DESERT DISCOVERY INC.

THE COOPER HILLS PROJECT

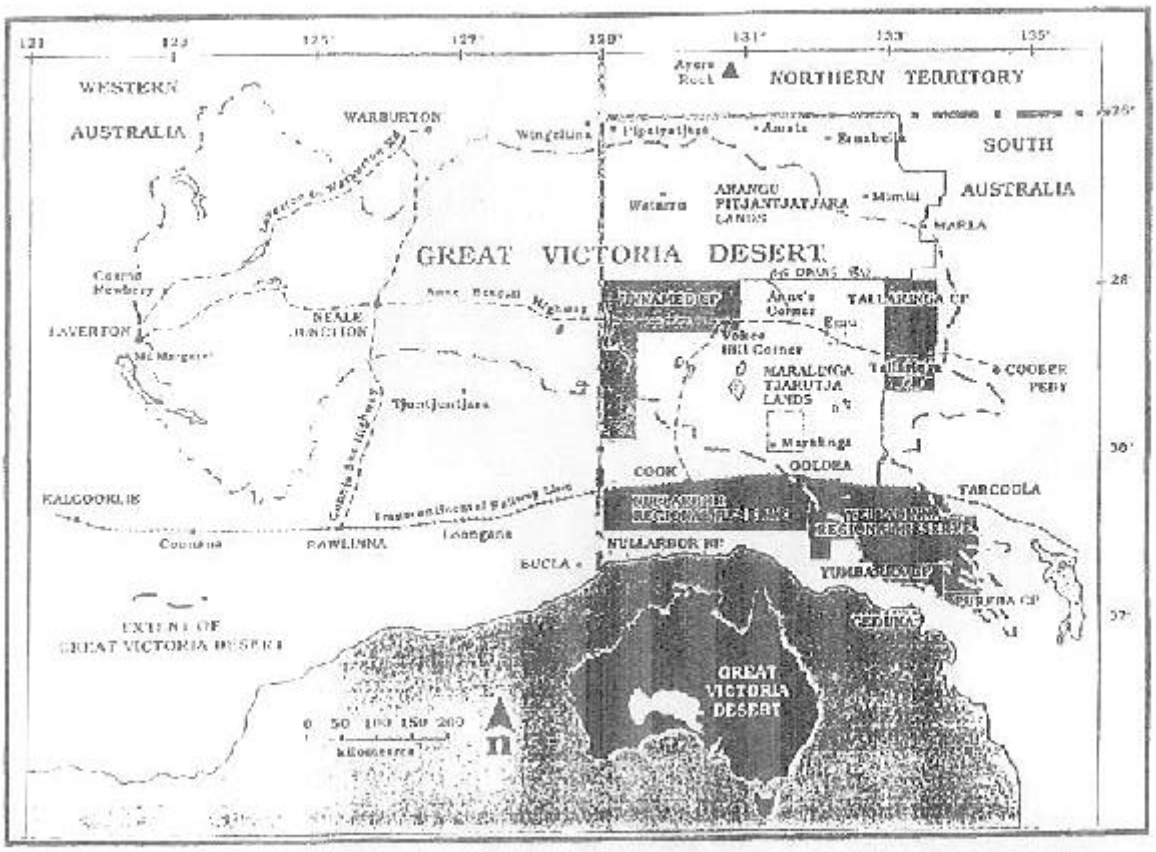
JUNE / JULY 2000

REPORT

Edited By: Garth & Jan Strong

Cover Photo: Cooper Hills Camp from the air, 8th July, 2000

GENERAL LOCATION MAP



Map indicating geographical position of the Unnamed Conservation Park, Anne Beadell Highway and Vokes Hill Corner/Cook Road within the Great Victoria Desert region.

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Desert Discovery Incorporated

ADDRESS: 113 Woodpark Road
Smithfield NSW 2164

PHONE: 02 9632 8155

FAX: 02 9632 8252

E-MAIL: desertdiscovery@fabtek.com.au

AIMS

Desert Discovery is a non-profit organisation whose aims are:

1. *To organise and document for the public record, safe expeditions into remote areas of Australia to study the environment, Aboriginal heritage and European exploration.*

2. *To encourage responsible recreational use of remote and environmentally sensitive areas.*

3. *To offer membership to people who enjoy and respect the outback regions and deserts of Australia.*

4. *To provide families, invited guests and students with the opportunity for fellowship, and to develop both individual strengths and team spirit through participation and cooperation in expeditions.*

5. *To acquire knowledge, skills, equipment, and funding to support the aims.*

COMMITTEE MEMBERS

President:	Mr David Hewitt
Secretary/Treasurer:	Mr Bob Hancock
Committee:	Mr Stuart Kostera
	Mr Ken Harris

BACKGROUND TO DESERT DISCOVERY

By David Hewitt

In July 1994 a small expedition trekked through the Great Sandy Desert, calling at Kurriji Yajula and Pikarungu, 450km south east of Broome. These features, known as Dragon Tree Soak and Joanna Spring to early European travellers are in one of a number of regions in Outback Australia rarely studied by scientific teams.

One of the members of the 1994 expedition that received sponsorship from Australian Geographic, was Dr Mike Bamford from Perth who had been in the area as the Australian representative with a Durham University party in 1981.

In the 13 years since then there had been considerable changes to the environment out there, particularly around Kurriji Yatula, caused by feral camels. Also in the 1994 expedition were Leanne and Jon Gregory and Margaret and David Hewitt. Many decisions can be made around a campfire on a still desert night and this trip was no exception. It was felt that there were opportunities for major privately sponsored scientific surveys to remote desert areas and it was decided to organise such a project in the Great Sandy Desert for 1996.

Preparations started immediately with generous offers of assistance from several companies and the following year Leanne and Jon Gregory went back to the desert on a search for a suitable site for a base camp. Two of the main criteria were water and close by, an area that could be made into an airstrip. With advice from former oil exploration personnel in Broome and Derby, they drove 280km due east of Anna Plains Station on the Eighty Mile Beach and located an ideal site between sand dunes with a good water bore which had been used for an oil drilling program 10 years earlier. An old airstrip 2km away could be cleared for emergency use.

For 3 weeks in July 1996 the first Discovery Project worked out of the base camp, 35km from Pikarungu, visiting features within a 150km radius of the camp, as far afield as Kurriji Yatula and the McLarty Hills. The 39 members stayed from two days to 3 weeks and included Aboriginal people who knew that area, an archaeologist, a linguist, biologists, botany students, teachers and senior students from two schools, an environmental engineer, pilots of two aircraft, a professional photographer, a 4 wheel drive writer, an experienced backup crew and observers. Sponsors included Land Rover Australia, West Kimberley Fuels, Midland Sheet Metal, The Ricegrowers Co-operative, Bob Hancock, Stuart Kostera and Engel Fridges. Most of the members of the project contributed to a report edited by Carolyn Graham Taylor and Mike Bamford and published the following year. The report provided valuable information on the botany; biology, archaeology, water resources and history of an area that had rarely seen this kind of study.

The Discovery Project created a lot of interest around Australia. The name came initially from Discovery Well, a native soak 20km south of the base campsite. It was named by Lawrence Wells, leader of the 1896-97 Calvert Exploring Expedition after finding the bodies of two young members of his party near the well. Charles Wells and George Jones had died tragically after failing to find a reliable water at Joanna Spring which had been given an incorrect position by Colonel Peter Warburton, 18 years earlier.

Following the success of the first project, Desert Discovery was established and incorporated in NSW in January 1998 as a non-profit association. Five aims of the organisation were defined and one of the principle objectives throughout has been to involve family groups, younger people and anyone with an interest in the Outback with experts during the projects.

Meanwhile planning was well under way for another desert expedition. Because of the amount of preparation needed, it was decided to run the projects every two years. A reconnaissance party once again led by Jon Gregory selected a site in the Gibson Desert for the 1998 base camp and produced a plan of the area. In June-July of that year, 114 people joined in the

Warri Project, named after one of the last of the desert people who came in to Wiluna from this region 20 years earlier. It was a very wet year for the desert and rain before and during the camp provided an additional challenge.

The project base camp was at another abandoned oil exploration site, 160km north of the Gunbarrel Highway with features such as the Woolnough Hills, Ngarinyari Claypan, Veevers Crater and Constance Headland providing day or extended trips from the base camp. Some members of the project stayed for a few days, others for the whole 3 ½ weeks, assisting with setting up and dismantling the camp. Bird surveys carried out by the Brooker family and Ken Harris was a feature of the camp and they gave talks on birds and involved other members in their work. Once again a report, edited by Bob and Kathy Hancock was published with many interesting contributions including some from the younger members. Phil Crocker, a pilot from Tumut NSW flew in and during his two days at the camp offered flights over the area. Other participants included Bob Lasseter who gave talks around the campfire about his father's search for a gold reef in Central Australia, Andreas and Christine Magun, a Swiss couple, and Ian Isbister who returned again with students from his school in Bathurst NSW. A group from North-West Safaris, an environmental tour company spent three days in the camp.

Planning began early in 1999 for another desert project and preparations for the Cooper Hills Project in the Great Victoria Desert are detailed elsewhere in the report.

The original committee of Desert Discovery Inc comprised David Hewitt, President; Bob Hancock, secretary/treasurer and Jon Gregory and Stuart Kostera as committee members. Last year Ken Harris joined the committee. At the last Annual Meeting Jon Gregory retired from the committee and sincere thanks were extended to him for his work over the past four years.

In addition to the main project this year, Desert Discovery was involved in 3 bird expeditions to cover remote one-degree squares in the Great Victoria Desert for the new Bird Atlas of Australia. Desert Discovery committee member Ken Harris is a member of Birds Australia and one of the Bird Atlas Project leaders, and he coordinated our participation. Members assisted in planning the routes, and arranging permits for entering Aboriginal Lands, then four vehicles joined in part or all of the surveys providing an essential backup and radio contact for the bird observers. Aboriginal people from Tjuntjuntjara and Oak Valley supplied advice on bird species for one of the teams and two Pitjantjatjara men from Amata and Umuwa took part in another survey.

Valuable financial assistance for the No.1 bird survey was provided by Australian Geographic. Bird's Australia allocated this money towards fuel expenses support for the Aboriginal participants and for radio repairs. Our members association with Australian Geographic goes back to the 1996 project when Dr Mike Bamford's work also received sponsorship from Australian Geographic.

Next year will be the final year of the Bird Atlas surveys and it is hoped that as Birds Australia cover difficult to reach areas of the Great Sandy Desert and the Tanami, Desert Discovery will again be able to offer its expertise.

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PREPARATIONS FOR COOPER HILLS

By David Hewitt

Four sites in the Gibson and Great Victoria Deserts of Western Australia were considered for the 2000 Desert Discovery project. In July 1999 a reconnaissance party of Ian Isbister, Neil and Helen Cocks, Stuart Kostera and Margaret and David Hewitt did a whirlwind 9-day trek over 2500km trek to check out the potential sites.

With experience from previous projects, the committee prepared a detailed summary sheet where criteria could be listed for the different sites.

Major points were:

- A remote region with a potential for flora and fauna studies.
- A reliable and good quality water supply.
- Reasonable access.
- An area close by suitable for an airstrip.
- Campsite - shade, wind protection, ground suitable for tent pegs.
- Weather conditions in mid-winter.
- A variety of landforms.
- Interesting features for day and overnight trips.

The survey started from Blackstone Community with Ian, Margaret and David and the first site inspected was on the Anne Beadell Highway, 200km west of SA border. The following day they met Neil, Helen and Stuart at Neale Junction and headed up the Connie Sue Highway to an overnight camp at Cooper Hills. The next night was at Tjukayirla Roadhouse, then along the David Carnegie Road to the Gunbarrel Highway. After checking out a site on the Gunbarrel, the party turned north on the Gary Highway and into the Gibson Desert. At Windy Corner they headed west to Midway Well on the Talawana Track. Returning to Windy Corner the last area at Veevers Turnoff north along the Gary Highway was inspected. The selection was finally between Cooper Hills on the Connie Sue and Veevers. Both sites had excellent water from bores, and old airstrips that could be returned to a serviceable condition with a couple of day's work. After a return visit to Cooper Hills in September 1999 by some of the Desert Discovery committee this site was chosen for the 2000 project mainly on the basis of access and the number of features which could be visited within a day's travel.

The dates decided on for the project were 28th June to 19th July, although the WA deserts can be rather cold at this time of the year and south-westerly winds can blow for several days at a time. These dates were selected mainly to suit school holidays and because spring timing would clash with the Olympic Games.

The actual campsite chosen was 8km north of the Cooper Hills bore at an abandoned mining camp, in mulga scrub with a cleared area suitable for the meeting tent and shower, laundry and water tank. Water would have to be carted and the Blackstone Community offered the loan of an 800-litre trailer mounted tank with a transfer pump. The distance via the Parallel road to Tjukayirla Roadhouse on the Great Central Highway was 230km and the roadhouse manager, Jim Hair agreed to deliver pre-paid fuel to the camp. This would be of special assistance for members coming in from the south who would be running low on fuel by the time they reached Cooper Hills, and for vehicles heading out on bird surveys at conclusion of the project. The Laverton Shire graded the Parallel Road, the Anne Beadell Highway from Laverton to near SA border, and their section of the Connie Sue in October last year, making access to the Project site much easier.

At Easter, Stuart Kostera brought up to Tjukayirla Roadhouse a trailer-load of camp equipment which had been stored at his property in Perth since the Warri Project. By the start of Cooper Hills over 2 tonnes of equipment had been assembled at Tjukayirla. This was brought in to the site in three trailers by Rene and Suzanne Wysman, Jim Hair, Bill Baker and Kath Whalen on 27th June. Bill and Rene erected the 9 metre by 6-metre marquee that had been specially made by Southern Cross Canvas in Melbourne. Next to arrive on site were Lawrie and Pat Draper, Bert and Marion Phillips, Clive Crouch, Neil Marriott and Peter Olde, followed a day later by Ken and Viv Harris, Connie Beadell and Margaret and David Hewitt. The committee wishes to thank all those who arrived in the first couple of days and assisted with setting up the camp, including a shower, pit toilet, bathroom, laundry and hot water service. Final touches were made to the “bush” plumbing set up by the hard working Garth Strong and Terry Smith when they joined the camp two days later. With the arrival of the All Saints College group from Bathurst, work started on the airstrip, firstly burning tufts of grass and digging out a few small acacia bushes. A Jon Gregory designed drag, made from four used grader cutting edges was then towed by Garth Strong up to 60 times along the 1100 metre length of the strip. The Cocks family group carried out last minute work on a washout part - way along the strip, and Gordon Birralee and Jock Black the day before the plane landed. More than half the camp was there on 7th July to see Phil Crocker make a perfect landing in his Beechcraft Bonanza aircraft. Phil gave the airstrip makers 9 $^1/_2$ out of 10 for their efforts - he says the other $^1/_2$ would have been awarded if it was sealed!

The work of setting up the camp was a means of bringing together members, many of whom had never met before and it gave everyone a sense of satisfaction in seeing a job well done. What can be achieved with a pile of used 200 litre drums, pallets and other gear left behind by mineral exploration parties, star pickets, canvas and second hand plumbing fittings never ceases to amaze. The standard of facilities in camp was a surprise to all newcomers to Desert Discovery. Improvements are being made to the equipment at every camp and thanks goes to those who have assisted here, specially Brian Clark from Midland Sheet Metal, Perth and Jon and Leanne Gregory from Tumut NSW.

The weather was a pleasant surprise with few of the possible cold winds or sub-zero overnight temperatures, though members had brought plenty of warm clothes. On three nights there were light showers of rain, enough for the

evening meetings to be moved to the shelter of the marquee that was an ideal size to seat over 50 people.

96 people attended over the 23 days, sharing in bird surveys, Clive's native animal observations, botanical collecting, flights over the camp, studies of geology, camels, the stars and the GPS navigation system, or just visiting and photographing many of the interesting features along the Connie Sue Highway. Special thanks to all those who gave talks around the evening campfire, usually a highlight of the day. Tea, coffee, milo, biscuits, and often pancakes followed this. The discussions usually continued beside the fire or in the marquee long after the official end of the night's activities. A volunteer roster ensured there was always someone to light the campfire, boil the billies and make pancakes, also to refuel the generator which ran for a couple of hours in the evenings, and keep the camp supplied with water from the bore.

Packing up after such an active couple of weeks can often be a long and drawn out affair however on the final day, breaking camp and loading the trailers was carried out very efficiently indeed. Those who assisted were John and Bev Deckert, Charlie and Jean Miller, Rene and Suzanne Wysman (who were also there on the first day), Bob and Elsie Lasseter, Andreas and Christine Magun, Kathy, Ian and Ava Hancock, Margaret and David Hewitt, Meg Carty and Stuart Kostera. Members are to be commended on the cleanliness of individual campsites on departure and after the next rains there will be little sign of Desert Discovery's presence in the area.

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A BRIEF HISTORY OF THE WESTERN GREAT VICTORIA DESERT

Aboriginal people, traditional owners from the area south of around Ryan's Bluff now live at Tjuntjuntjara Community. It was hoped that some of their members would be able to join the Cooper Hills camp, however unfortunately transport difficulties at Tjuntjuntjara prevented their participation.

European exploration through region was rather late in coming, given that most of Australia had already been "discovered" by the turn of the century. Frank Hann traversed the Great Victoria Desert from south to north in 1903 and it is interesting to compare his route with that selected by Len Beadell 59 years later for the Connie Sue Highway. From just north of Lennie's Neale Junction they are almost identical. Earlier, in 1873 William Gosse had tried to cross the continent to the west but was turned back by a shortage of water at the Barrow Range, 180km north of the Cooper Hills camp. Also in 1873 Ernest Giles in the first of 4 attempts to travel from the Overland Telegraph Line to the WA coast passed through the Warburton Range and named Elder Creek which is now crossed just south of the Warburton Aboriginal Community. He was forced to abandon this expedition after Alfred Gibson died in what Giles later named the Gibson Desert. John Forrest with his brother Alexander as second in charge and two Aboriginal companions successfully crossed from west to east in 1874, probably a much better season than the previous year. He also traversed the Warburton Range, named after another determined inland explorer. Forrest's was the last major inland exploration party to use only horses as Sir Thomas Elder had imported camels to South Australia and was making them available to anyone venturing into the desert.

In 1891 David Lindsay, a surveyor and leader of the Elder Scientific Exploring Expedition from Adelaide had travelled from the Blyth Hills on SA/WA border south-west to Giles' Queen Victoria Spring and had skirted around the region of the Desert Discovery Project. One of his bases was at Limejuice Camp, just north of the present Neale Junction and visited by some of our members. Across in South Australia Mt Lindsay honours his achievements and nearby he named Mt Sir Thomas after his sponsor and the Birksgate Range after Elder's Adelaide home.

Frank Hann financed all his own explorations, hoping to find gold and new grazing country in his travels. It is possible that he also just liked travelling outback and there are no doubt equivalents of Hann around today in their four-wheel drive vehicles. He did discover copper in the Warburton Range and Western Mining Corporation successfully mined this in the 1960s. His faithful companion on five trips through the region between 1903 and 1908 was the Aboriginal man, Talbot who came down with Hann from the Gulf Country of Queensland. Hann taught him to write and Talbot recorded their names on many trees and rock faces as they travelled. One of the 1: 250 000 maps of the area now carries his name.

In 1956-58 Len Beadell and a party from the Weapons Research Establishment, Woomera built the Gunbarrel Highway from Victory Downs Station in the Northern Territory, through the far north west of South Australia and up to Giles Weather Station, then across the Gibson Desert of Western Australia to link up with station roads at Carnegie, 340km east of Wiluna. Over the following eight years they built a further 3000km of tracks through outback NT, SA and WA. for the rocket firing project. The group known as the 'Gunbarrel Road Construction Party' became a legend in Outback Australia. In August-October 1962 they constructed a track from Warburton, due south to Rawlinna on the Trans-Australia railway and Lennie Beadell named it the Connie Sue Highway after his young daughter. This opened up the country for the first time to vehicle traffic and later that year an Australian Army survey team had a base camp at Waterfall Gorge, just off the Connie Sue and one of the more interesting features visited by the Cooper Hills members. The project was honoured to have the Beadell family and a friend Phil Sexton at our camp before they continued with a project of their own to replace some of Len's signs along the Gunbarrel and the Sandy Blight Road.

In 1963 an American company, Hunt Oil carried out an exploration program through the Western part of the Great Victoria Desert. It started with a seismic survey and two years later a deep drill hole called Lennis No 1. only 5km south of the site of the desert Discovery camp. In 1982 Shell Development followed with further oil surveys. Neither was successful but the result was a number of water bores and additional tracks running off the Connie Sue. Some of these have been reclaimed by nature while others, including the Parallel Road and tracks to Sydney Yeo Chasm, Sykes and Ryans Bluffs, Waterfall Gorge, and Woods Pass are still in good condition and were used by members of the Cooper Hills Project.

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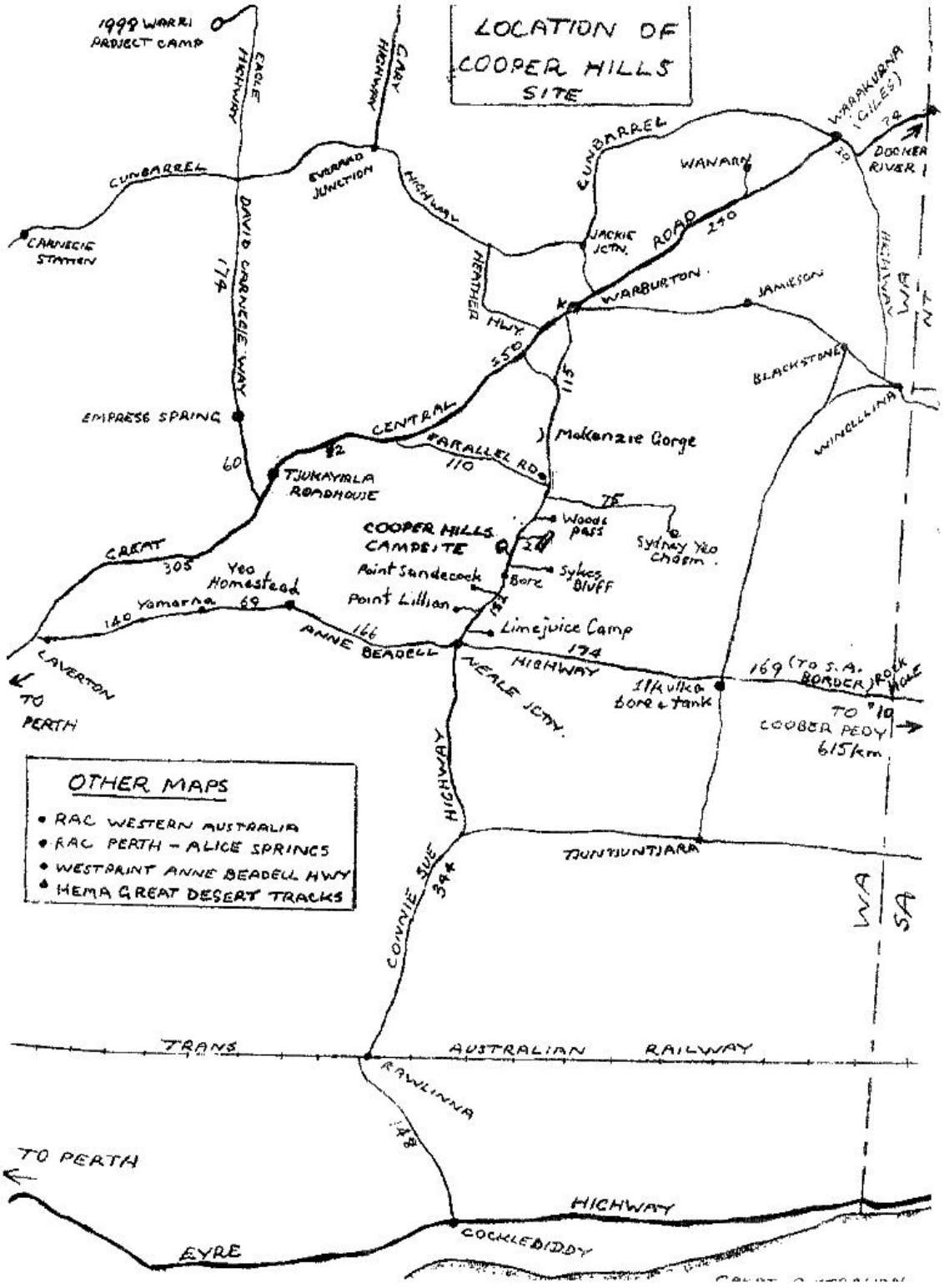
A long way from home.



