## *Managing Caves and People in the Leeuwin-Naturaliste National Park, WA*

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### BACKGROUND

The Leeuwin-Naturaliste Ridge in the extreme SW of Western Australia, is a band of aeolian calcarenite deposited over Precambrian granitic gneiss. The aeolian calcarenite is weakly consolidated limestone, which typically has a caprock layer at the surface. It is characterized by numerous solution pipes, which may intersect caves, extensive calcite speleothem development, and caves, which often show extensive collapse. (Jennings, 1968)

The south west of WA was heavily promoted as a holiday destination with caves as one of the main attractions over a hundred years ago. From 1901 to 1910 the Caves Board, a committee formed to protect and administer the caves was responsible for the installation of steps and gates in many caves including Yallingup, Lake, Mammoth, Golgotha, Calgardup, Giants, Brides and Blackboy Hollow. After the Caves Board disbanded in 1910, the caves suffered a long period of neglect under State Hotels.

In 1958 the local Tourist Bureaux were made responsible for the major tourist caves (Yallingup, Mammoth, Lake and Moondyne). Since 1959 caving clubs have been involved in management of caves. Caves considered by the clubs to be particularly significant were gated, with stringent controls developed for group sizes and number of visits.

From the 1960's on, there has been an increasing number of people exploring the caves of the Leeuwin-Naturaliste Ridge. Cavers, school groups, scouts, "Adventure" companies, surfers when there is no surf, and locals, have all added to the numbers. The Leeuwin-Naturaliste National Park is a three-hour drive from Perth, which makes it very accessible. The region is extremely popular for many reasons – for example beaches, surfing, walking, wineries, forest, fine food, and arts and crafts.

The most obvious visitor impacts are damage to speleothems; erosion around cave entrances and at cliff tops; erosion and sediment movement within caves; and damage to animal habitats. Erosion and breakdown of the limestone is a particularly severe problem in these caves due to the softness of the rock. Erosion of soil cones and sandy areas is also of concern. Between 1977 when Giants Cave was surveyed, and 1993 when a ladder was installed to bypass the rockpile, 53 cubic meters of soil had been removed from the rockpile – all by foot traffic! (Bell, P. & Wood, P. pers comm.)

### LEEUWIN-NATURALISTE NATIONAL PARK MANAGEMENT PLAN 1989-1999

The Department of Conservation and Land Management (CALM) contributed very little to Caves Management until the development of the LNNP Management Plan in 1989. This management plan recognized caves as an area requiring management initiatives. Amongst the main recommendations were:

- "Action 6.1:
  Establish a Cave Management Committee jointly with CALM, Speleological Groups and other appropriate bodies to oversee cave management.
- Action 6.2:
  Implement a permit system for visitors to wild caves."

### CMAC

The Caves Management Advisory Committee (CMAC) first met in October 1989 and continues to meet approximately six times per year. CMAC has been and continues to be a very successful and productive advisory group. CMAC has contributed to the development of the "Cave and Abseil Permit System", and the formation of the Cave Leadership Assessment Panel, as well as many other initiatives.

Initially CMAC was composed of representatives of Dept of CALM, Tourism Association and ASF affiliated caving groups. It was expanded to include representatives of the main user groups – Commercial operators, schools, scouts and the Defense Dept. This expansion of membership has provided a means of communication that has enhanced the understanding of cave conservation issues by many user groups.

**PERMIT SYSTEM**

Under the permit system, which was introduced in 1992, entry to any cave in Calm managed land in the Leeuwin-Naturaliste Ridge requires a permit (except for Calgardup and Giants Caves).

The objectives of the permit system are to:

- Improve cave conservation.
- Improve cave and abseiling safety.
- Educate cave users.
- Raise revenue on a user pays basis. (All revenue is deposited into trust accounts and is only to be used for the management of and conservation of caves/karst and abseil sites)
- Obtain information on people using caves.

Caves are classified into “Self Guide Caves” and “Restricted Access Caves”.

The majority of caves are in the “Restricted Access” category and are available only to ASF caving club members and researchers. Access to these caves is largely unchanged from the system developed by the speleological clubs. The maximum group size is between four and eight, and the maximum number of trips per year varies depending on the particular site.

The “Self Guide” caves are the caves available to commercial operators, school groups, scouts and others, as well as ASF members. This group is further divided into:

Class 1 : No permit required.
Class 2 : Horizontal entry.
Class 3 : Vertical entry requiring the use of a caving ladder or rope.

The caves chosen by the CMAC as self-guide caves were all accessible and already well known. However some well known sites were not included.

