

Article for Palya magazine by Nicholas White

Nicholas White has been leading a team of cave explorers on a yearly trip to the South Australian Nullarbor Plain since 2005 and before that on the Western Australian portion of the Plain. The team, from the Victorian Speleological Association (VSA) also includes members from other Australian Speleological Federation (ASF) clubs. The team's strategy is to find and document all caves and karst features such as dolines and rock holes

in a 30 x 40 square kilometre area on each expedition. To do this, one member systematically flies a single seat ultralight plane and uses a GPS to locate features which are then found and documented by ground parties either on foot or on motor cycles. All members play a critical role in the success of these expeditions with Nicholas leading and ensuring that the correct permits are obtained, Ken Boland flying his ultralight plane, a team to map and process data and another to organise catering and supplies. In total, this team has discovered and explored more than 2,500 new caves and karst features in the 18 years of these expeditions and in doing so also answered many questions about how the caves formed. A band of blowholes which are only a couple of metres deep with small extensions, mostly less than ten metres in length, relates to a former shoreline that existed about 6 million years ago. This band is about 70 to 100 km inland from the present coastline.

There is a section with very few caves 10 to 20 km south of the blowhole band and further south, nearer the coast, is a better known band of caves some of which are deep and water filled. Many of these caves, formed in a wet period of the Pliocene, contain important contents such as the bones of trapped animals or remnants from being used as carnivore dens. "What keeps bringing us back every year is the thrill of discovery. It's giving us a better understanding of why and where the caves are. Each cave is different but it's the cave contents that are of most interest whether this is animal bones, bird use of the caves or evidence of Aboriginal use" said Nicholas. Some of the caves display red ochre hand stencils, a clear indication that these provided Aboriginal shelter in the past.

Rockholes Rockholes in the limestone pavements sometimes fill with water that is used by animals and people. There are a number of well known major rockholes in the region. The VSA team have also located many others where stone artefacts provide evidence that they were once an integral part of early hunting and travelling routes.

Documenting past and present

During these exploration trips this team of scientific experts locate, explore and document the caves and their features. Where caves are found to contain important contents such as bones separate trips are organised to ensure a relevant expert is able to view and assess the find.

Collecting scientific evidence

Most recently, in November 2017, palaeontologists from Adelaide University and the SA Museum focused on caves which had owl roosting sites. This was a result of a request by Dr Pat Wooley from Latrobe University who asked the team to collect fresh owl pellets to help identify their food sources. Of particular interest was the mulgara, a small dasyurid marsupial. After several years collecting owl pellets it was obvious that owls lived on a very restricted diet compared to the much richer bone piles that collect under the owl roosts in the caves. On this trip the group collected bones associated with the roosts to define the original owl diet from the residual bones. Barn owls and masked owls of the genus *Tyto* were focussed on as the pellets they regurgitate still have easily identifiable

bones. Owl pellets collected in 2013, 2015 and 2016 have only had one to four species of small mammals in the pellets, mostly the introduced house mouse. Previous work from caves on the Western Australian Nullarbor from the 1960's showed that there were as many as 18 mammal species in the owl roost bone piles. This changed diet is probably attributable to the introduction of cats, foxes and the house mouse. Rabbit competition probably also contributed to what represents regional extinction of a number of species. These caves are all north of where sheep or cattle grazed as part of the pastoral industry. The devastating effect camels were having on the waterholes and shrubs on the Nullarbor was very apparent. With camel management strategies undertaken by Natural Resources

Alinytjara Wilurara over the past few years, scrub (such as *Eremophila* sp.) in the protected habitat around caves appears to be recovering. The mulga (Western Myall) on ridges on the Southern edge of the Plain appear to be retreating southwards. There is no regeneration even though rabbits are in very low numbers but it is also not known if this is a lower rainfall effect. Some dingo skulls were collected from several caves which will be analysed

by Dr Alan Cooper, Adelaide University for defining pre-1788 dingo DNA as so many dingoes now have interbred

with European dogs. We also collected a skull of the Tasmanian devil which will have its DNA analysed and will be

dated. Both the Tasmanian wolf and the Tasmanian devil are extinct on the mainland. This has been attributed to competition from dingoes which first came to Australia about 5,000 years ago. It is not known when they

disappeared. “We were disappointed that Mirning custodians could not join us on this last trip as we enjoyed having them with us for part of the 2015 expedition. Each trip to the Nullarbor provides a new and exciting experience and we look forward to future expeditions to this very special part of the world” said Nicholas.

Expedition members November 2017 Palaeontological Reconnaissance Trip L to R A Curry, M Curry, Ann-Marie Binnie, A Treloar, L Reed, S White, N White, G Leeder, D Marsh, I Curtis, J Treloar, S Milner Photo: S Milner