



AQUA2026 Field Trips

Pre-conference field trip Wombeyan Karst Conservation Reserve

Prof Andy Baker

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Saturday 4th July 2026

Cars leave Central Sydney (TBC) 7 am and arrive at Wombeyan around 10:30 am. There will be time for both morning and afternoon cave tours. Coach departs Wombeyan around 3 pm to return to UNSW by 7 pm.

The Wombeyan Caves are situated between Taralga and Mittagong. They became the first protected caves in Australia in 1865.

The field trip will include a guided cave (Woollondilly Cave; led by Andy Baker) and a self-guided cave (Fig Tree Cave).

Attendees need to be physically fit as this field trip includes a strenuous bush-walk of a few km, including steep slopes, steps and vertical fixed ladders in Woollondilly Cave.

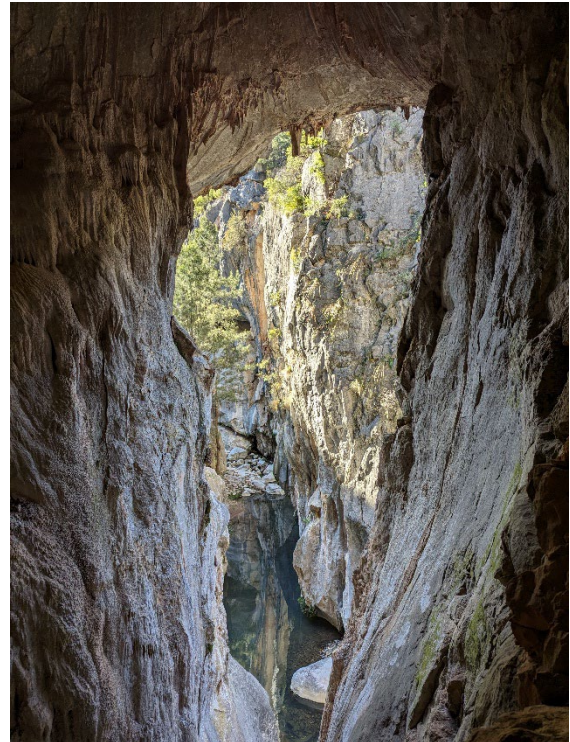
For the more adventurous participants, or those less interested in caves, there are walking trails that could be completed instead, including the Waterfall Walk and the Mares Creek Trail.

Less adventurous participants could choose to not do all (or even any) of the tours and instead enjoy the wildlife and some shorter walks on site. Hundreds of very tame kangaroos are guaranteed. Wombats, snakes, echidna, lyre birds, possums and gliders are all possible.

What to bring:

Water bottle, lunch and snacks for the day. Water is available on-site. Appropriate clothing for bushwalking (hiking boots, backpack for water bottles and snacks). If you have a head torch, it could enhance your cave experience.

Indicative cost: \$120 per person (transport and cave pass)





Wombeyan Caves Overview

Wombeyan Caves are situated in Upper Silurian (410Ma) marble. The original limestone has been folded and metamorphosed, buried by volcanics and re-exposed, probably several times. Today the marble forms a small-scale trough or basin, surrounded by volcanics. The caves are protected as part of Wombeyan Karst Conservation Reserve. Wildlife is abundant and the area has rich evidence of its use by indigenous peoples.

Paleoclimate related research at Wombeyan

Janece McDonald (University of Newcastle) monitored the hydrochemistry of cave drip waters in the caves, including Koorringa Cave (McDonald, 2004; McDonald et al 2004, 2007; McDonald and Drysdale, 2007) with the intent to reconstruct past climate from cave stalagmites. This research continues: see Goodwin et al (2025) for a three-thousand-year record of infiltration.

An UNSW / ANSTO / NSW Office of Environment and Heritage team has monitored the caves to investigate the influence of fire on caves and karst processes (Bian et al., 2019; Song et al., 2025). This research has helped inform fire management policy and foreshadowed a new approach to use cave stalagmites as a paleofire proxy (Campbell et al. 2024).

