

Sixteenth Australasian Conference on Cave and Karst Management

West Coast, South Island, New Zealand
10 April to 17 April 2005



CONFERENCE HANDBOOK

CONFERENCE CONVENOR:

Phil Wood

Handbook prepared by:

Kent Henderson,
ACKMA Publications Officer
assisted by Deborah Carden

Conference supported by:

Department of Conservation, New Zealand
Holcim Cement
Real Journeys
Buller District Council

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10 April to 17 April 2005

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Kent Henderson, Publications Officer, ACKMA Inc.

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Dave Smith (map on page 11)

Ken Grimes (maps on pages 56 and 72)

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New Zealand Conference Organising Committee – ACKMA 2005

Phil Wood, Convener
Mary Traves, Secretary
Geoff Schurr
Deborah Carden
Russell Bromley

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WELCOME TO THE CONFERENCE

A warm West Coast welcome to all delegates and their partners, most of whom have travelled significant distances to attend the *16th Australasian Conference on Cave and Karst Management* organised by the Australasian Cave and Karst Management Association Inc.

We will be enjoying the conference on the West Coast of New Zealand's Southern Alps, in three locations with field visits to sites near each. We start in Westport and have field excursions from there to Karamea, Charleston and Cape Foulwind. We then move south to Punakaiki for a night and finally (south again) to Greymouth. In both these latter locations we have field visits.

The following is provided to acquaint you with the locations and the sites we will be visiting.

Westport is a small town with a history of resource use – fishing, coal, timber and limestone for cement. The town is built beside the Buller/Kawatiri River with a port at its mouth. The port is an important asset, linking sea; road and rail transport services for the Buller district.

Karamea, one and a half hours north by road, is a village located on the edge of Kahurangi National Park. The 452,000 hectare Park is renowned for the Tasman Wilderness Area; for the Owen and Arthur karst fields (longest/deepest caves) and the very special 120 hectare Honeycomb Hill Caves Specially Protected Area and the Oparara Arch (tallest). We will be visiting both of the latter sites on a long day out. As we go to print there is a proposal to make this area a World Heritage site.

Charleston is located twenty minutes south of Westport. It comprises the northern entrance of the 30,000 hectare Paparoa National Park with stunning limestone features and a coastal strip of granite types loved by rock climbers. The Nile River valley will be a focal point for a field visit to Metro/Ananui – one of the Park's biggest caves.

In 2000 the NZ government determined to stop large scale logging of indigenous forests and transferred approx 7000 hectares of forested limestone blocks adjacent the Nile Valley from Timberlands NZ to the Department of Conservation to be managed as stewardship land. With this transfer the Department inherited over 90 recorded caves in addition to those in Kahurangi and Paparoa National Parks.

Cape Foulwind is a coastal headland situated west of Westport. Described as a 'Place of Foul Winds' by Abel Tasman in 1642 today it is one of the Department of Conservation's icon visitor sites. Its special features are light coastal winds, a coastal walk along the headland with 360 degree views, a breeding colony for NZ fur seals at one end with a lighthouse and sea caves at the other. Holcim Cement has a limestone quarry next to this site that we will visit.

Punakaiki is around 45 minutes south of Westport, and is the headquarters of the 30,000 hectare Paparoa National Park, renowned world-wide for its easily accessible Pancake Rocks and blowholes. Delegates will be introduced to the Park's inland secrets - behind the coastal bluffs lies the Bullock Creek polje and aquifers.

Greymouth is the West Coast's centrally located town, approx 30 minutes drive south of Punakaiki. Like Westport it is built on the river with a port that services similar industries and has a similar history of resource extraction.

Extraction of resources still comprises a significant part of region's income. Tourism has been a revenue earner for over a hundred years and is a steadily growing industry on the Coast. You will see why as the conference progresses and you visit some of our extraordinary caves and karst sites.

We hope you enjoy our place and participate fully in another great conference.

Phil Wood,
Conference Convener

GENERAL INFORMATION

CLIMATE

The climate in April should be moderate during the day and cool at night with what we hope will be fair Autumnal weather. However, we face the Tasman Sea with its unpredictabilities so exciting things can happen-weather wise. Temperatures are likely to range between 17 to 22 degrees.

SHOPPING/NZ POST

You'll get all you need in Westport and Greymouth, both of which have post offices. Karamea and Punakaiki are small villages with small stores and post boxes.

MEDICAL

Greymouth has the Coast's base hospital, Westport has a small hospital. Both have medical and dental centres and emergency services. An emergency medical helicopter service operates via NZ Police.

BANKING

EFTPOS facilities are available in all towns.

POWER SUPPLY

Mains 240V, 50 Hz, 3-pin plug.

CONTACT NUMBERS

Mobile phones will work in Westport and Greymouth

Emergency services 111

Westport Police 788.8310

Westport hospital 788.9030

Greymouth Police 768.1600

Greymouth Hospital 768.0499

NZ Map – add West Coast Map. Town MAPS are in delegates' kits



Deborah Carden at the Main Entrance of Metro Cave, South Island, New Zealand

ACKNOWLEDGEMENTS

The 16th Australasian Conference on Cave and Karst Management organisation has kept a small group on the West Coast out of mischief for nearly two years, the endeavour supported by NZ and Oz ACKMA Committee members when required. Secretary Mary Trayes has applied many hours of her own time – the conference field guide being proof of some of her effort. Geoff Schurr has been active throughout and Russ Bromley has given his time whenever he could. Deborah Carden was supported by the Department of Conservation as part of its input as the major conference sponsor.

SPONSORS

- The Department of Conservation (DOC) is the major or ‘crystal’ sponsor, contributing administrative, postage and printing resources and staff time to organise the event and act as backup during the conference week.
- Holcim Cement is the ‘marble’ sponsor, providing significant funds and hosting a field trip.
- The Buller District Council and Real Journeys in Te Anau have each sponsored the conference with staff input and funds.
- The Oparara Valley Trust in Karamea and Norwest Adventures in Charleston will host the visits to the caves in which they operate.

I would sincerely like to thank the sponsors as their contributions determine the success of the conference.

Caterers, bus drivers, accommodation and food suppliers have all been helpful and enthusiastic. Some we will meet more than others but this is a formal acknowledgement of them all.

And last but not least, thank you to all delegates attending the conference – particularly those who present papers and posters. Our conference theme has a question “Undeveloped – where to now?” The sharing of knowledge, information and experience is what makes the Cave and Karst Management Conferences very interesting and useful and will hopefully answer questions about the future as well as today.

Thank you.

Phil Wood,
Conference Convener

CONFERENCE SUPPORT

During conference DOC will provide the following resources:

- Computer 1 - Laptop Compaq nc8000, Windows XP, Microsoft office applications
- Data projector 1 - Toshiba LCD AC 100-240V Zoom lens
- Computer 2 - Arch Notebook, windows XP, Microsoft office applications
- Data projector 2 - Sony Data Projector 3M MP7760 Multimedia, XGA VPL-CX5 (28.2-33.8 1:1.8-2.15 zoom lens)
- White board on wheels, white board pens, duster

Staff Support

- Expert is Phil Rutherford.
- If you have any specific needs in this area please contact Phil Rutherford (in the first instance) or Deborah Carden (second instance) at Dept of Conservation, Westport, NZ
- Telephone: (+64 3) 788 8008 (work)
- Email: prutherford@doc.govt.nz
- Email: dcarden@doc.govt.nz

SIXTEENTH AUSTRALASIAN CONFERENCE on Cave and Karst Management CONFERENCE PROGRAM

CONFERENCE THEMES:

- * Undeveloped - where to now?
- * Commercial Activities

- * Protection and Use
- * Friends and Associates

DAY 1 – SUNDAY 10 APRIL (overnight Westport)

ARRIVAL DAY

Morning and Afternoon

4.00pm – 5.30pm

Registration – Assemble at the Buller Working Men’s Club,
44 Queen Street, Westport.

5.30pm

OFFICIAL MAORI WELCOME: Powhiri – formal entry ceremony
by Ngatiwaewae tangata whenua (local Maori people). Greg Martin
(ACKMA Past President), and Peter Chandler (ACKMA NZ Vice
President) will be the respondents for the Manuhiri (visitors).
The Formal Welcome will be followed by **dinner**.

7.45pm

OFFICIAL CONFERENCE OPENING
– MIKE SLATER, Regional Conservator, Department of Conservation.
Chair of Proceedings: Robyn McBeath, President, ACKMA Inc.

8.30pm

KEYNOTE ADDRESS. Paper 1: PROFESSOR PAUL WILLIAMS
*Searching for principles to guide sustainable management of karst:
lessons from science*

PROFILE – PROFESSOR PAUL WILLIAMS



Professor of Physical Geography in the School of Geography & Environmental
Science, University of Auckland, since 1972.

Former staff member of Australian National University and Trinity College Dublin.
Co-author (with Derek Ford) of the research text *Karst Geomorphology and
Hydrology* (1989) [new edition to be published in 2005]. Editor of *Karst Terrains:
Environmental Change and Human Impact* (1993). Editorial board member of the
journals *Earth Surface Processes and Landforms* and *Zeitschrift für Geomorphologie*.
Member of the World Commission on Protected Areas (WPCA) of the International
Union for the Conservation of Nature (IUCN). Honorary Member, National
Speleological Society (USA) and Honorary Life Member, New Zealand Speleological
Society.

Current research is on reconstructing climate change from speleothem records, e.g.
see ‘Speleothem master chronologies: combined Holocene ¹⁸O and ¹³C records from
the North Island of New Zealand and their palaeoenvironmental interpretation’, *The
Holocene* 14(2), 194-208 (2004).

Rumoured to be semi-retired but hadn’t noticed.

Favourite cave: Aurora (Fiordland)

DAY 2 – MONDAY 11 APRIL (overnight Westport)

Morning:

8.30am

Housekeeping. Phil Wood, Conference Convenor.

9.00am

WELCOME BY THE MAYOR AND DISTRICT COUNCIL

Martin Sawyers, Mayor

Gary Murphy, Buller District Council, Chief Executive Officer

2ND PAPER SESSION:**CHAIR: Steve Bourne**, Australian Vice President, ACKMA Inc.

9.30am – 10.00am

Paper 2: Mary Trayes*Regional Overview – West Coast Karst*

10.00am – 10.30am

Paper 3: Deborah Carden*Where to now for the Department of Conservation, West Coast?*

10.30am – 11.00am

MORNING TEA

11.00am – 11.30am

Paper 4: Trevor Worthy*Late Pleistocene diet of raptors at Kids Cave (and outline of HHC for next day trip)*

11.30am – 12 Noon

Paper 5: Geoff Shurr*Development of Cave Adventure Tourism in Ananui/Metro cave, West Coast, NZ*

12 Noon:

LUNCH

Includes Health & Safety briefing by Geoff Schurr, for afternoon field trip

Afternoon:

1.00pm

FIELD EXCURSION to Nile Valley. Depart 1.00pm by train.
2.30pm into cave. Two hours in the cave.

4.30pm

Depart for Charleston, arrive Westport at 6.00pm.

7.00pm

DINNER – Buller Working Men's Club, Westport

8.00pm

ACKMA Committee meets. Evening free for Delegates.**Optional evening activity: Adventure caving at Te Tahi.****LIMITED NUMBERS.** Enrol with Geoff Schurr

DAY 3 – TUESDAY 12 APRIL (overnight Westport)

Morning:

8.00am

Health and Safety briefing by Deborah Carden

9.00am

FIELD EXCURSION. Depart for Karamea – Oparara Arch, Honeycomb Cave.
Hosted by local DOC staff – Mal Hansen, Graeme Quinn, Barry Chalmers, Justin Beverage, Martin Abel, and Deborah Carden.**Afternoon:**

1.15pm

Lunch. On-site discussion during lunch Fossils of HHC;
and *Spelungula cavernicola* spiders.
Discussion Leaders: Trevor Worthy and Ian Millar.**3RD PAPER SESSION:****CHAIR: Dave Smith**, Information Officer (and Fellow), ACKMA Inc.

6.00pm – 6.30pm

Paper 6: Steve Bourne*Palaeontological Surveys – more than just numbers*

6.30pm – 7.00pm

Paper 7: Rauleigh Webb*Cave Permit Software – Design and Development*

7.15pm

DINNER – 'Last Resort', Karamea.

9.45pm

Depart for Westport.