Water Test Results Laboratory Report					
Type of sample	Units	Method	Ilkulka Bore,	Cooper Hills	Robs Bore, Parallel

			Anne Beadell Hwy	Bore	Road
pH	pH Units	PEI-001	6.7	6.7	8
Electrical conductivity @ 25^0 C	uS/cm	PEI-032	1900	400	1000
Total Dissolved Solids (calc.)	mg/L	PEI-032	1200	260	640
Iron, Fe (soluble)	mg/L	PEM-001	<0.05	1	<0.05
Sodium, Na	mg/L	PEM-001	220	42	110
Potassium, K	mg/L	PEM-001	34	14	110
Calcium, Ca	mg/L	PEM-002	20	15	46
Magnesium, Mg	mg/L	PEM-002	44	6.9	23
Chloride, Cl	mg/L	PEI-020	370	59	180
Carbonate, CO_3	mg/L	PEI-006	<1	<1	<1
Bicarbonate, HCO_3	mg/L	PEI-006	45	50	160
Sulphate, SO_4	mg/L	PEI-020	140	29	69
Nitrate, NO_3	mg/L	PEI-020	68	27	37
Cation/Anion balance	%	Calculation	-0.42	-0.31	-0.62
Sum of Ions (calc.)	mg/L	Calculation	941	243	650

First water from the bore at Cooper Hills

Desert Discovery Cooper Hills	Attendance List
NAME	**ADDRESS**
Baker; Bill	**Cloverdale WA 6105**
Bayliss; Rowan	**All Saints College Bathurst**
Beadell, Connie	**Salisbury SA 5108**
Beadell; Anne & Sexton, Phil	**Lyndoch SA 5351**
Beadell; Gary , Anne, Joseph & Inez	**Brahma Lodge SA 5109**
Berry: Ray	**Colac Vic 3250**
Birrell; Gordon	**Diamond Creek Victoria 3089**

Black; Jock	**Northcote Vic. 3070**
Blake; Trevor & Beryl	**Ringwood E VIC 3135**
Blunt; Jack	**Warburton Community, WA 6440**
Brooker; Michael & Lesley	**Gooseberry Hill WA 6076**
Carty; Meg	**Marmion WA 6020**
Cocks; Andrew, Sharon, Ben, Ashley & Joshua	**Boronia Vic 3155**
Cocks; Neil & Helen	**Boronia Vic 3155**
Cozens; Greg, Heather, Elizabeth, Anthony, & Vanessa	**Thornlie WA**
Crocker; Phil	**Tumut NSW 2720**
Crouch; Clive	**Nhill Vic 3418**
Deckert; John & Bev	**Nhill Victoria 3418**
Draper; Lawrie & Pat	**Bendigo Victoria 3552**
Enkelmann; Phillipa	**All Saints College Bathurst**
Fletcher; David & Penny	**Tumut, NSW 2720**
Fothergill; Euan	**Brunswick West Vic 3055**
Gole; Martin & Cheryl	**Gooseberry Hill WA 6076**
Hancock; Bob, Kathy, Ian & Ava	**Northmead NSW 2164**
Harris; Ken & Vivian	**Wheelers Hill Vic 3150**
Hesse; Sheena & Clive	**Toodyay WA 6566**
Hewitt; Margaret & David	**Alice Springs NT 0872**
Isbister; Ian	**Bathurst NSW 2795**
Johnson; Keith & Shirley	**Wheelers Hill Vic 3150**
Jordan; Malcolm & Sue	**Mt.Claremont WA 6010**
Kidman; Vanessa	**Bathurst NSW 2795**
Kostera; Stuart	**Kalamunda WA 6076**
Lasseter; Bob & Elsie	**Seven Hills NSW 2147**
Living; Laurie	**The Basin Victoria 3154**
Lumb; Mick & Judy	**Middle Park Vic 3206**
Magun; Andreas & Christine	**Herrenschwanden Switzerland**
Marriott; Neil	**Stawell Victoria 3380**
Mc Kinnon; David, Olga & Andrew	**Bathurst NSW 2795**
Miller; Charles & Jean	**Epping NSW 2121**
Moyes; Lou & Janet	**Banksia Park SA 5091**
Olde; Peter	**Illawong NSW 2234**
Pawson; Pat	**Bayswater Vic 3153**
Peakall; Gary, Dianne, Ashley & Georgia	**Boya WA 6056**
Perkins; David	**Heathmont Vic 3135**
Smith; Terry, Nella, Mark & Warwick	**Narrandera NSW 2700**
Strong; Garth & Jan	**Narrandera NSW 2720**
Tink; David	**Bathurst NSW 2795**
Travis; David, Barbara & Andrew	**Bathurst NSW 2795**
Walen; Kath	**Adelaide SA 5000**
Walker; Geoff	**Mentone Vic. 3194**
Wilkinson; John	**Coleambally NSW 2707**
Wysman; Rene & Suzanne	**Tumut NSW 2720**
Young; Graham	**Oberon NSW 2787**
Young; Hayden	**Albury NSW 2640**

Bird Survey

Edited by Ken Harris

1. Introduction

Bird studies during the Cooper Hills Project were conducted principally by Ken Harris who was in attendance throughout the Project. Other sightings were added by Neil Marriott and Clive Crouch who were also in attendance

throughout the Project and by other observers who attended during the last 10 days of the Project. These other observers were Michael and Lesley Brooker, Euan Fothergill, Cheryl and Martin Gole, Keith Johnson, Laurie Living and Geoff Walker. Most of the records will be submitted as part of the second Atlas of Australian Birds which is now in the third year of a four-year project.
Bird studies for the Project extended north along the Connie Sue Hwy to Warburton, south to Point Lillian, west along the extent of the Parallel Track and East to Sydney Yeo Range.
During the Project there were very few plants in flower or in bud. The area was dry and had been for some time. It was obvious that the heavy inland rains that fell during the previous summer and autumn had decreased as you moved south below the Great Central Road. However, the fact that juveniles were present for some species, eg Acanthiza spp, Red-capped Robin, Rufous Whistler and Grey Shrike-thrush, indicated there may have been sufficient rains earlier in the year to prompt a breeding cycle for some species.

2. Impact of camels on bird numbers and species
Extensive numbers of camels throughout the region are very likely to be having a direct impact upon the diversity and population dynamics of avian fauna. Nearly all waterholes visited had been fouled and emptied by the abundant camel numbers. This will be directly impacting on seed eating species as well as the numbers of almost all other bird species, and possibly accounts for the almost total absence of emus from the desert.

3. Areas Covered
Bird studies covered the following areas -

(1) Base Camp and Surrounds
The main camping area was in an area that had been burned during the previous summer. Prior to the fire, the area had extensive tree and shrub cover consisting principally of, Acacia species (principally mulga) and occasional Eucalyptus (mallee). The fire had eliminated more than 50% of the tree and large shrub cover and had damaged much of the remainder. Some regrowth had commenced and the fire had promoted extensive low herb growth that had already flowered and was in seed. However there were still numerous flowering herbs and shrubs including many *Eremophila forrestii* which were attracting numerous nectariferous birds. The surrounding area consisted of much similar burned area with a patchwork of unburnt mulga scrub and sand dune areas. These unburnt areas varied in size up to several hectares.
There was no casual water visible although the presence of some species indicated it was available well within a range of 20 kilometres.

(2) Breakaway Country
Between the latitudes of 26°40'S and 27°50'S the Connie Sue Highway follows a line of breakaway country. These breakaways take the form of steep rocky ridges, gorges and occasionally deep chasms. The features are varying distances apart and are separated by mulga woodland and sand plain. They provide different habitats which have the potential to attract both greater numbers of birds as well as greater species diversity. Well-shaded rockholes hold water for long periods and a number of sites were found where birds were using or had been using these sources of water. The higher ridges concentrate

run off during periods of rain and there are many dry creek beds with much denser vegetation than the surrounding plains.

(3) Sydney Yeo Ranges

The Sydney Yeo Ranges are a large area of breakaway country situated in a very remote area approximately 70km ENE of Base Camp. This area provided spectacular scenery as well as excellent habitat variation and as a result was surveyed extensively.

(4) Other

Surveys were conducted at various stages, either when birders were travelling in to Base Camp or travelling between the many breakaway features.

4. Summary of Sightings

The bird species observed at Base Camp were characteristic of the Great Victoria Desert. Notable sightings were -

- A significant number of sightings (in excess of 10) of Rufous-crowned Emu-wren
- Two Grey Honeyeaters seen near Sydney Yeo Ranges

During the course of the Project, 75 twenty-minute surveys were completed. 37 of these were single person surveys and the remainder by two or more people. The most commonly reported birds for these surveys were: Spiny-cheeked Honeyeater (present in 67 surveys), White-fronted Honeyeater (65), Grey-fronted Honeyeater (53), Singing Honeyeater (44), Rufous Whistler (40), Zebra Finch (38), Red-capped Robin (37), Willie Wagtail (36), Chestnut-rumped Thornbill (34), Variegated Fairywren (33), Hooded Robin (27), Crested Bellbird (24), Grey Shrike-thrush (22), Splendid Fairywren (20), Mistletoebird (20).

Species which could be considered to have lower than expected abundance were Emu (1 sighting only), Wedge-tailed Eagle (2 sightings), Australian Bustard (4 sightings), Black Honeyeater (nil sightings), Pied Honeyeater (1 small flock sighted) and Striated Grasswren. The low numbers of Emu and Wedge-tailed Eagle may simply be due to unsuitable habitat as numbers of both these species were low during a survey in 1972. Early results from the second Australian Bird Atlas indicate Bustard numbers have dropped across most of its range since the first Atlas. Further work needs to be done to quantify this apparent drop in population and to explore reasons. There is a concern that predation by aborigines is a contributing factor. The lack of either suitable or sufficient nectar source no doubt accounted for the absence of Pied and Black Honeyeaters. It seems likely that both these species depend heavily on nectar as their prime source of food. Those honeyeaters that were present are more insectivorous in their habits. Although several sightings were obtained of Striated Grasswrens the abundance of apparently suitable habitat led to expectations of them being more widespread, particularly along the Connie Sue. A possible explanation is that there is a higher frequency of fires along the Connie Sue.

The average number of birds recorded per 20-minute survey was 8.0 with a range from 2 to 17 birds. The average may not reflect a true abundance figure, as it is likely that a high proportion of surveys were conducted in higher abundance areas.

During May 1972 bird surveys were conducted for a substantial part of the Project area by Michael Brooker and others. Birds seen on this expedition that were not seen during the Cooper Hills Project were Orange Chat (56km south of Point Wood), Grey Butcherbird (74km north of Point Wood), and Brown

Songlark (37km north of Point Wood). Birds that were not seen on the 1972 expedition but were seen during the Cooper Hills Project were Collared Sparrowhawk, Wedge-tailed Eagle, Little Eagle, Australian Hobby, Crested Pigeon, Diamond Dove, Major Mitchell's Cockatoo, Budgerigar, Bourke's Parrot, Scarlet-chested Parrot, Horsefield's Bronze Cuckoo, Southern Boobook, Spotted Nightjar, Red-backed Kingfisher, Grey Honeyeater, Pied Honeyeater, Jacky Winter, Little Woodswallow and Little Crow. There are no major surprises in these differences between the surveys. The 1972 expedition travelled the Connie Sue Hwy only and did not base camp for a prolonged time, as did the Cooper Hills Project. The extended period of time, a larger number of observers and broader search area would account to a large extent for more species being detected in the Cooper Hills Project. Other species are nomadic. Of the above birds found in significant numbers on the Cooper Hills project, Budgerigars were obviously attracted to the seeding herb growth created by a fire followed by rain. The flocks of Bourkes Parrot would move in if both food and water were available. There are still many gaps in our knowledge of the Spotted Nightjar, however it is believed to be nomadic as well as having a partial migration. Therefore changes in its population within a given area might be expected.

BIRDS

Emu *Dromaius novaehollandiae*
A single bird seen at Point Wood.

Black-shouldered Kite *Elanus axillaris*
Single bird perched at Point Wood.

Collared Sparrowhawk *Accipiter cirrhocephalus*
One bird seen to take and eat a White-fronted Honeyeater in Sydney Yeo Chasm. One other sighting on the Parallel Track.

Wedge-tailed Eagle *Aquila audax*
Single birds seen at Sydney Yeo range and south of Base Camp.

Little Eagle *Hieraaetus morphnoides*
A single bird was seen on several occasions between Base Camp and the Sydney Yeo track.

Brown Falcon *Falco berigora*
Occasional birds seen but not particularly common. Recorded in eight 20-minute surveys. Most birds recorded on a trip was five, between Base Camp and Sydney Yeo Ranges (approx 115km).

Australian Hobby *Falco longipennis*
A pair nesting near Base Camp and two other sightings further south.

Peregrine Falcon *Falco peregrinus*
Seen near Base Camp several times. Two birds passed over Base Camp on three separate evenings. On each occasion their flight was rapid and the birds interacted by crossing each other's flight path and coming together in a brief soaring flight.

Also seen near the Old Parallel Track.

Nankeen Kestrel *Falco cenchroides*
Moderately common. Recorded in eleven 20-minute surveys.

Australian Bustard *Ardeotis australis*
Moderately common at Sydney Yeo Ranges but uncommon elsewhere. Four sightings at Sydney Yeo Ranges, a single bird seen at Mackenzie Gorge, three on Cooper Creek and at Base Camp two males seen displaying by swinging their pendulous throat sac in front of a single female. Evidence of kills by local aborigines at a number of sites.

Little Button-quail *Turnix velox*
Reasonably common at Sydney Yeo Range. Elsewhere birds flushed very occasionally. Recorded in three 20-minute surveys.

Common Bronzewing *Phaps chalcoptera*
Very occasional sightings along the Connie Sue Hwy, mostly south of Base Camp. Recorded in only one 20-minute survey.

Crested Pigeon *Ocyphaps lophotes*
Three birds seen in burned area near Base Camp and a single bird seen further south.

Diamond Dove *Geopelia cuneata*
Groups of between five and ten birds seen at Ryan's Bluff and Sykes Bluff.

Galah *Cacatua roseicapilla*
A small flock seen at Point Lillian and several birds seen along Cooper Creek.

Major Mitchell's Cockatoo *Cacatua leadbeateri*
A flock of about ten birds seen at Sydney Yeo Ranges.

Australian Ringneck *Barnardius zonarius*
Occasional sightings throughout the area. Recorded in five 20-minute surveys.

Mulga Parrot *Psephotus varius*
Moderately common throughout the project area.

Budgerigar *Melopsittacus undulatus*
Small flocks relatively common close to Base Camp, feeding in the low herb regrowth on the burned areas. Not recorded any distance from Base Camp.

Bourke's Parrot *Neopsephotus bourkii*
Moderately common, particularly in breakaway sites along the Connie Sue Hwy or anywhere there was good mulga growth. A flock of over twenty birds seen on the extension of the Old Parallel Track and a flock of 50+ seen at Ryan's Bluff.

Scarlet-chested Parrot *Neophema splendida*

Two sightings of male and female birds, one on Sydney Yeo Track and one approx. 40km south of Base Camp.

Pallid Cuckoo *Cuculus pallidus*
Returned from its northern migration late in the Project. First seen near Sydney Yeo Range early in the last week and heard shortly after at Base Camp.

Black-eared Cuckoo *Chrysococcyx osculans*
Moderately common throughout the whole area. Recorded in five 20 minute surveys.

Horsfield's Bronze-Cuckoo *Chrysococcyx basalis*
One sighting along Sydney Yeo Track and one on eastern end of Parallel Track.

Southern Boobok *Ninox novaeseelandiae*
Two birds heard calling frequently at Base Camp. Also recorded at Mackenzie Gorge roosting in a small cave and on the Connie Sue Hwy just south of the Parallel Track.

Barn Owl *Tyto alba*
A single sighting near Cooper Creek.

Tawny Frogmouth *Podargus strigoides*
One bird seen on the Connie Sue Hwy just south of the Parallel Track.

Spotted Nightjar *Eurostopodus argus*
Reasonably common throughout the Project area. Birds seen regularly when driving at night. Seven seen one night over 50km of Connie Sue including three birds near Base Camp.

Red-backed Kingfisher *Todiramphus pyrrhopygia*
One bird seen on several occasions near Base Camp and another sighting at Point Sandercock.

Splendid Fairy-wren *Malurus splendens*
Common in areas of denser mulga with shrub undergrowth. Males almost all in eclipse.

Variegated Fairy-wren *Malurus lamberti*
Very common in areas of denser mulga with shrub undergrowth. Frequently with *Malurus splendens.*

White-winged Fairy-wren *Malurus leucopterus*
Eight sightings spread throughout the Project area.

Rufous-crowned Emu-wren *Stipiturus ruficeps*
Moderately common in sand dune areas. Seen at Sydney Yeo Ranges, along the Sydney Yeo track, north of Mackenzie Gorge, near Base Camp and at a number of other sites south of Base Camp.

Striated Grasswren *Amytornis striatus*

Seen at Sydney Yeo Ranges, along the Sydney Yeo track, along the Parallel Track and south of Base Camp.

Striated Pardalote *Pardalotus striatus*
Moderately common throughout the project area, often in reasonable numbers, in non-flowering mallee where there was a lack of honeyeater activity. Recorded in nine 20-minute surveys, once surprisingly in a heavily burned area near Base Camp.

Redthroat *Pyrrholaemus brunneus*
Moderately common throughout the project area. Recorded in eight 20-minute surveys including Base Camp, Sykes Bluff and Sydney Yeo Ranges.

Weebill *Smicrornis brevirostris*
Moderately common wherever there was non-flowering mallee. Often in association with *Pardalotus striatus*. Seen in six 20-minute surveys including just south of Warburton, Sydney Yeo Ranges and near Point Sandercock.

Inland Thornbill *Acanthiza apicalis*
Reasonably common throughout area. Seen in twelve 20-minute surveys.

Chestnut-rumped Thornbill *Acanthiza uropygialis*
Very common throughout area. Seen in most areas where there was mulga.

Slaty-backed Thornbill *Acanthiza robustirostris*
Reasonably common throughout area. Recorded in eight 20-minute surveys but actual incidence may have been higher due to some difficulty in separating immature birds from other *Acanthiza* species.

Southern Whiteface *Aphelocephala leocopsis*
Frequently seen in burned areas near to Base Camp feeding in mixed flocks with **Budgerigar** and **Crimson Chat**. Uncommon elsewhere.

Banded Whiteface *Aphelocephala nigricinta*
One sighting on western end of Parallel Track.

Spiny-cheeked Honeyeater *Acanthagenys rufogularis*
Very common throughout area.

Yellow-throated Miner *Manorina flavigula*
Moderately common in more heavily timbered areas such as creek beds. More common south of Base Camp than to the north.

Singing Honeyeater *Lichenostomus virescens*
Very common throughout the area.

Grey-fronted Honeyeater *Lichenostomus plumulus*
Very common throughout the area.

White-fronted Honeyeater *Philidonyris albifrons*
Very common throughout the area. Nest with one large chick south of Base Camp.

Grey Honeyeater *Conopophila whitei*
One sighting of two birds feeding in mulga near Sydney Yeo Ranges..

Pied Honeyeater *Certhionyx variegatus*
A flock of approximately 20 birds seen on the track near Sydney Yeo Ranges. The birds were not feeding and the lack of suitable extensive flowering habitat suggests they were passing through.

Crimson Chat *Epthianura tricolour*
Seen regularly in burned areas near Base Camp feeding with **Budgerigar** and **Southern Whiteface**. Sightings elsewhere uncommon.

Jacky Winter *Microeca fascinans*
Occasional sightings in or near burned areas and one sighting in mulga near Sydney Yeo Ranges.

Red-capped Robin *Petroica goodenovii*
Common throughout the area.

Hooded Robin *Melanodryas cucullata*
Common throughout the area. Frequently seen in burned areas near Base Camp.

White-browed Babbler *Pomatostomus superciliosis*
Moderately common throughout the area.

Chestnut Quail-thrush *Cinclosoma castanotus*
One sighting at Mackenzie Gorge.

Varied Sitella *Daphoenositta chrysoptera*
Seen near Base Camp, at Sydney Yeo Ranges, on Old Parallel Track and twice south of the bore.

Cinnamon Quail-thrush Cinclasoma cinnamomeum
One sighting at Mackenzie Gorge.

Chestnut-breasted Quail-thrush *Cinclosoma castaneothorax*
Seen only at Sydney Yeo Ranges where it was common on the stony slopes.

Varied Sitella *Daphoenositta Chrysoptera*
Three sightings, at Sydney Yeo Ranges (twice) and near base Camp.

Crested Bellbird *Oreoica gutturalis*
Reasonably common throughout the area.
Rufous Whistler *Pachycephala rufiventris*
Common throughout the area.

Grey Shrike-thrush *Colluricincla harmonica*
Reasonably common throughout the area.

Grey Fantail *Rhipidura fuliginosa*
A single bird seen at Sydney Yeo Ranges.

Willie Wagtail *Rhipidura leucophrys*
Common throughout the area.

Black-faced Cuckoo-shrike *Coracina novaehollandiae*
Moderately common. Recorded in nine 20 minute surveys.

Black-faced Woodswallow *Artamus cinereus*
Moderately common throughout the area.

Little Woodswallow *Artamus minor*
Recorded at Point Wood, Point Sandercock and Sydney Yeo Ranges.

Pied Butcherbird *Cracticus nigrogularis*
Moderately common throughout the Project area.

Australian Magpie *Gymnorhina tibicen*
Very occasional sightings. Seen near Base Camp and a flock of 30+ birds observed several times along Cooper Ck.

Little Crow *Corvus bennetti*
Moderately common. Recorded in eight 20 minute surveys including Base Camp, Sykes Bluff and Sydney Yeo Ranges.

Torresian Crow *Corvus orru*
Slightly less common throughout the project area than *Corvus bennetti.* Recorded in six 20 minute surveys including Base Camp, Hann's Tabletop Hill Point Lillian and Sydney Yeo Ranges.

Richard's Pipit *Anthus novaeseelandiae*
Moderately common throughout area. Seen regularly in burned area near Base Camp.

Zebra Finch *Taeniopygia guttata*
Very common throughout area. A pair was observed building a nest in the middle of a camp site at Base Camp.

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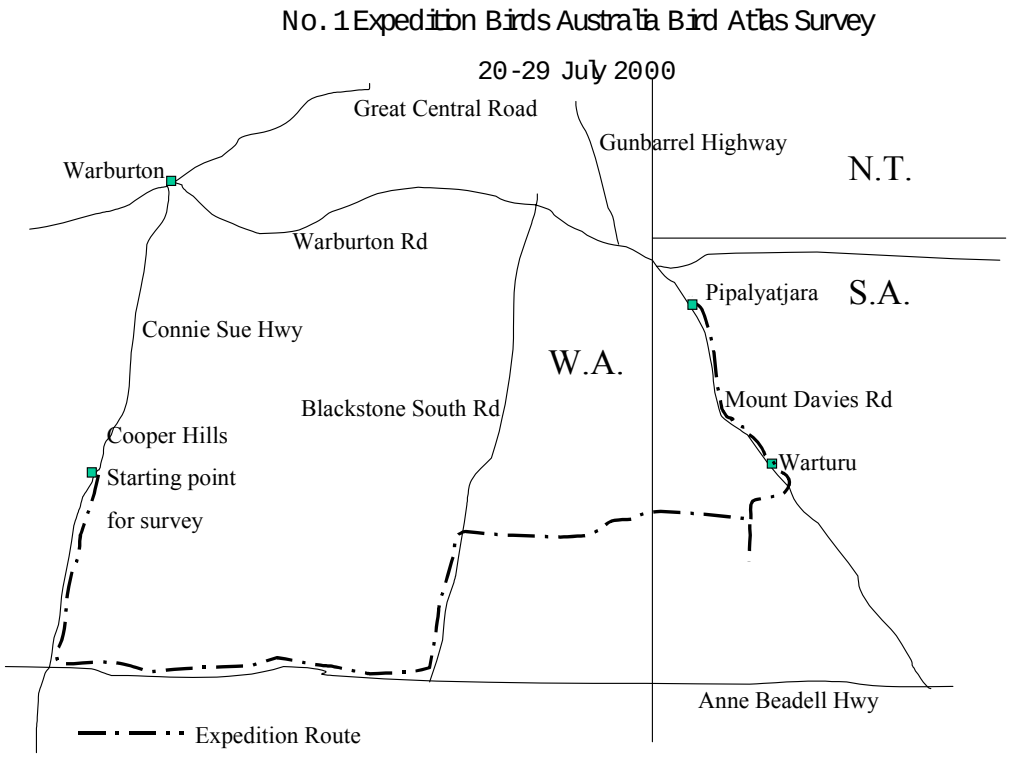

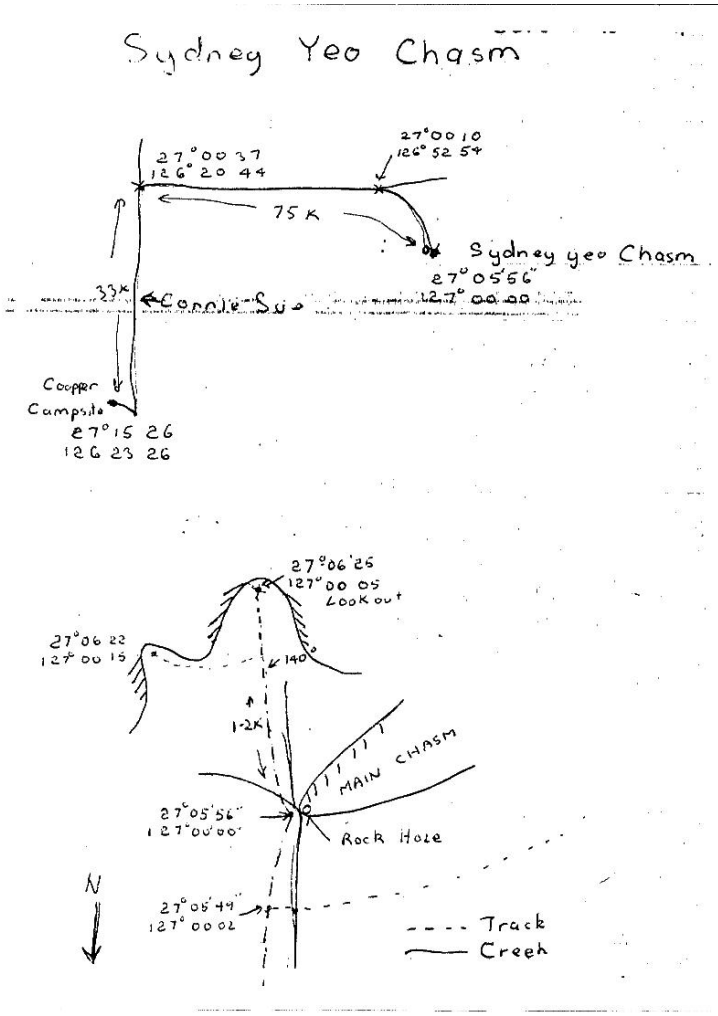

"Happy Prickle Picking"

Vegetation Report by Trevor Blake

Let us consider 'the fluff on the top' as the sand dunes were called by a geologist on camp, because the sand has an important visual impact on our appreciation and understanding of the desert. Much of the vegetation too has responded to the influx of sand over millions of years since the dunes were first formed. The last dramatic drying out of this continent took place over the last glacial period that occurred from 18,000 to 15,000 years ago. The aridification had been progressing and was well-established 2.4 million years ago and continued throughout subsequent glacial periods.

