

If not claimed within 14 days please return to the Alice Springs Field Naturalists Club
Inc. PO Box 8663, Alice Springs, NT 0871

June 2006



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Web site : www.geocities.com/alicenats

Alice Springs Field Naturalists Club 2006

Meetings

7.30 pm on the second Wednesday of the month.
Venue: Olive Pink Botanic Garden, Tuncks Road

Wednesday 14th June. Sonny Mason and Greg Mair from the Gem and Mineral Club

Wednesday 12th July. Bill Low, "Lake Lewis and its Flora and Fauna". This talk precedes the day trip to Lake Lewis.

Wednesday 9th August. AGM. As part of members "Show and Tell" after the AGM, Connie has offered to burn onto a CD a selection of members' photos from trips over the past 12 months to show at the meeting. If you wish your photos to be included please contact Connie Spencer on 89524694 or email constans@bigpond.net.au

Trips / Activities

Sat 10, Sun 11, Mon 12 June. Combine APS/FNC trip to *Acacia pickardii* & *Acacia peuce* on Andado Station. Trip fully subscribed. Leader Connie Spencer.

Sat 17 June. Walk woodland. Trail to Rocky Gap and back. Meet 8 am at Flynn's Grave Memorial. Leader Kaye Percy 89523405. 5 ½ hours easy walking, bring at least a snack.

Sat 1 July. Walk from Connie's place, 45 De Havilland Drive (cars can be left there safely), through the hills to the end of Smith Street, follow the railway line to the cutting, then the Larapinta Trail to the Charles River Bridge. From here we will call for a lift back. Start time 8:00am. Contact Connie in 89524694. Three quarter day walk, bring lunch.

Sat 15 July. Day trip to Lake Lewis. Optional camping at Tilmouth Well campground.

Sat 29 and Sun 30 Jul. Alcoota fossil dig.

Sat. 19 Aug. Walk from Flynn's Grave Memorial to Nutcracker Hill.

Sun 27 Aug. Chambers Pillar.

Sat 2 Sep. Native Gap

Sat 16 and Sun 17. Hamilton Downs

Sat 30 Sep and Sun 1 Oct. Palm Valley

Sat 14 Oct. AS Sewerage Ponds

Guest Speaker Report

Measuring the Miocene 'Climatic Optimum' Just how idyllic were the good old days?

Presented by Dr. Dirk Megirian

**Curator of Geology
 Museum of Central Australia**
 By Emma Bliss

Wednesday 10th May 2006

If you had the chance to visit Central Australia twenty million years ago, what do you think you would find? Many of you may have been influenced by Michael Archer, and would expect to find yourself in an ancient rainforest with dense vegetation and large animals. But if you know of Dirk Megirian's work, you might have a slightly different view. Dirk's presentation clearly and convincingly took us on a journey through the evidence that Central Australia was in fact not a tropical paradise, although it may have had a slightly more greenish tinge than it does today.

Using proxies, or indicators, preserved in the geological record, we can reconstruct the past. To formulate his theory, Dirk has investigated several proxies. These include sea-level records, knowledge of sediments and fossil evidence.

Evidence from the sea

Global sea-level is coupled to the size of the polar ice-caps and the Greenland ice sheet. During warmer periods, ice melts and sea-levels rise; during cooler periods, water is locked up as ice, and sea-level falls. So the rise and fall of sea-level is one measure of climate change. Sea levels were higher in the Miocene than they are today, suggesting a warmer climate.

Forams are single-celled marine organisms that form a shell composed of calcium carbonate. The oxygen isotopes in the calcium carbonate of these organisms can be used as a palaeo-thermometer. Planktonic (surface) and benthic (ocean floor) forams were studied, providing three dimensional evidence of the temperature of the oceans. The evidence from these studies agrees with the evidence from sea level records; that up until about 23mya there was a general cooling trend on earth, but that this was reversed at the start of the period we know of as the Miocene Oscillation.

This evidence provides us with an understanding of what was happening on earth as a whole, a general trend... but

what exactly was happening at a local level? To determine this, more proxies were investigated.

Evidence from Sediments

The ancestors of the Pleistocene megafauna are found in Miocene deposits, and it was during the Miocene that some dramatic increases occurred in body size within some lineages. Several fossil sites have been studied; Riversleigh, Bullock Creek, Alcoota, Kangaroo Well and Pwerte Marnte Marnte. One of the most famous Miocene sites is Riversleigh, reported by Archer (1991) to have been a wet tropical rainforest.

The first piece of conflicting evidence that led Dirk to question Archer's theory was that fossils of these megafauna were preserved in calci-clastic deposits. Calci-clastic sediments only form when annual rainfall is less than 850mm, thus suggesting a considerably drier climate.