DAY 4 – WEDNESDAY 13 APRIL (overnight Westport)

Morning:**4TH PAPER SESSION:****CHAIR: Andy Spate, Life Member, ACKMA Inc.**

8.30am – 9.00am

**Paper 8: Stephen Reilly
*Planning and Implementation of Cave Infrastructure for visitation***

9.00am – 9.30am

**Paper 9: Woo Kyung; Choi Don Won; and Kim Ryeon.
*Geological Investigation of the Speleothems in limestone caves, Korea***

9.30am – 10.15am

**Paper 10: Claire Baker
Fake Caves and Real Glow worms: building an artificial glow worm cave
and David Merritt
*Bioluminescence and Behaviour of Glow worms***

10.15am – 10.45am

MORNING TEA**5TH PAPER SESSION:****CHAIR: Professor Julia James**

10.45am – 11.15am

**Paper 11: Tim Moulds
*Guanophilic Arthropod Ecology and Conservation in Caves***

11.15am – 11.45am

**Paper 12: Professor Elery Hamilton-Smith
*Reviewing Changes in Nature Conservation***

11.45 – 12.15pm

**Paper 13: Kim Thomas
*Holcim Cement – Background to the Company*****Afternoon:**

12.15pm

LUNCH

1.00pm

Field Excursion (following safety briefing) to Holcim Cement site (Holcim staff), and Department of Conservation Showcase site (DOC staff).

6.00pm

Return to Westport

7.00pm

Dinner at Buller Working Men's Club
Optional Evening Activity. Viewing of DVD – “*Voyage to the Centre of Stone*” – Documentary on the Tsingy Karst in Madagascar (starring ACKMA Fellow Arthur Clarke)

DAY 5 – THURSDAY 14 APRIL (overnight Westport)

Morning:**6TH PAPER SESSION.****CHAIR: Neil Collinson, Manager, Te Anau Caves, New Zealand.**

8.30am – 9.00am

**Paper 14: Daniel Cove
*Relighting of the Lucas Cave: a new approach to creating ‘cave experience’***

9.00am – 9.30am

**Paper 15: Jonathon Woods and Michael Kidd
*Fibre Optics – a Different Approach to Cave Lighting***

9.30am – 10.am

**Paper 16: Kyung Sik Woo
*Volcanic and Psuedo Karstic Sites of Jejin Island, Korea***

10.00am – 10.30am

MORNING TEA**7TH PAPER SESSION.****CHAIR: Ian Houshold, ACKMA Karst Science Officer.**

10.30am – 11.00am

**Paper 17: Serena Benjamin
*Management of Agricultural Activities in Karst Environments:
A case study of Gunns Plains Karst***

- 11.00am – 11.30am **Paper 18:** Peter Chandler
Recent Experience in Cave Development at Waitomo.
- 11.30am – 12 noon **Paper 19:** John Ash and Greg Martin
Ruakuri Cave Development, Waitomo

Afternoon:

12 Noon – 1.00pm

LUNCH**8TH PAPER SESSION.****CHAIR: Serena Benjamin**, University of Tasmania

1.00pm – 1.30pm

Paper 20: Tony Amar.
Anthropogenic Effects in Single Entrance caves (Aranui Cave, Waitomo)

1.30pm – 2.00pm

Paper 21: Julia James and Stephen Meehan
Keeping the Jenolan Caves Blue Lake blue

2.00pm -2.30pm

Paper 22: Steve Bourne and Liz Reed
Palaeontological Surveys - – more than just numbers

2.30pm – 3.00pm

Paper 23: Stephen Swabey
Managing Debris Collapses into Streams

3.00pm – 3.30pm

AFTERNOON TEA**9TH PAPER SESSION.****CHAIR: Tim Moulds**, University of Adelaide.

3.00pm – 4.00pm

Paper 24: Neil Collinson
Redevelopment of Te Anau Glow worm Cave

4.00pm – 4.30pm

Paper 25: Professor Paul Williams
Karst Evaluation of the West Coast of the South Island of New Zealand

4.30pm – 5.00pm

Paper 26: Mary Trayes
Karst Management in the Grey District

5.15pm

ACKMA ANNUAL GENERAL MEETING 2005

6.45pm

Protocol briefing for Hangi dinner.

7.00pm

HANGI DINNER – Westport Football Ground.**DAY 6 – FRIDAY 15 APRIL** (overnight Punakaiki)**Morning:****10TH PAPER SESSION.****CHAIR: Geoff Schurr**, Norwest Adventures, Westport

8.15am – 8.45am

Paper 27: Tim Stokes
The next step in karst management in British Columbia – transition to a results based forest practices framework

8.45am – 9.15am

Paper 28: Ian Houshold
Cross tenure Management of karst

9.15am – 10am

MORNING TEA. Safety briefing for Field Excursion

10.00am

Depart for Punakaiki. Visit **Truman track** and beach and **Pancake Rocks**, en route. Hosted by local DOC staff: Deborah Carden, VC staff, Tim Mitchell and Chippy Wood**Afternoon:**

1.00pm

LUNCH

2.00pm

FIELD EXCURSION. Visit Bullock Creek polje, Cave Creek resurgence – on site discussion.
Leaders: Paul Williams, Martin Abel, Chippy Wood and Deborah Carden

7.00pm **DINNER** – Punakaiki Rocks Hotel.

8.00pm **POSTER PRESENTATIONS** (six).

DAY 7 – SATURDAY 16 APRIL (overnight Punakaiki)

Morning:

7am – 8am: Breakfast – Punakaiki Tavern

9am Depart for Greymouth

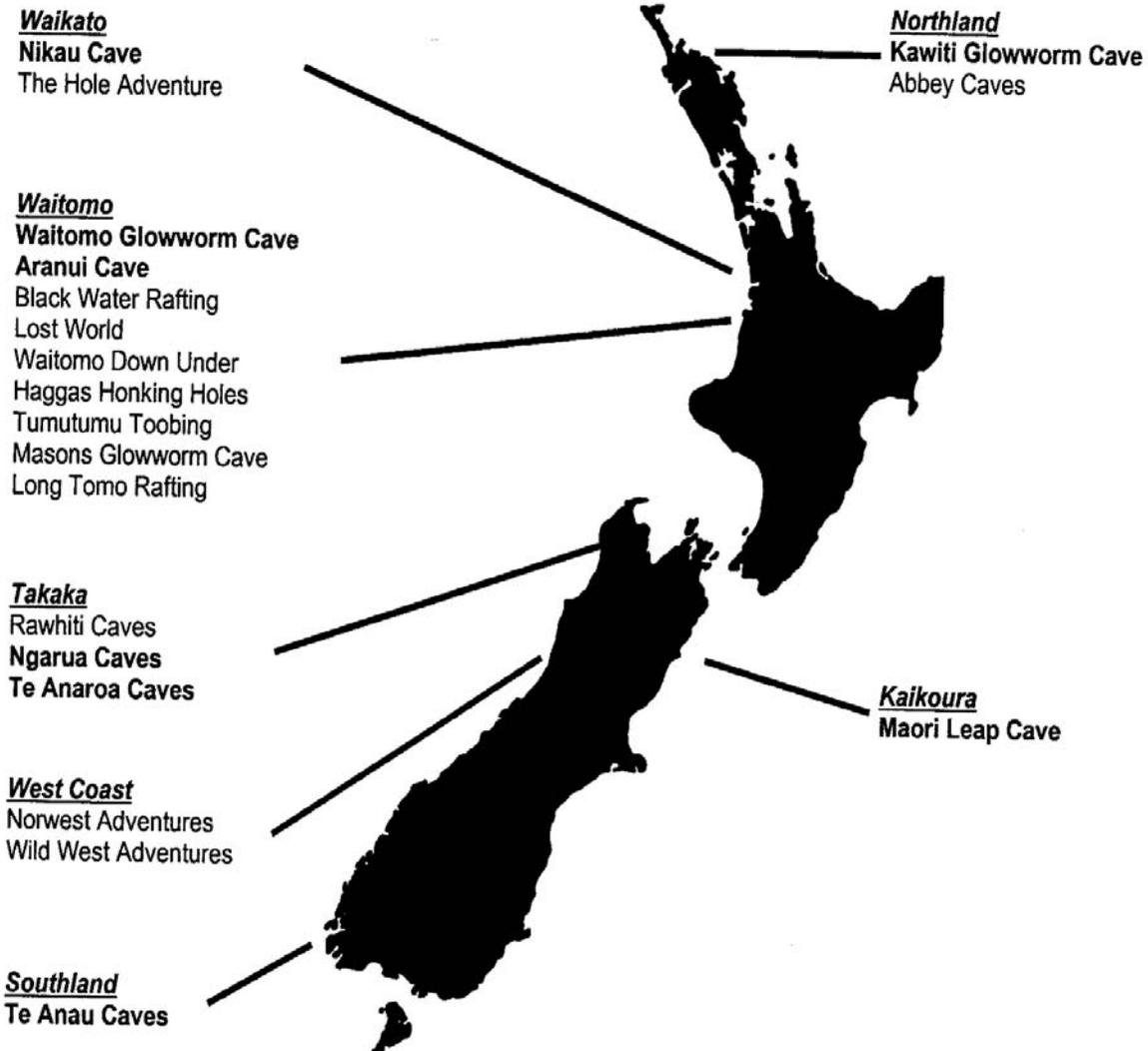
10am – 5.00pm **FIELD EXCURSION** – site visits to a variety of karst locations. Cut lunch.

6.30pm for 7.00pm **CONFERENCE DINNER**
Master of Ceremonies: Kent Henderson
Note: This is traditionally a ‘dress up’ affair!

DAY 7 – SATURDAY 16 APRIL (overnight Punakaiki)

DEPARTURE DAY – haere ra / farewell!

Depart by bus to Christchurch, or on Post Conference Study Tour.



Location of New Zealand Show Caves and Adventure Tour Operations

PRE CONFERENCE STUDY TOUR

6 – 10 April 2005

ATTENDEES: Kent Henderson, Dianne Vavryn, Serena Benjamin, Tony Culberg, Pat Culberg, Chester Shaw, Cathie Plowman, David Butler, Barry Richard, Peter Chandler, Libby Chandler, Derek Mason, Jill Mason, Mel Hansen, Russell Bromley, and Geoff Schurr. **Total: 16**

WEDNESDAY, 6 APRIL

9am pick-up from accommodation in Christchurch. Visit Canterbury Museum, hosted by Paul Scofield, Curator. Visit Redcliffs cave with archaeologist Chris Jacomb, then depart to Motunau to catch Associate Professor Ewan Fordyce, palaeontologist. Twin share overnight and dine-out own cost, at Kaikoura.

THURSDAY, 7 APRIL

Whale watch/swim with dolphins or morning walk to seal colony. Afternoon visit to Maori Leap Cave; a visit to a limestone wine cellar and the Livingstone Carving Gallery. Overnight again at Kaikoura.

FRIDAY, 8 APRIL

9am departure for Pyramid Valley to meet with palaeontologist Richard Holdaway. After lunch drive to Hanmer for a hot pool swim/laze. Twin share overnight at Hanmer Springs.

SATURDAY, 9 APRIL

9am depart for Springs Junction via Lewis Pass and a short walk to the marble 'Sluice Box' feature. Visit Gibson's Cave (own boots and helmet) then twin share at historic Hampden Hotel at Murchison.

SUNDAY, 10 APRIL

9am depart for Westport with a swing bridge experience to old gold workings and a visit to Profanity Cave en route. Optional rafting or jet boating on Buller River. Register for the Conference from 4pm onwards. Overnight: Westport.

POST CONFERENCE TOUR

17 – 22 April, 2005

ATTENDEES: Dianne Vavryn, Grant Gartrell, Brett Farquharson, Lesley Farquharson, Julia James, Mary Traves, Geoff Deer, Miles Pierce, Rhonwen Pierce, Phil Wood, Serena Benjamin, Tim Stokes, and Ian Houshold. **Total: 13.**

SUNDAY, 17 APRIL

12 noon departure. Lunch at Hokitika. Sightseeing until 2.00, then drive to Franz Josef, and Fox Glaciers. Evening: Glowworm walk. Overnight: Fox Glacier .

MONDAY, 18 APRIL

Morning: guided trip on Glacier with ice caving if possible. Afternoon: Depart for Wanaka, via Ships Creek, Haast visitor Centre, Haast Pass and Makarora. Overnight: Lake Hawea

TUESDAY, 19 APRIL

Early departure for Te Anau. Arrive midday for lunch and bus tour into Milford Sound for scenic cruise. Back for BBQ at Te Anau. Overnight: Te Anau.

WEDNESDAY, 20 APRIL

8.30am. Lake cruise to Te Anau Glow-worm Caves and Aurora Cave; splitting into two groups and alternating tours. Own dinner arrangements and overnight in Te Anau.

THURSDAY, 21 APRIL

Depart Te Anau for Central Otago schist experience. Overnight: Cromwell.

FRIDAY, 22 APRIL

Depart for Oamaru, *via* Clutha Valley, Dunedin and Palmerston (coast road). Lunch at Trotters Gorge, then to Moeraki Boulders, and visit limestone quarry, and other local karst features. Overnight: Oamaru.

SATURDAY 23 APRIL

Depart north *via* Parcora and cave to view Maori Rock drawings nearby. Travel to Christchurch *via* Kakahu Gorge, Geraldine, and Mt Somers with a stop at the historic limestone quarry (Burnett Reserve), and Rakaia. Arrive Christchurch 6pm, own accommodation arrangements.