The warm temperate to sub-tropical vegetation inherited from the Gondwana connection had been dramatically diminished and dry country species had been evolving. It was during these dry glacial periods that grasslands replaced the forests and it was as much an adjustment to aridity, fire, greater wind velocity and evaporation than too colder conditions. Fluctuations naturally took place as conditions changed during interglacial periods, however the overall effect was for a greater aridity to dominate.

During this last glacial action the sea level dropped 130 metres below the present, the wind velocity has been estimated at over double and the rainfall of

the deserts at about half. With two thirds of the continent covered in dunes from the western and southern seashores and with further arid lands extending to the east and north of the dunefields, the continent was indeed a dry place. Trees had disappeared from 85% of the landmass. It is worth remembering that Aboriginal people were living here right through this period.

Environments that had evolved up to this last, and very recent glacial period had modified systems to fire, had adapted to extensive areas of salt affected soils and groundwater, and covered enormous areas with windblown sand, thus altering river systems and drainage patterns. A number of these ancient meandering rivers can be better understood if a map of the desert areas is studied and a line run through the existing salt-lakes joining those in close proximity. Soils too were leached over the last 300 million years since the last ice sheet covered much of the continent, well prior to the break up of Gondwana. The ice ground down rocks and minerals forming and rejuvenating soils. In comparison, in the Northern Hemisphere much of Europe and North America experienced this only 18,000 years ago in the same glacial period.

With the severe conditions experienced during this glacial period the vegetation was not sufficient to prevent the winds from re-shaping the sands into new extensive dune systems. Airborne salt further contaminated the groundwater and the present-day dunes and sand sheets cover vast areas of the inland. These extend right up to the breakaways such as we experienced in the GVD. The dune systems throughout the continent were changed at this time and the prevailing winds determined the dune direction.

Well that's turned over a couple grains in the story of the fluff.

So now the modern day flora was able to re-establish itself after a 3000 - year hiccup. Most of the genera were well established and species that had survived in pockets began to spread and adapt to the gradually easing conditions until the arrival of white-man with all the inappropriate food producing techniques. The land at this stage had been slowly recovering from its glacial ordeal.

A few notes on the vegetation of the Great Victoria Desert with emphasis on the Cooper Hills area:

The dominant plants to uniformly cover the desert are the grasses which we grew to know well as some are still removing the odd spines of *Triodia basedowii* and *Plectrachne melville*i from fingers. *Acacia aneura* , the mulga, and at times *Eucalyptus gongylocarpa*, the marbled gum, and a group of mallees dominated the taller vegetation, *E. youngiana, pachyphylla, glomerosa, lucasii, concinna, clelandii, striaticalyx, rigidula, kingsmillii, oldfieldii, leptopoda, socialis, oleosa, trivalvis, gamophylla,* with very blue leaves, and a bloodwood, *centralis*. Quite often in fire ravaged areas a tall bright green poplar-like tree grew in profusion, this is the desert poplar, *Codonocarpus cotonifolius* and is an excellent regenerator after fire. It is short lived and the camels knock it around. Camels also browse heavily on *Gyrostemon ramulosus* which grows on the dunes and is related to the desert

poplar. Some of the striking vegetation, in full flower were the grevilleas and hakeas found along the sandy plains or in the swales between the dunes. Often we would come across pure stands of *Grevillea eriostachya* and *Grevillea juncifolia* with their brilliant orange flowers dripping with nectar.

On the dune tops was a grey/green bush with large clusters of creamy white flowers, this was *Grevillea stenobotrya* and was really only just coming into flower in July. The last of the grevilleas found in the Cooper Hills on Redmans Bluff, Sydney Yeo, McKenzie Gorge on rocky ground was *G. berryana*. Its leaves are very similar to mulga except they are divided.

Scattered throughout the desert were groups of corky-barked hakeas, *Hakea lorea,* with long, strappy, round, simple leaves and *Hakea eyreana*, with divided leaves. Both have big bunches of pedulous flowers, similar to grevilleas, but differing in the very woody fruits and winged seeds. Around Neale Junction and all through the desert to the west was the brilliant, red bottlebrush flowers of *H. francisiana*.
Along some of the moist water courses at Sydney Yeo Chasm was a form of the red, river gum, *Euc. camaldulensis var. obtusa* and an old reliable streamside dweller *Melaleuca glomerata*. An unyielding upright bush with rounded wavy-edged leaves that is scattered in a range of environments is *Canthium latifolium* and a less common plant of the same genus is *C. attenuatum.* Both are known as native currants and are easily identified by their opposite leaves. Things would have to be tough to rely on this plant for food.

A variety of wattles with silvery foliage were found throughout our wandering area. *Ac. brachystachya* and *Ac. argyrophylla*, on dunes, *Ac. ligulata* on dunes, *Ac. maitlandii*, dunes, rocky rises and flats*, Ac. abrupta* roadsides, *Ac. carnei* dunes, *Ac. pachyacra* a clump forming, suckering sp. which is like *Ac. murrayana* but without the white trunks, a wide range of mulgas, *Ac. aneura*, some with needle-like leaves, others with broader flat leaves and var. *pyramidata.* with layered growth. In rocky sites near streams (Sydney Yeo) the dead finish wattle grew, *Ac. tetragonophylla*

Down towards Neale Junction was *Ac. prainii* and a common large rounded bush of *Ac. colletioides* with needle leaves.

The roadside vegetation produced a lot of interest and to the north along the Connie Sue we saw masses of a brilliant yellow pea just coming into flower - *Burtonia polyzyga*, and another with fairly leafless stems *Jacksonia arida* .Wherever we went there was a large range of round bushes with attractive bright yellow flowers. These were Sennas and there were many species and hybrids. *S. oligophylla, artemisioides, nemophylla* var *coriacea, helmsii.* Yellow daisies peppered the area particularly where it was burnt or disturbed. *Leucochrysum stipitatum*, *Waitzia acuminata, Craspedia* sp and *Podolepis capillaris* and *canescens* .A stunning little posy of bright blue was *Brunonia australis.*

In the fan-flowered family, *Goodeniacea* were white, pink and purple *Scaevola depauperata, ovalifolia, parvifolia, collaris*, and the prickly bushy species *spinescens* . Goodenias were everywhere from prostrate with yellow flowers as in *G. centralis, peacockiana, eremophila*, *mimuloides, krauseana, glandulosa*, *triodiophila*, to a the tall species with masses of deep blue flowers,

G scaevolina. Along the roadsides was a grey-leafed rounded bush with tiny blue flowers, *Dampiera cinerea*. A weird fleshy stemmed plant with leaves that encircled the stems that was common in the burnt areas was *Velleia connata*.

The blues and purples could not be overlooked, and massed along the roadsides were the small, bushy Halganias, *H. glabra* with the shiny leaves, *H. cyanea* and *H. solanacea*. These latter two are closely affiliated to the species mentioned above, but don't quite fit the true species descriptions. *Keraudrenia integrifolia* , a compact bush that has purple flowers with yellow centres and the Solanums with their prickly stems and leaves. *S. centrale, orbiculatum*, *coactiliferum, lasiophyllum, gilesii.* Another group of striking shrubs with that blue/grey foliage and purplish or red pea flowers are the Indigoferas *I. georgei, linnaei, linifolia*. A vigorous ground covering creeper with large leaves with three leaflets and deep purple spikes of pea flowers is *Kennedia prorepens*. A large genus of spreading ground covering or low shrubs with masses of stems of brilliant purple pea flowers are the Swainsonias and there were plenty of them*S. microphylla, colutoides, flavicarinata, procumbens* and *kingii* var*. ornata*.

Massed along the tracks was a low shrub with striking,white, tubular flowers *Bonamia rosea* and a delightful prostrate plant with long runners with lots of white flowers *Diplopeltus stuartii*. One of the strange plants of the desert, and we saw it on occasions, looked as though a bean bag had burst amongst the triodia. On investigation it turned out to be a delightful little soft-flowered plant only a few cm. high, *Macgregoria racemigera*, which grows in clumps.

Well, before I head to the dunes the Dicrastylis deserve a mention. These beautiful rounded clumps of yellow, rusty brown or red and cream were everywhere and there seemed to be an infinite variety of them, *Dicrastylis* var. *exsuccosa* and var. *cinerea, doranii, brunnea, parvifolia, nicholasii,* and a form of *costelloi.*

Another group of plants closely related to the above are Newcastelias, usually found on the dunes. These have very silvery, grey leaves, which in themselves are most attractive and were only just coming into flower in July. We found many more in full flower later on and all have either rounded or elongated, silver spikes with brilliant, purple, star flowers opening onto this background - striking stuff! *N. cephalantha* var. *cephalantha*, var. *oblonga,* var. *tephropepla, bracteosa, spodiotricha, hexarrhena, viscida, chrysotricha.*

The dusty, pink on the sides of the dunes is from Thryptomene *maisoneuvii* - hope you noticed the magnificent peeling trunks on the older plants and the pong as you approached the dunes. Related to these, and also growing on deep sands, were the brilliant yellow *Micromyrtus flaviflora*, and a tiny, but massed, purple flowering *Wehlia thryptomenoides*

Right on top of the dunes were 'Bird plants' *Crotalaria cunninghammii*, the largest with clustered yellow/green flowers, also *C. eremaea*, and C. *novaehollandiae*, Large rounded bushes with little leaves and masses of golden daisy flowers is *Calotis erinacea*. Another beautiful silvery/grey-leafed thing, not in flower when we were there, but flowered later with dark purple, to black petals and yellow stamen was *Anthotroche pannosa*, striking stuff! A bushy plant, with rounded, lobed leaves, with hibiscus-like flowers was *Alyogyne*

pirioniana and more commonly *Raderya farragei*. *Sida* and *Corchorus* both with small yellow flowers and within the same family were also quite common.

Mulla mulla or Pussys tails were everywhere, coming in a great range of colours. The large, pink, flowering version, *Ptilotus exaltatus*, extends throughout all mainland states and *nobilis* and *macrocephalus* , also large flowering, but pale green were in our area. A large, green flowering species with nodding flower heads is *P. polystachyus* and was just coming into flower. The compact, silvery plant is *P. obovatus*, often found on stony soils. Another, a little more open with lilac flowers is *P atriplicifolius* and a species with prostrate stems was in the burnt areas around camp with greenish flowers *P. aervoides*. A little matt one, with creamy flowers, *P. chamaecladus,* and a yellow flowered species usually found in areas where there had been moisture, *P. gaudichaudi var. gaudi chaudi.*

Now for the genus I have been avoiding because they are very confusing as so many have not yet been described, Eremophila. All of this genus has colourful tubular flowers. Shrubs with deep, purple flowers growing on heavy sands and dunes, *E. willsii*, there were many different leaf forms of this species. Perhaps the commonest species was a compact plant with pink flowers and soft foliage whose new growth appeared golden, *E. forrestii.* On the tops of the breakaways grew a species with fine dark foliage and small pink flowers*, E. extipulata*. Around camp grew a pale lilac species with small leaves, *E*. *platyanthemos* . All through the mulga country grew the uniformly low, bright purple, long, thin-leafed *E. gilesii* . A taller plant with dark foliage and variable, red to pink flowers is *E. latrobei*. A striking, low bush with small leaves and brilliant deep purple flowers is *E. bowmanii*. Two unusual species with large, pink bracts, left after the flowers have fallen are *E. abietina*, with very sticky foliage and a creamish, deeply red-spotted floral tube. The other species is a large plant with sticky leaves up to 8 cm. long with a brown and lilac floral tube, *E. fraseri*. In moister areas or on clay flats, was a compact and variable, red-flowering species whose flowers were held on long stems, *E. maculata.* Other species included *E. duttonii, oppositifolia miniata, serrulata, undulata, glabra, alternifolia, youngii, longifolia, platycalyx, lancifolia, glutinosa, gibsonii, homoplastica, clarkei, falcata, scoparia,*

The salt bushes and other pricklies deserve a mention here because they insisted on being noticed. Some of the salt affected areas support a low, tiny dark-leafed plant with small, open, pink flowers, *Frankenia pauciflora*. This usually grew in colonies with little else and was first noticed at Redman's Bluff, just near the airstrip. Growing nearby were plants of a large group of saltbushes, not prickly, but with easily recognisable turbin-like fruits. These are Maireana and this species had tiny fruits massed along the upper stems, *M. sclerolaenoides*. Another striking, procumbent plant with larger, but similar fruits arranged in a spiral *M coronata*, is usually found on clay flats. One of the most noticable of this genera is the Blue Saltbush, *M.sedifolia,* which is widespread in dry salt affected rangelands but not in the GVD. A group of others were found, *M. trichoptera, pyramidata, villosa*, on the harsh rocky breakaways, *M. convexa*, and *platycarpa,* on salty flats.

The best way to meet this next lot is to walk out of your tent with a thick pair of socks on or if you're tough, bare feet and then collect the prickles and consult the book. We all got to know Sclerolaena, which has a large number of species.

Perhaps the most memorable of these was *S. bicornis* which has fleshy leaves and 2 spines to 15mm. long, usually covered in a white woolly substance. The bushes of this group are generally low and rarely reach 0.5m. *S. convexula,* with tiny spines, *S. eurotioides*, with 20mm., soft spines, *S. patenticuspis*, *S. parviflora, minute spines, S. divaricata, S. johnsonii, S. densiflora, S. gardneri.*

Happy prickle picking!

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Grevillea *juncifolia*

Leptosema *chambersii*

Parakeelia *Calandrinia*

Radyera *farragei*

Kangaroo Grass *Thermeda triandra*

Sturt's Desert Pea *Swainsona formosa*

THE VEGETATION OF THE GREAT VICTORIA DESERT

By Neil R. Marriott

INTRODUCTION

Aboriginal Impact

Aborigines have occupied the Great Victoria Desert region for many tens of thousands of years. During this time they became extremely adept at using a large number of the regions plants to supply them with seed, nectar, tubers, spears, shelter, and even water.

With their 'firestick' technology they developed a highly refined system of mosaic burning of the vegetation. Over such a long time scale the flora has been able to evolve and adapt to this practice. In fact it is now believed that the great diversity of the region is largely due to this patch burning; by regularly burning different parts of the bush each year, the aborigines created a variety of habitats side by side. As a result far more plants occur in the desert than would normally be expected in such a dry and relatively featureless terrain.

Early White History

The first Europeans to set foot into the area was a party coming from the west led by the explorer John Forrest in 1869, who was turned back by lack of water. The same result occurred with W.C. Gosses party who attempted to penetrate the desert from Alice Springs in 1873. In the same year Ernest Giles entered the region also from Alice Springs. Discovering the Rawlinson Range he made numerous attempts to push into the desert but was defeated by lack of permanent water.

In 1875 Giles succeeded in crossing the desert with a camel train, naming the region the Great Victoria Desert in honour of the Queen. Giles collected plant specimens for Ferdinand von Mueller in Melbourne. In 1891 the Elder Exploring Expedition travelled through the desert from the east, with Helms collecting much plant material which was described and published by Mueller .

Very little further botanical survey work occurred in the region until the 1950s, while in 1963 the whole area east of the 123rd meridian was examined and classified '<u>for pastoral purposes</u>' by the Department of Lands and Surveys. No pastoral development of the region has taken place owing to the unpalatability of the plant cover.

Climate

With an average annual rainfall ranging from 178mm (7 inches) to 239mm (9+ inches) per year accompanied by high average monthly temperatures, the vegetation of the region has developed a series of specialised adaptations to survive in the region.

A technique, which plots mean monthly rainfall against mean monthly temperature, provides us with the 'bioclimate' of a region. If rainfall for any month rises on a graph above the temperature curve, that month is considered 'wet', with adequate moisture for plant growth. For the Great Victoria Desert **no** month is wet –all months are classified as having a desert climate.

This does not mean that there is never any growth in the Desert –it means that there is <u>no assured growing season</u>.

The main reason for this is the fact that the desert lies in a transitional climate region, with tropical summer rain influences to the north, and Mediterranean winter rainfall influences to the south of the Nullarbor. As a result there is equal chance of rainfall in any month of the year. However droughts are common, with up to 40 months without rain being recorded at Warburton from Jan. 1961 to April 1964.

Temperatures above 30 degrees C. are normal from November to March, while minima around –4 degrees C. are common at night in the winter months.

Geology

Briefly, the region developed as a marine trough known as the Officer Basin. This was gradually filled, primarily with sandy sediments. The trough was then uplifted to create a high plain at a time that coincided with a period of high

rainfall. This resulted in deep weathering of the soils and the formation of the extensive sandplains and dunefields that dominate the region today.
It also formed a series of rivers and streams, although all that is left of these today are strings of saline depressions and lakes. Of the once large cliffs that flanked these rivers, today these are reduced to small escarpments such as those near our camp including Point Wood, Point Sandercock, and Point Lillian. All have been eroded and infilled by extensive periods of dry and windy weather to create the mostly flat region that we know today.

Major Plant Communities

Despite its relative 'flatness' it is the geology outlined above that has created a series of distinct habitats for our flora. These are;

- East-west parallel sandunes of varying height and depth
- Sandplains of varying depth
- Clay plains with varying percentages of sand and or gravel
- Lateritic plains
- Saline valleys and lower slopes of breakaways
- Sandstone breakaways

Sandunes
Probably the most memorable community in the desert is the spectacular red dunes with white trunked Marble Gums in the foreground and blue skies behind. The most frequent plants on the upper slopes of the dunes are the Sandhill Grevillea *Grevillea stenobotrya*, Camel poison bush *Gyrostemon ramulosus*, Native Borage or Cattle Bush *Trichodesma zeylandicum*, and Gibson's Desert Fuchsia *Eremophila gibsonii.* During our stay in the desert it was noticed that both the Camel Poison bush and the Native Borage in particular were being severely damaged and eaten out by camels. In many instances entire stands of *Trichodesma* were eaten down almost to ground level.

The sides and lower slopes of the dunes are often colonised by dense stands of the beautiful Desert heath-myrtle *Thryptomene maisonneuvii*, with occasional Yellow heath-myrtle *Micromyrtus flaviflora* and the bright pink Desert fringe-myrtle *Calytrix longiflora.*
The prickly Spinifex Grass *Triodia basedowii* is frequent in this community.

Sandplains
The deeper sandplains are dominated by the wonderful Marble Gum *Eucalyptus gongylocarpa*, with its mottled white trunks. Normally there is a dense to open understorey of Spinifex Grass *Triodia basedowii*. Other frequent plants are the Large-fruited Mallee *Euc. youngiana* with its huge red, pink or yellow flowers, the shiny leaved Great Victoria Desert Mallee *Euc. concinna*, the spectacular orange Desert Flame Grevillea *Grevillea juncifolia*, and Desert Grevillea *Grevillea pterosperma*. Occasionally Yellow Flame Grevillea *Grevillea eriostachya* is also found, and in some areas such as around Neale Junction the showy Pink poker Hakea *Hakea francisiana* is frequent.

One of the most significant, but also puzzling plants that we found was a single large Grevillea growing beside the track in to Sydney Yeo Chasm. Its closest affinities were with *Grevillea spinosa*, which hails from the Canning Stock Route and near Willuna. However the plant also had features of the local *Grevillea*

juncifolia. We suspect it to be a hybrid between the two, but if that is the case where and how could this occur when the nearest *G. spinosa* occur many hundreds of kilometres away? Could there be an undiscovered population nearby in the desert? Or could a honeyeater have fed on a *G. spinosa* up the Canning before flying south-east into the Great Victoria Desert where it fed on and transferred its load of *G. spinosa* pollen to a *G. juncifolia*? What a fascinating puzzle!

Where the sand is shallow over heavier soils such as around our campsite, *Euc youngiana* becomes dominant, with several other mallee eucalypts. The Emu bushes *Eremophila forrestii* and *Eremophila latrobei* are also common in this community, and there are occasional Mulga. When these shallow sands are burnt there is an abundance of showy annuals as was evident along the track in to our base camp. Dominant among these are dense mats of Purple Running Postman *Kennedia prorepens*, the lovely fluffy yellow massed displays of *Dicrastylis exsuccosa*, Wild Parsnip *Trachymene glaucifolia*, numerous daisies and members of the Goodenia family, the white flowered groundcover *Diplopeltis stuartii* and the beautiful massed white flowered Snow flake *Macgregoria racemigera*.

Clay Plains

Ranging from light sandy clays through to heavy, often stony clays, these soils always support open to dense stands of Mulga *Acacia aneura*, with occasional other Acacias. Often the dominant understorey is dense thickets of Giles Emu Bush *Eremophila gilesii*. This unusual Emu Bush with showy purple flowers is often so flat topped that it looks like plantations of clipped tea plants!! Several other Emu Bushes are also found in this community including *Eremophila glabra, E. latrobei* and *E. longifolia* as well as a number of unnamed species which are being sent to the Adelaide Herbarium.

In sandy clay soils Spinifex Grass *Triodia basedowii* is common in the understorey. In moister areas such as the Red Gum *Eucalyptus camaldulensis var. obtusa* lined creek that we found on the eastern extension of the old Parallel No. 1 track

Kangaroo Grass *Themeda triandra* can be found, along with numerous uncommon annuals and herbaceous perennials. In this damp area we also found the most unusual Adder's Tongue *Ophioglossum polyphyllum*. This strange looking plant is a member of the fern family, and which according to our references is very rarely found.

Lateritic Plains

Laterite is the rounded stony pebbles that are formed underground by very deep weathering of the sandy soils. Those of us who had the fun (?) of digging our bush dunny hole would remember the hard stony pebble soils at the bottom of the hole. With the erosion of the sandy topsoils, beds of laterite are often left as exposed plains. This is most readily seen where the tracks cross these plains such as where the Connie Sue Highway crosses a high plain on the eastern side of McKenzie Gorge. Our airstrip was also an example of this community.

Laterite plains are dominated by extensive areas of Spinifex Grass and are dotted with gnarled old specimens of the grotesquely beautiful Desert Corkbark *Hakea lorea ssp*. *lorea* with its pendulous bunches of creamy-yellow flowers that look just like a Grevillea. Also common on these plains are the Black Gidgee *Acacia pruinocarpa*, the blue flowered *Goodenia scaevolina*, and the curious bright red flowered Upside-down Pea *Leptosema chambersii* that gets its common name from the way its flowers are at the bottom of the plant with the

foliage above! We also found several lovely small unnamed *Eremophilas* in this community.

Saline Valleys and the lower slopes of breakaways
Remnants of the once deep river valleys, these soils still contain salts from times when inundated with shallow seas. As a result they create a highly specialised community of plants known as halophytes or "salt lovers". Dominant in this community are the salt bushes, particularly *Atriplex* species, Blue Bushes *Maireana* Species, the spiny Bassias *Sclerolaena* species, and several Sea Heaths such as the one with the salty foliage that Ken Harris first found at Sykes Bluff. This species was *Frankenia cordata*.
Another notable plant found on the saline soils was the showy pink flowered *Eremophila youngii* found along the track in to Hann's Tabletop Mountain.

In the saline soils around the margin of Baker's Lake, we found a lovely colony of the showy Spotted Emu Bush *Eremophila maculata var. brevifolia*. This plant normally has vibrant cerise pink flowers, but we also found several plants with bright yellow flowers. Nearby a colony of the orange flowered *Eremophila duttonii* were also found to contain several yellow flowered plants. Not far down the track we also found another unnamed dwarf Emu Bush with beautiful mauve flowers.

Sandstone Breakaways
During the camp we visited most of the breakaways in the district, including Sykes Bluff, Point Lillian and Sandercock, McKenzie Gorge and without doubt the most beautiful feature in the region Sydney Yeo Chasm and Range.
Dominant in the plant communities that occur on these stony soils are a variety of acacias particularly stunted Mulga *Ac. aneura*, with Dead Finish *Ac. tetragonophylla* at the base of the cliffs. Another notable plant is the shimmering, silvery leaved *Grevillea berryana*. Making a spectacular display of yellow to orange in all stony areas were the Cassias, particularly *Senna artemisioides, S. helmsii*, and *S. venusta*.
Also spectacular was the red-fruited Hopbush *Dodonaea microzyga*. Again, several unnamed *Eremophilas* were discovered in these stony areas. At Waterfall Gorge and in an unnamed gorge behind Point Lillian we found beautiful groves of the White Cypress-pine *Callitris glauca*. These plants are killed by fire and it is probable that the ancient specimens in these two gorges survive due to their location surrounded by stone and therefore safe from fire.

One of the most distinctive plants of the sandstone breakaways, is the Rock Fig

Ficus platypoda, which we found along the base of many of these cliffs. This plant is a true relict of wetter times, surviving only by its ability to penetrate its roots deep under the sandstone cliffs where it taps permanent water. It produces small pleasant tasting figs which a few of us were lucky enough to find before the birds which feast on them in season.
A very showy plant that caught our attention was the mauve flowered Desert Isotome *Isotoma petraea* that we found growing in tiny pockets and cracks on the rock faces. Despite its beauty this plant contains poisonous alkaloids, and great care must be taken when handling the plant –temporary blindness can occur if after touching the plant you rub your eyes!

Another notable plant for our trip was the cream flowered, small, unnamed mallee eucalypt that we discovered on the cliffs above Sydney Yeo Chasm. Specimens have been sent off to an associate who is an expert on Eucalypts.

This is but a brief summary of the rich and diverse flora that we observed during our stay in the desert. Peter Olde collected extensive specimens of most of the plants we found, and these have been lodged with the Sydney Herbarium. It will be interesting to see the complete list of species collected.

