



February 2021

Alice Springs Field Naturalists Club Newsletter



It was an interesting visit to Geoff and Jenny Kenna's native garden on 20 January. Highlight for me was photographing this native bee. He is certainly related to the Blue-banded Bee, *Amegilla* sp. A first sighting for me, although I know they occur around the Top End. I have submitted it to iNaturalist and await a definite ID. See more on this field trip on page 7. Barb Gilfedder.

Meetings are held on the second Wednesday of the month (except December and January) at 7:00pm at the Olive Pink Botanic Garden.

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NEWSLETTER

The next newsletter will be March 2021

The deadline for the March newsletter will be 21 February.

Please send your contributions to Barb Gilfedder: bjfedders@gmail.com

ALICE SPRINGS FIELD NATURALISTS CLUB



Wednesday 10 February

General Meeting in the gazebo at Olive Pink Botanic Garden at 7.00pm.

Speaker: Peter Jobson.

Saddling the horse and riding off - the flora of Southern & Eastern Arizona.

Join Peter Jobson as he takes us through the grasslands and mountain ranges of Arizona. With similar yearly rainfall and seasonal temperatures to central Australia, the Sonoran Desert is the most diverse of all the North American deserts including a plethora of prickly, iconic species in their native environment.

Peter presented this talk at APS AS meeting in November 2019.

If you saw it before, I know it is well worth listening to and watching again.

Sunday 14 February at 1.30pm to 3.00pm – Valentine’s Day Planning meeting at Olive Pink Botanic Garden Visitors Centre. All members welcome. Please bring along ideas for speakers and trips, or pass your ideas on to a Committee Member. See list of contacts below. Come early to buy drinks if desired.

Wednesday 10 March

General Meeting in the gazebo at Olive Pink Botanic Garden at 7.00pm.

AUSTRALIAN PLANTS SOCIETY - ALICE SPRINGS

apsalicesprings@yahoo.com.au

Wednesday 3 February 2021

7.30pm Olive Pink Botanic Garden Join Doug McDougall and Suzanne Lollback for a walk through Olive Pink Botanic Garden to look at the diversity of plants flowering after the recent rain. This will be followed by a slide show and talk about other plants that have been seen throughout the area.

Walk Start: 6.30pm - yes it may still be hot, so bring a hat and water.

Talk Start: around 7.30pm - with refreshments.

Wednesday 3 March 2021

7.30pm Olive Pink Botanic Garden - Annual General Meeting

followed by a talk by Ian Coleman about his travels in Tasmania over Summer, where he spent 9 days walking the Overland Track.

Wednesday 7 April 2021

7.30pm Olive Pink Botanic Garden

Ipampa Claypans - Buffel-busting project with Peter Jobson

JOIN IN and follow us on Facebook!

Our Facebook group – Alice Springs Field Naturalists Club has 130 members. It is a great place to post photos of all the wonderful fauna and flora you see. Any group member can post and comment on the sightings or help you identify them. It is easy to use and fun too.

So much around after the recent rains

Alice Springs Field Naturalists Club Committee Members

President	Barb Gilfedder	8955 5452
Vice-President	Margaret Friedel	0417 849 743
Secretary	Connie Spencer	0429 966 592
Treasurer	Neil Woolcock	0428 521 598
Property Officer	Rosalie Breen	8952 3409
Member	Lee Ryall	0417 401 237
Public Officer	Anne Pye	0438 388 012