ALTERNATIVE PROGRAM

(running concurrently with 16th ACKMA Conference)

SUNDAY:

(PM) Registration and Opening (as for Main Program)

MONDAY:

(AM) Westport Orientation Day by bus stopping at Utopia Pottery, Coal Town Museum and Westport Town for shopping.

(PM) Charleston Rain Forest Train & Nile River Cave (as for Main Programme)

TUESDAY:

(AM) to Karamea (as for Main Program)

(PM) Visit Info Centre (art), Tea Tree Oil Growing & Extraction and Saracens Café (wood Craft)

(EVE) Jesters Nest (puppets & figurines) & Museum

WEDNESDAY:

(AM) Cape Foulwind Walkway, Seal Colony & Bay House Restaurant.

(PM) Plant Nursery, Palmers Gardens and the Cape Pub.

(EVE) Beach Walk

THURSDAY:

(Day) Unimog Travel off road via Okari & Nine Mile Beach to Charleston returning via Jacks and Mountain Creek Gallery.

(EVE) Free evening

FRIDAY:

(AM) Pancake rocks & Blowhole, Paparoa National Park Visitors Centre, Cafe & Craft Shop.

(PM) Te Miko Glass, Truman Track & Pororari Art & Kayaking

(EVE) With main Group, Hangi & Kapa Haka

SATURDAY:

(AM) Point Elizabeth Walkway

(PM) Jade Boulder Gallery & Greymouth Shopping

(EVE) Join Main Group at Evening Formal in Shantytown with "Coast Entertainment"

SUNDAY:

(AM) Farewell Brunch with Main Group, Greymouth.



Protected Area sign, Honeycomb Hill Cave, South Island, New Zealand

ABSTRACTS OF PAPERS

in order of Scheduled Presentation

Paper Presenters are reminded that the final version of each paper is required **NO LATER THAN 31st AUGUST 2005**, please, to enable publication of the Conference Proceedings. Please email the same, with attachment, to Kent Henderson: <kenthen@optusnet.com.au>

DAY 1 – SUNDAY 10 APRIL

Paper 1: **KEYNOTE ADDRESS – PROFESSOR PAUL WILLIAMS**
8.30pm ***Searching for principles to guide sustainable management of karst: lessons from science***

Sustainable management implies the use of resources for the benefit of the present generation without limiting the potential use of the same resources by future generations.

Effective sustainable management will leave the environment in at least as good a condition as when its use first started. *The challenge* for managers of karst is to show how this can be achieved and to prove that it is being achieved.

Lessons from science:

1. “Nature to be commanded must be obeyed”, Francis Bacon, Lord Chancellor of England, (*‘Essays’* 1620). This idea was re-expressed in the 20th century as ‘Design with Nature’. The message is that if we are to work with Nature and use it to our advantage, then we must first learn to understand natural processes.
2. The epikarst (or subcutaneous zone) is of fundamental importance in the control of autogenic recharge. The epikarst is the uppermost weathered zone of karst beneath the soil. It stores and mixes water and redistributes recharge – and any pollution.
3. Conventional groundwater models should not be applied to karst for management purposes, because karst aquifers have triple porosity characteristics and have laminar and turbulent mixed flow regimes that conventional models cannot handle.
4. The best place to monitor the condition of karst is at the outflow spring, because water flow at springs integrates the effects of all upstream activities, terrestrial and aquatic, autogenic and allogenic.
5. Rocky desertification is the most widespread terrestrial problem affecting karst. Rocky desertification is a process that produces stony ecological deserts. It is a direct consequence of over-population and selfish or thoughtless over-exploitation of timber resources.

Principle of sustainable management

1. Harness the cooperation of society.
Science is impotent without the understanding and support of society. This implies that sustainable management should proceed by example.
2. Work with Nature.
In order to conserve resources for future generations, so far as possible, development and conservation should be compatible. Destructive activities such as quarrying should be located on the outflow side of karst groundwater systems.

Attributes of karst that require special consideration during management

- Karst surface and subsurface systems are integrated and so this renders karst especially susceptible to human impacts.
- Erosion of soil on karst is essentially irreversible at human time scales.
- Karst is a repository of natural and cultural history and has unique subterranean ecosystems. These are part of our heritage.

DAY 2 – MONDAY 11 APRIL

Paper 2:

9.30am

MARY TRAYES***Regional Overview – West Coast Karst***

On the West Coast of the South Island all karst areas lie west of the Alpine Fault and apart from one small area of Paleozoic limestone (late Cambrian – Ordovician Mt Arthur Group), which has been metamorphosed to marble, this karst is formed from mid Tertiary aged limestones. A small area of fossiliferous Paleozoic Limestone near Reefton (Devonian Reefton Group) is significant to New Zealand's geological history, but not karst forming.

The Alpine Fault is a major New Zealand geological feature which marks the convergence of two active continental plates, the Australasian Plate and the Pacific Plate. Convergence at the boundary between these two plates began around 50 million years ago and continues to this day, with movement on the fault being strike-slip, i.e. there is both vertical uplift (forming today's Southern Alps) and horizontal slip (northward). Scientists estimate that the next Alpine Fault earthquake (probability high in our lifetime) will generate sufficient energy (Force 8+ on the Richter Scale) to cause 1 - 3m of uplift and 7 - 8m of horizontal movement.

Over the Tertiary period this strike-slip movement has separated large blocks of rock which used to be continuous across the fault. The Red Hills ultramafic area in South Westland and the allied Dun Mountain ultramafic area near Nelson are now 480 kilometres apart while the marbles of Mt Arthur are linked to the many marble remnants found throughout Fiordland.

During the Oligocene - Miocene period most of New Zealand was under the sea and large beds of carbonate sediments were laid down, blanketing older sediments and Paleozoic basement rocks. The carbonate sediments eventually became limestones and mudstones which have been since exposed due to upthrust along the Alpine Fault. This mountain building phase, the "Kaikoura Orogeny" began some 20 million years ago and continues down to the present day.

Currently the mountains in and around Mt Cook are "growing" at 10mm per year. But they also eroding at much the same rate so that on the coastal shelf there are large depths of recently eroded sediments plus earlier glacial gravels overlying large areas of carbonate rocks. As the non-marine coal-bearing sediments under the carbonate rocks have the potential to contain gas and oil, much of the coastal shelf off the West Coast was explored by petroleum companies in the 1960-70's using seismic reflecting methods. The limestones in particular are good seismic reflectors and have contributed greatly to our current understanding of West Coast bathymetry.

The 600 kilometre coastal strip from Kahurangi Point in the north to Big Bay in the south, otherwise known as the "West Coast," is underpinned by some of New Zealand's oldest rocks. These basement rocks are Paleozoic remnants from proto-New Zealand, when this country, along with eastern Australia and Antarctica, formed the southwest segment of Gondwanaland. They are formed from either late Cambrian – Ordovician gneiss (Victoria Paragneiss, Pecksniff Sedimentary Gneiss, Charleston Gneiss) or from a sandstone – shale formation of the same period, commonly known as greywacke (Greenland Group Rocks) or from a late Devonian - early Carboniferous biotite granitoid rock (the Karamea Granites) which was intruded over a wide area. Extensive outcrops of basement rock, from which overlying sediments, including limestones, have been eroded, still exist as the granite - gneiss Paparoa and Victoria Ranges) whilst small exposures of all three types can be found along the coast.

The only karst found on the West Coast of the same period are some small outcrops at Springs Junction. Here the Sluice Box Limestone formation forms the southern most known outlier of the Mt Arthur Group (including marble). The "Sluicebox," is a short gorge lying immediately west of the Alpine Fault which has been carved through the marble by the Maruia River. There are also caves in this area.

In some places mid-Tertiary limestones lie unconformably over such basement rocks – for instance pockets of Oligocene age Takaka Limestone in Kahurangi National Park rest on an ancient peneplain formed of Karamea Granites – but in most places there other Mesozoic – early Tertiary sediments in between. These include breccias (mid Cretaceous Hawkes Crag Breccia), coal measures (late Cretaceous Paparoa Coal Measures and Eocene Brunner Coal Measures), sandstones (Eocene Island Sandstone:) and mudstones (early Oligocene Kaiata Mudstone). The Oligocene Limestones are in turn topped in many places by various Miocene formations such as the Welsh Formation (calcareous mudstones and limestones) and Stillwater Mudstone (often known as Blue Bottom or simply "papa").

The final cap which lies over much of the lowland West Coast landscape, is a layer of Pliocene non-marine gravels (Old Man Formation) and Quaternary glacial gravels. In many places relatively recent Tectonic activity has uplifted the beaches to form raised beaches or terraces behind the present coastline. In some places gravels on these terraces lies directly over limestone, e.g. at Darkies Terrace, Point Elizabeth. Sluicing these gravels for gold was difficult due to the propensity for water to drain away underground from dams and water-races.

With the exception of a very small area of strongly foraminiferal late Paleocene limestone in South Westland (the Abbey Limestone Formation at Abbey Rocks, south of the Paringa River), the remaining limestones of the West Coast region have been formed during the Oligocene period between 37 and 25 million years ago. They are all considered to be sufficiently similar in age and structure to be placed in the one group, the Nile Group. Outcrops of Nile Group limestones increase from south to north as the gap between the coast and the Alpine Fault widens, i.e. there is far more limestone and consequently more karst and caves north of the Taramakau River than south. In fact there is a large gap to the south synonymous with the "Beech Gap" (Taramakau River to Paringa River) where there are only two minor outcrops. Further south limestone is only found at the coast and on offshore islands.

North of the Taramakau the best karst and caves are formed in Potikohua Limestone which is found, in varying thicknesses, from Fox River to the Punakaiki River. It overlies a less calcareous, more sandy formation, the Tiropahi Limestone. Potikohua Limestone is formed from a hard white flaggy polyzoan biosparite which averages 90% CaCO₃. Most of the karst and caves of the Potikohua Limestone are protected within Paparoa National Park .

All the other formations are more variable, often with muddier bands grading down to actual mudstone, and of variable thickness. The Tarapuhi Limestone Member, which forms the Point Elizabeth area, is the best ranked (highest CaCO₃) of the Cobden Limestone Formation while well decorated caves can be found in Takaka Limestone (Megamania), Stony Creek Limestone (Honeycomb), and in the unnamed formation at Jackson's Bay (Serendipity).

On the West Coast karst development is best amongst higher ranked limestones where there has been sufficient water flow. For instance in the capture of Bullock Creek waters to Cave Creek South through the Potikohua Limestone Xanadu Cave system. By contrast karst formation in the muddier, lower ranked formations is often hindered by poor drainage resulting in small, muddy caves, sumped passages and tombs without ongoing leads, all typical features of the Cobden Limestone, Tiropahi Limestone, Matiri and Welsh Formations. The development of the large Honeycomb Cave in the moderately ranked Stony Creek Limestone has been much facilitated by the high rainfall and strong drainage patterns of the area (Oparara River and in-cave streams).

NOTES:

1. For a short list of West Coast karst and cave areas of the West Coast see the Field Guide.
2. For a more a comprehensive list see the separate spreadsheet, "Calcareous Rocks West of the Alpine Fault, NZ"
3. For information about geological maps of the West Coast see the Field Guide.

Paper 3:

10.00am

DEBORAH CARDEN

Where to now for the Department of Conservation, West Coast?

This is a question to which the Department of Conservation (DOC), West Coast/Tai Poutini has been seeking answers with regard its cave and karst management programme.

The Department is required to operate under various Acts of Parliament to achieve its mandate of protection of natural, historic and cultural values on one hand and to foster recreation and permit appropriate use on the other.

To facilitate its mandate with regard caves and karst management the Department on the West Coast adopted an inventory system developed by conservation staff in Waitomo. This system was used to inventory caves and karst sites managed by DOC on the Coast, contracting palaeontological advice and listening to the opinions of associate groups and interested individuals. This was followed by an assignment of geopreservation rankings to help determine the sites to which effort should be directed. Ranking is treated as an open process as rankings may change as more work is done and more detail about a site becomes available i.e., we have not assessed sites with regard cave flora or fauna to any degree.

In 2000 the NZ Government determined to stop large scale logging of indigenous forests and transferred 7874 hectares forest blocks adjacent the Nile Valley from Timberlands NZ to the Department of Conservation to be managed initially as stewardship land. With this transfer the Department inherited over 90 recorded caves to manage in addition to those

in Kahurangi and Paparoa National Parks. The ranking helps prioritise work, essential to ensuring effort and resources are used to the best advantage.

Current work involves contracting a student to develop a 'Best Practice' guideline with a focus on cave monitoring guidelines firstly and then on impact control methods. Working with licensed operators is an important task – there being two major concessionaires on the West Coast, one in the Honeycomb Hill Caves at Karamea and one in the Metro/Ananui cave near Charleston. As well, contact with caving groups is important liaison role.

The Department recognises it cannot do all its protection and use work itself and appreciates having good relationships with key cave and karst users.