References

- Bian, F. et al. 2019. Hydrological and Geochemical Responses of Fire in a Shallow Cave System. *Science of the Total Environment*, 662, 180-191
- Campbell, M., et al. 2023. A review of speleothems as archives for paleofire proxies, with Australian case studies. *Reviews of Geophysics*, 61, e2022RG000790
- Goodwin, M.J. et al., 2025, Three thousand years of effective infiltration in eastern Australia: A multi proxy stalagmite record from Wombeyan Caves, New South Wales, Australia, *Global and Planetary Change*, 255, 105096
- McDonald, J. and Drysdale, R. 2007. Hydrology of cave drip waters at varying bedrock depths from a karst system in southeastern Australia *Hydrological Processes* **21**, 1737–1748
- McDonald, J., et al. 2007. The hydrochemical response of cave drip waters to sub-annual and inter-annual climate variability, Wombeyan Caves, SE Australia. *Chemical Geology* 244 (2007) 605–623
- McDonald, J. et al 2004. The 2002-2003 El Niño recorded in Australian cave drip waters: Implications for reconstructing rainfall histories using stalagmites *Geophysical Research Letters* L22202
- Song, C. et al., A., 2025. Rainfall recharge thresholds decrease after an intense fire over a near-surface cave at Wombeyan, Australia, *Hydrol. Earth Syst. Sci.*, 29, 4241–4250



Pre-conference tour

Walking tour of the Rocks

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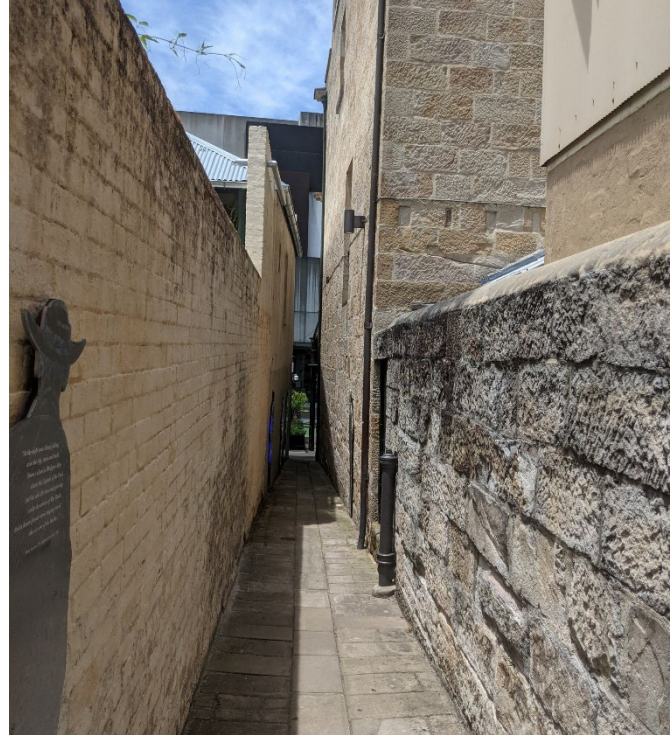
Sunday 5th July 2026

The Sandstone City: walking tour of The Rocks (free)

The tour introduces you to Sydney's Hawkesbury Sandstone, both as a 'big river' sedimentary deposit, as well its properties that has led to its use as a building stone.

1pm, meet outside the Museum of Contemporary Art, next to Circular Quay Light Rail Station.

~2 hrs walking tour, timed to catch the Light Rail back to the Icebreaker.



References:

Miall, A. & Jones, B., 2003. Fluvial Architecture of the Hawkesbury Sandstone (Triassic), near Sydney, Australia. *Journal of Sedimentary Research*, 73, 531–545.

Vernon, R.H. 2020. Ferruginous banding in Sydney sandstone, *Australian Journal of Earth Sciences*, DOI: 10.1080/08120099.2020.1819876





Mid Conference Fieldtrip

Centennial Park's Protected Ecological Communities

Dr Rebecca Hamilton and Prof Dan Penny

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Tuesday 7th July 2026

Meet at the Centennial Park Paddington Gates at 9:30am. We will visit protected ecological communities in the Park and explore their socio-ecological development in the context of southern Sydney's unique hydrogeological setting. We will walk to The Nelson for a pub lunch at ~12:30 pm for those not attending workshops.