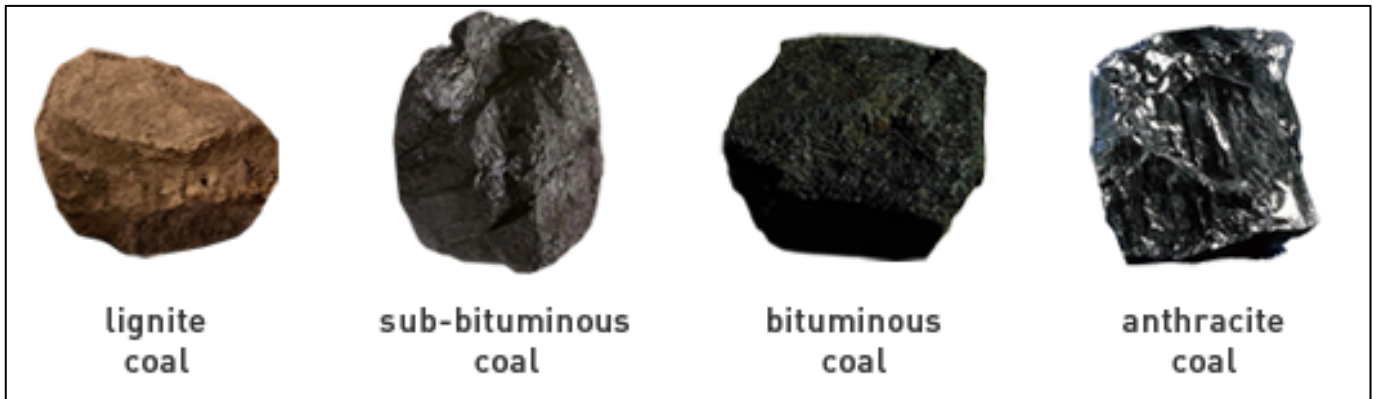
Other Club Responsibilities:

Newsletter – Barb Gilfedder bjfedders@gmail.com
Facebook Organiser – Meg Mooney moon3@iinet.net.au
Website - Robyn Grey-Gardner 8952 2207

COAL – A presentation by Nikola Van de Wetering - Report by Lee Ryall

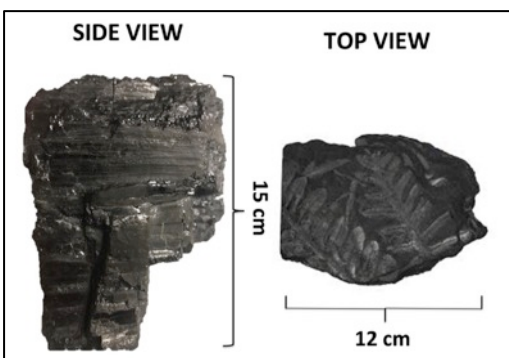
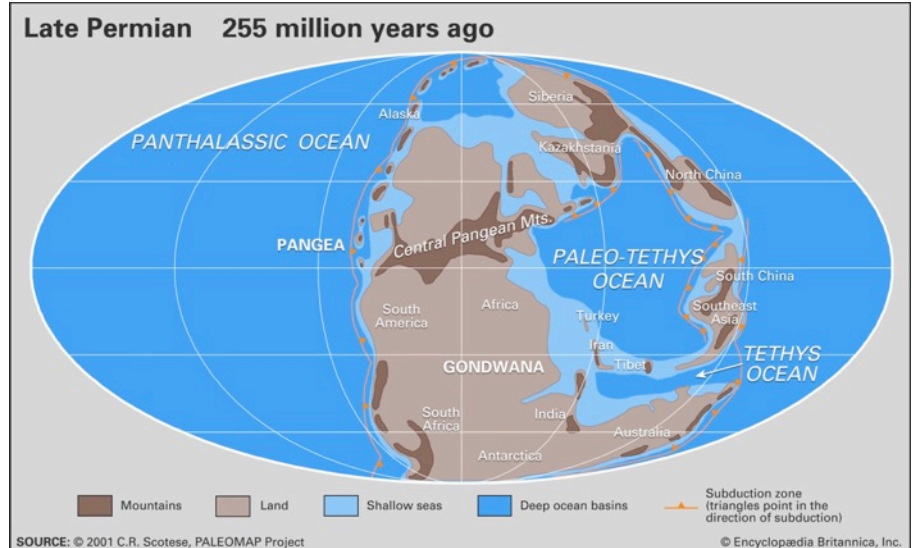
On Wednesday 11 November, in the semi-outdoors of the gazebo at Olive Pink, we were treated to a fascinating and entertaining talk about coal from Nikola Van de Wetering.

Many of us are aware that coal is mined primarily as a fuel, and Nikola started by clarifying the logistics for us. Some coals are processed (melted and purified) to become coke, used in the production of steel and described as “irreplaceable” by the industry. In fact, the coal may be replaced with hydrogen, given advances in bio fuel technologies, or with renewable-driven electrolysis. Coal may also be reduced to a fine powder and burnt to produce steam in the production of electricity. Some of this coal is described as clean because it has been ‘washed’ in a chemical mix, which in some cases may reduce the coal by 40% of its original weight. The issue remains of how to deal with the runoff.