Paper 4:

TREVOR WORTHY

11.00am

Late Pleistocene diet of raptors at Kids Cave

A vertebrate fauna from stratified deposits in Kids Cave, West Coast, South Island, New Zealand is described. Excavation of 2 m² of deposit revealed 3699 identified bones from one species of bat, 41 species of birds, 2 species of frogs, unspecified geckoes and skinks, a rat and a fish. This fauna derives from sediment with a shallow stratigraphy (<50 cm) deposited almost entirely within the Late Glacial Maximum from about 17000 to 13800 ¹⁴C years BP, dates based on moa eggshell.

The deposit is near an open cave entrance and on the basis of faunal composition and taphonomic features, is attributed to multiple depositional origins. The majority of bones are attributed to prey remains of birds, primarily New Zealand falcon *Falco novaeseelandiae* but also to Haast's eagle *Harpagornis moorei*.

Eggshell attributed to *Falco* is abundant, but that of possibly the eagle and of 2 moa species is present. Stratigraphic features of the deposit will be discussed that indicate marked climatic variability in the LGM with the earliest period 16859±118 to 14584±98 ¹⁴C yrs BP (20400-19700 to 17750-17150 cal yrs bp) an interstadial of relatively warm climate, which gave way to a markedly colder period between 14584±98 and 13852±122 ¹⁴C yrs BP (17750-17150 and 16900-16300 cal yrs bp).

Paper 5:

GEOFF SHURR

11.30am

Development of Cave Adventure Tourism in Ananui/Metro cave, West Coast, New Zealand

Norwest Adventures Ltd was formally established as an Adventure Tourism Company beginning trading over the 1986 Christmas period. A wide base of activities including wild caving, tramping, climbing & abseiling along with fishing & hunting were offered.

In 1998 NWA Ltd obtained a one year permit from the Department of Lands & Survey for adventure caving in the formerly off limits "Metro Cave". The permit included "Underworld Rafting"

In 1990-91 it became evident that the company could become a viable entity and construction commenced of a Gear Shed / Garage and the "Charleston Cavern".

Over the Summer of '91, NWA Ltd initiated an extensive track upgrade to the upper river crossing.

In Sept 1993 NWA Ltd finalised a 10 year fixed term Guiding Concession with The Department of Conservation.

During 1996 a suspension bridge was constructed across the Nile River at the upper level crossing.

In December 1996, following the "Cave Creek" tragedy, the existing elevated walkway and steps up to the cave entrance was removed and reconstructed by NWA Ltd.

In 1997 planning commenced for Nile River Bush Tram and Bollards and ropes were made and installed along the Tourist Route in The Metro Cave in order to control the pathway and spread.

Late in 2000 and early 2001, a set was built and the BBC production "The Lost World filmed.

In December 2001 NWA Ltd released evening "Charleston GlowWorm Cave Tours".

In December 2002, the Charleston Nile River Rainforest Train was commissioned.

In February 2003 an application was lodged with the Department of Conservation for the renewal of the NWA Ltd Caving Concessions.

This paper will expand on the decision making, difficulties and successes in developing an Adventure Tourism Business on Conservation Estate.

DAY 3 – TUESDAY 12 APRIL

Paper 6:

6.00pm

STEVE BOURNE***Palaeontological Surveys – more than just numbers***

Heritage assessments of palaeontological resources have traditionally centred on constructing faunal inventories and using criteria such as taxonomic diversity, time span of representation, excellence of preservation and potential for scientific research to determine significance. Other qualities such as historical, social and intrinsic values are usually given very limited consideration. In most cases they provide little useful information that assists managers and planners with site management. They may also be of limited value to researchers unless the list is accompanied by an accurate site map, data from previous excavations and information as to where previously excavated material is housed.

Naracoorte Caves World Heritage Fossil Site is best known for the large Victoria Fossil Cave deposits, which have been the focus of palaeontological research since their discovery in 1969. Collections have been made from many other sites within the park, but information relating to these collections is fragmentary and scattered. We had previously identified 20 fossil sites within the park's 26 caves (Reed & Bourne 2000), however, this figure was based on museum and published records, with very little accurate field work.

The objectives of this project were to identify World Heritage values to meet State Party obligations under the World Heritage Convention to protect and manage properties on the World Heritage list; and to increase knowledge of the World Heritage values of the Naracoorte Caves National Park to provide an important tool for the protection and management of the site.

The methodology involved conducting thorough field and literature surveys to identify all palaeontological resources within the park. During the field surveys, assessments were made on the condition of sites, threats, impacts and the potential for research and interpretation. The scientific, social, historical and intrinsic value of each site was determined via significance assessment using criteria developed for this project. An extensive computer database was completed and an archive of field survey, bibliographical, research data, maps, photographs and other relevant information was compiled for each site. The results from the project form the basis for a detailed report on the World Heritage values of the Naracoorte Caves. This report will establish parameters to assist with monitoring and completion of periodic reports to UNESCO. It will also provide critical information for developing future management plans and research strategies.

Paper 7:

6.30pm

Rauleigh Webb***Cave Permit Software – Design and Development***

The design for an on-line Cave Permit booking system is examined. The overall design of the system is outlined and the options available are considered. An integrated system to manage the on-line bookings is also detailed.

Some of the options that may be required by some cave managers are outlined and the ease of configuration of the system is displayed.

A demonstration of some of the features of Version 1 of the software will be provided.

DAY 4 – WEDNESDAY 13 APRIL

Paper 8:

8.30am

STEPHEN REILLY***Planning and Implementation of Cave Infrastructure for visitation***

At Jenolan Caves in Australia five kilometres of cave passage has been developed for cave tours, providing for a range of guided cave tour routes which today cater for over 230,000 cave visits a year.

Major redevelopment of the infrastructure within the caves has been undertaken over the last 10 years with a further two kilometres of cave passage to be redeveloped in the next three years.

Cave infrastructure planning issues include clarifying cave development and cave protection goals, materials to be used, design, impact assessment, works management, future capability of infrastructure, cave security, visitor safety and construction methods and techniques. How these issues are being addressed at Jenolan is discussed.

The redevelopment of the caves at Jenolan using of a wide range of lamp types and programmable lighting systems allows flexibility in illumination that can be matched to changing interpretation themes while minimizing negative impacts on the cave and providing energy efficiencies.

Cave managers are encouraged to share cave development information and experiences to assist in preserving cave values and to provide developed caves that will meet management and visitor needs for many years ahead.

Paper 9:

9.00am

WOO KYUNG SIK; CHOI DON WON; AND KIM RYEON.***Geological Investigation of the Speleothems in limestone caves, Korea***

There are more than 1,000 limestone caves in South Korea. The caves are mostly distributed in the lower Paleozoic carbonate rocks (Joseon Supergroup) of the central part of the peninsula. Textural and geochemical investigation of the speleothems has been carried out to understand the original mineralogy, formation processes and carbonate diagenesis, using coordinated textural, isotopic and elemental data. Among the speleothems studied, curtain (also bacon sheet), fried-egg stalagmite, cave shield, and rimstone are solely composed of calcite, and anthodite is composed of aragonite. However, cave coral, stalactite, stalagmite, flowstone are composed of aragonite and/or calcite. Based on the textural observations of more than 500 speleothem samples, five types of aragonitic and ten types of calcitic texture could be categorized.

The aragonitic speleothems show higher Sr and lower Mg contents than calcitic ones. All the speleothems from different caves show their distinctive Sr and Mg compositions, indicating that the fluids responsible for the formation of the speleothems had the different Sr and Mg contents according to locality. The $\delta^{18}\text{O}$ values range from -9.4 to -4.0 ‰ (PDB) and those of cave water and adjacent stream water range from -10.7 to 9.3 ‰ (SMOW), suggesting that most of the speleothems formed in oxygen isotopic equilibrium, except for some enriched aragonitic speleothems. These enriched aragonitic speleothems may indicate that they were formed by evaporation rather than degassing of carbon dioxide. The $\delta^{13}\text{C}$ values are quite variable from -10.0 to -5.0 ‰ (PDB). These values are between the carbon isotopic compositions of the measured organic carbon in overlying soils and those of the carbonate rocks surrounding the limestone caves. Based on the mass balance calculation about 10 to 25% of the carbon in speleothems studies were from the organic carbon in overlying soils.

Some of the originally aragonitic speleothems such as cave coral, stalactite, and flowstone in a few caves have been calcitized. The neomorphic calcite crystals contain relics of the original aragonite crystals and growth laminae. The presence of these relics in neomorphic calcite as well as the similar elemental contents to the original aragonite suggests that the calcitization processes took place in a semi-closed system via thin-film alternation front.

Paper 10:

9.30am

CLAIRE BAKER***Fake caves and real glow worms: building an artificial glowworm cave***

Glow-worm viewing by tourists in southeast Queensland is restricted entirely to after dark trips to rainforests and overhangs. The initial concept for our artificial glow-worm cave arose from concern over increased visitor numbers to particular sections of Tamborine National Park at night. As an alternative to these nightly activities, Tamborine Mountain National Parks personnel, keen to alleviate some of this high tourism pressure, suggested the creation of an artificial cave environment, perfectly suited for glow-worms, where viewing could occur during the day.

Construction of the concrete cave took over fourteen months with many months of follow-up fine tunings. Introduction of the local species of glow-worm, *Arachnocampa flava*, to the cave began in late 2004, with a small colony established in the cave before the annual glow-worm breeding season.

Glow-worms require very specific environmental conditions and the cave has been fitted with equipment to maintain these conditions throughout the year, thereby providing the perfect environment for a healthy glow-worm colony year round. It is envisaged that the cave population will become self-sufficient.

The prey items (small fly species) needed to sustain the glow-worms are currently breeding and developing in a mulch and pond system within the cave. This paper outlines the process of construction, the factors needed for a healthy glow-worm colony living in an artificial habitat, and gives a basic layout of our glow-worm tours.

Paper 10A:**DAVID MERRITT**

Add on to Paper 10

Bioluminescence and behaviour of glow-worms

In 1967 Ian Stringer published an article describing the behaviour of New Zealand glow-worms in their snares based on painstaking observations taken through the night. Using *Arachnocampa flava*, the glow-worm from south-east Queensland, Australia, I confirm and extend these observations using time-lapse video. Glow-worms were taken from rainforest sites and maintained in the laboratory on an artificial substrate that allows larvae to withdraw into a crevice during the day. Their nocturnal behaviour was recorded using time-lapse digital photography under near infra-red (nIR) illumination, invisible to glow-worms and humans, but detectable by a nIR-sensitive camera. Larvae are generally very active in their snares, interspersing bouts of snare maintenance activity with periods when they are stationary and glowing. To produce new fishing lines the larva hangs from the tubular gallery and lowers a silk line, periodically adding droplets to the line. There is a high turnover of fishing lines, the glow-worms removing and replacing many lines each night. Artificial removal of all fishing lines leads to substantial replacement within one night. Contrary to the observations of others, fishing lines are not re-attended and lengthened once they have been produced, and they are not moved to different positions. Production of fishing lines and the placement of sticky droplets is a very stereotyped behaviour that may reveal species-specific or habitat-specific characters.

Paper 11:**TIM MOULDS**

10.45am

Guanophilic Arthropod Ecology and Conservation in Caves

Guano in caves is deposited by bats, birds, orthopterans (crickets and grasshoppers), and small mammals, with each type of guano sustaining a unique ecosystem. The most widespread and common guano is that produced by bats and these deposits are generally the largest in volume. Guano deposits are extremely variable, unlike other cave habitats, and consist of numerous micro-habitats differentiated by fluctuating temperature, moisture, and pH. Fresh guano is basic, commonly with a pH of 8.5-9.0 that rapidly becomes acidic (5.0-5.5) with age and depth. Varying water content of guano due to desiccation with increasing age also results in noticeable mosaic of micro-habitats. Both pH and water content control the diversity and density of fungi and bacteria, the trophic basis for many guano ecosystems and essential in breaking down many of the otherwise indigestible faecal products. Arthropod community composition is strongly seasonal, with distinct fresh and old guano assemblages. Guano associated communities commonly consist of insects (beetles, flies, cockroaches, springtails, moths and wasps), arachnids (spiders, mites, pseudoscorpions, whip scorpions and harvestmen), crustaceans (isopods) and nematodes. Species richness is significantly higher at tops of piles than at bases. Increasing species richness positively correlates with increasing pH at bases of guano piles. Substantial removal of guano, either fresh or desiccated, dramatically decreases or potentially destroys guano associated communities primarily by lack of food but also via excessive disturbance. Compaction of guano deposits through human visitation destroys essential micro-habitats in the upper layers of deposits making them unusable to virtually all organisms. Pollution of groundwater that contacts guano deposits can also adversely affect guano communities by reducing, or completely destroying, natural micro-organism populations. Guano associated communities rely on the adequate protection of guano producing animals, the caves they inhabit and the continual, or seasonal, presence of fresh guano. All three of these criteria are essential to the conservation of guano communities.