References
Unfortunately there is no publication on the flora of the desert, however we found the following to be most helpful in keying out and identifying the regions plants:

Flora of Central Australia Jessop et al. Reid 1981
Wildflowers and Plants of Central Australia Urban. Portside Editions 1996
Eucalypts of South Australia Nicolle. Nicolle 1997
Vegetation Survey of Western Australia –Great Victoria Desert Beard. UWAP 1974
Plants of Western New South Wales Cunningham et al. Soil Cons. Service NSW 1981
The Grevillea Book Vols 1-3. Olde & Marriott. Kangaroo Press 1994-5

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Report on Fauna Studies

By Clive Crouch

INTRODUCTION
The aim of fauna surveys carried out during the Desert Discovery Cooper Hills Project was to collect information on the reptiles and mammals in a region rarely visited by scientists.

Information gained from the surveys will be forwarded to the Department of Conservation and Land Management (CALM) in Western Australia, to the Western Australia Centre for Wildlife Research (CWR) and to the Department of Environment, Heritage and Aboriginal Affairs (DEHAA) in South Australia.

Such information will be of use in determining the distribution of species and also in the preparation of management plans for the region.

Fauna surveys were carried out in three localities:
a. In the areas surrounding the Desert Discovery campsite at Cooper Hills.
b. In Pitjantjatjara Lands in Western Australia and South Australia.
c. In the Rawlinson Ranges in Western Australia.

METHODS
Opportunistic records were kept throughout the trip and locations recorded using a hand-held Global Positioning System (GPS), using map datum WGS 84.

In addition to keeping opportunistic records, some systematic sampling was carried out in various habitat types. This sampling involved the use of Crouch box traps and pitfall traps.

At the Cooper Hills campsite, two pitfall lines were established, each consisting of two plastic buckets 40 cm deep and 28 cm in diameter. The pitfalls were spaced at 3 m intervals and were straddled by a 6 m drift fence of plastic sheeting. Both of these pitfalls were established on spinifex-covered laterite soils.

Another pitfall line, consisting of 5 pitfalls and 10 m of drift fence was established in spinifex and mulga on laterite soils, approximately 3 km south of the Cooper Hills site.

Box traps were set in various locations around the Cooper Hills site, in a variety of different habitat types, which included recently burnt mulga-spinifex dunes and flats, unburnt areas, laterite flats, dry water courses and rocky outcrops.

Some systematic searching for reptiles was carried out in each of the habitat types and involved digging out clumps of spinifex, digging out burrows and looking under rocks and logs.

In addition, one evening was spent spotlighting from a vehicle, in an attempt to determine the nocturnal fauna of the Cooper Hills site.

In the following section, the results are presented. An annotated species list summarises all observations on fauna.

RESULTS

The following is an annotated list on fauna observations made during the Cooper hills Project, the Pitjantjatjara Lands cross-country expedition and the expedition into the Rawlinson Ranges.

REPTILES

Gecko *Diplodactylus stenodactylus*
One specimen captured at Mt. Fanny on the Mt. Davies Road.

Purple Dtella *Gehyra purpurascens*
One specimen captured at Waterfall Valley and another at Baker Lake.

Bynoe's Gecko *Heteronota binoei.*
One specimen captured on a rocky breakaway on the Connie Sue Highway south of the Cooper hills site and another at Waterfall Valley.

Knob-tailed Gecko *Nephrurus vertebralis.*
One pair was dug from an old goanna burrow on a spinifex-mulga sand plain, on the road to Sydney Yeo Chasm.

Legless Lizard *Delma nasuta*

One specimen captured on the Connie Sue Highway south of the Cooper Hills site and another at Sydney Yeo Chasm.

Burton's Legless Lizard *Lialis burtonis.*
One specimen captured at Syke's Bluff.

Military Dragon *Ctenophorus isolepis*
One specimen captured on the Old Gunbarrel Highway west of Giles.

Western Netted Dragon *Ctenophorus reticulatus*
One specimen captured at the Sydney Yeo Range and a further two specimens near Mirra Mirra Tdjara.

Thorny Devil *Moloch horridus*
Two specimens captured at Mirra Mirra Tdjara.

Dwarf Bearded Dragon *Pogona minor*
One specimen captured at the Cooper hills site.

Spiny-tailed Monitor *Varanus tristis.*
One specimen captured at Point Wood.

Spotted Comb-ear Skink *Ctenotus pantherinus*
One specimen captured in a pitfall trap at the Cooper Hills site and a further two specimens observed amongst clumps of spinifex at the same site.

Lined Comb-ear Skink *Ctenotus quattorodecimlineatus*
One specimen captured in spinifex approx. 3 km south of the Cooper Hills site.

Yellow –Faced Whip Snake *Demansia psammophis*
Two specimens captured at Ryan's Bluff and another at Hann's Tabletop Mountain.

Orange-naped Snake. *Furina ornata.*
One specimen captured at Point Wood and a second specimen in the Rawlinson Ranges west of Giles.

MAMMALS

Fat-tailed Pseudantechinus *Pseudantechinus macdonnellensis*
One specimen captured at Hann's Tabletop Mountain, two at Sydney Yeo Chasm and another at the caves on No. 2 Parallel road.

Wongai Ningaui *Ningaui ridei*
One specimen captured on a spinifex-covered laterite plain at the Rawlinson Ranges west of Giles.

Red Kangaroo *Macropus rufus*

A total of six kangaroos were observed in the vicinity of the Cooper Hills site.

Black-footed Rock Wallaby *Petrogale lateralis*
Two specimens were observed in car headlights on the road at McKenzie Gorge by Neil Marriott and Peter Olde and a further specimen was observed sunning itself on a rocky point at the Sydney Yeo Ranges.

? Crescent Nailtail Wallaby *Onychogalea lunulata*
Whilst on the cross-country trip through Pitjantjatjara Lands, we stopped on a small claypan and found there some droppings which looked very much like the droppings of a Rock Wallaby, but it was entirely the wrong habitat for Rock Wallabies. We asked the traditional custodian of Pitjantjatjara Lands, Ginger Mick, what the droppings might be from. He said “Tjawalpa”, which is Pitjantjatjara for the Crescent Nailtail Wallaby. Since the species has not been seen for many decades, some of the droppings will be forwarded to the Western Australia Centre for Wildlife Research.

Lesser Stick-nest Rat *Leporillus apicalis*
In a cave at Point Lilian, Rene Wysman found a nest of the Lesser Stick-nest Rat, which appeared as though it might have still been in use. Although this species is now presumed extinct, there are occasional reports which indicate that it may still be extant in a few isolated locations. We set several box traps in the vicinity of the nest, but caught nothing. As several sticks in the cave looked reasonably fresh, I took one as a souvenir. Later, I showed this stick to Ginger Mick, the traditional custodian of Pitjantjatjara Lands, and asked him how old it might be. His answer was “two-three months, most, one year”.

Spinifex Hopping Mouse *Notomys alexis*
This species was widespread and common in all of the spinifex-mulga habitats and a total of 20 specimens were captured in the box traps.

Sandy Inland Mouse *Pseudomys hermansbergensis*
This species was widespread and common through the spinifex-mulga habitats. A total of 13 specimens were captured in the box traps.

Dingo *Canis lupus dingo*
One specimen was observed near the Cooper Hills site, another near Lake Wright and a third near Giles. Three were heard howling at night near the caves on the No.2 Parallel Road and another was observed on Waigen Lake in Pitjantjatjara Lands.

INTRODUCED MAMMALS

House Mouse *Mus musculus*
This species is widespread and abundant through all habitat types. A total of 40 specimens were captured in the box traps.

Cat *Felis catus*
Although no specimens were sighted, their tracks were seen frequently in all habitat types, indicating that this is a widespread and abundant species. (**PS.** A large cat, at first thought to be a small dingo, was sighted by Garth & Jan Strong

on the Anne Beadell Highway about 150 km east of Neale Junction on the return trip.)

Rabbit *Oryctolagus cuniculus*
No specimens were sighted, but a few tracks and a few scratchings were observed. It would appear that rabbit numbers a very low at the present time in the Great Victoria Desert.

One-humped Camel *Camelus dromedarius*
This is a widespread and abundant species in all but the rocky habitats. Matt Daniels (Pers.Comm.) states that the population of camels in the Great Victoria Desert may exceed 200,000 in number.

DISCUSSION
The information presented in this report serves as a record of observations, which gives an indication of the distribution and relative abundance of the species recorded during this survey and which may be useful in future reference.

Although the Great Victoria Desert is probably the richest site in the world for reptile species, only 15 species were recorded during the survey. This was most likely due to the fact that the survey was conducted in mid-winter, when many reptiles are hibernating.

Although daytime temperatures were frequently in the low- to mid- twenties degrees Celsius, night temperatures dropped as low as minus 5 degrees Celsius and so temperatures in burrows and amongst rocks would remain below that needed for reptiles to become active.

Similarly, many marsupial mammals were also probably hibernating or were in torpor, due to the cold nights. One evening spent spotlighting showed that little or nothing was moving at night. When spotlighting on warm nights in deserts, one usually sees huge numbers of spiders' eyes shining in the beam of the spotlight, but none were seen during this survey.

Without spiders and insects moving around at night, there would be a much-diminished food supply available for small marsupial mammals or geckoes and this would also have been a factor in the paucity of marsupial mammal records. Rodents, on the other hand, were in very large numbers on the spinifex plains and dunes.

In March, Cyclone 'Rosita' moved inland from the W.A. coast and dumped record amounts of rain on much of the Great Victoria Desert. (Matt Daniels, Pers. Comm.)

This resulted in prolific flowering of the spinifex and, as a result, there was an abundance of food for the seed-eating rodents, allowing populations to proliferate.

Unfortunately, the abundant plant growth also benefited the feral camels, and allowed them to disperse into all parts of the Great Victoria Desert, where they had a devastating impact on the fragile desert ecosystem. It is imperative that Federal and State Governments address the problems caused by feral camels

immediately, to stop or significantly reduce their environmental impact on the desert.

ACKNOWLEDGEMENTS
My sincere thanks go to David Hewitt and Desert Discovery Inc for inviting me to be part of the Cooper Hills Projects and the subsequent Pitjantjatjara Lands expedition. For me it was the fulfilment of a twenty-year dream to explore the Great Victoria Desert and I was most grateful to have the opportunity to do so in the company of so many interesting, friendly and helpful people.

I would particularly like to thank those many people who helped me to carry traps and to dig pitfalls, especially those tireless juniors – Ian and Ava Hancock, David Tink and Warwick Smith.

Thank you too, to Rene and Suzanne Wysman for their interest and support, particularly in finding the nest of a Stick-nest Rat in a cave at Point Lilian.

And a special thanks to Ginger Mick and Frank Young for allowing us to travel with them across their Pitjantjatjarra Lands – it was an experience that I will always remember and treasure.

I would also like to thank Matt Daniels, Indigenous Protected Lands Co-ordinator for Anangu Pitjantjatjara Lands, for his advice and assistance in the cross-country expedition.

I am also most grateful to CALM in Perth for providing me with the Scientific Research Permit No. SF003179 and to Peter Canty of DEHAA in Adelaide for providing me with Research Permit No. Q 24356 1, to do a fauna survey, in association with Matt Daniels, in the South Australian section of the Pitjantjatjara Lands expedition.

Finally, a very big thank you must go to Neil Marriott and Peter Olde for providing me with transport, for being such good camping companions and especially for taking me on their Grevillea hunt in the fabulous Rawlinson Ranges.

To anyone else who helped in any way to make this survey as successful as it was – a very big thank you.

Ginger Mick Frank Young

Knob-Tailed Gecko (Nephrurus vertebralis)

Spottedcomb-ear Skink (Ctenotus pantherinus)

Fat-tailed Pseudantechinus macdonnensis) SandyInland Mouse (Pseudomys hermanbergensis)

Thorny Devil (Moloch horridus)

Spiny-tailed Monitor (Varanus tristis)

Dwarf Bearded Dragon (Pogona minor)

Wongai Ningaui (Ningaui ridei

Cooper Hills Geology Report

By Greg Cozens

The terrain of the Cooper Hills area comprises the erosional remnants of a previous land surface, which was itself formed by erosion. Rocks, as such, crop out at the base of the breakaways and in low ridges.

This report utilises published reports and the writer's observations.

The references used are:

- Jackson M.J., 1977. Lennis 1:250,000 sheet Explanatory Notes. Australian Govt. Pub. Service, Canberra
- Lasky R.P: 1990? Officer Basin in Geology of Western Australia. pp 362-380

Geological Location.

The Cooper Hills campsite is located within the western Officer Basin, a large sedimentary basin occupying the south eastern part of western Australia and

western South Australia. The campsite is located in the NW corner of the Lennis 1:250,000 mapsheet.

Outcrop in region around the camp is poor as relict laterite peneplain, sand plains and breakaways dominate the terrain. Siltstones and sandstones are exposed around the base of breakaways and the more resistant sediments form low ridges. Most of the information on the rocks in the Basin is derived from the wells drilled by the oil explorers.

Geology.

Due to Cainozoic and Quaternary (~<50Ma) laterite and sand cover there is little outcrop of the basin sediments. The two Formations exposed are the upper Mesozoic (~80Ma) Samuel Formation and the older Early Permian (~260Ma) Paterson Formation. The Samuel formation consists of thin bedded to thinly laminated micaceous siltstone, fine grained sandstone and minor claystone (Jackson 1977). The sediments are bioturbated and burrowed, shown as claystone and siltstone streaks and laminae. These sediments were deposited in a shallow marine environment. These sediments are exposed around the base of Ryans Bluff and Sykes Bluff and Hanns Tabletop Hill. The Patterson Formation is exposed along the Sherriff and Sydney Yeo Ranges and Cooper Hills. The Patterson formation ranges from conglomeratic and very coarse grained, poorly sorted sandstone to well sorted fine grained sandstone, siltstone and claystone. The sandstone ranges from thick bedded to thinly laminated, parallel to cross bedded and contains dropstones derived from glaciers. The sandstones were deposited in a mixed fluvial (river)/lacustrine (lake)/glacial environment.

Older rocks in the basin are exposed along the northern margin of the basin. Most information on the rocks within the basin has come from the oil exploration holes.

Previous Geological Exploration.

The first reported exploration of the area took place in 1891 when the Elder Scientific Exploring Expedition (Lindsay 1893) crossed the previously unexplored desert area between the routes followed by Forrest in 1874 and Giles in 1875. The Elder party included a surveyor, geologist and a naturalist. The expedition crossed the Lennis sheet area from the Barrow Range (90km to the north) to Queen Victoria Spring, 360km to the southwest (Jackson 1977).

Talbot and Clarke made a geological reconnaissance expedition through the area in 1916 to determine if gold bearing formations were present. They travelled from Laverton to the South Australian Border and entered the Lennis sheet from southwest, traversing northwards along the Sheriff Range, which was called the Hann Breakaways in their report. Their report was the only comprehensive report on the area until the BMR and Geological Survey of WA commenced work in 1970.

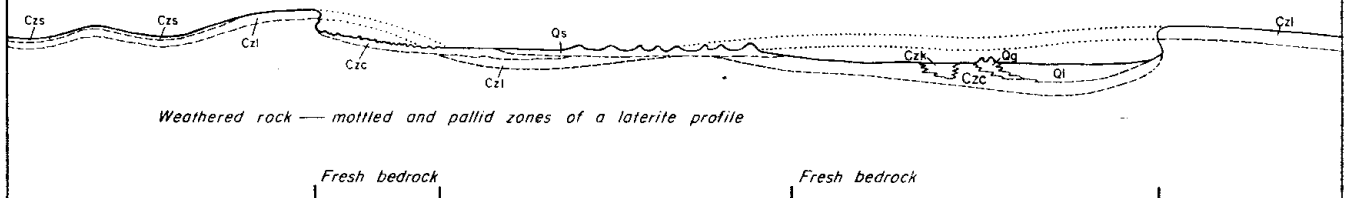
Extensive geophysical studies were undertaken by the Hunt Oil company in the 1960's. This exploration resulted in a number of wells drilled for oil, Lennis No1, 5 km south of the camp being one of them. Evidence of the exploration can been seen in old seismic lines and remnants of camps. The Parallel road and road to Sydney Yeo are access roads for seismic and other geophysical surveys.

Physiography.

The region is dominated by a relict laterite peneplain that developed during an earlier humid climate and has been modified by the later/current arid climate into landforms more typical of a desert environment (Jackson 1977).

Four physiographic divisions have been recognised, three of which occur around Cooper Hills. The relationship between the geology and physiography is shown in Fig 1.

- **Undulating Laterite Plain**. This plain dominates the landscape and is between 420 and 500m above sealevel, gently undulating and characterised by smooth pisolite strewn rises 1 to 3km across and separated by broad depressions (Jackson 1977). The laterite plain is covered by pisoliths (roundish concretions of iron formed during laterite formation) and irregular fragments of ferruginous (iron rich) sandstone lying in a loose red clayed to sandy soil. The breakaways show that the plain is developed on the ferruginous pisolitic duricrust (fragments of weathered rock cemented together) of a weathering profile. In the Cooper Hills area the duricrust overlies friable sandstone and siltstone of the Lower Permian Paterson Sandstone and Mesozoic Samuel Formation. Good examples of these plains are the high areas on the Parallel Road and Sydney Yeo road and the Ryans Bluff airstrip area.
- **Breakaways, Mesas**. In the Sherriff, Sydney Yeo Ranges and Lennis Hills the laterite plain is bounded by steep cliffs (breakaways) flanked by wide, gently sloping scree covered pediments (aprons). In other areas erosion dissected the plain into mesas and buttes or has only left remnant mesas such as Hanns Tabletop Hill. Sydney Yeo Chasm is a good example of how erosion dissects the laterite plain and pediment development, ultimately developing a sand plain.
- **Sand Plains and Dunes**. These occur on the broad depressions and consist of southeasterly trending, parallel, longitudinal sand dunes separated by sand plains.

PHYSIOGRAPHIC DIVISIONS USED IN TEXT	Undulating laterite plains	Mesas, buttes, and adjoining pediments	Sand plains and dunes		Major valley floors	Salt lakes and clay pans	Mesas, buttes, and adjoining pediments
DESCRIPTION OF MAJOR LANDFORMS	Broad depressions separated by gentle rises. Ground covered by ironstone pisoliths and sand. Well-developed relict drainage system usually present.	Steep to undercut cliff generally with siliceous and ferruginous capping. Weathered bedrock exposed.	Rubbly, boulder strewn pediment usually incised by short ephemeral creeks.	Featureless sand plain with cover of spinifex and sparse trees.	Longitudinal sand dunes with intervening sand plains, stabilized by vegetation cover.	Flat, low, sandy and clayey elongated depressions. Small areas of karst topography.	Flat, bare, featureless expanses of salt and/or clay commonly flanked by white gypsiferous dunes. Lakes form after heavy rain.	As Before
SCHEMATIC CROSS-SECTION SHOWING TOPOGRAPHIC RELIEF, PHYSIOGRAPHIC UNITS AND THEIR RELATIONSHIP TO GEOLOGY							
POSSIBLE ORIGIN OF MAJOR LANDFORMS	Well preserved undulating Tertiary peneplain formed under more humid climate than present. Essentially unmodified since formation except for minor slope wash and soil creep towards depressions.	The headward erosion of ephemeral creeks into peneplain forms cliffs. Pediment of alluvial and colluvial debris is produced.	Mainly aeolian deposition in broad depressions during the present arid climate		Formed by deposition of silt, clay and sand in the major depressions in the topography. Evaporation of standing bodies of water to form salt and gypsum crusts and of groundwater to form calcrete bodies. Gypsum dunes formed mainly by deflation of lake surfaces.		As Before
RELATION TO JUTSON'S (1934) PLATEAUX	Great or Old Plateau	New Plateau					Great or Old Plateau

G52/A13,8

Fig. 2. Relations between physiography and geology.

Fig 1.
Jackson

- The aeolian (wind blown) sand overlies lateritised bedrock or pisolitic gravels. Sand dunes can occur on the laterite rises.

Erosion is steadily reducing the elevation differences over the area. The area would have been completely covered by the laterite plain. Drainage's cut through the plain, the broad depressions are remnants of a relict drainage system. Erosion cuts back the valley sides until the broad depressions become sand plains. As erosion continues the duricrust and underlying rock is transported onto the plain and the breakaways retreat, ultimately disappearing. The whole area would probably become a sand plain under an arid climate or be further eroded if the climate became wetter.

Basin Evolution

The western Officer Basin is asymmetrical (Fig 2) and has deep troughs along its northeastern margin and shallow basement to its south and southwest region (Lasky). The basin is divided into western and eastern portions by the Neale Ridge. The Neale Ridge crosses the Lennis sheet from SW to NE. The western portion has a north westerly structural trend and consists of a deep trough (Yowalga sub-basin) and a shallow shelf (Kingston Shelf) separated by a faulted terrace (Westwood Terrace). The Cooper Hills area is within the Yowalga sub-basin, with a depth to basement of approx. 6000m (Fig 3)

In the Late Proterozoic (~800Ma) a thick sedimentary sequence was deposited over Central Australia. The sediments were deposited in a shallow marine environment during a marine transgression (Lasky). The shallow marine environment continued for a long time, including the deposition of evaporites and oolitic and stromatolitic carbonates.

A widespread glaciation followed at about 750Ma. Shallow water sediments were deposited after the glaciation (580-610Ma) followed by marine sediments into the Early Cambrian when a major tectonic event occurred.

The Petermann Ranges Orogeny resulted in gentle folding and faulting of the sediments and the extrusion of Cambrian flood basalts throughout the Basin. A tectonically stable period of non-deposition and erosion occurred between the Cambrian and Devonian (500-345Ma).

This was followed by the Alice Springs Orogeny (deformation event) in the Devonian and Carboniferous when shallow marine, subtidal to deeper marine sandstone units were deposited. The Alice Springs Orogeny resulted in extensive faulting in the Basin. A period of non-deposition and erosion followed in the Carboniferous (320Ma).

In the early Permian widespread glaciation occurred and several advances and retreats of the glaciers led to the deposition of glacio-lacustrine (lake) sediments. The glaciation was followed by a period of erosion and an Early Cretaceous marine transgression resulted in deposition of marine sediments. Following a marine regression in the Late Cretaceous (65Ma) the basin appears to have remained above sea level.

During the Eocene the climate was humid and led to erosion of the Cretaceous sediments and re-deposition in seas to the northwest and south. In the Late Eocene (37Ma) the climate changed from humid to arid, as it is today.

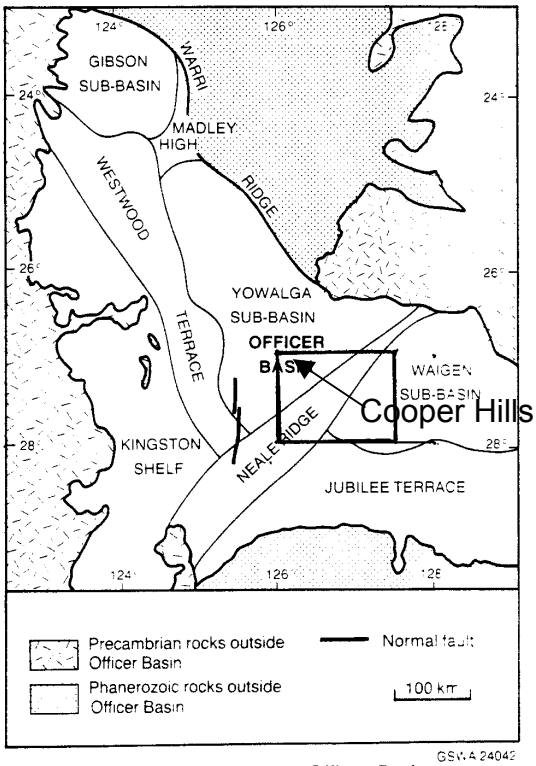


Figure 4-39. Subdivisions of the Officer Basin.

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Fig 2 (above) & Fig 3 (below) (from Lasky)

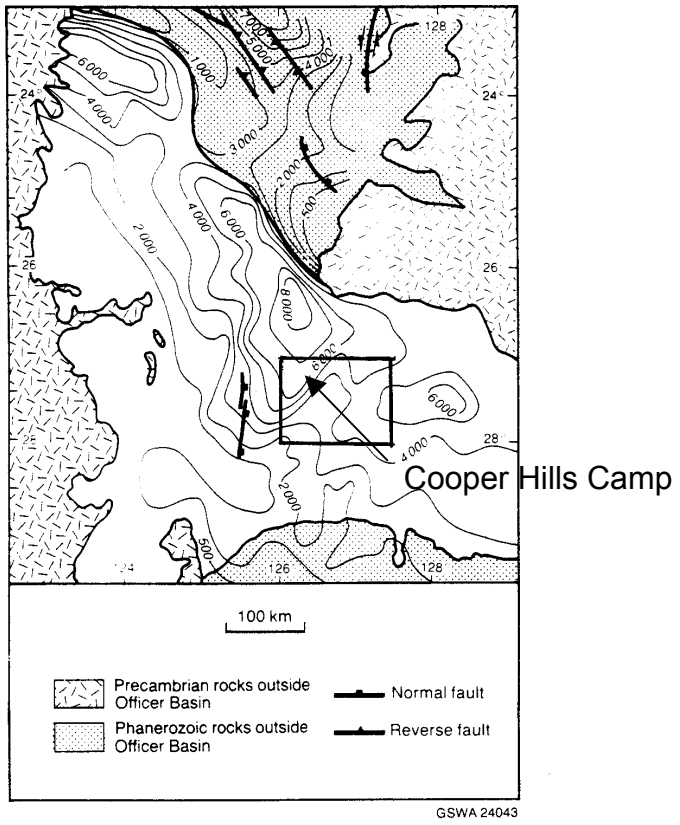

Figure 4-40. Depth to basement (in metres) in the Officer Basin.

DESERT DISCOVERY 2000

By Neil Cocks

Pat Pawson, Dave Perkins, Helen and myself left Melbourne on the 19th June '00 but not to go directly to DD'00. Our first task was to do a reconnaissance of the Pedirka Desert. Where is that I hear you ask? Well, it is in the north of SA and is roughly bounded by the Stuart Highway on it's west side, Hamilton Creek on the north side, Alberga River on the south side and the old Ghan railway on the east side.