Nikola reminded us that coal comprises plants, layers and layers of them. The recipe is simple - add water, bury and squaash. Andkeepsquashing. Nikola used a slide of the Arafura wetlands to illustrate the sort of areas which currently have potential to become peat and then coal. 10 metres of peat compact down to one metre of coal. That same metre of coal takes approximately 10,000 years to form.

Because coal needs stable wet conditions, it has commonly formed in polar latitudes, where summer damp and winter ice provide constant moisture. Oddly enough, this accounts for the massive deposits of coal in Australia, which spent considerable millennia of its Gondwanan past in polar latitudes. The Carboniferous/Permian (about 365 to 250 million years ago) was a classic time, due to its climatic conditions, for coal formation. Much of Australia’s current coal dates from then. There are, however, much older coal deposits recording conditions on the earth some 400 million years ago.



Coal formation goes through a number of stages, where increasing compression and heat produce brown coal, sub-bituminous black coal, bituminous black coal and eventually anthracite. At each stage more hydrogen-rich compounds are lost and the carbon content of the coal increases. Fossils of beautifully glistening ancient leaves, stems and spores often remain (although not in anthracite) - sometimes in such detail that the cellular structure can be examined. Early plants including *Glossopteris*, and cycads abound. Nikola’s photograph of the layers in coal shows a *Cladophlebis* fossil when viewed from above (left). Pollen and spores can be found as well and provide data for analysis of past climate conditions in spectacular detail.

Cores of coal, like cores of other geologically fascinating rocks, are kept in libraries and provide a great resource for anyone wanting to do a little coal reading. For instance, the presence of fly ash, a product of burnt coal, 252 million years ago, suggests a major causative factor in the end-Permian extinction when 90% of marine animals and 80% of land animals died out. The likely scenario was that massive volcanism in Siberia caused explosive fires in coal seams and the resultant toxins were dispersed by winds across the globe. This research is summarized at

<https://www.abc.net.au/science/articles/2011/01/24/3120458.htm>

One of the people who was fascinated by these fossils was Marie Stopes, (eugenicist and women’s rights campaigner) whose scientific work was focused on coal and coal balls. Googling ‘Stopes’ and ‘Ancient plants’ brings up a copy of one of her texts on the subject. Stopes was using the fossils she found to try and prove the existence of Gondwana.

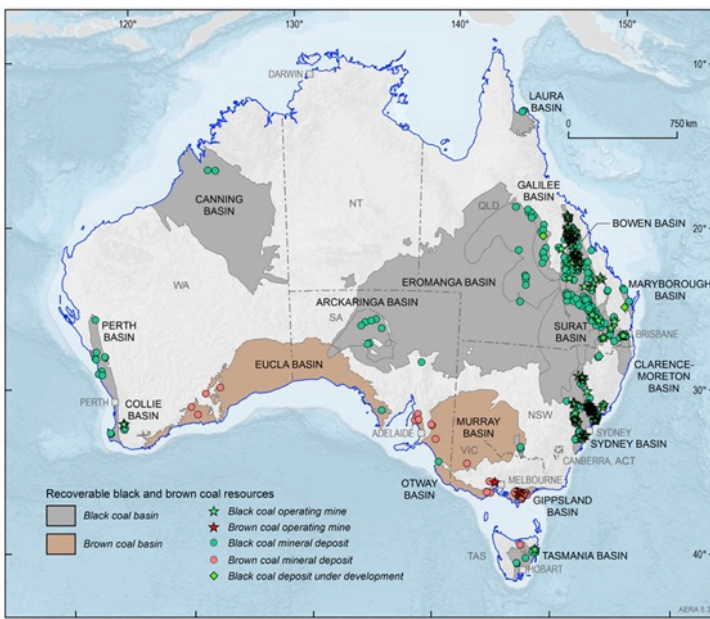


Coal cores

These are only a couple of the stories coal can tell us. Nikola talked about evidence of another mass extinction prior to the end-Permian, in the early Carboniferous, and showed us charts of past climatic variations developed from coal-based evidence. The information contained in coal seams around the world is beyond imagination. Sadly, most coal is burnt, destroying this invaluable record of past plants and climates and even the tectonic movements of the planet itself.

Nikola Van de Wetering (BSc. MSc. GeoSci) is a rock and dead-things enthusiast previously of Queensland, fresh to Alice Springs. She was the host of Brisbane's 4ZZZ radio science-meets-punk show 'Hot Schist'. She now works in environmental consulting, and sound production at 8CCC Community Radio.