Paper 12:**ELERY HAMILTON-SMITH**

11.15am

Reviewing Changes in Nature Conservation

For many years, the conservation movement believed that the idea of protected areas, particularly national parks, originated in 1872 at Yellowstone in the USA. Moreover, the pattern of management, which had evolved at Yellowstone, was seen as a model for the world. We now recognise that the protected area concept goes back for probably several thousand years and that the so-called "Yellowstone model" as the dominant paradigm for protected areas was very seriously flawed.

Land resource protection and management has undergone immense change in recent years. A diversity of models have evolved in different cultural settings, many of which are producing much more effective outcomes. Bureaucrats (known as park managers or park rangers) are no longer kings of their own little kingdoms. Parks are now much more democratic and serve a diversity of values and interests.

Interestingly, many other countries have changed much more quickly than Australia, although Australians play a major role in international action for conservation. One of my colleagues says that "...the World Commission on Protected Areas should be renamed the World Commission for the Protection of Australians because so many of the positions in the international conservation movement are now filled by Australian refugees from the Australian park services". There is enough truth in this joking comment that it does pose a challenge to our governments.

Paper 13:

11.45

KIM THOMAS***Holcim Cement – Background to the Company***

Holcim (New Zealand) Ltd has been involved in the New Zealand building industry since 1888. The company is made up of four divisions – Cement, Concrete, Aggregates and Lime. The Holcim (New Zealand) Ltd Cement operation is based in Westport.

The Westport Works at Cape Foulwind employs approximately 120 staff and the plant operates continually – 24 hours a day, 7 days a week, 52 weeks a year – and produces approximately 500,000 tonnes of cement annually.

In over a century of servicing New Zealand's needs we have built long-standing relationships, a host of facilities nationwide and a hard won reputation for consistently delivering quality.

Since the 1980s Holcim has had an ongoing Quarry rehabilitation programme.

DAY 5 – THURSDAY 14 APRIL**Paper 14:**

8.30am

DANIEL COVE***Relighting of the Lucas Cave: a new approach to creating 'cave experience'***

The Lucas Cave is the largest and most popular show cave at Jenolan, and the most visited cave in Australia. Between 2001 and 2004 the cave underwent significant redevelopment including redesign and replacement of the lighting system. This relighting was technically innovative, merging state of the art home automation software, renewable energy technology and careful selection of luminaries and fixtures for both heightened aesthetic appeal and lowered environmental impact. However, the project also represents an equally significant evolution in how to approach the cave experience in order to encompass the diverse range of values encompassed by 'karst', from the geologic to the aesthetic and spiritual. The fusion of this approach and cutting edge technology has led to a profound shift in guiding methods and a re-evaluation of the future of interpretation at Jenolan Caves.

Paper 15:

9.00am

JONATHON WOODS AND MICHAEL KIDD***Fibre Optics – a Different Approach to Cave Lighting***

In 2002 the initial steps were taken towards a new lighting system for the Kelly Hill Caves on Kangaroo Island, South Australia. The project was completed in January 2005, with fibre optic technology being chosen to light the four chambers of the show cave. The upgrade also involved a new pathway lighting system comprising of low voltage fluorescent lights and a backup uninterruptible power supply which now gives 8 hours of full system lighting in the case of power failure.

The presentation will outline the various benefits and limitations of illuminating a show cave using this technology, with particular emphasis on the benefits to the cave environment. Some of those benefits include minimal heat output, a system that requires very little maintenance and which draws significantly less power. There are several limitations, however fibre optic lighting has the potential to deliver significant positive outcomes in displaying cave environments. The presentation will also discuss the project management process as undertaken by the Department for Environment and Heritage, and its ability to deliver a staged project on budget within tight timeframes.

Paper 16:

9.30am

KYUNG SIK WOO***Volcanic and pseudokarstic sites of Jedu island (Korea): Potential features for inclusion in a nomination for the World Heritage List***

Scientific research has been conducted on various features of Jeju Island, looking toward a nomination as a World Heritage Site. The Island contains a variety of volcanic landforms and more than 100 lava tube caves of geological and speleological significance. It essentially consists of one major shield volcano, Hallasan (Mt. Halla), with satellite cones around its flanks. Especially notable features include maar (Sangumbun), parasitic cones (Geomunoreum and Seongsan-Ilchubong), giant lava tubes (Bengdwi Cave, Manjang Cave, Gimnyeonsa Cave, Dangeheomul Cave and Susan Cave), an exposure of columnar jointing at Daepodong, volcanic dome (Mt. Sanbang) and the Suwolbong tuff deposits.

Especially notable are the lava tube caves, which show a complete flow system and display perfectly preserved internal structures despite their old age of 0.2-0.3 Ma BP. Dangcheoinul Cave contains calcareous speleothems of superlative beauty.

Four aspects are identified which demonstrate the congruence of specific features to criteria for World Heritage status. 1) The volcanic exposures of these features provide an accessible sequence of volcanogenic rocks formed in three different eruptive periods between 1 million and a few thousands years BP.

The volcanic processes that made Jeju Island were quite different from those for adjacent volcanic terrain. 2) The listed features include a remarkable range of internationally important volcanic landforms that contain and provide significant information on the history of the Earth.

The environmental conditions of the eruptions have created diverse volcanic landforms. 3) The largest and most spectacular lava tube caves are located in the western and north eastern parts. With a length of 7,416 km, Manjang Cave is one of the longest and most voluminous.

Other, shorter caves (i.e., 4,481 km Bengdwi Cave) are more complex in form. 4) Of great significance are the abundant carbonate speleothems seen in some low elevation lava tube caves. This phenomenon is very uncommon, and the spectacular caves in which it occurs on Jeju Island are generally acknowledged to be world's leading examples. Dangeheomul Cave can be considered to be the world's most beautiful lava tube cave containing calcareous speleothems.

Paper 17:

10.30am

SERENA BENJAMIN

***Management of agricultural activities in Karst environments:
A case study of Gunns Plains Karst***

The Gunns Plains karst, located in northwest Tasmania, is formed in Ordovician limestone and extends over 36 km². It contains significant karst phenomena at system, landform and landform contents levels. These include horizontal and vertical cave systems, streamsinks, sinkholes, springs, cave deposits, clastic sediments, bone deposits and karren.

The karst is largely on privately owned farmland but land tenure also includes areas of State Forest, Crown land, a State Reserve and a Private Forest Reserve.

Given the significance of some of the karst features and their occurrence on private land, agricultural management practices are an important consideration for the karsts' future protection. Though karst is generally perceived to be a fragile environment, some elements of the karst landscape may be more robust than others with sustainable land use practices needing to be prescribed for each particular karst area.

This presentation covers the results of an Honours project conducted over a ten-month period from February 2004 to November 2004. An holistic approach was adopted in order to investigate potential impacts of agriculture on the karst environment.

Thus, historic land use change, sinkhole development and landslide activity were assessed using a series of aerial photographs dating from the late 1940s to the present. Ground surveys looked for further evidence of sinkhole development and landslide activity as well as investigating rates of soil loss by measuring the exposure of solutional microforms that originally formed beneath the ground surface (karren) and have been exposed by subsequent soil erosion.

Investigations of the impact agricultural activities have had on the subterranean environment involved observation of eight karst caves. Because patterns of groundwater flow in karst can be difficult to predict, a groundwater tracing experiment was also undertaken to enable impacts within a defined sub-catchment to be considered in greater detail. Furthermore, findings from the above investigations were supplemented by anecdotal evidence from property owners.

The study found that the Gunns Plains karst has been subjected to significant amounts of change as a result of past agricultural practices. While these impacts may persist, the adoption of more suitable land use practices by property owners has seen these impacts minimised.

Further changes in land management practices could procure improved outcomes for karst management.

Paper 18:

11.00am

PETER CHANDLER***Recent Experience in Cave Development at Waitomo***

Resource ownership. Te Ana O Te Atua, the Cave of the Spirit, or Masons dry cave (near Waitomo Caves, New Zealand), has been developed to a show cave by enthusiastic operators Pete and Libby Chandler, creating a unique relationship between tourism operator, farmers turned resource owner and Limestone Quarry owners. Although still in a settling in phase at present, the current wave of demand for nature tourism means opportunities for all parties, including the resource and the visitors.

Resource Development – recent experience with cave engineering materials. Within budget and time constraints, concrete, recycled plastic and stainless steel were used as much as possible for the recent development of The Cave of the Spirit. Particular attention was paid to creating aesthetics that complimented the cave passages for part of a guided cave tour.

Paper 19:

11.30am

JOHN ASH AND GREG MARTIN***Ruakuri Cave Development, Waitomo***

The Ruakuri Tourist Cave was closed for tourism in 1988 following the placement of a trespass notice in the cave by the adjacent land owner who claimed ownership of the cave under his land. The Tourist Hotel Corporation entered into negotiations which were unsuccessful at the time and hence closed the cave. At about this time, the Government entered into a phase of selling off assets (State Owned Enterprises) and the Waitomo Caves operation including the Hotel, Ruakuri and Aranui Caves was part of this sale.

A land claim was dealt with by the Waitangi tribunal which through a mediated settlement saw the Glowworm caves pass partly to the local Moari People and the Department of Conservation.

The Cave has now been reopened with a new entrance due to the cultural importance of the traditional entrance and this paper highlights the issues and development of the new entrance to Ruruakuri Cave, scheduled for opening mid 2005.

Paper 20:

1.00pm

TONY AMAR***Climatic Studies in Aranui Cave, Waitomo***

Little is known about the microclimate of single entrance caves. They are considered to be ‘static’ systems where little natural change occurs. As a result, the presence of tourists groups can drastically alter their internal climatic conditions. The introduction of high resolution measuring equipment has allowed for a more detailed examination to be made concerning the microclimate of these ‘static’ systems.

This study identifies the microclimatic processes that operate within a mid-latitude, single entrance tourist cave. The processes examined in this study are the thermal, moisture and airflow characteristics of the cave environment. Anthropogenic impacts on these processes are observed, including the effects of visitors on the thermal condition of the cave, and the recovery rate of the cave from tourist use. Single entrance caves have been identified as comprising three separate zones, each with distinct environmental characteristics. These zones respond to anthropogenic change in different ways, and this is seen in the fluctuations that take place in the air and rock temperatures as well as the changes in humidity, airflow and air quality. Air exchange, cavern size, season and visitor numbers are significant variables in understanding the anthropogenic effects in single entrance caves.

Paper 21:

1.30pm

JULIA JAMES AND STEPHEN MEEHAN***Keeping the Jenolan Caves Blue Lake blue***

“A natural archway and a brilliant blue lake on which black swan float, welcome visitors to Australia’s finest caves.” Scenic Wonders of the World, Reader’s Digest, Sydney, (1981).

The Blue Lake (*the Lake*) referred to in the quote is found at Jenolan Caves, New South Wales, Australia. In recent years the Lake has been rarely true blue and is often colourless, green and/or turbid. The Lake was artificially created in 1903 in order to have a constant head of water for a hydroelectric plant located approximately 2 kilometres downstream. A 10m high dam wall retains the water spread over a surface area of 130m x 35m. Three creeks charge the Lake: Camp Creek, which flows through the Southern Group of Jenolan Caves; the Jenolan River, which flows through the Northern Group of Jenolan Caves; and Surveyors Creek, which flows through the *Caves House* Precinct and Grand Arch.

The Lake is a sediment trap accumulating sediments carried by the three creeks and runoff from its surrounds. Prior to the dam's construction this sediment would have moved further down the Jenolan River. Following construction of the dam, the sediment was periodically dredged and dumped over the dam wall into the river. In recent years sediment has accumulated to unacceptable levels due primarily to the dredging of the river being no longer permissible and as a result, the extent of aquatic weed infestation in the Lake has increased. The construction of the dam wall and creation of the Lake has also lead to water *back-filling in caves*.

The presence of this water is adding to the visitor experience and is significant in terms of cave ecology. This paper will explain the blue in Blue Lake and suggest reasons as to why its colour is varying. It will outline the *Blue Lake Management Strategy Action Plan* which will have the aim of restoring the Lake to its blue colour and in doing so, protect one of Jenolan's more prominent features. The Action Plan will provide detail on preliminary investigations such as the possibility of re-instigating dredging, methods of weed eradication and control, sediment trapping and the impact any work on the Lake may have on wildlife (particularly Platypus) inhabiting it.

Paper 22:**STEVE BOURNE AND LIZ REED**

2.00pm

Managing beyond the World Heritage Boundary

While the World Heritage status is embraced by many, who see opportunities for funding for site development and research, tourism as well as an international profile, it can also bring a sense of apprehension to neighbouring landowners. Some fear losing their land to the protected area system and to World Heritage if significant caves are located or new caves are found on their farms. Many caves and potential fossil sites around Naracoorte were lost in viticultural developments before they could be examined because of this fear and misunderstanding. A chance discovery of a small cave by a bulldozer in 1999 and the opportunity provided by the owner to excavate the site, allowed palaeontologists and park management to demonstrate their willingness to assist landowners with cave and fossil site management rather than compulsory acquisition of the land.