The reason for this reconnaissance was to establish a west – east route through the desert for Peter Treseder in his attempt to walk across the Pedirka Desert. Peter is a modern day adventurer who has some amazing endurance records against his name, not the least being his attempt to be the first person to walk all recognised deserts in this country, of which there are thirteen. If he is successful with the crossing of the Pedirka that will be his seventh completed. Helen and myself have been responsible for the safety backup on most of them.

Contact with all the station owners in this area, including the Aboriginal people of Indulkana, was one of our tasks. The stations involved were Granite Downs, Lambina, Todmorden and Hamilton. We spent three days checking out as much of the access to the desert as possible and meeting the station people. One interesting side trip was to the Seven Waterholes opal field on Lambina Station. Boy, are there some characters in that place!

On the 27th June we were to rendezvous with our eldest son Andrew and his wife Sharon, together with their children Ashley, Josh and Ben, at Coober Pedy. Thanks to the HF radios in our vehicles all guesswork was taken out of where and when we would meet up. A pleasant surprise was that Kath, Ian and Ava Hancock were able to spend the night with us at Coober Pedy before heading up to Ayers Rock to pick up Snow and continue on via Docker River and Warburton to Cooper Hills.

On the other hand, we would travel to Cooper Hills via the Anne Beadell and Connie-Sue tracks. It is a lovely desert to drive through, with its wonderful diversity of plant life. The first night found us camping at Tallaringa Well. During the next day we visited Ground Zero, where some of the atomic testing took place.

After crossing the Serpentine Lakes and a short way past there the WA border, we then visited a rockhole about 1 km. south of the Anne Beadell that had a reasonable amount of water that was fit for washing only. This waterhole was interesting to me because I thought it to be a possible supply point for Peter Treseder's attempt at crossing the Great Victoria Desert in 2001. In fact it was to be the only natural water we found up to Neale's Junction.

The next place we visited off the Anne Beadell was an aircraft wreck north of the track first visited by our own Bill Baker.

Up to Neale's Junction (six days out of Coober Pedy) we had encountered 5 vehicles, 3 in one group , the other two singles. On the morning of the seventh day our three vehicles rolled up to Cooper hills.

We had been on the move for two and a half weeks and it was great to be able to set up our camp and know we could leave it set up for the next two weeks. Of course it goes without saying the camp shower was most appreciated by all.

During the course of DD'00 we all enjoyed learning from the experts and participating in a number of side trips, the three day trip into Sydney Yeo Chasm being our favourite. A particular highlight for me was the discovery of a tree by the Brookers, blazed by Frank Hann in 1903 – a terrific find.

A sincere thanks from three generations of my family to all the people that we met during DD'00 for their friendliness, and to the committee of DD'00 --- the expeditions just keep getting better.
Last but not least, a special thank you to the heart and soul of Desert Discovery ---- David and Margaret Hewitt.

PS. Update on Pedirka trip. The walkers, Peter, Tim and the two scouts, David and Felicity started on the 22nd July. On the morning of the 22nd a distressed Felicity, after completing 35 kms, had to concede defeat and pulled out thanks to a recurring knee injury sustained snow skiing 6 weeks before and badly aggravated while carrying a very heavy pack. To give you an idea, Tim, the biggest member of the walkers, was carrying a pack that weighed 55 kgs.
On the fourth day the remaining three walkers decided to offload as much weight as possible and do the last 50 kms in a day.
After starting at 4.30 am they completed the 50 kms at 3.00 pm

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OUR LEN BEADELL SIGN REPLACEMENT PROJECT

By Connie Beadell

I would like to open my report by thanking everyone concerned with the Cooper Hills project. I found my 2 weeks there to be a thoroughly enjoyable and interesting experience, and I know that as a family we hope to be included again in 2 years time!

Our sign replacement project is not strictly related to the Cooper Hills project – it's basically the Beadell family carrying on where Len left off. Len, in the 1950's and 60's, erected some 50 or so aluminium plaques during his years of roadmaking in the Great Victoria, Gibson and Great Sandy Deserts. He placed them near features of interest as well as using them to inform the traveller of their position and the distances to the nearest town or outpost. Unfortunately, the theft of these historic plaques is something that has occurred on a regular basis since, and prior to his death in 1995 Len made a point of replacing the stolen ones during his numerous trips into the outback. Reports from David Hewitt and other travellers made us aware of the fact that all 10 of the Sandy Blight Junction signs were now missing, as well as 6 along the Gunbarrel Highway - 3 on the "abandoned" section west of Giles, and 3 between Mulga Park and Pipalyatjara. We thought it was particularly appropriate for the Sandy Blight Junction road to have a revamp for its 40th birthday this year!!

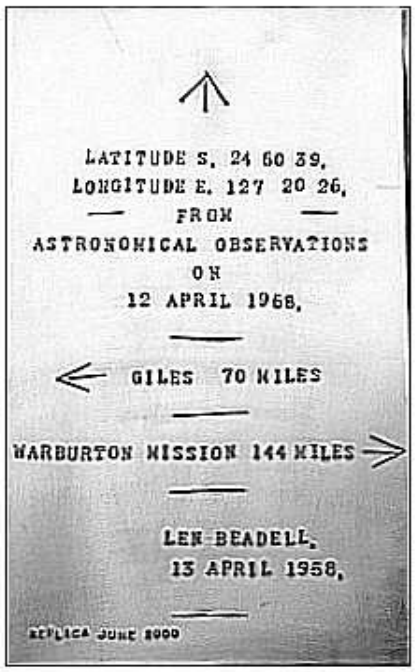
A lot of preparation was required for this as we were all keen to try and put up the new plaques making them as theft-proof as possible. Bob Hancock donated some special one-way screws and Fullers a whole box of Maxbond adhesive which we used in abundance. There was also the matter of actually making the signs, with which I had help from a contact of David's. Roger Henwood (a Maintenance Officer at Woomera) kindly offered to make all of the Sandy Blight Junction signs for us. Using Len's original letter and number punches I made the 6 Gunbarrel signs (and added the "B","D" and "N" letters onto the Sandy Blight

signs that Roger was missing out of his set!). All of the signs were made as an exact replica of Len's (except for the Kintore Avenue junction sign west of Amata, as that's the only one that I haven't a close-up photo of). David's cousin John, with the Ricegrowers Co-operative, also put in a lot of work to assist us with our preparations, and I thank him. After the positive support of the Aboriginal people from the various areas involved was received we were ready to go!

A couple of days prior to the start of Cooper Hills I met David and Margaret Hewitt at Mulga Park and we then continued west to replace the first 3 plaques. Thanks to some hard work undertaken earlier by the Hewitt's, Jon Gregory, Murray Wells, Alan O'Shaughnessy (and stepson Sam) the "50 miles west of Mulga Park" sign and the Kintore Avenue junction with the Gunbarrel had brand new white posts on which to erect our new signs. The third one was erected on Len's original desert oak 110 miles west of Mulga Park. We then continued west to arrive at Cooper Hills for the start of the Project.

In due course my brother Gary and his family, and Mum and Phil Sexton (armed with a video camera) arrived, and after a couple of days at the Cooper Hills camp for them to get the feel of it, my family and I left to continue our sign replacing. We headed north from Jackie Junction along the so-called "abandoned" Gunbarrel Highway placing our signs on Len's existing trees 70, 62 and 50 miles west of Giles. The Sandy Blight Junction road then beckoned and we erected 7 of the 10 missing signs, all on Len's original trees and posts. We were unable to do the remaining 3 signs. One tree I missed altogether (the half-way point between Giles and Sandy Blight Junction). Two others require new posts (the junction of a track Len and his team made going to the summit of the Sir Frederick Range, and another near the tree into which William Henry Tietkens carved his initial and the date at the base of Mt Leisler in 1889. Sadly, the tree is no longer standing.

In September we completed the last 3 signs on the Sandy Blight Junction Road that we didn't have time for in July, complete with 2 brand new posts. That's the Sandy Blight Junction road finished for now. Also, a few people asked me about the naming of Neale Junction. Apparently it was named for the location of the junction - it fell into a map grid known as "Neale". Who he was I don't know, but Len didn't name it - perhaps the National Mapping people did? It was very satisfying for us to see the plaques going up one by one; we felt Len would have been very happy to know that they're not being neglected. The support and enthusiasm we received from all quarters was extremely heartwarming, and we thank everyone involved, especially David Hewitt. Without his help and enthusiasm we would not have been anywhere near as productive!



Len Beadell and The Gunbarrel Road Construction Party

By Connie Beadell

The life history of Len Beadell; Australian surveyor, explorer, and author; is a truly unique one. His early years were spent in the company of a Scout master who taught Len the ropes (and the love!) of surveying. This led to a posting in New Guinea with the Army Survey Corps during World War 2, after which he worked in Arnhem Land with an expedition from the CSIR (as it was then known). The Woomera Rocket Range project in 1947 needed a surveyor at this time to lay out the site for the town and firing Ranges, where the launching of rockets still take place today. Len was the ideal candidate, and led to him remaining in the army for an extra year to start it off. Civilian life saw him finishing up what he had started.

In the early 1950's the British and Australian Governments co-operated in the British Nuclear Testing Programme and Len was again the ideal candidate to lay out the sites for Emu and Maralinga, already knowing the desert areas of Australia in which the tests were to be conducted.

A weather station was needed to check prevailing winds, so in 1955 Len was off to locate the perfect site, now called Giles. By this time Len had a road making party that had made the accesses to Emu and Maralinga, and had made a start on the access to the weather station - the commencement of the Gunbarrel Highway! In the end he and a little party of men surveyed and built 6,000 kms of lonely desert roads through the Great Victoria, Gibson and Great Sandy Deserts of Australia. The roads were also located following the path of the centreline of

the rocket firing, from Woomera northwest across Australia to the Eighty Mile Beach near Port Hedland. Apart from access to Emu and Giles etc, they were used for geodetic surveys, rocket trajectory (and collecting rocket parts) and updating maps.

The Gunbarrel Road Construction Party, as Len called them, were made up of different men throughout the course of the road building, but there were a few core members who stayed for most of the time. Scotty Boord was the grader driver, Doug Stoneham the dozer driver, Frank Quinn the long distance supply driver, Paul Christensen the cook, Rex Flatman the heavy equipment fitter/mechanic, Bill Lloyd the supply driver (early on) - all of these men, plus many others for shorter spells, spent years with Len in the desert at various times. They had to cope with extreme heat, cold, dust, flies and the very remoteness of the area in which they were working - and the fact that Len accepted them year after year was a testament to how much he respected them and their work.

A basic working pattern was this. Work would commence again after a couple of months off over Christmas due to the extreme heat (however December and February were still pretty hot!!). During a period of road making they would move the camp to a new location every day, to save driving time and the associated fuel. At around midday Doug would bulldoze an area around 10 blades wide for the site of the new camp. Paul & Co. would then drive down to the new clearing and set up the new camp. Lunch was a simple “soup and sweets”, and then later on they would have a proper dinner. Paul was an excellent ex-shearer’s cook from the Department of Mines, who used to make bread on Wednesdays and Sundays. He apparently had the bread rising in a bowl next to his elbow in the truck and as he was driving along he would occasionally knock it back with his elbow. Len used to say he only washed his elbow twice a week!

I have had a couple of desert trips with Doug Stoneham (one I have only just returned from) and if he was any indication of the quality of men that Len had to work with then Len was extremely fortunate. Doug is a great bloke, full of stories of the times they had, plus the hard work involved. As Len used to say, “they were rip roaring years, and I would have paid them to let me do it!”

More about Len's life and work in the outback can be found in the following books written by him.

Too Long in the Bush (Gunbarrel Highway)
Blast the Bush (Emu)
Bush Bashers (Anne Beadell/Connie Sue Highways)
Still in the Bush (Woomera)
Beating About the Bush (Sandy Blight Junction road)
End of and Era (Gary/Gary Junction/Windy Corner roads)
Outback Highways (compilation of the best of the first 5 books)
Around the World in Eighty Delays (not about the bush, but his trip overseas)

There is also a biography - "A Lifetime in the Bush", written by Mark Shepherd

Origin of the name Neale Junction

By David Hewitt

Regarding the origin of the name Neale Junction, *Australia on Paper - a History of Mapping* by JD Lines (available from John and Bev Deckert's **Westprint Maps**) describes surveys carried out by the Donald Mackay airborn mapping project. Mackay was a pastoralist from Wallenbeen in south-west NSW who organised a series of private aerial surveys of inland Australia over five years from 1930. His Anec aircraft operated from airstrips mainly on the edges of the deserts, at locations such as Fitzroy Crossing, Roy Hill, Ilbilla, Docker River, Oodnadatta and along the transcontinental railway.
Mackay's chief pilot on all these flights was Captain Frank Neale DFC, a World War 1 flying ace. His final surveys were from Laverton and Rawlinna to the west and south of the Great Victoria Desert in 1935. In recognition of Captain Neale's achievements, one of the 1:250 000 topographic maps of this area produced by the Division of National mapping in Canberra was named Neale. The junction of Len Beadell's Connie Sue and Anne Beadell Highways appears on this map and was named appropriately, Neale Junction.
The Airstrip constructed by Mackay and Neale's party at Ilbilla in the Ehrenberg Range west of Alice Springs was used in 1930 by the Lasseter expedition.

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Finding Hann's Tree

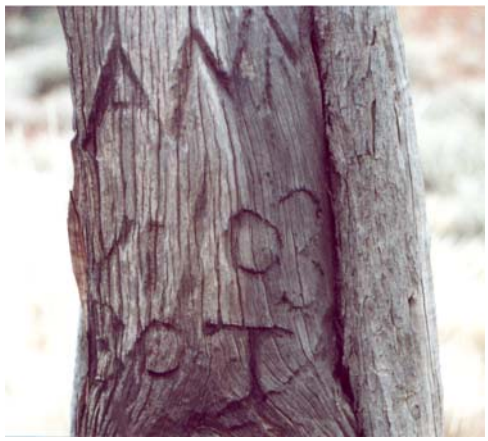
By Michael and Lesley Brooker

On the day we arrived at Cooper Hills, we were very excited when Rene Wysman told us that he had found the gnamma hole at Point Wood, since before our trip we had been reading Frank Hann's own account of his exploration through the area in 1903 (in "Do Not Yield to Despair" by Donaldson and Elliot). In his journal, Frank Hann recorded that:

"Sunday 7 June 1903. ….2 miles from point (i.e. Point Wood) north there is a splendid namma hole, right on the saddle between two breakaways. I saw such a lot of old blacks camps about I knew there must be a good namma hole about. Hold about 1000 gallons if cleaned out, good camp west side, it being Sunday we camped… Talbot cut F. HANN VI/VI/03 and TALBOT on mulga tree in gap west of namma hole. Nature has put these namma holes about as no creeks to hold water. No sign of gold country."
"Monday 8 June 1903. … Started about 9 went up to namma hole took all our packs had to be very careful with the camels, put some water in cans…"

Eager to see the gnamma hole, we asked Rene to draw us a mud map of how to find it. It was fortunate that he did so, as the location of the hole shown on the Lennis map proved to be incorrect. Once at the gnamma hole, Lesley tried to retrace Frank Hann's steps looking for a low enough pass along the breakaway where it would have been possible for Hann to bring up the horses and camels on the Monday morning. She actually climbed down the breakaway and then

back up by what seemed to be the easiest route. And there, on the way back, she discovered the remains of Hann's tree - really a signpost marking the route to the gnamma hole. Only a stump remained and on that, only half the inscription, now reading ANN VI/03 BOT.



Postscript
On our return home, we managed to contact Ian Elliot, one of the authors of Do Not Yield to Despair, to ask him if the location of Hann's tree was commonly known. He informed us that he had found the tree in 1987. At that time it was still quite tall, but had been struck by lightning and was split down the middle. Obviously since that time the left hand side had broken off and a subsequent fire had burnt the stump. Nevertheless it's amazing to realise that the stump itself must be well over a century old. Ian told us that very few of Hann's inscriptions on Eucalypts have survived as they were usually eaten out by white ants or grown over by the bark. Only those on Mulgas have lasted the distance.

He also told us that the gnamma hole had been damaged when a bulldozer was driven over it during mineral explorations in the 1960s. There are many signs of similar environmental damage in the area, the purpose of which is hard to fathom.

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The Sydney Yeo Mouse

By Michael and Lesley Brooker

We don't know where she came from and we don't know when she arrived, but the first evidence of her presence was on the Saturday morning of our return journey, when we retrieved a loaf of bread that we had bought from Jim Hair at TJ Roadhouse. We found numerous small round holes in our unopened loaf – a sure sign of a house mouse *Mus musculus* (or as they are known these day *Mus domesticus*). How and when had she managed to get into our Nissan Patrol, we wondered? Probably not from Cooper Hills Camp. Perhaps on our stopover on the Parallel Road where we tried to catch some Striated Grasswrens and Rufous-crowned Emu-wrens to measure and photograph. We didn't have much luck as the emu-wrens flew straight through our 1¼ inch mist nets as if they weren't there

and the grasswrens knew better than to get caught. John and Bev Deckert passed us on their return journey from TJ Roadhouse after delivering the trailer – they were amused to find "badminton nets" beside the road in such an isolated area!

Perhaps the mouse had joined us at our first stop along the Parallel Road where Stuart Kostera flew by in the dead of night – an area where the breakaways were full of stick-nest and cave bitumen, probably made by the Lesser Stick-nest Rat, which haven't been recorded in Australia since 1933. How wonderful it would have been to have their nests scattered through the Mulga (as they were originally) rather than just sad remnants in caves where they have survived away from the rain and fires.

No, our mouse probably didn't come from the Parallel Road, because we subsequently found evidence of her presence earlier than this. She had discovered a packet of Columbines and, when we unpacked at home, slivers of silver paper and sticky half eaten toffees were found scattered throughout the back of the Nissan. We think she must have come from Sydney Yeo Chasm. Apart from being the most romantic of places to have come from, it was the only place we had unpacked the back of the vehicle. Also it was the only place we had camped out away from the caravan, which had been left all alone at Waterfall Gorge, and the only place where it had rained! Incidentally we were glad we did leave the caravan at the gorge – we will have something to say to Rene Wysman about suitable conditions for caravans when next we meet!

How do we know that the Sydney Yeo Mouse was female? Unpacking in Perth, we found her nest – a substantial ball of fibres obtained by stripping a roll of carpet we had used as packing. We just hope that she didn't leave the vehicle at our camp 114 km west of TJ Roadhouse, where Barn Owls screeched around us all night! Her next chance to escape would have been where we camped beside the bitumen north of Menzies – this would have been the most "civilised" place that she had ever encountered – fences, sheep, and ore trucks whizzing past throughout the night.

Well, we don't really know where her journey started or ended – we can only hope that she enjoyed her travels as much as we did.

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IN THE STEPS OF FRANK HANN.

By Bob & Elsie Lasseter

It is unlikely that Lennie Beadell had access to the diaries or maps of Frank Hann at the time he (Len) was building the Connie Sue "Highway", as Frank Hann's diaries have only recently been published. Very little was generally known of him, even though he was one of Western Australia's most efficient explorers, responsible for naming over 500 features in W.A., more than any other man.

As one of the aims of Frank Hann's expeditions through this part of the country, was to find a practical route from Leonora in the west to the important railhead of Oodnadatta in the centre. It is amazing to find, in all this vast expanse of

relatively open country, just how closely, Len's highway coincided with the route explored and recommended by Hann. For 140 km, where it passes through the area of the Cooper Hills Camp, (see map of our study area showing Connie Sue Hwy and Hann's first 1903 and 1904 traverses)

Though Hann would have been more constrained by the necessity of his route containing enough watering places for traveller's camels and horses, It possibly shows how both these men recognised the best run of country for placing their road. (Compare on map page 58).

Having seen the names of Frank Hann and his aboriginal off-sider, Talbot, chiselled into rock at numerous rock holes in the Rawlinson/Petermann Ranges area, I was, for many years, curious to know more about him. So was pleased when, thanks to Mike Donaldson and Ian Elliot, his diaries were published. I was also gratified that the site for the Desert Discovery camp was chosen in part of Hann's area, giving us a great opportunity to see many of the places he named (see Table-Hann 1-G.P.S Data page 89).

From the Cooper Hills Camp, (our base camp, actually about 10 km north of Cooper Hills), those members interested in the history of the area, visited many of the geographical features named by Hann. At Point Lillian (named after a Miss Stokes of Sydney) we searched for any sign of his 1903 or 1904 camp, where, "Talbot cut 'H' in small Mulga at camp", but without success. One of our party, Clive Hesse, with his metal detector, found two cartridge cases, down the creek. Hann records that he had shots at two wallabies but missed. Whilst very encouraging, it would be a bit of a 'long shot' to claim they were Hann's.

From on top of Point Lillian, Point Sandercock was visible only 4 km north, and clearly fitting Hann's description, "bold point no trees on it". Rene and Sue Wysman, investigated Point Sandercock and, nearby, located a substantial cairn, which had been built there in 1916 by Government Surveyor Talbot and party (not to be confused with Hann's aboriginal assistant of the same name). We had spent time searching for this cairn at Point Lillian as it was recorded as being there, so it appears there was some confusion about their exact location.

Sykes Bluff (originally named Sykes Hill), now bears a tall trig marker, at the eastern end of an oil search straight cut, which provided ready access from the Connie Sue, for the 4 or 5 car loads of participants who visited this site. Being approached from west, one can appreciate the beauty of this escarpment with it's many caves and shelters, typical of the general run of this, west facing, breakaway country, which extends north and south for the whole of our map area, over 150 km.

At Sykes bluff we searched diligently for "F H" recorded as being there - "Talbot hammered F H on stone or rather side of the main range W end." When no trace could be found, we conjectured that possibly the rock is too friable, being very soft sedimentary layers, or, that we were looking in the wrong place. A little further north, there is a spur which extends 4 km further west than the bluff marked with the trig, so later 3 or 4 car loads made another search for his sign on the chance that the position has been wrongly marked on the map, which seemed likely. We were unsuccessful, so the original location of Hann's "Sykes Hill" remains uncertain.

Hann travelled the 12 km NNE to Point Wood the next day, (which he named after Inspector Wood), and another 2 km on, he found, "--there is a splendid namma hole, right on the saddle between two breakaways. I saw such a lot of old blacks camps, I knew there must be a good namma hole about. Hold about 1000 gallons if cleaned out,--". We spent a lot of time searching for this Woods Namma Hole, over several days and had virtually given up, when Michael and Lesley Brooker arrived back at camp to announce that they had not only located the namma hole, but had also found the emblazoned Mulga, incredibly still unburnt and clearly readable exactly as Hann had recorded:-F HANN V1/V1/03, and TALBOT. Due to some damage, what remains is: - ANN above V1/03 above BOT. This find was the highlight of our search for Hann relics. Next day the majority of the camp poured out to inspect and photograph these finds, and also did a good job of cleaning out the namma hole, many people taking turns on the shovel.

Hann rode over to "a flat top point 6 miles NNW." now named by the mapmakers, Hann's Tabletop Hill. It is a mildly spectacular sight for travellers heading north along the Connie Sue Hwy and an interesting formation, being honeycombed with caves, shelters and chimneys of all shapes and sizes.

From Woods Namma Hole, Hann and Talbot headed east, naming Point McLean, Point Williams, Lennis Hills and Mount Irving, before finding and naming the beautiful little Sydney Yeo Chasm with it's most inaccessible rock hole. Holding some 10 to 15,000 litres of the cleanest possible fresh water, but perched within undercut strata about half way up (or down) a 40 ft high (12m) vertical rock crevice. Fortunately, Hann found a small rock hole on top of the range, sufficient for his animals. 800m south of the hanging rock hole, the edge of the 50m high escarpment, provides an unobstructed lookout with spacious views to east, south and west.

In his effort to find a suitable route to Oodnadatta, Hann pushed east another 90 km in almost waterless sand dune country before turning back and returning to Sydney Yeo Range. Then he headed north westerly until, at Point Read, he picked up the same run of breakaway country that had provided a fair run of namma holes further south. 10 km north, he found a good supply of soakage water in a rocky creek, and named the adjacent hill, Simpson Hill (at top of our map).

Because of lost time and supplies running low, he could only spend another 16 days examining the Warburton and other ranges to the north, before returning to the soak at Simpson Hill. From there, he and Talbot followed the line of breakaway country, about SSW, naming Mantons Knob and Creek, Mackenzie Breakaway and Gorge, Point Brophy, Miss Gibson Hill, Miss Harkness Creek and Harkness Gorge, Watt Creek, Skipper Knob, and Featherstonhaugh Hill. From here he was able to sight and recognise Point Wood, about 30 km SSE, by which he knew he had plotted a continuous chain of waterholes, all the way from Laverton to the ranges east of Warburton. This became the main route for his next expedition, all the way to Oodnadatta, later that same year, 1903 (Sep to Dec), and also for another 4 expeditions, 1904, 1906, 1906/7 & 1908.