Also, the more vegetation there is, the less mobile sediments are. If indeed there were dense forests, it is again unlikely that the necessary sediments for fossilisation would be formed. Rainfall would need to be in excess of 1800mm per year (assuming temperatures of 25-28°C).

Evidence from fossils at each site

To get a better idea of the vegetation, more palaeo-thermometers and palaeo-rainfall gauges were studied at each site.

Pwerte Marnte Marnte was the oldest site, at which a few teeth were found. Kangaroo Well also yielded several teeth. At Riversleigh, a large diversity of animals was found. At Bullock Creek giant ducks, crocodiles, large goannas, turtles, giant snakes and lots of aquatic animals were found. There was much evidence to suggest that the assemblage of all these fossils was a direct result of them being food for crocodiles. Bones at Alcoota were highly fractured but evidence that the megafauna had gotten larger over time was seen.

So we have a good idea of the animals that were around as time went on, but many of these animals were mammals, and as mammals are endothermic they are not good palaeo-thermometers. To get a better indicator of climate it was necessary to look at the plants eaten by these animals. This suggested that there were grasses and eucalypts. There was also evidence that a high proportion of these animals were browsers. In a rain forest most productivity is in the canopy, out of reach of these animals. This was all further evidence that Central Australia was not covered by rainforest during the Miocene.

Frogs as palaeo-environmental indicators

Frogs are extremely good indicators of annual rainfall, as species diversity is highly correlated to annual precipitation. 12 Species of frog were found, indicating rainfall between 300 and 600mm. Frogs also aggregate in response to water stress and evidence of this was found. Some of the frog species found built nests from foam. This foam is known to break down when ambient

summer temperatures reach 25°C, leading to the conclusion that temperatures were less than 25°C. This leads to the conclusion that Central Australia was quite dry, with moderate temperatures.

Evidence from vertebrate biogeography

There was a high diversity of aquatic reptiles and marsupials, but a low diversity of terrestrial reptiles, again suggesting cooler temperatures than we have today. The high ratio of snakes to lizards also suggests a colder climate. This evidence, coupled with that from the frogs, tells us that temperatures were moderate; there were few frosty days, that there were sub-tropical levels of winter sunshine and low annual rainfall.

Evidence from gastropods

Evidence from gastropods indicates that there were both aquatic and dry land snails. The evidence also indicates that there were no integrated river systems and that the transition between the aquatic areas and dry land was abrupt, suggesting an essentially dry landscape with a series of wetter (waterhole) areas.

Evidence from today's geography

The final piece of evidence comes from today's geography; which parts of Australia today have a similar environment to the one suggested for Central Australia during the Miocene? Inland areas of NSW and WA at about 30°S have been identified. And where was Riversleigh during the Miocene? Approximately 30°S.

So what does this mean for the climate of the Miocene?

The landscape was mainly covered in scrub, suitable for the high number of browsers that lived here. Some rainforest type vegetation is possible in the waterways where the water table was high. The vegetation was maintained by groundwater and not by the rainfall. Rather than integrated river systems, there were waterholes, and the transition from wet to dry was abrupt. Temperatures were moderate with a smaller winter/summer temperature range than we know today.

In conclusion, the megafauna did not emerge from a tropical lowland rainforest, but the landscape did have a distinctly more greenish tinge than it does today.

Glossary of terms

Calci-clastic Sedimentary rocks formed from fragments of mechanically transported limestone, as distinct from chemically deposited limestones

Miocene Oscillation Geological time period approximately 23 – 7 million years ago

Megafauna Species greater than 40kg that lived in the Pleistocene era

Trip Reports

MORDOR POUND
13th & 14th May 2006

By Rosalie Breen

Bob drove and Liz and Rosalie were passengers for an exploratory trip to Mordor Pound, not in middle earth, not even in New Zealand, but on the Gardens station, north of Trepina. (check out **Creature Feature** in this newsletter for a more scientific report).

To get there you need to drive north and west and then approach the pound from the north on a four wheel drive track, passing Mt Laughlen on the right and the red ramparts of the long Georgina Range which forms one of the sides of the pound on the left. Along the track are a couple of good views of Trepina Hills and the range to Mt Benstead. At the southern end is a pass to go around the base of the range and enter Mordor.