*Left: Australian coal deposits.
Below: Open cut coal mine in the Hunter Valley*



Vale Jim Lawrence

11/6/1947 – 6/11/2020

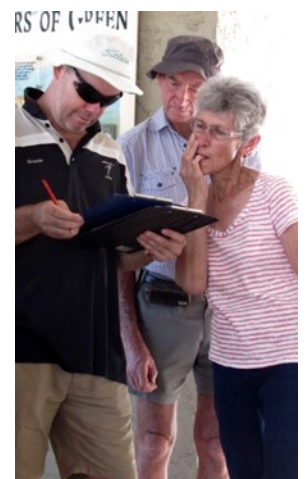
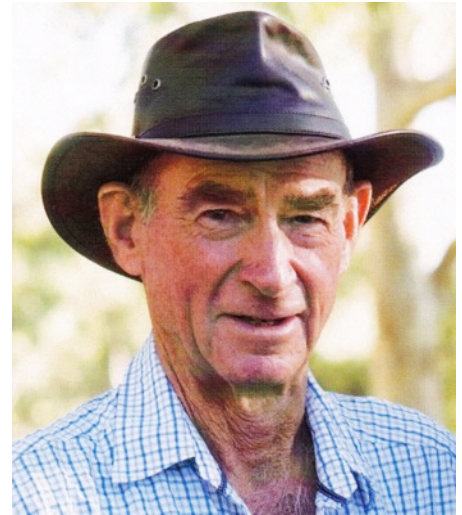
Jim Lawrence was an enthusiastic member of the Alice Springs Field Naturalists Club for many years.

Over this time he made many contributions to our Club, attending meetings, always with an interesting question for speakers, and participating in events and helping to plan them.

He led some wonderful trips, real adventures, several along the Finke River, the Pinch, Ooraminna Rockhole, Horseshoe Bend and more. He was a great leader, finding the best way through water or over rocks, when others might have turned back, and staying aware of every person and vehicle in the party.

Jim was an excellent mechanic and a comfort to have around when things got sticky, a bogged vehicle, a broken spring, a stopped engine, a hurt animal – all would be taken care of quietly and confidently. Followed of course, by making cups of tea with the famous fire-extinguisher billy.

He enjoyed talking with people from all walks of life, sharing stories and his extensive knowledge of the bush. He will be remembered with affection and respect as a good man and good friend to many. We will miss him so much. Our condolences go out to his dear wife Margaret and to all his family.



A walk to Henry's garden and beyond – combined APS AS and ASFNC excursion – 17-1-21

Leaders; Connie Spencer and Rosalie Breen. Report: Barb Gilfedder.

Nine of us met along Kurrajong Drive at 7.00am to hopefully miss the heat. As it turned out the temperature was not so high and walking was pleasant. Henry and Sue started by clearing invasive Buffel Grass from around a favourite tree in a pretty valley not too far from the road. Their exercise continued, and as more Buffel was cleared, they were rewarded with a range of small native herbs taking its place, so gradually the area was enlarged. The main species that caught my eye in this area, were *Abutilon fraseri* (left) with its sunny blooms and *Ptilotus xerophilus* (right) A stunning pair!



We continued on up a hill and following cycle paths. There were lots more plants to look at along the way, lovely views across rocky hills and from the top of one we could see a beautiful Bloodwood, *Corymbia opaca* standing out. "That's where we are heading." announced Connie. We saw three more Mulla Mulla species along the way, *Ptilotus obovatus*, named for the shape of its leaves, *P.sessilifolius*, named for its almost stalkless leaves and *P.nobilis*, which is similar to *P.xerophilus*, but tougher looking with a reddish tinge and branching stems. See the ASFNC November 2020 newsletter for pictures of these species in "A quick guide to central Australian *Ptilotus* species". Near the Bloodwood, a rocky outcrop displayed *Hybanthus aurantiacus*, *Heliotropium tanythrix*, a *Sida* sp. and a *Hibiscus sturtii* (below). I think it is probably variety *grandiflorus* but need to confirm with Peter Jobson at the herbarium. It is a low straggly plant with beautiful pink flowers and very hairy all over (below). We had a good discussion about the need to get photos of the calyx and epicalyx in order to identify, as the flowers of all the varieties are very similar.