Working closely with local landowners and community groups has also improved wintering habitat for the Southern Bentwing Bat *Miniopterus bassanii*. The Friends of Naracoorte Caves and Green Corps teams, supported by funding through the Envirofund program and the South East Natural Resource Consultative Committee, have restored two significant caves on private land. Caves important for both fossil resources and providing bat habitat are now managed outside the protected area system by local landowners, but with the support of the Department for Environment and Heritage.

Paper 23:**STEPHEN SWABEY**

2.30pm

Managing Debris Collapses into Streams

Collapse of rock debris into streams has the potential to dam the stream and create situations hazardous to wild cavers and other cave visitors. The damming of streams by natural landslides is a phenomenon that has been investigated thoroughly outside caves and similar principles apply inside caves. Debris dams that develop in cave streams may be stable, unstable or conditionally stable. The state of the debris dam may be assessed by simple geomorphic analysis. The effects of debris dams include elevating upstream water levels; drowning sections of cave passage; modifying cave habitats; potential catastrophic failure of the debris dam and consequent flood waves experienced downstream; and transfer of large-grained material downstream. A debris dam of artificial origin in a Te Kuiti (New Zealand) cave resulted in several of these detrimental effects, with the additional effects of destroying fossil bone archaeological sites and of burying and transferring rubbish previously deposited in the cave. Limited options are available for mitigating many of the effects of the debris on the cave, suggesting avoidable prevention of debris dam formation is likely to be far better (and cheaper) than the cure.

Paper 24:**NEIL COLLINSON**

3.00pm

Redevelopment of Te Anau Glow worm Cave

Rediscovered in 1948 by a local tour operator the Te Anau Glowworm Caves have operated since that time as a commercial show cave. Being situated with-in the confines of Fiordland National Park the caves are privately operated by Real Journeys on a concession issued by the Department of Conservation. In recent years the need to upgrade the original 1950s infrastructure has provided many challenges. Visitor expectations have also changed during this time.

This paper is non scientific and aims to share our practical experiences upgrading the infrastructure, interpretation and safety aspects of this small but dynamic cave.

Paper 25:

4.00pm

PAUL WILLIAMS***Karst Evaluation of the West Coast of the South Island, NZ***

The paper focuses on karst of the northwest coast of South Island that is developed on Oligocene to Miocene limestones. The limestone sequence is highly variable in thickness, but in places exceeds 700 m, though is usually much less.

The west coast maritime environment is by nature a land of forests, being mild and wet in all seasons. This is exactly the kind of situation in which chemical dissolution processes are at their most active and in which karst evolves most rapidly.

Coastal terraces give evidence of tectonic uplift. The higher parts of the karst plateau in the Punakaiki-Charleston region probably began to emerge about 1 - 1.5 million years ago. The larger rivers from the Paparoa Range maintained their courses to the sea as uplift occurred, thereby producing antecedent gorges that are characteristic of the region, but the smaller streams sank underground. The Cave Creek springs yield the largest flood flow (ca.30-40 m³/s) from any karst system in New Zealand.

Uplift also stimulated downcutting of cave passages, which in Metro Cave has averaged about 0.27 m per thousand years. Dry cave passages at 150 m or more above modern river level are likely to be at least 500 000 years old. Speleothems from the have yielded the best dated terrestrial palaeoclimate record currently available in New Zealand. The record shows that the climate of the region over the last 23 thousand years did not correspond very well with climate events in the Northern Hemisphere, indicating that the climate systems of our two hemispheres are not as closely synchronised as sometimes suggested.

Paper 26:

4.30pm

MARY TRAYES***Karst Management in the Grey District, New Zealand***

In the Grey District there are two main karst areas where seven different groups have management responsibilities. Two of these are national administrative bodies, two are local administrative bodies, one is an industry group, another is the local iwi and the last group comprises assorted private landowners.

Six of the management groups are associated with the Cobden Limestone, which outcrops in a horseshoe shape behind Greymouth. One side of the horseshoe is formed by the Kaiata Range and the other is formed by the Peter Ridge – Rapahoe Range. These ranges are characterised by narrow steep escarpments and wider dip slopes, densely vegetated with coastal or podocarp forest, apart from where the lower slopes have been cleared. There are two other small outcrops at Marsden and Cape Terrace.

The other management group is associated with a small area of cavernously forming, highly calcareous sandstone (Island Sandstone), at Dunollie. The main karst features are a large cave (Cavern or the “Dragon Cave”) into which a stream sinks, a number of small caves and a stream submergence which resurges as a spring in an urban yard.

Knowledge of both karst areas is extensive due to drilling for coal and petroleum resources over the last 70 years. Historically the Cobden Limestone has been far more impacted upon by human endeavour than other West Coast limestone areas. The “minimal footprint” of local Maori soon changed to the “major footprint” of gold-seeking Europeans when the town was surveyed in 1863. The cliffs of the Cobden Gap were an immediate barrier to travel up the Grey River and by the late 1860’s quarrying on both sides had begun for a road, railway and to provide rock for training the river mouth.

The principal karst management issues in the Grey District today are a lack of understanding about karst drainage, the human propensity for dumping rubbish down holes and conflicts of land use (building, resource extraction, forestry, tourism and recreation). The seven managers of karst lands on the West Coast and the key issues for each are:

Ministry for Economic Development

Crown Minerals, within the Ministry for Economic Development has issued Solid Energy, a NZ State Owned Enterprise, licence to mine coal at Dunollie, this being the same area as a commercial tour operator, Wild West Adventures, takes adventure cave tours. The viability of the latter enterprise is under threat as the new Springs Creek Mine expands.

Department of Conservation

The Greymouth – Mawheranui Office DOC office is the largest manager of Grey District karst, including the Rapahoe Range and Marsden Scenic Reserves and the Card Creek Ecological Reserve. The office maintains only walking track at Point Elizabeth, despite the large area under their management. Lack of resources (monetary, personnel) are a barrier to opening other tracks on the karst or carrying out any specific karst studies.

Grey District Council

The council maintains a number of short tracks to viewing points on the limestone on both sides of the river and to the Cobden Cave. There are safety issues regarding barriers around tomos and at the cave. The council has a slope hazard policy in place, which any proposed development on the limestone slopes is subject to, because of landslide risk. Heavy local downpours can cause underground drainage to overflow, causing urban flooding in both Greymouth and Cobden.

West Coast Regional Council

The Regional Council is both owner - manager of the Cobden Quarry. In February 2005 it was announced that the quarry would close and be rehabilitated in conjunction with community group “Progressive Cobden” after remaining useable rock is removed. This work will markedly improve one gateway to Greymouth.

Timberlands West Coast Ltd

Part of Timberlands pinus radiata plantings at Cape Terrace is over karst in the Stillwater - Fireball and Tansey Creek catchments. Here there are caves, tomos, gorges and a stream capture from one catchment to the other. The company are aware of the significance of this karst and are seeking best practice advice for future management. Sedimentation of the streams and caves has been a problem in the past .

Mawhera Incorporation – Ngai Tahu

Mawhera Inc are owners of lower Peter Ridge. They have permitted a neighbouring landowner to remove overhanging rock from their land for safety reasons. Ongoing rock removal at the site has created further instability problems. The rockfall and safety issues here, plus potential for uncovering an underground stream, need better management.

Private Landowners

Many people own properties backing onto the limestone at Cobden, up the Omotumotu Valley and out through Boddytown to Welshmans and Marsden. Much of this land has been gold-mined, logged and/or farmed without care as to karst drainage. In the past year local cavers have seen domestic rubbish, old cars, dead animals and sediment from land clearance in tomos and caves. Fossils found in the Limestone Road area are valued by local people but their attention needs to be drawn to other values in their karst environment.

DAY 6 – FRIDAY 15 APRIL

Paper 27:

PAUL GRIFFITHS¹, TIM STOKES², BILL ANSON³, PETER BRADFORD⁴, AND BOB CRAVEN⁵

8.15am

The Next Step for Karst Management in British Columbia: Transition to a Results-based Forest Practices Framework

The release of karst inventory standards and vulnerability assessment procedures in 2001, and best practice guidelines for harvest operations on karst in 2003, has given impetus to more comprehensive management of karst resources in British Columbia’s (BC) forests (see <http://www.for.gov.bc.ca/hfp/fordev/karst.htm>).

To improve the competitiveness of the provincial forest sector, the BC Government introduced the Forest and Range Practices Act, a new results-based regulatory framework for forest practices, in March 2004. This new regulatory framework based primarily on professional reliance, and effectiveness evaluations and monitoring programs of government, will have profound implications for karst management.

Provisions for managing karst are specified within the new results-based framework; however, implementation details have yet to be worked out. Environmental indicators and monitoring/evaluation protocols for karst have recently been developed as part of a province-wide evaluation program (see draft indicators at http://www.for.gov.bc.ca/hfp/frep/3_indicators.html).

These protocols present the first opportunity to assess the effectiveness of karst management strategies and practices being utilized in BC's forests.

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²Tim Stokes, Terra Firma Geoscience, 1480 Sherwood Drive, Nanaimo, British Columbia, Canada, V9T 1G7 <tstokes@island.net>

³Bill Anson, 2483 Wilcox Terrace, Victoria, British Columbia, Canada, V8Z 5R7 <b.ianson@shaw.ca>

⁴Peter Bradford, Resource Stewardship Evaluation Officer, Forest Practices Branch, British Columbia Ministry of Forests, P O Box 9513 Stn Prov Govt, Victoria, British Columbia, Canada, V8W9C2 <Peter.Bradford@gems1.gov.bc.ca>

⁵Bob Craven, Manager, Forestry Operations, International Forest Products Limited, #311-1180 Ironwood Road, Campbell River, British Columbia, Canada, V9W 5P7 <Bob.Craven@Interfor.com>

Paper 28:

4.30pm

IAN HOUSHOLD¹ AND JENNIFER DYRING²

Towards integrated management of Australian karst systems

Whilst good environmental planning and management systems have been developed for some Australian karst areas, other programs have not been truly systematic in scope or approach. This is most common where more than one land tenure is found within the total karst catchment.

Tenure boundaries between different classes of public land (and between private and public land), initially poorly planned from a karst perspective, have become entrenched, particularly as the economic potential of an area has been realised and investments made in the expectation of future returns.

Codes of practice or management plans have consequently been restricted by legislation to individual tenures - with often quite divergent management philosophies - even though caves, active karst drainage networks or surface karst ecosystems cross these tenure boundaries.

Many planning systems have little in common with those controlling neighbouring tenures, resulting in an inconsistent approach to management across an entire regional karst system. Mining tenures abutting reserves, production forestry in the catchment of National Parks, intensive agriculture and grazing in catchments of vulnerable cave systems or public water supplies are examples of potential catchment-based impacts not effectively ameliorated by tenure-specific planning.

Management of cave-based activities, particularly regarding access and associated public liability, are also complicated when multiple tenures are involved. Whilst this situation is true in many environmental systems, the consequences of unplanned cross-tenure relationships have distinctive effects on karst values and processes.

Geoconservation, management of cave ecosystems, public access, soil, water and vegetation management issues in karst catchments all provide special challenges when a karst system is managed according to disparate philosophies.

Integrated karst management may be compared with well-established principles of integrated catchment management, generally developed for surface catchment areas defined by normal fluvial systems. Whilst retaining the emphasis on catchments, integrated karst management must be defined according to catchment boundaries which are often highly variable according to groundwater conditions.

This paper explores the relationships between traditional integrated catchment management principles, and those which may be more logically applied to karst systems. It also reviews past experience and trends in integrated karst management in Australia, and the regional potential for ongoing development.

A particular challenge is the development of effective integrated or sympathetic management regimes across the public-private tenures.

1. Karst Geomorphologist, Earth Science Section, Dept Primary Industries, Water and Environment Tasmania.
2. Investigations Officer, Integrated Policies and Strategies Branch, Department of Primary Industries, Water and Environment Tasmania.

POSTER PRESENTATIONS

The following posters will be presented at the scheduled Poster Session during the Conference:

JULIA JAMES

Some thoughts on carbon dioxide in tourist caves

WOO, KS: KIM, R AND CHIOI, DW

The origin of the calcite speleothems in Dangcheomol cave (Lava Tube), Jeju Island, Korea: Its sedimentological significance and potential for the World Heritage Nomination.

CHOI, DW AND WOO KS

The origin of the gypsum flower in the Okgye Cave, Kangwondo, Korea

CHOI, YONG-GUN

Distribution behaviour of cave fauna according to cave environmental change: an example from the Gosi cave in Korea

CATHIE POWMAN

Voice training and cave guides



A view of Bullock Creek across the Swamp, Paparoa National Park, West Coast, South Island, New Zealand

LIST OF DELEGATES

(alphabetically arranged)

1. MARTIN ABEL

14 Hawes Street, Waimangaroa, New Zealand.

Tel. 03 789 9833 (home), 03 788 8008 (work), Email: <mabel@doc.govt.nz>

Department of Conservation Buller Kawatiri Area, West Coast, New Zealand – Cave & Karst Program Manager.