One of the interesting features of Mordor is the number of springs, formed at the junction between the quartzite of the range and the more porous Bitter Springs limestones. These are mostly along the edge of the eastern side of Georgina Range. We stopped and overlanded on foot, following numerous and intertwined cattle pads, to find an oasis in among the dry landscape, of big River Red Gums along the creek bed with pools of running water supporting the gums, and numerous other plant species. Around the actual water it was rather bare because of the lots of animals coming in to drink. It was quite pretty as well as unexpected, considering we had been walking over dry creek bed. Further upstream it was dry again. A number of donkeys came down to drink but were wary of us.

Further along the track was Wallace Springs, in an area you would swear was out of Man from Snowy River. Flat green area with wooden yards among the towering river gums, with soggy ground and a water pool. The actual spring area had been fenced off above the pool.

On the map the track branched but on the ground the north branch wasn't. So we took the track that was there, following along between rocky isolated hills then more open country of mostly witchetty bushes. We passed a corkwood symmetrically Y shaped sitting on a pile of rocks. We chose a camp site in a clear area near one of these hills. Clear it was but still had a few tiny prickles. A dingo came to inspect us so I decided I needed to put up the tent. Liz had a delicious quiche to share for tea with salad from Rosalie and an apple and berry crumble cooked by Bob's Leonie. They (not the salad or the people) were warmed up in a camp oven. Pretty colours in the sky around sunset.

Next morning we drove further along the track stopping at a T junction (also not on the map). Here we went bird watching and found lots (compensating for lack of bird life at the camp site). It was like a big parkland, grassy with big trees of Bloodwood, Ironwood, Corkwood and others and surrounded by big cliffs at a distance. Then we decided to walk in the general direction of Jennings Gorge which we had spotted from a rocky hill. (The map

again was not very specific where it was). After about 35 mins walking we met the road again near the beginning of the Gorge. A 'five fingered' river gum grew in the creek leading down. The Gorge was stunning, red cliffs, grey patterned rocks with pools of water all along and descending fairly quickly. Then we could go no further as there was a drop of 20m or more, down to a sandy flat, the creek entering another narrower chasm to continue through the hills. A beaut spot for contemplating the world. We followed the road back to the car (took a bit longer), stopping at one spot which was obviously a feeding ground for many little wrens, all flitting around us close by. After lunch we retraced our steps or rather, car tracks. Along the way could be seen small rises topped with white quartz type rocks, or red, or the black boulders, mentioned in **Creature Feature** in this newsletter. Like big white eggs and big black eggs and red outcrops. The drive from the pass into the pound to the turnoff onto the Gardens took about 50 mins not counting stops. And back into town another two and a half hours.

I've got to go again.

Water for Life's Peter Baker, with Angus Duigood, and Jane Brimbox went out there the next week to observe some spring areas, and take samples of invertebrates. This was to collect information to give a data base to gauge improvement of habitat if these areas were to be fenced off from stock.

Creature Feature

In the Land of Mordor where the Shadows lie

reproduced from AUSGEO NEWS #66, June/July 2002
pp14-15

Courtesy Rosalie Breen.

The shadowy land of Mordor sketched in Tolkien's 1950s book, Lord of the Rings is not a myth. Mordor is 68 kilometres north-east of Alice Springs in the middle of Australia rather than in Middle-earth, and it is a wild place for dingoes and camels (Ed. and donkeys) instead of Tolkien's hobbits and dark lords. Mordor is an extraordinary area that the geology fraternity has kept quiet about for 30 years.

A team of government geologists and field hands mapped Mordor in 1972-3. At the time, locals called the place Spring Pound, probably because it is said to have an unusual spring that comes and goes. Bureau of Mineral Resources geologist Alan Langworthy was the ringleader when it came to officially naming the place. He suggested Mordor because of the remarkable similarity between the area's geological features and the Mordor map published in Lord of the Rings. Mordor Pound (also called Mordor Igneous Complex) is a region of low relief surrounded by sheer cliffs of sandstone and

conglomerate. The cliffs form a distinctive rectangular pound that is open-ended to the south-west.

To enter Mordor, one must follow a rugged 4WD track that passes through a gap in the cliffs called Wild Dog Pass (Cirith Gorgor in Tolkien's tale). In the valley floor there are conical hills of black rock. One is called Mount Doom because it resembled its namesake in Tolkien's book. The rocks of Mordor Pound are ultramafics and some unusual rocks called shonkinites. Like the original Mordor, they would have been forged in a very hot environment where, according to Tolkien's description, 'great steam and smoke belched...and all about it the Earth gaped'. The rocks are unusually rich in potassium, aluminium, rubidium, strontium and barium. They surfaced from deep in the Earth's crust, but were not extensively contaminated by country rocks. They have not undergone the degree of deformation and alteration that is normally expected of such old rocks.