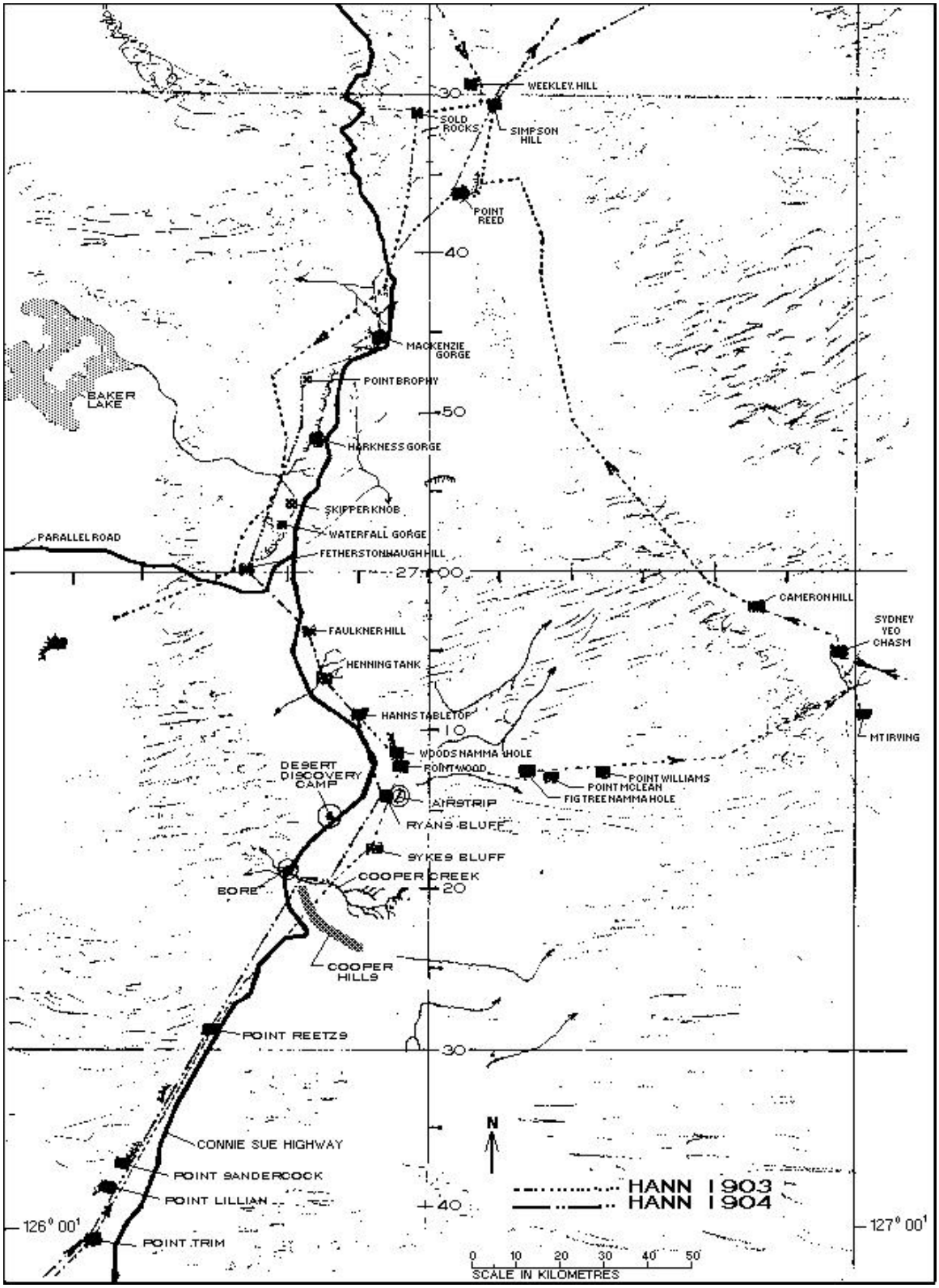
One can assume that it was on his return from Oodnadatta in early 1904, that he found and named Waterfall Gorge. This is one of the most appealing spots to visit, only 1.4 km W off the Connie Sue, consisting of a beautifully sheltered rock hole with 12,000 litres of clear water, a picturesque, cool and shady little gorge, full of Cypress pines, and a natural, "London Bridge" type, arch. There seemed to be more lizards than elsewhere, but also a silky layer of web in the rocks revealed a black spider, strongly resembling the Sydney Funnel Web. Near the rock hole, a more recent survey party had left a concrete pad containing their names.

Frank Hugh Hann, was a most outstanding bushman, horseman, and explorer with an uncanny ability to find water. He was also very sensitive to how his horses and camels were feeling, and their general condition, and he cried over one of his horses that died. He had a strong sense of making a contribution to the development of the young colony of Western Australia. It was probably due to media beat-up over an unwise remark concerning aborigines, that he fell from grace, and was not accorded the fame he deserved. His lifelong aboriginal companion, Talbot, who came with him from Queensland and accompanied him on all his journeys, proved himself to be the most reliable and sensible assistant any man could possibly wish for. Talbot's regular responsibility, was to travel the main plant, horses and camels loaded with supplies and camping gear, directly as possible from camp to the next suitable camping place, while Hann ranged far and wide on horseback, taking sights for his charts and finding water. Sometimes he covered 65 km during the day, before meeting up with his main party, usually 25 km on from their previous camp, about sunset.

We found it a great interest and a pleasure to read his diaries, travel in a little of his footsteps, experience the desert during winter, and enjoy some of the most picturesque places, the location for which, we can thank Frank Hann.

Reference:- Mike Donaldson & Ian Elliot
"Do not yield to despair" - Frank Hann's exploration diaries.
Hesperian Press -- 1998.

Hann’s Tabletop Hill



Frank Hann's travels through the Cooper Hills region

Bob Lasseter

ALL SAINTS' COLLEGE "Back To The Desert"

The committee for Desert Discovery Incorporated invited All Saints' College to participate in their 2000 desert expedition that was to be called The Cooper Hills Project. This is the third time that we have been invited and have had representatives of our school attend.

The project was held from 28 June to 19 July 2000 in an interesting area of The Great Victoria Desert in Western Australia, near Cooper Hills on the Connie Sue Highway. Our school was able to attend from 30 June until 10 July due to the need to travel approximately 3500 kilometres each way. Highlights were the presence of experts in fields such as botany, zoology, ornithology, geology, local history and desert navigation.

The contingent from Bathurst consisted of: Olga & David McKinnon, Vanessa Kidson, Ian Isbister, David & Barbara Travis, Graham Young, Rowan Bayliss, Philippa Enkelmann, David Tink, Andrew McKinnon, Andrew Travis and Hayden Young.

Rowan Bayliss (Year 10)
During the term two holidays, David Tink, Philippa Enkelmann and I travelled with Mr Isbister, Mrs McKinnon and Mrs Kidson to The Great Victoria Desert in Western Australia in the school's 4WD, the "White Ant".

We stopped at places like Broken Hill, Coober Pedy, Lake Eyre South and the Flinders Ranges along the way. The purpose of this expedition was to reach the Desert Discovery 2000 Cooper Hills campsite. Desert Discovery Inc. is an organisation that aims to gather scientific information on the Australian Outback. This information is mainly about the birds of the area, but data on the geology, animal and plant life and history of the area is also collected. When we arrived at the campsite, where we were to spend the next ten days, we realised the magnitude of the project. There was an expert for almost every field, ranging from insects to camels.

On the way back we saw the Olgas and Ayers Rock (Uluru) at sunset, before catching a plane back home. This was definitely a worthwhile experience and I recommend it to anyone else thinking of going in 2002.

Philippa Enkelmann (Year 10)
During the June/July holidays a small group from All Saints' travelled to The Great Victoria Desert to participate in the Desert Discovery - Cooper Hills 2000 Project.

Mr Isbister, Mrs Kidson, Rowan Bayliss and I left on 24 June in the "White Ant", (the schools 4WD), taking the last week of Term 2 to drive out West. We stopped at all of the attractions along the way, such as Broken Hill, Woomera, Curdimurka Rail Siding (a very little, known, but famous site), Lake Eyre South (licked it and

left!), William Creek, Coober Pedy and some natural springs. While we were at Coward Springs, Mr Isbister did his good deed for the day when he saved a little boy who had fallen in head first, pulling him out by the ankle. These first few days were so much fun and we were doing so many things that we sometimes forgot that getting to Desert Discovery was the main part of the trip!

At Yulara airport (near Uluru) we picked up David Tink, Andrew and Mrs McKinnon. The seven of us piled into the "WhiteAnt", luggage and all, and drove on, past Uluru and the Olgas, which we visited and climbed on the return trip. We sadly farewelled the bitumen for the next two weeks and greeted the rough dirt roads ahead. Later that day we stopped at Lasseter's Cave which was interesting, as we would meet Lasseter's son, Bob, later in the trip. That night we met up with the rest of our group: Dr David McKinnon, the Travis family, (David, Barbara and Andrew), Graham Young (Oberon) and his nephew Hayden Young (Albury).

We finally arrived at base camp, just off the Connie Sue Highway (barely a dirt track), on Friday *30th* June and met David Hewitt, the President of Desert Discovery Inc., along with many experts and other members of the camp. During our ten days there we studied the flora and fauna of the area, astronomy, geology, cleared an airstrip and went for joyflights when the plane came in. We saw some amazing natural features such as Waterfall Gorge, Ryan's Bluff, Sykes Bluff and Sydney Yeo Chasm.

Highlights of the trip include a meeting Bob and Elsie Lasseter, Len Beadell's family, Anne, Gary and Connie Sue (whose highway we were on) and the discovery of what was thought to be some new species of flora and fauna previously unknown in the area.

The trip was a fantastic experience and lots of fun. We learnt heaps and met lots of wonderful people. I would strongly recommend the next one in 2002 to anyone interested. On behalf of the "Bathurst Crew", as we were called, I would like to thank Mr Isbister for all the organisation and driving, and Mrs McKinnon and Mrs Kidson for their delicious cooking and for not letting Mr Isbister feed us tinned spaghetti for the whole trip!

David Tink (Year 10)

I can easily say the desert discovery was the greatest experience of my life. The camp, situated in the Great Victorian Desert, had almost all the participants bird experts, 3 botanists, an astronomer, mammal experts, reptile and insect experts and a geologist. I learnt a lot from these people and not to mention everything I learnt about the desert and the Australian bush. Owing to Mr Isbister's expert driving skills I also had lots of practice at changing tyres. There were many great discoveries on the camps, too numerous to mention, but a highlight was certainly the sighting of a stick nest rat's nest, a rodent thought to be extinct in the 1930's. Along with camel chasing and dingo spotting, we also spent time at the Olgas and at Ayers Rock.

It was a great experience for me and I am sure it was for the other students as well. I strongly encourage junior students to attend the 2002 expedition.
Thanks to Mr Isbister for his organisation and to Mrs McKinnon and Mrs Kidson for helping Mr Isbister and for being great on the expedition.

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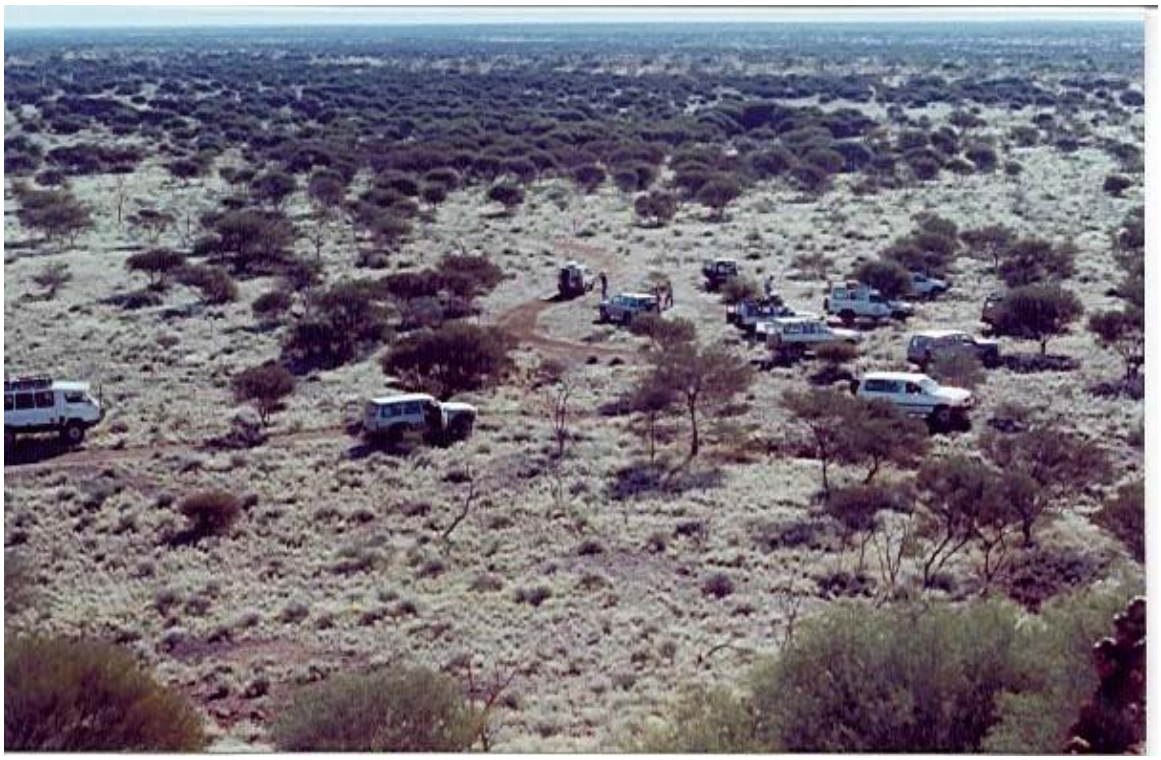
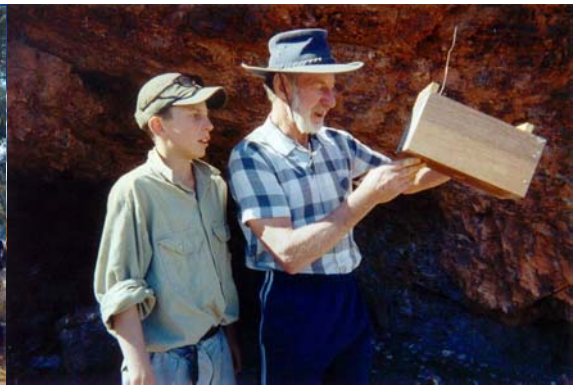


Lunch at Ryans Bluff



"Indianna Izzy" & Co at Lasseter's Cave

A good landing is one you can walk away from!

Another @#$%* flat!

"Come and get it!"

Washing day

Wasn't it great?

All Saint's College photos.

Stars In the Desert

The McKinnon Family Report

It has long been a desire of ours to travel in the Australian deserts. Quite a few years ago, we planned to travel the Oodnadatta Track and visit Lake Eyre with some friends but that never eventuated. The opportunity to go with experienced people never presented itself. When Ian Isbister put the proposition to us in 1999, we had no hesitation in accepting. The major issue, though, was getting there and back. My Toyota Hilux Twin Cab is well past its best days when it carried hang gliders up mountains. Luckily, the Travis Family, whose son Andrew is also at All Saints' College, were interested in going and Graham Young, a friend of

theirs was persuaded to transport me and my telescope to Cooper Hills. Olga and Andrew flew to Uluru and were picked up by Ian Isbister. I travelled with Graham and the Travis' on the ground and, goodness, it was an interesting journey.

I have flown over this country many times. I remember once heading for the UK via Adelaide and seeing what I now presume to be the railway track across the Nullarbor from 40,000 feet. There was no bend in it. This country appeared to be big but, until you travel on the ground, across the gibbers, across the sand dunes at 20-40km/h avoiding washaways and Mulga stumps (you hope) there is no conception of its real size. Taking seven days to travel from Bathurst via Broken Hill, Hawker, Maree, Oodnadatta, Finke, the Alice, Uluru (what a rock), Docker River (frequently heard about on Ian McNamara's radio show), Warburton and finally arriving at Cooper Hills after a superb sunset really drove home for us how big this country is.

That first night we were welcomed warmly by everyone as we hastily pitched our tents, cooked our meals and ate. It seemed like we were in the middle of a dark forest. The following morning presented me with a major surprise…there was no forest. The darkness of the surroundings was because the surroundings were not there. The darkness was the cloud-covered sky and it had been truly black that first night.

It was somewhat of a relief for me to find that the country was open. It allowed almost uninterrupted views of the sky. We moved our tents a little, though not far enough for some, and got organised. The innovation of our early settlers was amazing. The washing machine did an amazingly effective job on my jeans that had taken a week's battering on the trip out there. The shower system was amazing to behold. I first learned from my father, who was in the British Army for 16 years of the system that meant you had to put water into a drum to get water out. Here it was working and producing water for showers. Amazing! The donkey boiler was there as well. I have a theory about its name. The donkey boiler was used to produce steam for a single phase steam expansion engine and as the piston was driven to the end of the cylinder it then hit the exhaust valve with a thunk and was accompanied by a whoosh of exhausted stem. My theory is that donkey" is an onomatopoeia for that "thunk-whoosh". But here it was working and producing the most delicious warm water for the occasional shower - luxury.

I waited with some degree of impatience for the sky to clear as I wanted to use that telescope and also to see what I had often read about - those desert skies at night. When it did clear up, it was at the dark of the Moon. The Great Rift through the constellation of Sagittarius was there for me to see. The rift is made up of relatively nearby immense clouds of gas and dust that block the fainter light coming from the rest of our galaxy behind it. What a sight! You could even see the bulge in the Milky Way in Sagittarius where the centre of our galaxy lies.

All this and more to follow. We sat up a couple of times late into the night looking for shooting stars - tiny grains of dust that flash into the Earth's atmosphere at speeds up to 60km/second. The before midnight meteors tracked relatively slowly across the sky - they were only travelling at 20-30km/second. After midnight, the shooting stars meet us head on as we travel around the sun and so their speed is added to the Earth's speed. It is like having a collision with a car

going in the same direction as you are travelling (the before midnight condition) compared with a head on collision where the two cars are travelling in opposite directions. Rowan Bayliss and David Tink can testify to the observation - they stayed up to watch. There were also some really noticeable fireballs or meteoroids that travelled quite slowly before midnight and covered a large part of the sky before they disappeared. I saw two of these. One travelled from the south west towards the east. These were probably quite large objects maybe the size of a soccer ball that bounced off the Earth's atmosphere.

Every day, the Earth collects around 40,000 tonnes of meteoric material that amounts to around 100 micrograms per square metre. You can collect this from the surface of a road, concrete path or house guttering using a magnet. Much of the dust is magnetic consisting of a mixture of nickel and iron. If you examine this dust under a low power microscope or a powerful 15x hand lens you can see small shiny spheres some of which have tiny tails on them. These are micrometeorites.

The enthusiasm shown by more than a few people for things celestial was great and the most notable of these were young Anthony and Connie. They kept on coming back to have yet another peek through the telescope.

I took some star trail photographs with my camera mounted on a tripod and left the shutter open for nearly one hour. The image (Fig 1 Page 65 shows the Southern Cross and the Pointers. The misty blue background colour is actually the massive numbers of stars in our Milky Way galaxy smeared out by the Earth's rotation.

The second photograph (Fig. 2 page 65) is a 20 - minute exposure of the same part of the sky taken with a 50mm lens and Kodak 800 ASA film with the camera mounted on the telescope to follow the stars across the sky. You can clearly see the Southern Cross at the centre of the image, The Pointers to the lower left and the many knots and brighter patches along the Milky Way to the right of the Cross. Also visible is the Coal Sack - a darker region to the immediate bottom left of the Cross. This is a dark nebula that lies between the Milky Way and us. It blocks the light coming from the myriad of stars behind. The sky was just so beautiful with no light pollution and no smog. The dark splotch at the bottom left of the picture is the telescope tube.

Figure 1: The Southern Cross and Pointers: A 1 hour exposure

Figure 2: The Southern Cross and Pointers: A 15 minute exposure

My one regret of the trip was not being able to talk about Aboriginal cosmology with any native Australians but that now seems to be being made possible by David Hewitt. Perhaps next year, I shall be back out in the desert to talk to some

aborigines. David wrote to me just this last week with a photocopy of an article that appeared in a Western Australian newspaper about the series of pictures I took of Asteroid 2000 QW7 and which caught the imagination of the media in that pre-Olympic period when any news will do. In that instance, the asteroid missed us by 1.4 days or 3.5 million kilometres. We were lucky this time. But out there in the outback there are many craters, some small, some large, which were created during the time when humans have been on this continent.

The aborigines have recorded some of these celestial events in their rock art. One example springs to mind - the Vela Supernova of around 15,000 years ago is recorded in the rock art of Arnhem Land. It must have been a stunning sight. An old star completely destroyed itself in a gigantic explosion outshining the other 100 billion stars in our galaxy for a few weeks. It would have visible in the day-time sky. And there it appears in the Arnhem Land rock art.

Our thanks go to the botanists, biologists, geologists and ornithologists who gave us many entertaining talks as to which particular sub-variety of whichever species it happened to be, or on the erratic lumps of rock carried by glaciers a long time ago to be dumped on Sykes Bluff for us to find. The bird calls and their identification have been a continuing source of fun as we try to emulate their song and engage them in conversation. Thanks for the congeniality, the organisation, the homework and for the many learning experiences. Our son, Andrew, enjoyed it all immensely. He took more than a few good pictures one of which is now enlarged and framed and hanging on our family room wall to remind us of our first real experience in the desert. My thanks also go to Graham Young for conveying me and my telescope in his most comfortable Land Rover which never sustained one puncture, and to the Travis' family, our travelling companions for 7000 plus kilometres. The good humour constantly bubbled along, especially near the Dingo Fence on the way back when they finally punctured the only remaining tyre that had not been holed. And that was not all - but they can tell their own story.

David, Olga and Andrew live in Bathurst, New South Wales. David works at Charles Sturt University and Olga teaches history at All Saints Saints' College. Andrew is in year 8 at All Saints' College.

A note from the Editor

A few weeks after returning home we realised we had had just spent time in the company of a world class astronomer when we came across the following article:

Bathurst astronomer gazumps US military

SYDNEY- An Australian astronomer this week gazumped the US military in scooping the first clear pictures of an asteroid as it zoomed past Earth close for comfort.

Sitting in the comfort-,of his home office in Bathurst, Associate Professor David McKinnon operated a telescope by remote control to capture the asteroid on the Internet.:

Labelled 2000 QW7, the one kilometre wide space rock whizzed through space at 30 kilometres per second, coming within 3.5 million kilometres of Earth - apparently a near miss in astronomical terms.
"It was labelled by the US military a potentially hazardous asteroid when it was discovered on August.26 and they issued a warning," Professor McKinnon said.
"As far as I know there are four telescopes around the world which look for these sorts of objects - equipment worth millions of dollars.
"I gazumped the lot of them with my relatively small telescope the size of my back door," he said. Professor McKinnon took 21 pictures of the asteroid over a 30-minute time frame and stacked them on top of each other to show the object streaking across space.
He then posted it on the website of Charles Sturt University where he lectures in online teaching and learning
Since then' he as been inundated with requests to use the images, which have been deemed by experts, including astronomers in the US military, to be the best in the world.
With the gravitational pull of planets such as Jupiter 'the asteroid could easily have been thrown course and landed on Earth instead.
"Given the speed of this thing, it would have been the end, of civilisation as we know it," Professor McKinnon said.
"It would have been the equivalent of one thousand million Hiroshima bombs going off at the same time - the sun would have been blocked out by dirt and it Would have left a crater 250 kilometres in diameter."

Wagga Daily Advertiser - 08-09-2000

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Desert Camel Trips

By John Wilkinson

"Patient to a degree, enduring hunger, thirst and pain with a stoical courage beyond all others, the first sign a may give that it is being asked to do the impossible is to drop down dead."

This was written for the British War Office after the experience gained in the Middle East campaigns during 1917 / 18, when 35000 camels were used in the Camel Corps and for the transport of supplies and the wounded.

For the same reason camels were used for later exploration of Australia's arid areas and when the settlers and prospectors moved in.

During the second expedition of Ernest Giles in 1875, his camels did a dry march of 325 miles in 17 days with their only drink of 4 gallons (18 litres) each on the 13th day.

The Elder Expedition explored the Great Victoria Desert in 1881. They started with 44 camels and only lost one. At one stage they travelled 536 miles over sand ridges and spinifex and through dense mallee scrub in 35 days, the only water being 3 gallons (13.6 litres) each on the 2nd day, 2.5 gallons (11.4 litres)on the

8th day and 2.5 gallons on the 25th, a total of 8 gallons (36 litres) each. And they did this on poor feed.

In the late 1800's camel strings and wagons almost displaced the horse and bullock teams in the backcountry and they were also used for station work being ridden or driven in buggies. A good riding camel could cover 40 miles every day. In the strings the camels carried big loads day after day, a common loading being 2 bales of wool for cow and bullock camels and 4 bales for bulls. I 1905 a bull camel carried a heavy saddle plus a load of 912 lbs. (414 kilograms). As there were up to 70 camels in a string, imagine the work entailed in loading each morning. The strings were mainly managed by so called "Afghans" who actually came from the present Pakistan. Australian teamsters preferred to use wagons on which the loading was often 1 ton per camel.

Camels are ruminants, with the same type of digestion as cattle and sheep but with some vital differences. The first stomach is lined with cells that store water, the urine is sparse and extremely concentrated and most of the frugal sweating is done through a gland at the back of the head. So full use is made of drink.

The hump is filled with fat, which can be used for sustenance and because of their height and long, strong neck they can reach and pull down branches of fodder trees.

Their feet are marvels of design, being large, flat and spongy. Ideal for travel over sand or stone but no good for slippery mud, over which they can do the splits with disastrous results.

During dust storms they can close their nostrils and filter the air through fine hairs and they have thick eyelashes to keep sand from their eyes.

So far I have told you the good things, but camels can be baddies too. They sometimes complain when being loaded with loud roars and the spitting of bad smelling cud. They can bite with a very big mouth and strike with the front legs and kick, with a long reach, with the back legs even when "hooshed" down. Another peculiarity is that the bulls come on rut for about 3 months each year, and during this period can become very dangerous. Their method of fighting is to grab the leg of the opponent, throw him to the ground and crush him with the weight of their neck and body. An enraged camel will do this to humans too.

So now you are possibly wondering why I am so fascinated by these creatures. As a boy my favourite reading was of the explorers and pioneers and camels were a vital part of this. Then my first contact with them occurred when I was working on Mount Ridduck Station, NE from Alice Springs, in 1941. The station had a string of camels to carry supplies to outstations and also used them to operate whips for the watering of cattle.

In 1987 Jo and I with 4 friends went on a camel trip out from Birdsville. I wanted to learn more about them, so asked the operator, Rex Ellis, (who had been a jackeroo with me years before) if he had a vacancy for a "cameleer". And in 1988 I helped truck 15 camels to Steep Point in WA and walked with to Cue, some 400

miles (644 Km.) to the east. And I have been doing long trips with them ever since.