2. TONY AMAR

8716 Speight road, St Heliers, Auckland, New Zealand.

Tel. 09 585 1205 (home), 09 373 7599 Ext. 89199 (work), Email: <tonyamar@rocketmail.com>

Attained an MA from the University of Auckland for my research on Aranui Cave in Waitomo. Supervised by Chris de Freitas who had done similar work in the Glowworm Cave. The study was well supported by THL and DOC. One or two winners of the Peter Dimond Memorial Award to attend the Conference.

3. JOHN ASH

C/- Post Office, Waitomo Caves, New Zealand.

Tel: 07 878 8384 (home), Email: <jkash@xtra.co.nz> or <bwr@black.water.rafting.co.au>

Formerly Joint owner/operator of Black Water Rafting. Now consultant on the re-opening of Ruakuri Cave at Waitomo as a Show Cave. ACKMA Education Officer, NZ (1995-97).

4. JANE BAIRD

Clifton Road, Clifton, RD1, Takaka, Golden Bay, New Zealand.

Tel. 03 525 9061 (home), Mobile: 027 230 3636, Email: <janemac.baird@xtra.co.nz>

Family owned Rawhiti Cave for 40 years. I was guide for 11 years. Family sold to Nature Heritage Trust (fund) Now DOC manage it. I am apply for a concession to take guided tours to Rawhiti Cave. My interests are cave management and the impact tourists have on caves.

5. CLAIRE BAKER

37 Ganges Street, West End, Queensland, Australia 4101

Tel. 61 07 3844 0443 (home), Mobile: 0418 722 550, Email: <bugsyclaire@yahoo.com.au>

As an entomologist at the University of Queensland, I have been studying glowworms since a 3rd year project in 1997 investigating how glowworms glow. I since completed an Honours project on the management of our local species, *Archroca-pa* flora, on the basis of biological and ecological data and then expanded to cover the distribution, taxonomy, systematics & genetic diversity of glowworms Australia wide in my PhD. Side projects have involved work in a biotech lab in USE using bioluminescent technology in cancer research, school education visits and more recently a stint as scientific advisor for two BB film crews. I now manage an artificially built glowworm cave (with real glowworms) as a tourist destination behind the Gold Coast.

6. SERENA BENJAMIN

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Honours Student, University of Tasmania.

7. RUSSELL BROMLEY

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NWA Senior Guide, DOC Contractor Cave/Karst.

Member: Conference Organising Committee.

8. STEVEN BOURNE

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Fellow of ACKMA, and Australian Vice President. Manager of Naracoorte Caves National Park – a World Heritage Fossil Site. Keen interest in fossil research and management of fossil sites, including assisting local land owners with fossil caves. Once active caver, now a little less so! Interested in all things in caves and sharing the excitement of the underworld with visitors.

9. DAVID BUTLER

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Member of Northern Caverneers, Tasmania. Long history of caving in Northern Tasmania. Member of Karst Cave & community group involved in cave management in Northern Tasmania.

10. DALE CALNIN

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Senior Ranger of the Buchan Caves Reserve. Responsible for the management of the Buchan Caves and the wider Karst areas of Buchan and Murrindal. Accompanying to conference: **Gail Calnin**

11. DEBORAH CARDEN

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Department of Conservation Ranger, Westport. ACKMA Conference 2005, steering committee member. Treasurer of NZ Speological Society.

12. PETER CHANDLER

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Tel. (07) 878 7621 (office & home), Email: <pete_lib@xtra.co.nz>

Fellow of ACKMA. Past President of ACKMA. Currently NZ Vice President. Manager/Director 'Spellbound Ltd – Eco Cave Tours'. Involved with Blackwater Rafting since 1987. Board member – Waitomo Museum. Accompanying to the Conference: **Libby Chandler**

13. ARTHUR CLARKE

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Fellow of ACKMA. MSc Student, University of Tasmania. Cave Biologist. Past member of ACKMA Committee, and ASF Executive.

14. NEIL COLLINSON

P. O. Box 1, Te Anau, New Zealand.

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Email: <ncollinson@realjourneys.co.nz> Te Anau Area Manager of 'Real Journeys' tourism and sightseeing company; operators of Te Anau Glow- worm Caves in Fiordland National Park.

15. DANIEL COVE

P. O. Box 127, Oberon, New South Wales, Australia 2787

Tel. 61 02 6336 0320 (home), 61 02 6359 3911 (work), Mobile: 0417 063 162, Fax: 61 02 6359 3307.

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I work as a guide at Jenolan Caves, NSW, Australia. In addition to guiding show-caves I am an adventure toru guide and a keen caver, having been fascinated by the underworld from an early age. In rare moments away from Jenolan I am also a musician playing piano and guitar.

Accompanying to Conference: **Domino Cove** (wife) & **Isaac Cove** (son – 20 months)

16 TRAVIS CROSS

15 Ramsay Street, Pine Hill, Dunedin, New Zealand

Tel. 03 473 8294 (home), Mobile: 021 0611156, Email: <travis_cross@hotmail.com>

Masters Student in Geology, Otago University, New Zealand. One or two winners of the Peter Dimond Memorial Award to attend the Conference.

17 TONY CULBERG

P. O. Box 122, Lindisfarne, Tasmania, Australia 7015

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Retired operator 'Exit Cave Adventure Tours'. Secretary Australian Speleological Federation 1974-1980. Secretary – Tasmania Caverneering Club 1974-1980.

Accompanying to the Conference: **Pat Culberg**

18 DON WON CHOI

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Scientist, Cave Research Institute of Korea.

19 GEOFF DEER

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Sub-ordinate boss to Deputy Boss wife Trish and the Boss, Benjamin (aged 2-1/4 yrs) at Gunns Plains Cave, North West Tasmiania, (Andy Spates words). Trish and I took over running Gunns Plains in September 2004 following a lifelong interest in caves by both of us. Main interest is Benjamin and watching him grown in this wonderful are and develop his love for caves. I am interested also above ground and wish to use my horticultural knowledge to return parts of the Reserve to its natural state using endemic plants from seed collected locally.

20 ROLAN EBERHARD

Nature Conservation Branch, Department of Primary Industries, Water & Environment,

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Rolan works on karst projects in the nature Conservation Branch of the Department of Primary Industries, Water & Environment in Tasmania. Recent projects include: environmental monitoring systems in show caves, strategy for managing caves in the Tasmanian Wilderness World Heritage Area, hydrogeological mapping of karst systems at Mole Creek, management plan for he Mole Creek Karst National Park and Tasmania's Reserve management Code of Practice (operational standards for management of protected areas.)

21 EPHRAIM EMERY

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Karst Resources officer in charge of cave environment monitoring at Waitomo Glowworm Caves and establishing monitoring programme for the new Buakuri Cave development.

22 BRETT FARQUHARSON

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Old fart caver. Accompanying to conference: **Lesley Farquharson**

23 ANDREW FLETCHER

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ACKMA Treasurer, and ACKMA Fellow. Life member: Cave Exploration Group (South Australia).
Interests include cave meteorology, cave morphology, conservation and interpretation. Co-discoverer World Heritage listed fossil cave, Naracoorte. Retired Physicist and currently a farmer.

25 JOHN GIULIERI

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I work for the Capricorn Caves as their Activities Manager. I have a keen interest in caves in general. I have only worked professionally as a cave guide for four years and am looking forward to learning and seeing a lot while attending this, my first ACKMA Conference.

26 ALAN GRIFFIN

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Conservation Ranger with the Department of Conservation, Karamea Office. Involved in caves/karst works with respect to site preservation, restoration, concession, development, site excavations, education. Also cover a wide variety of biodiversity/recreation areas with the Buller District.

28 ELERY HAMILTON-SMITH

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30 ROBIN HENRY

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31 IAN HOUSHOLD

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Karst geomorphologist with the Tasmanian Department. Primary industries water and environment. Provides advice to government departments (particularly conservation agencies), local government, groups and individuals regarding cave and karst management. Particular interest in landscape and environmental history of karst areas, karst geomorphology and hydrology.

32 A/Prof JULIA M JAMES

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Honorary research associate within the School of chemistry, The University of Sydney, Australia. Immediate past president of the International Union of Speleology and a past editor of the Australasian Journal of Speleology – *Helictite*. Presently a member of the Jenolan Caves Scientific and Environmental Advisory committee. Her specialist area in speleology is speleochemistry and extends across the interfaces of chemistry with a number of other scientific disciplines. Recently it has expanded into the areas of heritage, sustainable development and cave and karst management. She has over a hundred speleological publications and contributed to twelve books on speleology.

33 MICHAEL KIDD

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Email: <kidd.michael@saugov.sa.gov.au>

Senior guide, Kelly Hill Caves, Kangaroo Island, South Australia. I have been in this role since September 2004, having been a cave guide here since December 2002. My interests include cricket, watching the Adelaide Crows in action and fishing. Accompanying to Conference: **Claire Fitzgerald**

34 KYUNG SIK WOO

Department of Geology, College of National Sciences, Kangwon National University 192-1 Hyojaz-dong, Chncheon, Kangwon-do, Korea 200-701

Tel: +82-33-250-8556 (work), Mobile: +82-11-369-9314, Fax: +82-33-244-8556

Email: <wooks@kangwon.ac.kr>

Professor, Department of Geology, Kangwon National University, Chunchen, Kangwondo 200-701, Korea. Director Cave Research Institute of Korea.

35 MOIRA LIPYEAT

29a Celia Street, Redcliffs, Christchurch, New Zealand

Tel. 03 384 2570 (home).

Loan time caver, operator (with Derek) of NZ caver's favourite cup-of-tea van. Co-author with Les Wright of "Delving Deeper, Fifty Years of Cave Discovery in New Zealand"

36 GREG MARTIN

Department of Conservation, Private Bag 3072. Hamilton, New Zealand

Tel. 07 854 0255 (home), 07 838 3363 (work), Mobile: 027 475 1460, Fax: 07 838 1004

Email: <gmartin@doc.govt.nz>

Past President, ACKMA, and ACKMA Fellow. Waikato Conservator, Department of Conservation, Hamilton, New Zealand. Chairman of the Waitomo Cave Management Committee and Chairman of the Waitomo Environment Trust. Former President of ACKMA and Fellow of ACKMA.

37 DEREK MASON

81 Maungakawa Road, RD4, Cambridge, New Zealand

Tel. 07 823 5525 (home), Mobile: 0274 778829, Fax: 07 823 5525, Email: <thorntonridge@xtra.co.nz>

Retired Owner/Operator of Mason's Caves, Waitomo (now 'Spellbound Tours')

Accompanying to conference: **Jill Mason**

38 ROBYN McBEATH

C/- Augusta Margaret River Tourism Association, 100 Bussell Highway, Margaret River, Western Australia 6285. Tel. 61 08 9758 7137(home), 61 08 9757 7411 (work), Fax 61 08 9757 7421

Email: <robynmcbeath@margaretriver.com>

President of ACKMA, and ACKMA Fellow. Manager of Augusta Margaret River Caves and Cape Leeuwin Lighthouse. Interests include tourist cave management and development and creating innovative interpretation product.

39 STEPHEN MEEHAN

Locked Bag, Jenolan Caves, New South Wales, Australia 2790

Tel. 61 02 6334 2806 (home), 61 02 6359 3166 (work), Mobile: 0407 213 113

Email: <stephen.meehan@jenolancaves.org>

Senior environment Manager, Jenolan Caves Reserve Trust. Interested in Karst conservation.

40 DAVID J MERRITT

School of Integrative Biology, The University of Queensland, Brisbane, Queensland, Australia 4672

Tel. 61 07 3892 6706 (home), 61 07 3365 3478 (work), Mobile 0422 009 387, Fax: 71 07 3365 1655

Email: <dmerritt@zen.uq.edu.au> Biologist interested in glowworms.

41 IAN MILLER

27 Douglas Road, Nelson, New Zealand. (C/- Department of Conservation, P. O, Box 5, Nelson)

Tel. 03 548 6676 (home), 03 546 9335 (work), Email: <imillar@doc.govt.nz>

Department of Conservation: provide 'specialist' support to field staff in invertebrate conservation and karst conservation issues. Karst interests: caving, cave biology, cave science generally.

42 TIMOTHY MOULDS

Earth & Environmental Sciences, Environmental Biology, Darling building, University of Adelaide, South Australia, Australia. 5005.

Tel. 61 08 8363 4574 (home), 61 08 8303 8245 (work), Mobile: 0427 708 317, Fax: 61 08 8303 4364

Email: <timothy.moulds@adelaide.edu.au>

PhD student at the University of Adelaide studying the ecology, seasonality and biogeography of guanophilic invertebrates. I am an active caver enjoying surveying, exploration and recreational caving for the last nine years. My current project is centred on the Naracoorte Caves in south eastern South Australia.