Geoscience Australia geologists determined that Mordor rocks are 1.13 billion years old. But there are opposing views on the order in which the major rock groups were emplaced (ultramafics, shonkinite, then syenite, or whether the ultramafic bodies postdate the felsic bodies). Minerals of economic interest may be associated with the rocks, including nickel, copper, platinum-group elements, diamonds, uranium and rare-earth elements.

AWSG (Australian Waders Study Group) Leg Flag sightings.

Red-necked Stint *Calidris ruficollis* with an 'orange' tag/flag on the right tibia.

Single bird in small flock sighted by ASFNC members:-

- Liz Carpenter at the A.S. Sewerage Ponds on 15 April 2006 and 30 April 2006. Birder Rod Fairclough from Harrogate, UK, confirmed the sighting with Liz on the 30th, so it must be true!
- Barb Gilfedder at Mt Isa Sewerage Ponds on 14/5/06.

According to Clive Minton of AWSG this/these bird/s were flagged in Victoria 38deg 0 min S 145deg 0 min E, which uses the flag combination orange, sometime since 1990!

Clive advises that if anyone should make any similar sightings to please report to the Shorebird Research Studies in the East Asian-Australasian Flyway.

Website: www.tasweb.com.au/awsg/index.htm

The "processing" of leg flag sightings is financially supported by the Federal Department of Environment and Heritage.



Owen Springs Waterhole

Photo by Rosalie Breen

Copy Deadline for articles for July newsletter:-
Monday 3rd July 2006
Thanks. Ed.

**Photocopying
courtesy of
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ALICE SPRINGS FIELD NATURALISTS CLUB INCORPORATED
Minutes of the General Meeting held at Olive Pink Botanic Garden
Wednesday 10th May 2006

Open: The President, Bob Read, declared the meeting open at 9:20 pm and welcomed members and visitors

Present: As per attendance book (16 members and 1 visitor)

Apologies: Barb Gilfedder, Leoni Read & Heather Whittaker

Minutes: The meeting resolved to accept the minutes of the previous meeting held Wednesday, 12th April 2006 as a true and correct record of that meeting.

Correspondence In:

Heritage Alice Springs Inc.

Westpac

Newsletter Autumn 2006

promotional material

Bank statement

Western Australian Naturalists Club

NTFNC

NRETA

May newsletter

May newsletter

thank you for input to Larapinta Trail

Correspondence Out:

Charlie Carter & Deb Clarke

thank you for being guest speakers

Treasurer's Report:

Opening balance end Feb 06

\$2,171.78

Less payments

Aradlay Insurance (1/4/06-1/4/07) \$300.00

Australia Post (rental of box) 60.00 360.00

Plus income

Two half year subscriptions 25.00

Interest 3.35 28.35

Balance as at 10 May 2006

\$1,840.13

General Business:

Speakers:

Wed 14 June

Sonny Mason & Greg Mair from the Gem and Mineral Club.

Trips:

Sat 13 & Sun 14 May

Trip to Wallis' Paddock (Mordor Pound). Leader: Bob Read 89521935. Gravel road and station tracks, 4WD needed, about 350 km return.

Sat 27 & Sun 28 May

Trip to Sloans Gully off The Garden Rd. Meet at McDonalds for an 8am sharp departure. Organiser and contact Rhondda Tomlinson. Rhondda requested that those intending to go on the trip make sure they contact her on the Friday night before.

Sat 10, Sun 11 & Mon 12 Jun

Combine APS/FNC trip to *Acacia pickardii* & *Acacia peuce* on Andado Station subject to permission being granted. Organiser Connie Spencer. Maximum number of vehicles 7. 4WD - 700km round trip. Meet 7:45 am for an 8 am departure from the Information Bay on the South Stuart Hwy.

Sat 17 Jun

Walk the Woodland Trail (to Rocky Gap and back) in Simpsons Gap National Park. Meet Flynn's Grave Memorial 8am. Leader: Kaye Percy 8952 3405

Supper for June – Jenny Purdie

Note taker for June – Rhondda Tomlinson

Sightings:

Liz reported a Red-necked Stint with a red band on right leg, Australian Crane & 3 or 4 Orange Chats at the sewerage ponds.

Kaye reported Mistletoe birds in the Sadadeen area.

Helen reported seeing White-backed Swallows in Spencer Hill area and on Santa Teresa Road also north of Alice Springs.

Iain Campbell reported Striated Pardalotes behind the Date Farm.

Bev Gray reported seeing a juvenile Channel-billed Cuckoo.

Emma Bliss observed a Yellow-throated Miner roasting a caterpillar on the exhaust of a Rav 4 at Curtin Springs!!!!

Meeting Closed 9:45 pm