On that first trip the lead camel was Sam, a large and lovable old rogue. When we arrived at Cue, after a very hot 3 weeks, we hooshed the string down opposite the pub. The publican brought a carton of tinnies and one was offered to Sam. He then drank 7 of them. I was given the job to give rides to the scores of children, mostly aboriginal, who had gathered around us. I used Sam, who had the most suitable saddle, expecting him to cross his legs or go to sleep but he was perfectly behaved, On another trip, in the Great Victoria Desert, we camped beside the dog fence. The camels are tethered at night but Sam was allowed to roam. In the morning, however, Sam was on the other side of the 6-foot high fence and couldn't be persuaded to jump back again. So we left him and a couple of hours Sam rejoined us.

Trips with this operator are usually of three weeks duration and finish where there is vehicle access, so that passengers can change over and supplies brought in. One advantage of this form of travel is being able to traverse country that has not been disturbed by vehicles or stock so the wildlife is not alarmed. Unfortunately, cats, foxes, rabbits and house mice now occupy a lot of the deserts.

A typical day starts at daylight, with a cameleer untying and shepherding the hobbled camels, who have been tied to fodder trees overnight. In the meantime, the camp rolls swags, has breakfast and packs gear. The camels are then hooshed down opposite their own saddles and loaded. Everyone helps and it takes between2 to 3 hours from daylight to march. At midday the string is hooshed down and the billy boiled for lunch. This takes about an hour, giving the camels time to chew their cud.

A camp is sought between 4 and 5 o'clock. When a suitable site is reached, requirements being food for the "humps" and firewood and shelter for the humans, for desert nights can be cold. The "humps" are unloaded and shepherded to graze, firewood is gathered and a meal prepared. Just before dark the "humps" are tethered to edible trees for the night . As we travel between 15 and 30 Km per da, depending on need or the type of country, it is a delight to sit on swags around a fire consuming drinks, a hot meal and the yarns of the day. Sleeping is in swags, with each person issued with a tarp, in case of dew or rain.

Another operator, Philip and Ifeta Gee, run a different type of trip. Their headquarters are at William Creek, west of Lake Eyre, and their trip is for 4 or 5 days. They move with camels to an area where they are licensed to trap wildlife and set traps for a night or two. Then move to another area and again set traps, returning to William Creek, where there is an excellent bush pub. Their method is mostly as described previously. As the Gees have a good knowledge of the birds, beasts, plants and history of this area and are delightful travelling companions as well. I can thoroughly recommend this trip to anyone interested in the nature of deserts.

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AVIATORS REPORT

By David & Penny Fletcher

Phil Crocker, David Fletcher and daughter Penny attended the Cooper Hills camp after an adventurous flight out in a light plane from Tumut. We took the opportunity to look through the Royal Flying Doctor Service Base at Broken Hill after refuelling – a wonderful aero medical organisation which provides a "mantle of safety" for people of the inland formed by Rev. John Flynn in 1912. With sixteen bases the RFDS provides emergency services, routine clinics, radio and telephone consultations, the outback pharmacy (medical chest) and aerial transfers. There is no patient in Australia who cannot be reached within two hours. A truly wonderful organisation.

We took the opportunity to divert to Lake Eyre and over flew the infamous Maree Man. Lake Eyre North was brimming with water and was a magnificent sight. It was hard to imagine that Sir Donald Campbell had broken the land speed record there all those years ago as we looked at the "sea" in the Tirari Desert. We counted five aircraft on the ground at William Creek and saw aerial tour groups taking in the abundant wildlife.

We then headed west and landed at Coober Pedy the "opal capital of the world" for the night. We had a good aerial view of the breakaways reserve, striking hills rising out of the stony Gibber Desert. It was hard to believe that over seventy million years ago this area was covered by an inland sea. Coober Pedy is derived from an aboriginal word "kupa piti" meaning "white man in a hole". Many miners live underground in dugouts to escape the heat of the summer and cool winter desert nights. The most striking aspect from the air was the complete lack of greenery (except the school oval). Very little plant life exists due to the low rainfall, high cost of water and lack of topsoil.

The next morning we flew the final leg to Cooper Hills over a fairly featureless landscape. We had a slight detour to check the position and condition of a track that intersected David Hewitt's proposed easterly cross-country trek with the Birdos after the Cooper Hills camp. It was great to get a visual on the airstrip at Ryans Bluff and then see the spiralling smoke from the heaped spinifex fired up by the reception committee. Thanks to all the hard work of our fellow campers we had a safe landing. The strip originally built by an American company Hunt Oil in the 1960's had been restored to an excellent condition. The pilot and aircraft owner, Phil Crocker, conducted flights over the camp and Sydney Yeo Chasm and had the honour of being the first aircraft to land on the new strip at Tjukayirla Road House recently completed by the WA government, mainly for RFDS emergency evacuations, on the Great Central Road.

We had no sooner landed than Elsie Lasseter had the billy boiled and had us over for a cup of tea while Ian Hancock expertly erected some extra tents. It was great to see a number of familiar faces from the Warri expedition and renew old acquaintances.

The camp facilities were first class with hot and cold running water, toilet and laundry facilities although a little extra work for some as camp water was drawn from a bore five kilometres away. The following day we went out with several car loads to Hanns Table Top Hill, a very interesting area and looked through several caves. Clive Crouch had excited us with his reports of animal activity and we discovered a very rare boomerang shaped dropping, not yet identified.

On Sunday morning (9 July) we enjoyed a nice little church service in the marquee. Ann and Gary Beadell led us in singing and we were treated to several solos by Peter Olde.

One of the highlights of the camp was meeting and talking with the family of the late Len Beadell, some of whom were going on to replace his trade mark "plaques" which had fallen into disrepair over the years. Although only there for a few days, we found the enthusiasm of the nightly reports around the campfire infectious, entertaining and educational.

We sadly left the camp on 10 July and over flew Wingellina and Surveyor Generals Corner en route to Ayers Rock where we camped the night and enjoyed the sunset. We had an excellent flight home the next day with a twenty knot tail wind, arriving in Tumut about 4pm. All in all, a wonderful adventure and thanks to all who made this project possible, in particular David and Margaret Hewitt.

DAVID FLETCHER
PHIL CROCKER
PENNY FLETCHER

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Rock Bridge at Waterfall Gorge

The trials & tribulations of a botanist - Peter Olde at Waterfall Gorge

Camp Kids

Bob & Elsie Lasseter

Evening gathering around the campfire

The Ryan's Bluff Airport Construction Team

Crisis Management!

Highway Traffic

Bluffs and more bluffs

By the Hancock family

What may often be viewed as harsh, barren country in the interior of our island continent, are features that never cease to amaze even the most seasoned traveller. Rising up from the dunes and plains of our deserts, are mesas, rocky outcrops, gorges and bluffs. It was the bluffs that were a major focus of the Cooper Hills project for many people. Within close radius to our base camp, numerous bluffs beckoned the day-tripper, as well as the two and three day trips.

We began our exploration of these bluffs with a day trip to Waterfall Gorge, located about 40 kilometres to the north. Soon we were spread out, walking over the rock faces and the dried creek bed. “We saw six geckos”, observed Ian, who had turned over many rocks with Clive, our untiring zoologist. A number of native pines were thriving in the creek bed, and offered welcome shade on what was a pleasantly warm day. One of the two pools of water was difficult to get close to, although it was easily viewed from the rock face above. To reach it, involved climbing past a thick stand of Red Curly-bark trees. One of the most interesting features of Waterfall Gorge, was a natural archway. Spanning about four metres, the arch appeared fragile but has stood the test of time. It beautifully framed the creek bed below.

The following day, after an ‘emu parade’ at the airstrip, many of us explored Ryan’s Bluff. Being our closest headland, this feature was visited by many, more than once. Rising up from the plain, this bluff gave wonderful views of the panorama below, illustrating the fact that in this type of country, even climbing up several metres, is often beneficial in which to view the country-side. Hann’s Tabletop was visible to the north. Ian, Ava and Warwick built a cairn on the headland closest to the vehicles. After walking along the top of the bluff for some distance, we scrambled down the rock face to walk back, when Ian discovered a large cave, approximately four square metres underneath the bluff. It was cold and dark inside.

Several days later, a small but enthusiastic party undeterred by rain, visited Sykes Bluff. Bob Lasseter and Ian teamed up to explore several caves and holes, discovering a stick nest rat’s nest and a snakeskin. The mysterious black tar-like substance was found here.

Hann’s Tabletop was close to the Connie-Sue Highway and made for easy access. Caves were found along with the inevitable animal droppings. This particular bluff made a spectacular outline especially when approached from the south.

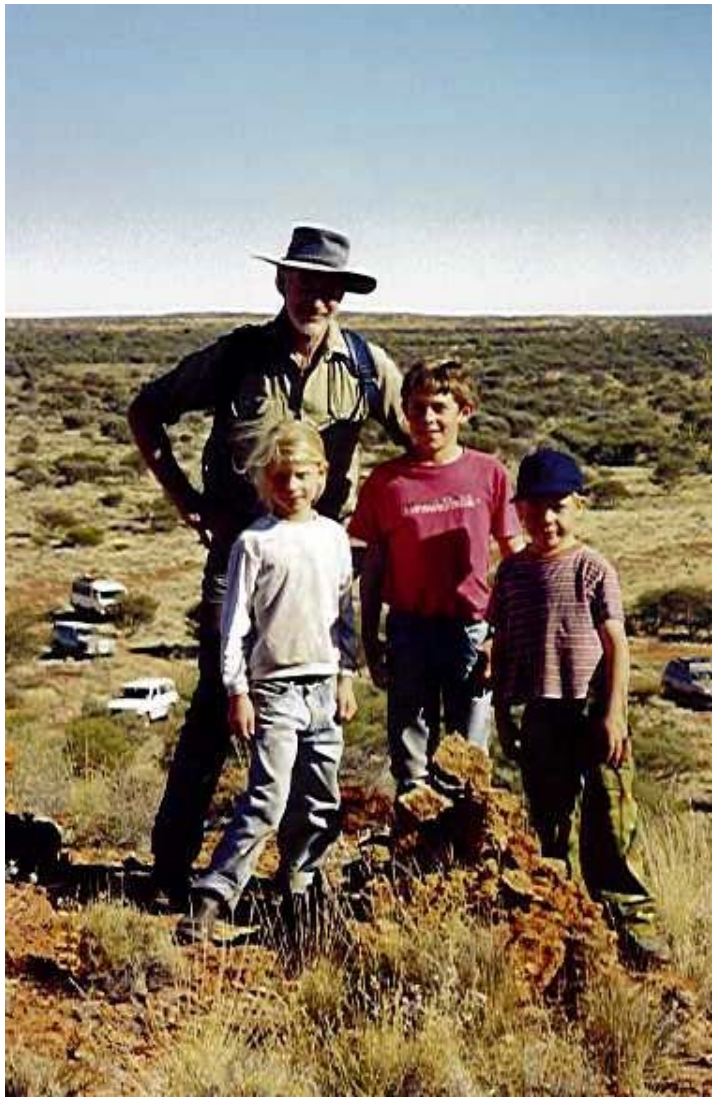
Point Lillian was the next headland we visited. Although we enjoyed our time there on a day trip, several members wisely stayed longer and camped over. Some sixty kilometres south of our base-camp, Point Lillian is extensive. Leaving our vehicles on the flat valley floor, several of us set off in different directions, climbing up onto the headland. Our small group attempted to find the Government surveyor’s cairn, but our search proved fruitless. Over lunch, Ian caught a small scorpion.

Our next bluff was Point Read. We camped within easy walking distance to the headland. It was easy to see why this bluff was originally known as Red Point. The colour was vibrant both on sunrise and sunset. A ten kilometre round walk across the flat, returning by the headland, gave stunning views of the surrounding spinifex plain. The following morning, before returning to base-camp, we explored to the south. This resulted in finding a namma hole, that explorer Frank Hann referred to in his diaries. Hann estimated it had a five hundred-gallon capacity, and watered his horses and camels from it. Adjacent to Point Read, was a smaller bluff. We discovered a large cave with a collapsed roof, just right for kids to jump into.

The final bluff we visited was Wood Point. This was a fitting finale as here was a blazed tree stump, engraved by Frank Hann in 1903. As well, we located a silted over namma hole. Enthusiastic digging gave way to water. Clive and Neil released a small snake and goanna before returning to base camp.

In a relatively small area of the Great Victoria Desert, lays a wealth of interest. Who could believe that so many bluffs could exist, all different and all waiting to be explored?

Ian (10 years), Ava (7 years) and Kathy Hancock



Clive with Ava, Ian & Warwick

BLACK STUFF! What is it?

(Also known as cave bitumen, amberat or rock sweat)

By Garth Strong

I was intrigued by the black, tarry deposits left in numerous caves and rock shelters in the bluffs we visited around the Desert Discovery camp. They were usually associated with the remains of the nests of the Lesser Stick-nest Rat. People who have studied these deposits say that it is the hardened faecal and urinary wastes of these animals.

However, I found a deposit in a cave at Sykes Bluff that had oozed from the roof of the cave. There was no cave above and in my opinion there is no way that it could have been left by an animal.

"Black Stuff" oozing from the ceiling of a cave at Sykes Bluff

I found the following article written by Peter Meredith in the **Australian Geographic,** number 31 July - Sept. 1993 :

"**THE ARRERNTE ABORIGINES** of central Australia called it 'stinking stuff" and said it was the droppings of a mythical being.

Members of AG's fourth expedition dubbed it simply "black gunk". Hardly a rock shelter they visited was without it. Looking like hardened tar, it had a pungent, though not particularly nasty smell. Many believed it was of animal origin, but no

one was sure. Since the expedition, however, I've dug up some information on it.

Peter Copley of the South Australian National Parks and Wildlife Service, who made a detailed study of stick-nest its in the mid-'80s (AG 6), reported: 'Where nests have den built in dry, protected locations in rock shelters and caves, and occupation has been longstanding, faecal and urinary wastes have consolidated to form hard, bituminous 'plaques' or 'middens".

The substance has been studied in central Australia by Biologist Sandy Berry of the Australian National University (ANU), who is convinced that more than one animal species is involved.

The middens I found contained the faeces of rock - wallabies and possums as well as rodents," she said.

ANU earth scientists have dated midden material to 10,000 years. Wollongong University geography lecturer Lesley Head, who, with honours student Lynne McCarthy, is studying middens at three arid zone sites, says there is no reason why older ones shouldn't be found. By analysing the plant matter trapped in the material, they hope to reconstruct the history of the and zone's vegetation.

Andrew Smith of the University of New England emphasised the significance of this. 'It may be able to tell us what's happened to the landscape since Europeans arrived,' he said.

And it may reveal why one of the animals that contributed to it – the lesser stick – nest rat – became extinct."

AG #31 July – Sept., 1993

OooOOOooo

A camp news sheet, "The Cooper Chronicle" was published on seven occasions during the project

THE COOPER CHRONICLE

Edition No: 1 **July, 2000**

Editors-in-chief:

Editor for this copy: Vivien & Ken Harris

WELCOME TO THE COOPER HILLS PROJECT !

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Thursday 29 June		5°c	Nil
Friday 30 June		6°c	Nil
Saturday 1 July	24°c	7°c	Nil

The project takes its name from a small range of hills 19km south of the campsite and to the east of the Connie Sue Highway. A creek running past the bore where we are drawing the camp water is called Coopers Creek. Like most features in the area, they were named by explorer and gold prospector, Frank Hann, who passed through heading north in 1906. Hann's Tabletop Hill, 20 km north of our camp recognises his travels.

One of the places to be visited during the project is Sydney Yeo Chasm where there is permanent water in deep gorges. This is an extensive area of rugged hills and gorges of which little is known from a natural history point of view. It was also named by Frank Hann.

Some camp guidelines:

1. It would be appreciated if firewood was to be collected at least 1km away from the camp to avoid denuding the campsite area.
2. To conserve wood, please keep your campfire small or better still share campfires.
3. When collecting your wood bring a bit extra for the donkey boiler and for the evening meeting fire.
4. Water is being carted from a bore 5kms away, so it would be appreciated if water could be conserved in the shower/hand basin/laundry complex.
5. For your own camp use we suggest giving your jerry cans to the appointed water carrier.
6. There will be a lot of people for showers so please keep your visits to the shower enclosure brief.
7. The bore water is excellent quality – 260 mg/L total dissolved solids – based on tests carried out from samples taken by Desert Discovery committee member Stuart Kostera in July 1999. **(However the cleanliness of the tank being used to cart water cannot be guaranteed.)**
8. We will be looking for volunteers on a roster basis to replenish the water supply. The round trip including pumping will take approx 1.5 hours.
9. There are available in the marquee a number of books on the history and natural resources of the WA desert areas. Members are welcome to borrow these but please return them to the table in the meeting tent as soon as you have finished with them.
10. The Cooper Chronicle will be published every couple of days. Contributions on your interests or what is happening in the camp will be welcomed by the editor.
11. The evening meetings will commence at 7.30p.m. camp time. Bring a chair and mug. Supper of tea, coffee, milo, biscuits and pancakes will be supplied. We will be inviting anyone with special expertise or background to give talks around the campfire. At the last project this included Ken Harris on birds, Ian Isbister on the GPS, and Bob Lasseter on his father's travels. In addition to these same people, this year we have many others to include such as Neil Marriot and Peter Olde on plants, Clive Crouch on mammals, invertebrates and frogs, Greg Cousins on the geology of the area, and Dave McKinnon on astronomy.
12. At the Warri project an engineer in camp described the shower/laundry complex as the most Heath Robinsonish setup he had ever seen. Who was Heath Robinson?
    Why is a donkey boiler called a donkey boiler?

A free packet of rice cakes for whoever can come up with answers to the above questions.

We are especially privileged to have with us members of the Beadell family on this project. Connie has already arrived and will be joined by her mother Anne and her brother Gary and his family. Following is a note provided by Connie:

In case anyone is interested I have brought with me a print of my computer files on Len and his work. This ranges from a transcript of Len's diaries as an 11 to 13 year old scout on camp (including an entry where he failed a porridge making test – apparently it tasted like walnut) to a summary of the road construction projects in chronological order. I also have an almost complete database on Len's sign-plates, what was on them and when they were erected. The diaries themselves I have transcribed in longhand (the important entries anyway). They make very interesting reading. The diary, book and verbal information I have collated into files organised by individual roads. If anyone would like to peruse the above just ask me and I would be happy to show them to you.

At the time of print the airstrip was almost completed. We hope to include some photos of the work done in a future issue.

THE COOPER CHRONICLE

Edition No: 2 **July, 2000**
Editors-in-chief:
Editor for this copy: Vivien & Ken Harris

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Sunday 2 July	25°c	.5°c	
Monday 3 July		.5°c	Nil

Waterfall Gorge
On Sunday 2nd of July a large party set off to Waterfall Gorge. With the interesting bird talk given to us by Ken in the morning, we put bird watching into practice. It was a great day at Waterfall Gorge. The party saw deep cuts and crevices along with water holes and some caves which were very tight to fit into. We had lunch out there and spent the afternoon bird watching, with a few sightings recorded which I'm sure helped Ken immensely. Thanks must go to everyone who went for such a good day. David Tink

Ryan's Bluff
Today's day trip to Ryan's Bluff was one of great interest. Personally I found it amazing that in such a dry and rocky area so many species of flora and fauna could be found. The most unusual find was of course the *frankenia* (Sea Heath). Normally a coastal plant, the Sea Heath has been (so far) the highlight of the Desert Discovery 2000 Project.
Ryan's Bluff has kindled an interest of botany in me. The plants that such a harsh country like Australia can yield is fascinating.
Rowan Bayliss
[A flora and fauna list for Ryan's Bluff will be in the next edition.]

Trapping Report
Every day Clive and Warwick go to the bore to check the traps in the morning and set the traps in the afternoon. Sometimes we get house mice but usually we get Spinifex Hopping Mice and Sandy Inland Mice. The Spinifex Hopping Mouse has a big eye, long hind legs, a little brush on the end of the tail, and tall ears. The Sandy Inland Mouse is more or less the same as the house mouse but it has bigger eyes and the hind legs are longer. Today we went to the bore and made a big pit trap with Ian and Ava.

Warwick Smith (8 years)

Sign erected on Gunbarrel Highway on 10 April 1958 by Len Beadell.

GUNBARREL ROAD
CONSTRUCTION PARTY

———————

LEN BEADELL . . SURVEYOR
DOUG STONEHAM . . BULLDOZER
SCOTTY BOORD . . GRADER
REX FLATMAN . . FITTER
BILL LLOYD . . FUEL SUPPLY
CYRIL KOCH . . DRIVER
BILL SCHAPEL . . COOK

———————

GILES 62 MILES.

———————

10 APRIL 1958.

———————

THE COOPER CHRONICLE

Edition No: 3 **July, 2000**
Editors-in-chief:
Editor for this copy: Mark

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Tuesday 4 July	26.5°c	2.5°c	Nil
Wednesday 5 July	21°c	16°c	Nil

Flora and Fauna of Ryan's Bluff
Flora:

eremophila gilesii (Giles Emu Bush)
eremophila latrobei (Latrobe's Emu Bush)
eremophila oppositeifolia (Berrigen)
grevillea berryana (Berry Grevillea)
acacia aneura (Mulga)
acacia lyfophyllia (Mini Ritchie)
calytrix sp.
sclerolaena sp.
maireana georgei
frankenia sp. (Sea heath)
distichlus distichlophyla (Salt Grass)
dysphania rhadinostachya (Rat's Tail)
ariplex sp. (saltbush)
ptilotus sp. (Pussytails)
anthropogon sp. (spider grass)
wahlen bergia sp. (Bluebell)
Fauna:
diplodactylus strophurus (Spiny tailed gecko)
diplodactylus elderi (Jewelled gecko)
lialis burtonis (Burton's legless lizard)
demansia psammophis (Yellow-faced whip snake)
ctenotus panthernus (Spotted comb-ear skink)

Thanks to Rowan Bayliss for this information.

Ryans Bluff - Caves
At Ryans Bluff there are many caves. One in particular was about 2m tall, 3m deep and 3m wide. It had an entrance smaller than a doorway and was fully enclosed. This cave was underneath where we were walking earlier. On the roof there were roots of a fig tree above. There was no evidence of aboriginal rock art. Warwick, Ava and I built a cairn at the top of Ryans Bluff. It was about 1m tall so if you are parked near it have a look for our cairn.

Ian Hancock (4/7/00)

Culinary tip from Jock: Rice cakes with scrambled eggs are just delicious!

THE COOPER CHRONICLE

Edition No: 4 **July, 2000**
Editors-in-chief:
Editor for this copy: Vivien & Ken Harris

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Friday 7 July	12°c	3°c	Nil
Saturday 8 July	19°c	1°c	Nil
Sunday 9 July	18°c	2°c	Nil
Monday 10 July	22°c	4°c	Nil

Desert Discovery - First Impressions.

The Smith family, and Jan and Garth Strong from Narrandera and John Wilkinson from Coleambally arrived on Friday 30/6 for their first Desert Discovery experience. John is a very experienced desert traveller, as he has crossed most Australian deserts, both on camel and in 4WD, but declares the GVD his favourite. Although Terry and Nella frequently enjoy camping holidays to remote regions, (and have many of Terry's camp 'appliances' to prove it), it was their first trip to WA. Definitely a 'first' for many years for Garth and Jan, who last camped in the NT almost 30 years ago! We are in awe of the organisation which goes into these camps, and are relishing the opportunities to learn much new knowledge and skills about the desert, its ecology, and past occupation both by aborigines and early explorers. We feel privileged to be part of the Cooper Hills Project.

Jan Strong

Sydney Yeo Ranges Trip

On Thursday 6 July we set off with Rene & Suzanne Wysman and John Wilkinson for the Sydney Yeo area. It rained steadily all afternoon but we made slow and steady pace arriving around 4p.m. where we met Bill Baker and Kathy. Friday morning was initially clear but patches of ground mist came and went until mid-morning. Ken explored the chasm in the morning. In the afternoon we took a walk suggested by Bill Baker. We headed out along a point to a lookout on the south side of the chasm. From the lookout we had a superb view over a broad amphitheatre through which a densely wooded creek ran. We were able to fairly easily find our way down into the amphitheatre and follow the creek upstream. This eventually led us back to our camp, on the way passing Frank Hann's camel watering hole which Bill had earlier discovered. Friday night was a very heavy frost and based on the amount of ice we guess the temperature was about -4°c. On the Saturday Ken did a long morning walk, heading off from camp on a bearing of about 270° and enjoying the varied scenery of the Sydney Yeo area and the large numbers of birds associated with it. In the afternoon we decided to again explore the chasm and one particular highlight was to see a Collared Sparrowhawk catch a honeyeater and devour it while sitting on a bough about 10 metres from us.

Our impression of the Sydney Yeo Ranges is of many rocky ridges spread over a vast area. Between these ridges are sandy plains with densely vegetated creeks. When walking in this area one must take particular care because the ridges twist and turn and divide into many small creeks which look alike. Our expectations were high and we were not disappointed. We enjoyed the spectacular scenery, the solitude, and the companionship of our fellow travellers. The icing on the cake for Ken was to get a sighting of the rare Grey Honeyeater on the return trip.

Ken & Vivien Harris

Arrivals and Departures

Some people have asked who was first in camp? This honour belongs to Suzanne & Rene Wysman, Bill Baker & Kath Whalen who arrived on 26th June towing trailers loaded with gear which had been assembled at Tjukayirla Roadhouse. The same day Jim Hair from the roadhouse brought in 16 drums of fuel and remainder of the camp equipment.

Rene, Bill, Suzanne and Kath erected the marquee, collected drums for the tank stand and started on the shower recess and toilet hole.

On 28th June Bert & Marion Phillips, Lawrie & Pat Draper, Connie Beadell, Neil Marriott, Peter Olde, Clive Crouch, Ken & Viv Harris, David & Margaret Hewitt arrived. The following day saw a lot of action on the plumbing layout and toilet while Bill, Ken & David equipped the bore with the submersible pump and brought in the first load of water.