Caves or parts of caves can change classification. Since the permit system was introduced three caves have been changed from “Self- Guided” to “Restricted Access”. A cave may have more than one classification. For example Calgardup Cave has part of the cave open to the public, another section is classified as “Self- Guide 2”, and is available to groups of up to eight people including an accredited leader, and another section is “Restricted Access” and is only available to caving club groups with visitation restricted to groups of four people four times per year.

**CALGARDUP AND GIANTS CAVES**

Calgardup and Giants Caves were both operated as Tourist Caves early in the twentieth century. They have both remained well known and highly visited. As is often the case with ex show caves they have suffered greatly from inappropriately behaved visitors. These two caves are now locked and entry is available after payment of an entry fee. Staff ensure visitors are appropriately equipped and briefed prior to their entry into the cave. Helmets and lights are supplied. Infrastructure has been installed to protect the caves from further damage, and in some cases to provide safer access. Extensive rehabilitation has been carried out. Revenue collected is used exclusively for management of the caves.

Access to Calgardup and Giants Caves is also available to accredited leaders via the permit system.

### TRACKMARKING, GATING, MONITORING

Nearly all of the self-guide caves have been trackmarked and many have been gated. Track marking follows the system developed by Poulter (1994). In some instances, the route is indicated with single reflectors up to 10m apart, whereas in more sensitive areas the track is defined with fishing line and reflectors on either side. Where a section of cave that was previously well visited has been closed off, a small sign is installed to indicate the reason for the closure. Eg. fauna habitat; dangerous. Trackmarking and gating have been carried out in conjunction with CMAC.

CALM staff monitor the more visited sites regularly for visitor impacts. The CMAC also carries out site visits to reassess issues such as group sizes, trackmarking and risk management.

### LEADER ACCREDITATION

Due to concerns regarding continuing high levels of damage to the "Self-guide" caves, CMAC recommended that a more formal system of leader accreditation be developed to replace the self-accreditation scheme initially used for the "self-guide" caves. Initially, the only requirement to become registered as a cave leader in the "self-guide" caves was to complete a form. Over 400 leaders were registered via this self-assessment system. (Caving clubs have their own system of accreditation of "trip leaders" and this is recognized for the operation of club trips.)

The Cave Leadership Assessment Panel (CLAP) began regular meetings in 1998, when a course structure and manual were developed. This was followed by a pilot course in January 1999. Experienced leaders from the outdoor recreation industry and caving clubs attended the course and provided feedback. Extensive modifications were made as a result of this feedback and the first course was offered in May 1999.

CALM's Cave Leadership Assessment Panel is comprised of people with relevant technical expertise, training and teaching experience, and elected community members. It includes representatives from CALM, West Australian Speleological Group (WASG), Speleological Research Group of WA (SRGWA), Cavers Leeuwin (CLINC), Adventure Industry Association, Outdoor Education, and Community Groups.

The course is run over three days. The first day consists of theory and group exercises. This is followed by two days of caving. Assessment is by observation of the candidate during the course, a theory exam at the end of the three-day course, and a practical assessment, which involves observation of the candidate leading a caving trip. This is carried out at a later date by arrangement with an assessor.

Prerequisites:
- Current Senior First Aid Certificate.
- A minimum of six cave visits over the past year.
- Experience in leading groups in outdoor activities.
- A minimum age of 18 years.
- DSR Abseil Instructors Certificate or equivalent for vertical entry caves.

Course Outline:
Day One: (Theory)
- Geology, cave development, speleothems: Biology: Sediments, Paleontology and Archaeology.
- Cave Conservation.
- Cave and Abseil Permit System
- Leadership & Group Management.
- Risk Management.
- Emergency procedures.

Days two and three involve visits to four caves. The emphasis is on group management and cave conservation. The maximum group size for the cave visits is six people - five course participants and one instructor.

Cave Leader Accreditation has been a prerequisite for cave permits issued from January 2000. (excluding caving club trips) To maintain currency of the Cave Leader Accreditation, a leader is required to maintain currency of their First Aid Qualification and lead a minimum of six caving trips during a year.

CALM's Cave Leader Course covers units of competency from the Australian National Training Authority. It is likely that an increasing number of people will obtain accreditation from elsewhere. These people will be exempt from part of CALM's course, but would still be expected to complete areas concerning the operation of the permit system, trackmarking, and other information particularly relevant to the Leeuwin-Naturaliste Ridge.