Centennial Park is located ~3km north of UNSW and is the largest urban green space in Sydney. The half-day field trip will include a tour around some of the protected ecological and historical sites in Centennial Park. Geographers Rebecca Hamilton and Dan Penny from the University of Sydney will discuss the historical ecology of the landscape and reflect on the importance of Quaternary Science for urban conservation.



Accessibility:

Attendees need a moderate degree of fitness (we may walk around ~3km). The fieldtrip can be made fully wheelchair accessible (please contact the organiser rebecca.hamilton@sydney.edu.au to confirm requirements).

The timing of this half-day trip has been planned to facilitate a semi-organised morning ocean swim before and/or pub lunch after for those so inclined.

What to bring:

Water bottle, wet weather gear (we will go in light rain), hat & sun protection, snacks as needed.

If you are doing a morning swim we will travel from the beach to Centennial Park by public transport, so bring a bank card or opal card for the bus fare.

Indicative cost:

The trip is self-funded and may include public transport costs (~\$10-\$15), coffee, breakfast and pub lunch & drinks depending on what activities you want to join. The field trip itself is free.

Centennial Park overview

The historic swamps and dunes included in the bounds of today's Centennial Park provided abundant food and water supplies for the Gadigal and Dharawal people and were commonly shared by neighbouring clans "*as a place for combat, punishment, and upholding lore*" (Ingrey, 2026). After 1788, this important Indigenous landscape was variably exploited by British colonists as a Common, an industrial 'wasteland', and Sydney town's water reserve before being turned into a managed parkland in 1888. Today, it is the largest true urban park in Sydney and hosts several important ecological communities that reflect some of the last remnants of the 'natural' heath-wetland system of South Sydney. Geographers at the University of Sydney in collaboration with the Gadjuja foundation, Randwick council and the NSW herbarium have been piecing together the long-term socio-ecological evolution of the heath-wetlands, with a focus on implications for conservation (e.g., Wang et al., 2025, Hamilton et al., 2024., Gillespie et al., 2024, Hamilton & Penny, 2015).

References

Gillespie et al., 2024. *Ambio* [10.1007/s13280-023-01957-7](https://doi.org/10.1007/s13280-023-01957-7)

Hamilton et al., 2024. *Landscape Research*. [10.1080/01426397.2023.2271421](https://doi.org/10.1080/01426397.2023.2271421)

Hamilton & Penny. 2015. *Environmental Conservation*. [10.1017/S0376892914000083](https://doi.org/10.1017/S0376892914000083)

Ingrey, R. 2026. A place of combat and punishment between neighbouring clans lies beneath a well-known Sydney park in *Deep Time: An epic story more than 65,000 years in the making*. ABC News. <https://www.abc.net.au/news/deeptime/topic/networks-and-connections/dharawal-fireplace/>. Accessed 09/03/2026



Post-conference field trip

Thirlmere Lakes-Woronora Plateau-Wollongong

Prof Tim Cohen

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Saturday 11th July 2026

The bus will leave Sydney Central Station 8 am and arrive at Thirlmere Lakes National Park (TLNP) by 9:30am. There will be morning tea and 1 - 2 hrs to investigate sites and do a short walk. The bus will depart TLNP and drive to Wollongong via the upland swamps of the Woronora Plateau. Participants will be dropped at Wollongong train station at 5 – 6 pm for the bullet train back to Sydney (if required) or will be dropped at local accommodation.

The Thirlmere Lakes National Park is part of the Greater Blue Mountains World Heritage Area and is an unusual setting with five small lakes that episodically fill and whose sedimentary infill extends over multiple glacial cycles. The trip will showcase 8 years of research across the five lakes and will include long term Quaternary processes, through to the aquatic ecosystem characteristics of these sites including recent work focusing on fire history in the Sydney basin. The return trip to Wollongong will be via the picturesque Woronora Plateau visiting upland swamps before finishing at Quaternary coastal sites in the Illawarra. Some bush short walks will be included on the trip.



Duration: 10 hrs

Cost: \$40 (some light food provided)

Capped at 20 delegates