Final touches to the plumbing were made and numerous drips rectified with the arrival of the ultra-practical Strongs and Smiths, all the way from Narrandera NSW. Their presence was an inspiration to everyone already in camp.

Also arriving on 30th June were the Bathurst group led by Ian Isbister on his 3rd Desert Discovery project, and John Wilkinson our resident camel expert and ex rice farmer. In the Bathurst party was the camp's valued astronomer David McKinnon.

The following day work commenced on the Ryan's Bluff airstrip with a team led by Terry and Garth. One of Garth's roles back home is Bush Fire Brigade captain but he also proved to be adept at lighting fires, as grass covering the strip was burned. Another day on the airstrip saw an emu parade the full length of the strip with Gordon Birrell, who had arrived with his Scottish friend Jock on 2nd July, towing a trailer to pick up mulga sticks and tufts of grass which had missed the previous day's clearing. Final touches to the airstrip were made by Neil Cocks and his team from Melbourne who cleared the parking area and completed filling in a washout through the centre of the strip. Everyone who worked on the strip could be justly proud of their efforts and this concluded the major construction around Cooper Hills camp. Our sincere thanks to all who so willingly assisted with this work.

David Hewitt

Local Birds

This morning Ken Harris, Andrew Cocks and I drove about 4km north up the Connie Sue Highway to look for birds. Soon after we left the vehicle I spotted 4 Bustards just off the Highway. There were 2 females and 2 males that were displaying their feathers. When we moved into mulga country we started to hear Singing Honeyeaters and Red-capped Robins. After chasing a Spiny-Cheeked Honeyeater for a while we saw a flock of Splendid Wrens. Amongst the brown females we saw a male. It had vibrant blue feathers, 6 different shades of blue. I learnt a lot of interesting things about birds and thought it worthwhile just to see the Bustards.

Ian Hancock (10 years)

THE COOPER CHRONICLE

Edition No: 5 **13th July, 2000**

Editors-in-chief: Vivien & Ken Harris

Editor for this copy: Kathy Hancock

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Tuesday 11 July	23°c	6°c	Nil
Wednesday 12 July	23°c	5°c	Nil
Thursday 13 July	26°c	6°c	Nil

The airstrip was the last major construction around Cooper Hills camp. Members arriving since then are still making a significant contribution to the project.
On the 3rd July, Greg and Heather Cozens, with Elizabeth, Anthony and Vanessa arrived and set up their camp in the eastern suburbs of Cooper Hills. Greg is an exploration geologist by profession and his expertise was immediately called upon to identify rocks which the younger camp members had collected. Heather's welcoming of guests for meals became legendary during their stay.
Bob and Elsie Lasseter, veterans of the Warri Project and many previous trips to Central Australia, arrived on the 5th July. They are creating a lot of interest for other members with Bob's talk on his father's travels and his own engineering achievements-thanks Bob and Elsie!
Next to join the camp were Lou and Janet Moyes, who immediately put their names down for water carting and supper duties and over the following week did much more than was expected of them. Lou and Janet will be sadly missed as they return to Adelaide today via Tjukayirla Roadhouse, Laverton and Rawlinna. We may have to call Lou back before the end of the Project if there is a vacancy in the water roster!
On the 7th July, the rest of the Beadell family, Anne, Gary, Ann Joseph and Inez and friend and video-cameraman Phil Sexton arrived. It was great to see them all, specially as everyone had made use of at least one of Len's roads in travelling to the camp. The Beadell's had come via Anne's "own" highway from Coober Pedy to Neale Junction, then on Connie's highway to Cooper Hills. They joined Connie who had been here since the beginning of the Project and left on Monday for Sydney Yeo Chasm, Warburton and the start of a very special project in replacing Len's plaques around the W.A. section of the Gunbarrel and up the Sandy Blight road. We wish them well in this work and safe travelling. We were pleased to be able to help both Ann and Joseph celebrate their birthdays while in camp.
The 7th July also saw the Beechcraft Bonanza V-tail from Tumut land on the newly completed airstrip-with Phil Crocker in the Captain's seat, David Fletcher as First Officer and Penny Fletcher as Flight Attendant-far removed from their normal jobs as dentist, solicitor and medical student respectively. The next 3 days brought a lot of enjoyment to camp members as Phil conducted flights over the camp and Sydney Yeo Chasm and to Tjukayirla Roadhouse and Ayers Rock. The Beechcraft Bonanza had the honour of being the first aircraft to land on the newly completed strip at the roadhouse. The strip was built by the W.A. Government mainly for RFDS emergency evacuations along the Great Central Road. Before this, the closest strips were at Warburton and Cosmo Newberry 250km away.
On Sunday's flight to Ayers Rock, Phil took out Snow who had been chief driver of the OKA on the trip in and carried Neil Marriott and Ian Hancock as observers. Bob Hancock, the Secretary/Treasurer of Desert Discovery was a very welcome passenger on the return flight. He joined Kathy, Ian and Ava who had already been in camp for over a week. Neil, one of our resident botanists gave a great report around the campfire on Sunday evening on the landforms and vegetation between here and Ayers Rock. 9.00 am on Sunday morning, we said a sad farewell to Phil, David and Penny. After a perfect takeoff, they circled the strip twice before once again heading off in the direction of Ayers Rock, then back to Tumut on Tuesday.

David Hewitt

Our day trip to Point Lilian

It was 60km south of our camp. It looked similar to Ryan's Bluff because of the colour and shape of the rock. After lunch we climbed the bluff. From the top we could see Point Sandercock. We could see a trig on top of it. Mr. Lasseter said we should keep our eyes open for the government surveyor's cairn built in 1916, but we did not find it. On our way back to the vehicles I saw 2 ngamma holes. While we were having afternoon tea, I spotted a scorpion, and Ian caught it and put it in the fridge.

Ava Hancock (7 years)

Our Journey to Discovery

July 98 saw us farewell our friends the Maguns as they left our camp at Wilson's Patch and head off to join the Warri Camp. At the time, we didn't know a lot about the camp and when Andreas and Christine returned to Perth we were interested to hear their stories of camp life and the activities they were involved in.

We also heard about the vast quantities of rice they ate and we saw the box of rice cakes they returned with. Little did we know we were to help eat the surplus they left after they departed for Switzerland.

A few months later the Warri Report arrived at our place and before posting it to Switzerland, we read it. Needless to say, we were so impressed by the stories we read, we felt sure we would enjoy being part of a future camp-which brings us to participate in the Cooper Hills Discovery Camp.

We left our home in Toodyay on Saturday 9th July and travelled via Kalgoorlie (overnight) , Menzies, Leonora and Laverton. Our last camp was about 100km west of the roadhouse in a lovely stand of Marble Gums. On our run into camp we had an interesting encounter with a camel who decided he had right of way on the road. After following him for approximately 3km., we decided to stop for the camel. By the time we resumed our journey, he was no-where to be seen.

We were welcomed into camp and set up our tents, cooked dinner and had almost finished washing up, when Rene came over to say they were waiting to start the meeting at 7.30pm. What we didn't know was that West Australia had suddenly changed time zones-we were now on camp time!

We have been on two short trips since our arrival, the first to Point Lilian looking for a cairn (no luck), and the second to Ryan's Bluff and the airstrip to explore the area.

We would like to thank everyone for allowing us to be part of the Cooper Hills Camp.

Clive and Sheena Hesse

Latest up-date on Lizard found at Base camp

While the men were digging an extra hole for the shower, we found a lizard nearby. It was about 370mm long and was light grey in colour. Its tail was 3 times its body length. There were markings every 10mm on the tail. Its tail was darker than its body. On its neck there was a charcoal brown marking 40mm x 10 mm. The 4th toe on its back legs was 20mm long. It had small spines on the back of its head. It had spines on its cheeks and was fast and agile. We took photos of it and then released it near the shower.

Ava and Ian Hancock (7 & 10 years respectively)

The Classifieds

Dentistry: all tooth maintenance; bring your own Leatherman, see Bob Lasseter.

THE COOPER CHRONICLE

Edition No: 6 **16th July, 2000**

Editors-in-chief: Vivien & Ken Harris
Editor for this copy: Sue Jordan

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Friday 14 July	22°c	7°c	Nil
Saturday 15 July	24°c	5°c	Nil
Sunday 16 July	8°c	28°c	Nil

Arrivals & Departures: continued from edition No. 5

Desert Discovery has been very fortunate in having such a wide range of expertise in this year's project. The final week is no exception.

The Western Australian representation was boosted with the arrival on 10th July of Sheena & Clive Hesse from Toodyay, just outside Perth. Keen gold prospectors, we are at least expecting them to find some old buried jam tins with their metal detector. Closely following Sheena & Clive were fellow Western Australians Malcolm & Sue Jordan who are on their third Desert Discovery expedition. Malcolm is a biology teacher at Hale School in Perth and on the first project at Pegasus in the Great Sandy in 1996 he introduced 3 senior boys from his school to the desert. Malcolm & Sue were again with us at Warri in 1998.

Another couple who arrived this week were also at Warri; Andreas & Christina Magun from Berne, Switzerland. They have been travelling the Australian Outback for more than 25 years now and certainly know the country better than a lot of Australians. Friends of Sheena & Clive, they will be here till the end of the project.

Leaving the camp on Wednesday were the Cozens family who had made a fine contribution through Greg's geological knowledge, Heather's hospitality to visitors and the children's reports at the evening meetings.

Gary & Dianne Peakall with Ashley and Georgia arrived on Wednesday via Tjurkayirla Roadhouse and the Parallel Road. Gary is a cabinetmaker by trade but 2 years ago proved that he can also turn his hand to making windlass barrels when he produced a new timber barrel for the windlass which sits above Well 26 on the Canning Stock Route. Since its restoration in 1983 Well 26 has probably seen more use than in the 50 years of droving on the Canning, and the gear for

recovering water was becoming badly worn. It is now in top condition again thanks to Gary, Bob Hancock and others.
Ken Harris's bird observing team received a considerable boost with the arrival of Keith & Shirley Johnson, Euan Fothergill, Laurie Living, Geoff Walker, Mike & Lesley Brooker, Cheryl & Martin Gole. Mike & Lesley were at Warri and with their daughter Belinda their contribution to the bird report in 1998 was much appreciated. We would like to specially welcome Cheryl Gole to Cooper Hills as she is the WA Co-ordinator for the new Bird Atlas of Australia.
As this issue of The Chronicle hits the streets of Cooper Hills we will be welcoming the final participants to the Project, Stuart Kostera and Meg Carty from Perth. Stuart is a member of the Desert Discovery Committee. He was one of the main supporters of the Pegasus Project and though he was not able to attend Warri his assistance with the equipment there was much appreciated. Stuart is the owner of the trailer which brought most of the camp gear in here. Thanks Stuart for all your help and welcome to Meg on her first Desert Discovery Camp.

Wood Point & Wood Pass

Breakaway country approximately 10 km south east from Cooper Hills camp site (t/o from Connie Sue, S27°11.601' E126° 26.214'). This range was sighted by F N Hann on 7th June, 1903 and he named it Point Wood after Inspector Wood at Laverton.
A splendid namma hole was recorded in the saddle between the two breakaways. Suzanne and I discovered a namma hole in this saddle on Wednesday in our exploration of this area. The namma hole when cleaned out is estimated to hold approximately 1,000 gallons.
We were also looking for an emblazed mulga tree in which Talbot cut "F. HANN VI/VI/03 AND Talbot" on the west side of the namma hole. However we were unsuccessful and considering it was 97 years ago the existence of the mulga tree would be very slim. Imagine the excitement had we found a blazed tree in this region as Hann left his name emblazoned on many mulga trees at sites where he camped and found water.
Walking on top of the escarpments enables you to capture magnificent views of the surrounding countryside. To the north you can see Hanns Tabletop Hill; toward the south, Ryan's Bluff; to the east, Point McLean and numerous large sand dunes.
Walking through the Pass we came across a lone emu, by its size obviously a female. Further in our walk we startled a large red kangaroo. The walk along the escarpment revealed many caves with signs of rock wallaby and lizards. Many fig trees were in evidence and these attracted many species of birds. Zebra finches in large numbers obviously indicated the presence of water nearby.
A very interesting area, well worth a visit. Suzanne & Rene Wysman

We finished our association with the Cooper Hills Camp Project at Yeo Chasm & Gorge. Having travelled to the site with Margaret & David, Elsie & Bob and Bev & John we camped near to Neil, Peter, Clive and Trevor & Beryl and after dinner around our campfires had an interesting gathering catching up with the latest flora and fauna discoveries. In the morning we shared a delightful walk before lunch and our final farewells.

Lou and I thank everyone we have not met at the camp; we have really enjoyed your hospitality and vast knowledge. It has been a privilege to be involved. We hope to meet you all again. Jan & Lou Moyes

Having seen Frank Hann's initials, name, date, etc. at quite a number of rock holes in the Petermann, Rawlinson ranges area, I have been curious about Frank Hann for many years. So I was delighted when his diaries were published and further delighted when the Cooper Hills Camp happened to be on his original route to the Centre, giving us a great opportunity to see many of the places he named. Apparently he is credited with naming more places in W.A. than any other man.
The Sydney Yeo Chasm with its spectacular Rock Hole and view from the lookout (approx 1km south of the Rock Hole) so far is the highlight of the areas we have visited during our very enjoyable stay at the Desert Discovery Cooper Hills Camp.

Bob & Elsie Lasseter

Note from the editors: Many thanks to all those people who so willingly contributed articles to The Cooper Chronicle. It has been great to have contributions from so many people covering such a variety of areas of interest. Vivien & Ken Harris

THE COOPER CHRONICLE

Edition No: 7 - The very last, final, ultimate, closing edition! **18th July, 2000**
Editors-in-chief: Vivien & Ken Harris
Editor for this copy: David and Margaret Hewitt

The local weather:	**Max temp.**	**Min temp.**	**Rain**
Monday 17 July	25°c	8°c	Trace
Tuesday 18 July	21°c	13°c	Trace

Arrivals & Departures: continued from edition No. 6
Arriving for the last 8 days of the project were John and Bev Deckert and Charlie and Jean Miller. John and Bev are from Westprint Maps who publish some excellent maps of the remote areas of Australia. Most people travelling to Cooper Hills would have used either the Westprint Anne Beadell or Gunbarrel maps. As part of their present trip, John and Bev are mapping the Connie Sue with their computer mapping program and from here will be doing the Canning Stock Route to update their map of that region.
We were pleased to welcome back Charlie and Jean Miller who also attended Warri in 1998 and were hosts to a reunion for many members from Warri at their home last year. They are from Sydney and are including Cooper Hills as part of an extended trip through the Kimberley, Central Australia and the Simpson Desert.

There were many farewells over the past few days. Some of the bird observing teams left yesterday, followed by Ken and Viv Harris this morning, all heading south along the Connie Sue to the start of the three Bird Atlas surveys. Mick and Judy Lumb and Trevor and Beryl Blake followed Ken and Viv south to Neale Junction, following a visit to Woods Gnamma Hole this morning. The Lumbs and Blakes are returning to Melbourne via a circuitous route which includes Laverton. Also taking off this morning were Neil and Helen Cocks with Pat and David in the second vehicle. They are going across to the Pedirka Desert in the far north of South Australia to act as backup for Peter Tresseder who is walking the Pedirka with three other people. Hitching a ride as far as Ayers Rock with Neil and Helen is Bob Hancock whose office desk is calling back in Sydney. It is sad to see anyone leaving camp, but specially Ken, Viv and Bob who have all done so much to ensure the success of the Cooper Hills Project, over the past 12 months and throughout the project.

The end of Cooper Hills 2000

Today (Tuesday) sees the packing up start and by this time tomorrow we hope there will be little sign of our presence at the campsite on the Connie Sue. Two trailer loads of gear will be going out to Tjukayirla Roadhouse, one eventually finishing up at Stuart Kostera's place in Perth, awaiting the next Discovery Project. Thanks to John Deckert and to Stuart for towing the trailers out to the roadhouse.

The Committee would also like to acknowledge the assistance of those people who offered to stay till the end to help with taking down the marquee, dismantling the shower, toilet, laundry and vanity areas, and pulling up the submersible pump from the bore. They include Kathy, Ian and Ava Hancock, Rene and Suzanne Wysman, Charlie and Jean Miller, John and Bev Deckert, the Peakall family, David and Margaret Hewitt, Bob and Elsie Lasseter, Andreas and Christine Magun, Stuart Kostera, Meg Carty, Peter Olde, Neil Marriott and Clive Crouch. Their cooperation is particularly appreciated as the numbers on the last day are not as great as expected. We are hoping that the rain, threatening for the past two days, holds off long enough to see all the packing up completed. As this edition of the Chronicle is being prepared, we are feeling some of the strong winds which the Great Victoria Desert can be subjected to at this time of the year. Fortunately the Project has been largely free of these cold winds, usually coming from a High Pressure System in the Great Australian Bight.

Looking ahead to 2002

Yesterday a meeting of the Desert Discovery Committee was held to review Cooper Hills 2000 and to start planning for the next project. It was felt that the mix of experts, students, family groups and others was ideal and the same formula in inviting participants will be followed again. This view was confirmed by a general discussion around the campfire last night, led by Bob Hancock. Other comments from members last night will also be taken on board for future planning.

In July 2001 a reconnaissance will be conducted to select a site for the next project, again considering the criteria used for previous projects. These include a remote area where little research on the desert ecology has taken place, a bore providing good water, a site for an airstrip, a good supply of firewood, shelter and suitable terrain for camping, and reasonable access.

Any suggestions regarding the next project are welcome and could be passed on to any of the Desert Discovery committee, Ken Harris, Bob Hancock, Stuart Kostera or David Hewitt.

Finally the Cooper Hills Project would not have been possible without the participation of the 93 members who joined us during the past 3 weeks - **Sincere thanks to everyone.**

Ian and Bob Hancock—Cooper Hills own Talbot & Hann

GPS readings taken 2000 Jun/Jul, by R.Lasseter.;

All to Datum- AGD '66

Description of Point.	Deg Min	Deg Min
Cooper Creek, Water Bore (Water at 40 to 45 m below ground level)	27 19.020	126 20.264
Desert Discovery "Cooper Hills" Camp 2000	27 15.433	126 23.377
Hanns Tabletop Hill, Turnoff	27 09.756	126 24.915
Hanns Tabletop Hill, Carpark	27 09.361	126 25.035
Harkness Gorge, Turnoff	26 52.082	126 22.887
Harkness Gorge (S.E. Edge)	26 52.023	126 22.752
Henning Tank, Turn/Off	27 07.027	126 21.737
Mackenzie Gorge (S.E.Edge)	26 46.107	126 26.902
Neale Jnc, (Connie Sue & Anne Beadell Highways)	28 18.263	125 48.949
Parallel Rd, Turnoff	26 58.977	126 20.608
Point Lillian, Turnoff from Connie Sue	27 39.669	126 10.007
Point Lillian, Carpark	27 38.897	126 07.751
Point Lillian	27 38.884	126 07.753
Point Sandercock, Turnoff from Connie Sue (Assumed)	27 36.963	126 11.169
Ryans Bluff Airstrip, Parking Area	27 14.311	126 26.863
Sykes Bluff	27 17.439	126 26.354
Sydney Yeo Chasm, Turnoff, from Connie Sue	27 00.630	126 20.730
Sydney Yeo Track, Jnc on track, Keep to RH	27 04.406	126 57.869
Sydney Yeo Track, Jnc on track, Keep to RH	27 04.546	126 59.341
Sydney Yeo Chasm, Camp Area (one of)	27 05.766	127 00.015
Sydney Yeo Chasm	27 05.957	126 59.979
Sydney Yeo, Look Out, Car Park	27 06.397	127 00.110
Waterfall Gorge, Turnoff from Connie Sue	26 57.552	126 20.658
Waterfall Gorge Rock Hole	26 57.233	126 19.944
Waterfall Gorge, Arch, Car Park	26 57.150	126 20.058
Woods Pass & Namma Hole, Turnoff from Connie Sue	27 11.589	126 26.218
Woods Namma Hole, Carpark	27 11.198	126 27.884
Woods Namma Hole	27 11.219	126 27.940

Co-ordinates of some additional features around the Cooper Hills Area

Ian Isbister & David Hewitt

Description of Point.	Deg Min	Deg Min
Ryans Bluff Airstrop	**27 14.308**	**126 26.868**
Turnoff to Sykes Bluff	**27 17.445**	**126 21.430**
Sykes Bluff	**27 17.503**	**126 26.423**
Hanns Tabletop Hill	**27 09.365**	**126 25.027**
Lasseter's Cave	**25 01.256**	**129 23.733**
Docker River Campground)	**24 51.989**	**129 03.652**
Turnoff to Connie Sue Hwy. from Great Central Road (marked by old 200L drum 5km south of Warbuton Roadhouse)	**26 09.006**	**126 32.359**
Turnoff to Sydney Yeo Chasm from track.	**27 00.237**	**126 52.819**
Warburton Roadhouse	**26 08.097**	**126 34.811**
Turnoff to south to Rob's Bore on Parallel Road 85 km east of the Great Central Road. Good water at 14m depth.	**26 59.455**	**126 09.305**
Parallel Road/Great Central Road Junction	**27 39.669**	**125 19.225**
Tjukayirla Roadhouse There is a sealed emergency airstrip at Tjukayirla.	**27 09.317**	**124 19.225**

Note: For GPS coordinates Desert Discovery uses the datum referred to on the 1:25 000 topographic map of the area.

For the Lennis map this is Australian Geodetic Datum 66

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THANKS

The Committee for Desert Discovery Incorporated wishes to thank the following individuals and organisations for their assistance with preparations for the 2000 Cooper Hills Project :

The Ricegrowers Co-operative, Leeton NSW, specially Jacqui Herrmann and John Hewitt for the supply of rice and rice products..

Blackstone Aboriginal Community for loan of water trailer and transfer pump.

Tjukayirla Roadhouse, Great Central Road WA - Jim and June Hair, managers for assistance with delivery of fuel to the camp.

Fabtek Pty Ltd, Sydney, provision of secretarial services to Desert Discovery.

Tumut and District Historical Society for donation of the now-famous hand washing machine.

Bob Hancock and Kathy Hancock, loan of 240 volt generator and satellite phone.

Stuart Kostera and Kostera's Garage, Kalamunda, WA, loan and transport of equipment.

Jon and Leanne Gregory who assisted in many ways during planning for Cooper Hills but unfortunately they were not able to join the project.

Dr Phil Crocker, Tumut NSW, for making his aircraft available.

Jack Blunt, Warburton Community - transport of Avgas for the aircraft.

Ian Isbister, for all his work in co-ordinating the All Saints College group from Bathurst.

Ken and Viv Harris, who introduced many of the experts for this year's project to Desert Discovery.

Rene and Suzanne Wysman, who were first on the campsite and were still there at the end to play a key role in packing up.

Neil Cocks, Melbourne for assistance with purchase of the marquee.

Rod Van Leuwen, Laverton for his wealth of local knowledge.

David and Margaret Hewitt, loan of computer, printer and photocopier for publishing the camp news sheet 'The Cooper Chronicle'.

Garth and Jan Strong, Narrandera NSW for so willingly taking on the task of editing the project report. They would like to thank all contributors. E-mailed reports made this task much easier than it otherwise might have been.

Partners of committee members who endured many e-mail, phone and fax messages as preparations for the project proceeded.

Finally, sincere thanks to all who took part at Cooper Hills. It was encouraging to see how everyone happily assisted with the day-to-day camp duties, thus ensuring the smooth running of our third memorable desert project.

THE FUTURE FOR DESERT DISCOVERY

Cooper Hills is the third project to be run by Desert Discovery and the second as an incorporated organisation. Over the four years, three deserts, the Great Sandy, the Gibson and the Great Victoria have been visited. The areas covered are some of the most remote in Australia and if it were not for the resources

provided by Desert Discovery, experts and other interested people would not have been able to have such ready access.

The experience and knowledge of the experts offering their services to a 3 week desert camp has been one of the highlights of the Discovery projects. However the projects would not have been possible without the support of others who provided the equipment, the backup and the interest to just be there, share in the experience and assist the experts with their surveys and research.

254 people have joined in the expeditions, and 11 members have 'endured' all three. They are Neil and Helen Cocks, Bob, Kathy, Ian and Ava Hancock, David Hewitt, Ian Isbister, Malcolm and Sue Jordan and Stuart Kostera.

At the end of each project it is felt that the next one "could not possibly be as good as this" however the same high quality is being maintained, due mainly to the enthusiasm of all the participants. Copies of the reports from 1996 and 1998 projects are still available and may be purchased from any member of the committee.

The Committee for Desert Discovery Inc has decided to continue the idea of a project every two years. A survey will be conducted around June-July next year on possible sites for 2002, keeping in mind the same criteria used in previous years. It will certainly be in a very remote area where once more the solitude of the desert can be experienced. The committee feels that the mix of experts, family groups, students and four wheel drive enthusiasts has worked exceptionally well and this policy will be continued. The project will again be for around three weeks. A minimum stay of five days will be required so those participants will have an opportunity to meet other participants and be a part of the project. Everyone contributes towards the camp expenses in the form of a daily levee (with a reduced rate for students), and is expected to accept some of the daily duties. This is one sure way of getting to know other people in the camp.

Expenses this year included purchase of a 9 metre by 6 metre marquee, fuel for the water pump and generator, extra plumbing fittings and canvas to extend the 'bathroom' facilities, publication of a camp news sheet every couple of days, and provision of the all-important supper requirements. Thanks to excellent guidance over the past two years from our secretary-treasurer, Bob Hancock, Desert Discovery is in a good financial position to prepare for another project in 2002. The Ricegrowers Co-operative, Leeton NSW has been a sponsor of all three projects and it is hoped that this relationship will continue into the future.

The Committee is always open to suggestions – from past project participants or from readers of the report - to make the next camp even more valuable for those who benefit from the research, and for all the participants.

Editors note.
Owing to cost restraints, the printed report has some B&W photos. A full colour version on CD Rom in MS Word 97 will be available for $12 (inc. postage) through Desert Discovery Inc.

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