Thank you to Connie and Rosalie for encouraging me to come and see all these beautiful flowers after the rain.



A Visit to Geoff and Jenny Kenna's garden at Greatorex Road, Ilparpa. A combined APS AS and ASFNC excursion – Wednesday 20/1/21

Leader: Neil Woolcock, Reporter: Barb Gilfedder

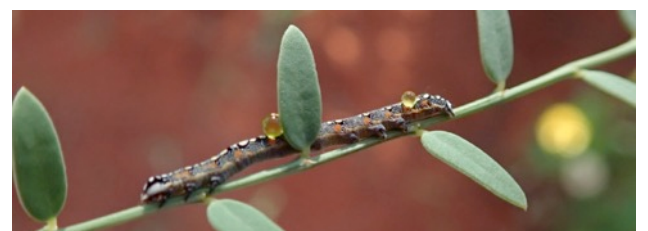
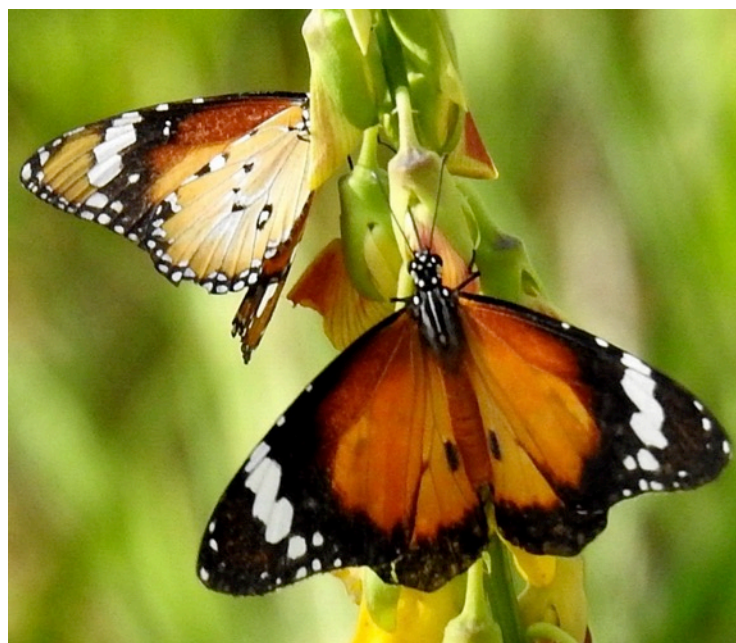
Because this was another combined Plants Society and Field Naturalists trip, I decided to focus more on the fauna than the flora. It is amazing how much local fauna can be attracted to a native flora garden...

...hence the photo of the Bee on the cover. It has been identified as a Blue-banded Bee or allied Digger Bee. There were several of them very busy around an *Eremophila* species. Geoff said they also really like the *Solanum* patch that grows at the end of the house and lots of other flowers. About the same length as the also present, Honey Bee (*Apis mellifera*), it is broader across the abdomen and with obvious bluish stripes. They live solitary lives in little burrows in the soil or the crevices of rocks. Blue-banded bees are one of a few native Australian bee species that perform a particular type of pollination known as 'buzz pollination'. This type of pollination is really useful on crops such as tomatoes, blueberries, cranberries, kiwi fruit, eggplants and chillies, but the Honey Bee is incapable of performing this process. The Blue-banded bees will grab onto the flower, and shake their entire bodies rapidly, causing both the flower and its anthers to vibrate. This shaking movement causes the pollen to be dislodged from the anther, and then be collected by the bee onto hairs on its back legs.

Another insect, hiding in the *Solanum coactiliferum* patch, was this beautiful Grasshopper. Bob Read identified it for me as *Stropis nigrovitellina*, Varied Stropis. I note that Bob had a picture of it on the front cover on ASFNC newsletter in April 2009, after seeing it at the Intertexta Forest.

Also on the *Solanum* was a tiny Garden Spider. Geoff says that this *Solanum* has been a great garden plant, spread clonally, staying low and always flowering.

Leigh Woolcock sent this lovely photo of Lesser Wanderer Butterflies, *Danaus chrysippus petilia*, taken in the pond area of the garden. I remember taking a photo of its chrysalis, again at the Intertexta Forest, some years ago.



