

YANCHEP NATIONAL PARK *

- A UNIQUE UNDERGROUND ON PERTH'S DOORSTEP

- Christie Mahony**

History, mystery and discovery

Yanchep National Park is located within the north-coastal corridor of Perth's Swan Coastal Plain and lies 50 kilometres north of Perth's CBD. The biologically rich area has been utilised by Nyoongar people for many generations due to its abundance of food and water. Aboriginal artifacts found in the Wanneroo and Yanchep region date back between 6,500 and 1,700 years ago (CALM, 1997).

More recently, the 2,500-hectare park was recognised by Europeans for its ecological value when in 1905 the government of the time reserved the area for the 'Protection and Preservation of Caves and Flora for a health and pleasure resort'. Initially the area was vested in the Caves Board as an 'A' class reserve. However, due to the remote location of the park and sandy track conditions, the board's attempts to develop the park were unsuccessful (CALM, 1997). The ensuing years saw management of the area change hands several times until in 1931 the State Gardens Board assumed control of the area.



Henry White party at Crystal Cave entrance circa 1930

During the early 1930s a large amount of money was donated to the park and used to employ sustenance workers to undertake extensive development projects within the park. It was during this time that the park was supplied with power and water, internal roads were built and a single-wire telephone was connected. Crystal Cave was modified with the development of pathways and lighting, and thousands of tons of limestone were removed from Silver Stocking Cave (aka Cabaret Cave) to open up a pavilion to be used for dining and dancing. Other caves in the park were also being explored in order to open them up for tours. These included Yonderup Cave where more was uncovered than expected.

In May 1932, Yonderup Cave hit the headlines of *The Daily News* and *The West Australian* with the discovery of human remains in one of the newly unearthed chambers. In the process of removing large boulders and debris from the chamber, a small working party allegedly made the discovery

of "a leg bone protruding from a pyramid of rock and soil", and after "proceeding a little further with the greatest of care, unearthed the face of a skull" (Bastian, 2001). It's reported that three skeletons were uncovered at that time in the Yonderup cave chamber, however there is much conjecture about the discovery today. One theory is that the discovery was fabricated to raise the profile of the caves and hence increase public interest and visitation to the caves. The cave remained open for tours for 50 years after the discovery of the bones, however in 1984, the WA Museum in conjunction with the local Nyoongar community decided to close the cave completely. The cave remained closed to tours until 1997 when a decision was made to seal off the west wing (where the bones were found) and allow tours to run through the rest of the cave. Today the cave is used for adventure cave tours and the bones rest safely at the WA Museum.



Lex Bastian and Jay Anderson undertaking research at Yanchep

Wind, rain and water

The limestone found throughout the Yanchep region is Tamala Limestone which is believed to have formed in the Pleistocene age, which in geological terms makes the limestone very young. Tamala Limestone extends north and south parallel to the coastline, and reaches inland to about halfway across the Swan Coastal Plain (Bastian, 2005). In short, Tamala Limestone is a 'dune' limestone, or aeolian calcarenite (aeolianite). This aeolian (wind-deposited) limestone was built up in the form of coastal sand

dune belts (made up of beach sands and shell fragments) that subsequently hardened into solid rock through the cementing action of rainfall. The oldest sections of this limestone are believed to date back to 500,000 years ago.

The 250,000-year-old caves found in the Tamala Limestone are some of the world's few caves that have formed in an aeolian environment. Interestingly, the limestone itself was still forming while caves at the limestone groundwater interface began to take shape through the action of underground streams. This syngenetic process could be likened to white ants boring at the foundations of a home while it's still being built.

Today more than 570 limestone cave and karst features have been recorded within and adjacent to Yanchep National Park which is currently managed by the Department of Environment and Conservation.



Members of the Yanchep Caves Advisory Committee. L to R – Rob Susac, Inga Price, Lex Bastian and Richard Wood.

Boomerang, Crystal and Cabaret

In 2007 more than 240,000 people visited Yanchep National Park. The park has much to offer including a pristine lakefront recreation area, abundant native wildlife and a stunning array of wildflowers in the spring. However, in many cases, it is the caves that attract visitors.

Of the 570 known cave and karst features in the area, only a few are available for the public to experience. The easiest and most accessible is Boomerang Gorge which offers a surface expression of the limestone underlying the majority of the park. Boomerang Gorge is believed to be an ancient collapsed cave system and still harbors small overhangs which are believed to have been used for shelter by the Nyoongar people. One of these features is named 'Dwerta Mia' meaning the 'house of the wild dogs'. It is believed to have been inhabited by dingoes and spirits. This feature can be easily seen along the short trail which currently meanders through the gorge system. The first 500 metres of this trail is wheelchair accessible and contains a number of interpretive signs which were developed in conjunction with local caving groups to deliver messages about the regions geology to visitors.