**RESULTS**

- There has been a very large decrease in the number of accredited leaders. There were over 400 trip leaders registered prior to Jan 30th 2000. There are 82 leaders currently. These figures exclude caving club trip leaders.
- There has been a decrease in the number of visits to Self-guide 2 & 3 caves. See Table 1. There is also a decrease in the number using WI 16, for which Cave Leader Accreditation is not required.
- Reliable figures are not available for Calgardup and Giants Caves prior to 1997. Some estimates based on visitor books and visitor surveys have been produced for Giants Cave (Webb, 1989 & 1993). These are shown, together with recent permit system data in Table 2.
- There appears to be a high level of compliance to the track marking, as shown by a lack of footprints off the track, and regeneration of extensive tree roots in some areas.
- It has been suggested that a possible consequence of gating and controlling access to Calgardup and Giants Caves would be an increase in unauthorised cave entry at other sites. There does not appear to be evidence of any increase in "illegal" caving.
- Feedback forms completed by all Cave Leader Course participants are generally very positive, with the main criticism being that the course covers too much in too short a time.
- Informal feedback from Cave Leaders in regard to trackmarking indicates that although most can appreciate the benefit to the cave, there is some dissatisfaction with the lack of "adventure" or "wilderness" experience.
- It is difficult to draw conclusions regarding rescues due to the low frequency. There was a high number of rescues (average one/year) in Giants Cave in the early years of the Permit System. This is the period during which an estimated 35 000 people a year were visiting the cave. A permit was not required to visit Giants Cave at that time. There have been no rescues at Giants Cave since May 1997.

**CONCLUSION**

The last 12 years have seen an enormous change in cave management in the Leeuwin-Naturaliste National Park. Over 12 years ago, there were no controls on cave visitation apart from the self-imposed limitations implemented by caving clubs. In many cave areas this may not present a problem, due to relatively low numbers of cave visitors. However, in the southwest of WA, escalating visitor numbers to the "wild" caves were causing unacceptable impacts.

The permit system has been in place for over 12 years. Most "self-guide" caves have been trackmarked, and many have been gated. More recently, Leader Accreditation has been introduced. The emphasis has been on education. This has been an ongoing process, via the permit system, CMAC, newsletters, and more recently the Cave Leader Course.

**ACKNOWLEDGEMENTS**

Thanks to CMAC, CLAP and the many caving volunteers. Without the valuable contributions of volunteers (past and present) the caves of the Leeuwin-Naturaliste National Park would be far worse off than they are.

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***Table 1 - Cave Visitation: Number of people***

Self Guide 2 & 3 Caves and Abseil Sites *

| | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|
| WI 16 | 4560 | 4852 | 3120 | 3119 | 2655 | 3781 | 3402 | 2723 | 2449 | 1934 |
| Brides Cave | 4271 | 4191 | 2587 | 2579 | 2347 | 2748 | 2960 | 1831 | 1543 | 1734 |
| Giants Pipe | 3339 | 4395 | 2685 | 2750 | 1865 | 2370 | 1979 | 1270 | 1182 | 1360 |
| Calgardup Pipe | closed | closed | 26 | 400 | 647 | 766 | 1291 | 575 | 459 | 598 |
| Nannup Cave | 739 | 859 | 760 | 656 | 630 | 907 | 793 | 553 | 583 | 457 |
| Golgotha Cave | 977 | 1059 | 819 | 628 | 769 | 1221 | 997 | 571 | 1305 | 676 |
| Dingo Cave | 355 | 422 | 348 | 287 | 299 | 301 | 360 | 282 | 109 | 150 |
| Mill Cave | 558 | 597 | 468 | 298 | 460 | 529 | 323 | 368 | 488 | 255 |
| Arumvale Pipe | 232 | 150 | 127 | 259 | 219 | 168 | 126 | 66 | 96 | 94 |
| Block Cave | 96 | 113 | 60 | 72 | 101 | 141 | 61 | 71 | 30 | 37 |
| Quinninup Lake | 112 | 73 | 62 | 53 | 99 | 116 | 41 | 26 | 18 | 43 |
| Mordang Dar | 101 | 48 | 52 | 72 | 68 | 54 | 31 | 65 | 10 | 3 |
| Blackboy Hollow | 124 | 95 | 170 | 69 | 13 | 32 | 45 | 8 | 15 | 6 |
| **Total** | **15464** | **16854** | **13449** | **13376** | **12397** | **15217** | **14438** | **10424** | **8287** | **7350** |

** ASF Cavers and CALM accredited leaders.*

| | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Restricted Access Caves **** | 927 | 834 | 523 | 377 | 537 | 477 | 507 | 538 | 394 | 494 |

***ASF Cavers only*

***Table 2 - Giants Cave Visitation***

| Giants Cave | **1978** | **1988** | **1992** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|
| Abseil Permits | | | | 2,370 | 1,979 | 1,270 | 1,182 | 1,360 |
| Cave Permits | | | | 1,776 | 2,269 | 1,420 | 1,305 | 1,199 |
| Public Entry | | | | NA | 4,138 | 5,207 | 6,047 | 7,278 |
| **Total** | **786** | **17,000** | **35,000** | **-** | **8,386** | **7,897** | **8,534** | **9,837** |