I also found a looper caterpillar in the Geometridae family of moths, on a *Phyllanthus maderaspatensis* plant. We know it is a looper because the legs are on the body extremities. These caterpillars pull their bodies into loops as they move. There are over 1270 species of moths in this family in Australia and they are very difficult to identify. This one appears to have some damage, note the tiny bubbles of green liquid. Another member of NT Field Naturalists Facebook group, Geoff Mart, suggested it may have been stung by an Ichneumid Wasp or some other nasty.

Thanks Geoff and Jenny for an interesting look around your garden. All the best to you in your new location and good luck with building another beautiful native garden.

GEOLOGY OF ELLERY CREEK AND SURROUNDING AREA

Talk by Meg Mooney at Ellery Creek Big Hole on Sunday 8/11/2020

Notes written by Rebecca Duncum



IN THE BEGINNING...

Meg began by explaining that 900 million years ago (Ma), Australia was part of a supercontinent called Rodiniaⁱ. Rodinia included the 'old' part of Australia (the section west of Broken Hill). Inlets came in and formed a huge basin about the size of the Mediterranean Sea (this became the Amadeus Basin). This basin extended west to the WA border, south to Kulgera and a few hundred kilometres east of Alice Springs. The northern boundary is the Heavitree Formation, created from sand at the bottom of the sea (oldest sediments). At this time there were algae, bacteria and stromatolitesⁱⁱ but no animals to create fossils.

Within the Amadeus Basinⁱⁱⁱ, a series of sediments were deposited on top of the Heavitree sands, some coming in from the east and some from the west. Limey muds, like in the shallow waters of the Coorong and Shark Bay, created the Bitter Springs Formation.

As mentioned above, the Heavitree Formation displays the oldest rocks from the basin and the type locality is at Heavitree Gap. Bitter Springs Formation is next and is comprised of sands, silts and limey muds. The sand at the bottom of the basin was compressed by the sediments above and solidified into rock.

THE MOUNTAIN BUILDING

The Alice Springs Orogeny (300 – 400Ma) is an unusual mountain building event in that it did not occur at a tectonic plate boundary. The region is sitting in the middle of a continental plate. So what caused the orogeny (mountain building) to occur? The answer is still a little unclear but theories include thoughts around the thickness of the sediments created high temperatures at the base and radioactivity.

As part of the uplift, the Heavitree Formation includes lots of folding. The impact of the uplift was strongest at the northern edge of the basin (in the Heavitree Formation like at Ellery Creek Big Hole). Some parts of the Heavitree Formation were exposed to intense temperatures and pressures and were transformed into quartzites – the hardest rock in Central Australia. Sandstone to quartzite is a physical change in the crystals as opposed to a chemical change.