For those wanting to venture underground, Crystal Cave is the park's main tour cave and sees more than 24,000 visitors traverse through its chambers each year with tours being offered daily. Crystal Cave is the largest cave in the park and contains a vast display of active stalactites, stalagmites, helictites, flowstone, shawls and columns. Crystal Cave is a 'stream cave' and has a horizontal, tubular shape caused by flowing groundwater removing the calcium carbonate (CALM, 1997). Surface expressions of groundwater were present in the cave until recent years where the watertable has dropped steadily to more than a metre below the cave floor. DEC carries out ongoing upkeep in the cave such as the maintenance of lighting, paths and stairways. Long-term plans for the cave may also include the current pathways being upgraded to boardwalks, and lighting being changed to sensor lighting to reduce the effects of lampenflora on cave walls and formations. Many of the cave's lights have recently been changed to lower wattage to use less energy and minimise their impact on the cave environment.

The most modified cave in Yanchep National Park is Cabaret Cave. Known as Silver Stocking Cave or Ballroom Cave in the 1930s, this cave has been a popular venue for various events held over the past seven decades. The cave consists of two large chambers which were developed into a supper room and a ballroom in 1932. A ball was held in honour of the Duke of Gloucester during his visit to the area in 1934. The cave was used extensively in the years that followed for dances, Debutante balls and as a tourist cave until its closure in 1970 due to floor erosion. The cave was repaired throughout 1983 and 1984, and reopened with a reception hosted by the City of Wanneroo to commemorate the fiftieth anniversary of the Duke's visit. The honorary guest at this event was the then State Governor Sir Gordon Reed. In 2006 the Cabaret Cave precinct received significant upgrades including sealed car parking facilities, an upgrade of the amenities including powder rooms for bridal parties, and an overhaul of the cave lighting. Today Cabaret Cave is available for hire and is a popular venue for wedding receptions, birthday parties, seminars and other functions. First class catering is available in conjunction with the *Yanchep Inn*.

Adventure underground

For the more adventurous, Yanchep National Park offers tours through some of the park's wilder caves. With little or no infrastructure, participants don a hard hat and a headtorch to explore the relatively untouched cave environments with a guide. Currently, five caves are used for adventure caving tours. Two of these, Yonderup and Mambibby were modified in the 1930s and have some pathways and stairs. Other caves such as Yanchep, Gilgar and Bunker have minimal or no infrastructure. Visitation is limited to nine participants plus one guide per trip with a limited number of trips allowed per month. The number is determined by the nature of the cave. Visitation restrictions are set by the Yanchep Caves Advisory Committee and monitored by DEC

park staff. Adventure caving is particularly popular with school groups, as a team building exercise for corporate groups and with speleological groups. In the past year about 180 people took part in adventure caving activities in the park.

Research, restoration and rewatering

The limestone caves found in and around Yanchep National Park not only provide a source of recreation and education to visitors, they are also of much interest to speleologists, researchers and scientists. Yanchep National Park staff work closely with local speleological groups including members from the WA Speleological Group (WASG) and the Speleological Research Group of WA (SRGWA). Over the years, members from both speleological groups have been involved in the on-ground management of caves in the national park. This has included being involved with the classification of caves for visitor access, training of adventure cave staff and cave cleaning and restoration projects. In October 2007, Crystal Cave was 'cleaned' by speleological group members and DEC staff, and other past projects have focused on the removal of *lampenflora* from the cave. Members of WASG and SRGWA sit on the Yanchep Caves Advisory Committee which offers advice to the park in regards to the management of its limestone caves and karst features.

Extensive research has been carried out within the Yanchep caves. Researchers from universities have conducted surveys on the stygofauna existing throughout Yanchep National Park and the surrounding area. Studies have also focused on climatology and groundwater levels which are also monitored by staff from the Department of Water.

The largest issue currently facing the park's cave systems is that of rapidly declining groundwater levels. This is believed to be related to a combination of the large expanses of pine trees located to the east of the park, the increasing number of Perth residents relying on water supplies from the Gnangara Mound, and Perth's recent decline in annual rainfall. This decline in the water table is having a drastic effect on stygofauna such as the amphipod which rely on water for survival.

Amphipods live in pools of underground water and rely on tuart tree rootlets for shelter and food. As these underground pools have been slowly drying up, these small creatures have become critically endangered. In an attempt to save this small species of crustacean and their Threatened Ecological Communities, a joint project between the Water and Rivers Commission and DEC

REFERENCES

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(previously CALM) was established in 2000. In consultation with a number of experts a world-first caves rewatering trial has been established whereby filtered groundwater is pumped back into Crystal Cave initially and then other nearby caves to reestablish the original underground pools of water and hence secure the future of the Threatened Ecological Communities relying on these pools. There have been a number of obstacles faced throughout this project. However, if successful, this project is believed to be the first like it in the world and may offer some solutions to similar issues being faced in cave systems in other places.



A school group in Crystal Cave

Summary

Yanchep National Park is truly unique in regards to its intriguing history, exceptional geology, vast array of caves and the dedicated people working towards the long term preservation of these. The park faces a number of issues because of its close proximity to the city. As the metropolitan area slowly creeps north, Yanchep National Park will eventually become an island surrounded by housing development, roads and other infrastructure. With ongoing dedication, professionalism, and commitment towards protecting the health of the park's biodiversity and geodiversity, the park can be enjoyed by many without compromising its environmental integrity. Through education of the public and good-decision making by DEC and its stakeholders, Yanchep National Park will continue to thrive amidst growth and progress and continue to be a unique underground on Perth's doorstep well into the future.

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