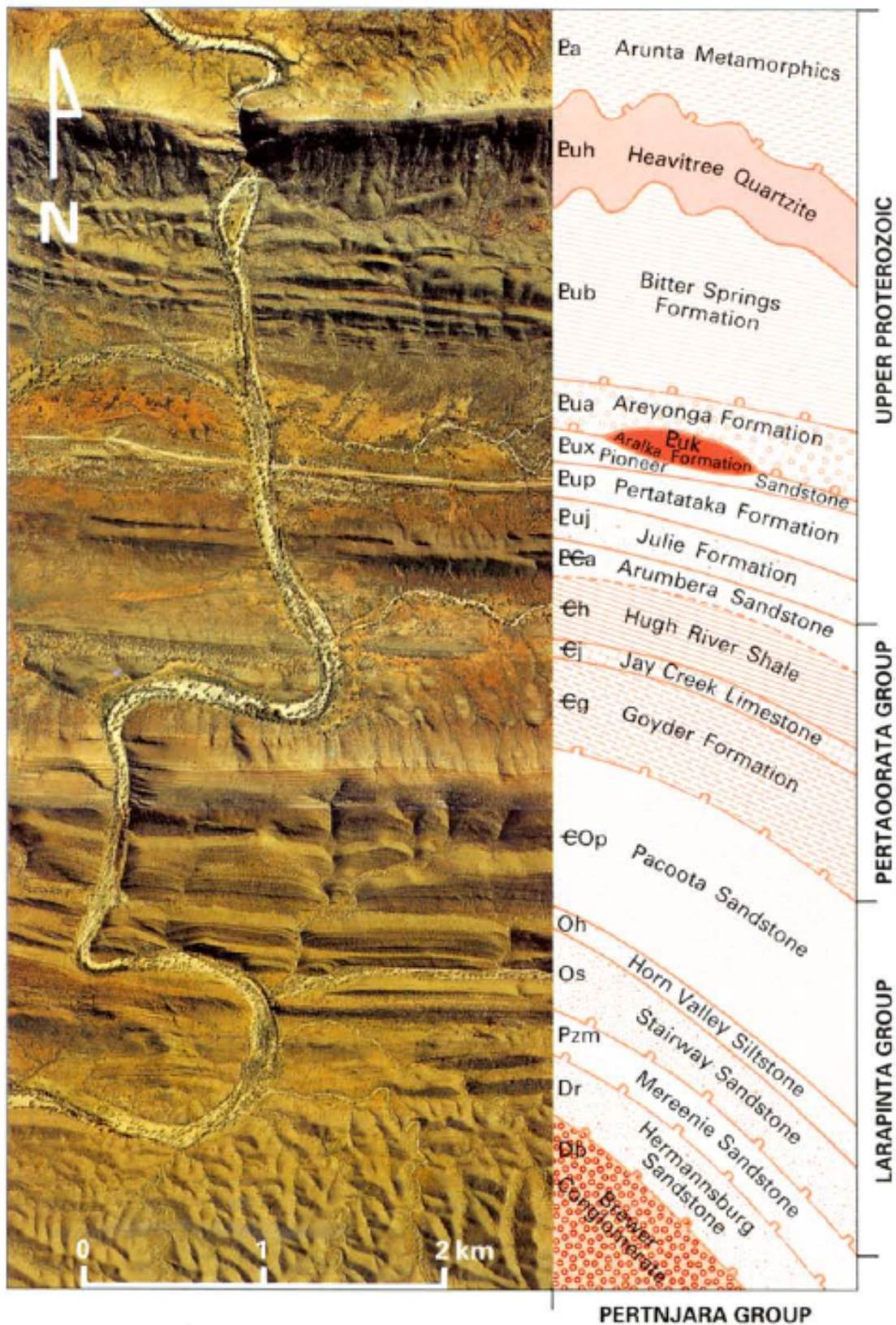


Figure 23 Geology of Ellery Creek and cross-section

From 'A Guide to the Geology and Landforms of Central Australia' by R. B. Thompson.

The Arunta complex formed the shoreline of the Amadeus Sea. These were the 'basement' rocks including the granites and gneisses seen around Alice Springs.

There is a one billion year time gap (unconformity) between the basement and basin rocks. This does not mean nothing happened during that time, just that all evidence of what happened has been eroded away and is no longer present.

The Areyonga Formation (younger than the Bitter Springs Formation) shows evidence of 'erratics'. These are 'glacier-transported rock fragments that differ from the local bedrock' (Brittanica.com). An interesting note is that some of these erratics in other parts of the



world have been transported up to 800 km! The glaciers were present at the time the Areyonga Formation sediments were being deposited. This time was known as a 'snowball Earth' and was around 650Ma. The melting of this 'snowball Earth' was the trigger for the development of multicellular organisms such as the Ediacaran fauna (found in the Flinders Ranges and Canada – Burgess Shale).

The Pacoota Sandstone makes up the main walls at Glen Helen. It contains trace fossils of worm tubes (burrows created by worms which have been filled in by muds).

*Top: Ellery Creek Big Hole,
Left: Main walls at Glen Helen.*

A special thanks to Meg Mooney for starting the morning off with a refreshing swim and then giving a very informative and easy to understand account of our regional geology.

ⁱ **Rodinia** (from the [Russian](#) родить, *rodit*, meaning "to beget, to give birth",^[2] or родина, *rodina*, meaning "motherland, birthplace")^{[3][4]} was a [Neoproterozoic supercontinent](#) that assembled 1.1–0.9 billion years ago and broke up 750–633 million years ago. (Wikipedia)

ⁱⁱ **Stromatolites** – Greek for 'layered rock' – are microbial reefs created by cyanobacteria (formerly known as blue-green algae). **Stromatolite** deposits are formed by sediment trapping and binding, and/or by precipitation activities of the microbial communities (Awramik 1976). (Bush Heritage)

ⁱⁱⁱ Refer [Amadeus Basin | Geoscience Australia \(ga.gov.au\)](#) Named by Ernest Giles after King Amadeus I of Spain.