43 MILES PIERCE

42 Victoria Crescent, Mont Albert, Victoria, Australia. 3127

Tel: +61-3-9890-8319 (home), Mobile: 0429 359 832, Email: <milwen@ozemail.com.au>

A long term member of ACKMA. Hon. Life member of VSA and a past president of ASF Inc. Current member of, Parks Victoria, Caves & Karst Advisory Group and participant on various past cave management/development consultancies. Interested in a wide range of speological and cave management issues. Semi retired professional engineer (FIE Aust.) practicing in electrical power, controls and lighting systems. Other interests involve industrial heritage, bushwalking, 4WD etc.

Accompanying to Conference: **Rhonwen Pierce**

44 CATHIE PLOWMAN

637 Deriot Road, Deriot, Tasmania, Australia 7275

Tel. 61 03 6394 7686 (home), Mobile & Work: 0417 053 773, Fax: 61 03 6344 8109

Email: <Cathie.Plowman@parks.tas.gov.au>

Member of Northern Caverneers, Tasmania. Keen interest in interpretation – works in this area with Parks & Wildlife Service, Tasmania. Interested in developing more cave & karst interpretive materials. Currently managing re-lighting of King Solomans Cave (with Neil Kell). Currently co-ordinating workshops in voice training for cave guides (Tasmania)

45 BARRY RICHARD

42 Edith Road, Jenolan Caves, Australia 2790

Tel. 61 02 6335 6239 (home), 61 02 6335 6239 (work), Mobile: 04 28619709, Fax: 61 02 6335 56239

Email: <relax@jendaneatons.com.au>

Own and operate 'Jenolan Cabins' at Jenolan Caves. Guide at Jenolan Caves. Life member and patron of Blue Mountains Speleological Club.

46 RYEON KIM

Department of Geology, College of Natural Science, Kangwon National University 192-1, Hyojaz-dong, Chunchan, Kongaloon-do, Korea 200-701

Tel: +82-33-262-5196 (work), Mobile: +82-11-369-9314, Fax: +82-33-262-1314

Email: <caver92@hanmail.npt>

Master, Department of Geology, Kangwon National Univeristy, Chuncheon, Kangwon-do 200-701, Korea. Subdirector, Cave Research Institute of Korea. Manager, The Korean Society of Cave Environmental Science.

47 ALICE SHANKS

80 Colombo Street, Christchurch, New Zealand

Tel. 03 337 1256 (home), 03 366 1247 (work), Fax: 03 366 1246, Email: <alice@caverock.net.nz>

Member: New Zealand Speleological Society.

48 CHESTER SHAW

P. O. Box 67, Mole Creek, Tasmania, Australia 7304

Tel. 61 03 6363 1433 (home), Mobile: 0418 362 341, Email: <trog1@dodo.com.au>

Life Member of ACKMA. Retired manager, Mole Creek Caves, Tasmania. However still maintain a very keen interest in Cave & Karst management. Now also collect cave memorabilia.

49 DAVE SMITH

Department of Conservation, PO Box 38, Te Kuiti, New Zealand

Tel. 07 878 8534 (home), 07 878 1050 (work), Mobile: 021 146 6828, Fax: 07 878 1051

Email: <dwsmith@doc.govt.nz>

ACKMA Fellow, and ACKMA Information Officer. Programme Manager, Biodiversity at Maniapoto Area Office, Department of Conservation, Te Kuiti. Karst work includes Waitomo Area recreational caves. Involved with NZSS, Ackman, Waitomo Catchment Trust, Waitomo Museum Society, Glowworm Cave Advisory Group etc.

50 ANDY SPATE

2 Hoskins Street, Kall, ACT, Australia 2618

Tel. 61 02 6230 2322 (home), 61 02 6230 9966 (work), Mobile: 0407 293 301, Fax: 61 02 6230 2322

Email: <andyspate@aliencamel.com>

ACKMA Life Member, and Past President. CEO & Tea lady: Optional Karst Manage. Cave & Karst Management consultant. Interpretation training. Landscape rehabilitation. Cave & Karst exploration.

51 ANGUS STUBBS

PO Box 13, Waitomo Caves, New Zealand

Tel. 07 878 6328 (home), 07 878 6219 (work), Mobile 027 226 7681, Fax: 07 878 5190

Email: <angus.stubbs@thelongline.com>

Born and raised in Waitomo caves I started cave guiding with John & Martin Ash with their company (WOAD), then while completing a degree in Earth Science started as the first guide working with Pete Chandler and John Ash at Blackwater Rafting. At the moment I'm working as 'Chief Instructor' at BWR while being part of the team to develop the 'Ruakuri Cave' product. I'm interested in all areas of cave and karst, but in particular the area of client/guide interaction in tourism environments.

52 STEPHEN REILLY

Locked Mail Bag, Jenolan Caves, New South Wales, Australia 2790

Tel. 61 02 6336 0304 (home), 61 02 6359 3182 (work), Fax: 61 02 6359 3378

Email: <jencaves@jenolancaves.org.au>

Manager of Jenolan Caves. Employed by the Jenolan Caves Reserve Trust. I have worked in a direct guiding and cave karst management role for 18 years at Yarrangobilly, Wombeyan & Tempurung (Malaysia) Caves. Have an interest in anything relating to karst, aboriginal interaction with karst & gold prospecting.

53 GEOFF SCHURR

41 Domett Street, Westport, New Zealand

Tel. 03 789 8922 (home), 03 789 6686 (work), Mobile: 025 262 5149, Fax: 03 789 7956

Email: <geoff.schurr@xtra.co.nz>

Founding Director "Norwest Adventures Limited". Member, Conference Organising Committee.

54 TIM STOKES

1480 Sherwood Drive, Nanammo, British Columbia, Canada V4T1P7

Tel. 250 756 2456 (home), Email: <tst.ker@island.net>

Most my work is as a geological consultant (Terra Firma Geoscience) in British Columbia where I am mainly involved in projects related to forestry activities on karst and terrain stability. I also get involved in a variety of other geological mapping and environmental-type projects. In addition, I am a part-time instructor at Malaspina University-college where I teach a second year general geoscience course. One of my current projects is developing a third year 'Karst Systems' course for the Malaspina Geology Department.

55 STEPHEN SWABEY

4 Allans Beach Road, Portobello, Dunedin 9004, New Zealand.

Tel. 03 478 0909 (home), 03 474 0827 work), Mobile 021 252 4970, Fax 03 478 0909

Email: <stephen@peninsula.co.nz>

I am the Natural Hazards Manager for the Otago Regional Council, where I investigate river and coastal flooding, earthquakes, landslides and coastal erosion. There are few caves in Otago, but I am also engaged by other organisations to undertake karst hydrology and geomorphology investigations.

56 ROBERT TAHI

P. O. Box 501, Otorowanga, New Zealand

Tel. 07 878 7971 (home), 07 878 8323 (work), Mobile: 021 328 390, Fax: 07 878 8858

Email: <robert.tahi@waitomocaves.co.nz>

Manager – Waitomo Glowworm Caves and Black Water Rafting.

57 MARY TRAYES

31 Pitt Street, Runanga, Westland, New Zealand.

Tel. 03 762 7414 (home), 03 768 0466 (work), Email: <maryt.runanga@xtra.co.nz>

Member local caving group, Poutini Potholders, Member of NZSS and a Cave SAR Advisor for Tasman Police District. Work as Environmental Information Officer for the West Coast Regional Council. Interested in all aspects of Cave & Karst management here on West Coast.

58 DIANNE VAVRYN

25 Barmoya Road, The Caves, Queensland, Australia 4701

Tel. 61 07 4934 2788, Email: <vavryn@irock.com.au>

Fellow of ACKMA. Casual Ranger – Queensland parks and Wildlife Service (Bat Cleft – guide for 25 seasons). Tour guide at Cammoo Caves – 1984, and Olsen's Capricorn Caverns, 1985-1997. Organizing Committee Member: 10th Australasian Conference on Cave & Karst Management, 1993; and 8th Australasian Bat Society Conference, 1997. Sub-editor, ACKMA Journal. Interested in all aspects of Karst, its management, flora/fauna, and helping others to understand their importance and need of protection.

59 VAN WATSON

P. O. Box 13, Waitomo Caves, New Zealand.

Tel. 07 878 8375 (home), 07 878 6219 (work), Mobile: 021 417 814, Fax: 07 878 5190

Email: <van_watson@thelongline.com>

Operations Manager at Black Water Rafting, currently involved with the development of the Ruakuri Cave which is due to re-open to tourists in the next couple of months, under the management of Tourism Holdings. In the past two years have done two stints in the Borneo doing rigging for the International Adventure Race.

60 RAULEIGH WEBB

27 Beckenham Street, Beckenham, Australia 6107

Tel. 61 08 9356 5550 (home), 041 994 6764 (work), Fax: 61 08 9356 5550, Email: <rauleigh@iinet.net.au>

Fellow of ACKMA. ACKMA Webmaster and Information Technology Officer. General interest in Cave Management with emphasis on Cave Conservation by Management. Currently developing Cave Permit software for use over the internet.

61 THOMAS WHITTAKER

58A Aurora Terrace, Hillcrest, Hamilton, New Zealand.

Tel. 07 856 0347 (home), 07 838 4392 (work), Email: <bew3@waikato.ac.nz>

I am a PhD candidate at the University of Waikato, and jointly supported by the Chemistry and Earth Sciences Departments. I am interested in developing new paleoclimatic records for New Zealand from speleothems collected in Westland, South Canterbury and Waitomo.

62 NICHOLAS WHITE

123 Mannington Street, Parkville, Victoria, Australia 3052

Tel. 61-3-9328-4154 (home), Email: <nicholaswhite@netspace.net.au>

Fellow of ACKMA. ASF Vice President and Convenor, Conservation Commission. Long standing advocate of cave conservation and improved cave and karst management.

63 PAUL WILLIAMS

School of Geography & Environmental Science, University of Auckland,
P. O. Box 92019, Auckland, New Zealand.

Tel. 09 445 1680 (home), 09 373 7599 ext 88459 (work), Mobile: 021 662176, Fax: 09 373 7434

Email: <p.williams@auckland.ac.nz>

Research fellow at the Australian National University in 1960's and Professor at the University of Auckland since 1972. Main research interest are karst geomorphology and hydrology and interpretation of polace - environmental change from cave deposits. Member of IUCN World Commission of Protected Areas. Honorary Life Member of NZSS and NSS.

64 GRAHAM WOOD (Chippy)

P. O. Box 48, Punakaiki, New Zealand.

Tel. 03 731 1428 (home), 03 731 1895 (work).

Department of Conservation. Caving, natural history, photography. Work as a ranger focussing on biodiversity. Work in local caves. Work with wildlife.

65 TREVOR WORTHY

2A Willow Park Drive, Masterton, New Zealand

Tel. 06 377 7166 (home), Email: <twmoa@wise.net.nz>

Scientist. Author of several books, notably on sub fossils.

66 PHILIP WOOD

23 Romilly Street, Westport, New Zealand

Tel. 03 789 8106 (home), 03 789 8800 (work), Fax: 03 789 8800, Email: <complex@ihung.co.nz>

Menswear Retailer. Foundation member of ACKMA – long time cave explorer – mapper Buller Area including Honeycomb Hill – Metro – Babylon – Megamania. 12 years West Coast Parks & Reserves, West Coast Conservation Board – 40 years Scouting and Westport Rotary Club. **16th ACKMA Conference Convenor.**

67 YONG-GUN CHOI

Hyundai APT 102-302 Dunchondong, Kangdongku, Seoul, Korea 134-077

Tel. 82-2-470-2844 (home), 82-2-427-5992 (work), Mobile: +82-19-290-2844 Fax: 82-2-429-5972

Email: <kcavere@hanmail.net>

Biospeleologist. The Korean Institute of Biospeleology, Cave Research Institute of Korea.

PART TIME ATTENDEES:

68 Dr CATHERINE CHAGUE-GOFF

National Institute of Water & Atmospheric Research Ltd (NIWA), PO Box 8602, Riccarton, Christchurch, New Zealand. Tel. 03 348 8987 (work), Fax: 03 348 5548, Email: <c.chague-goff@niwa.co.nz
Scientist with the Natural Institute of Water & Atmospherics (NIWA).

69 INGRID GRUNER

Department of Conservation, Private Bag, 701, Hokitika, New Zealand
Tel. 03 755 7733 (home), 03 755 5536 (work), Fax: 03 755 8380, Email: <igruner@doc.govt.nz>
Conservancy Advisory Scientist involved with Cave management on West Coast.

70 BARRY HAWKER

Timberlands West Coast Limited, PO Box 515, Greymouth
03 768 6424 (work), Fax: 03 768 6425, Email: <barryh@timberlands.co.nz>
Harvest Planning Supervisor (Plantation Management). (*half day attendance*)

71 NIGEL O’RORKE

Timberlands West Coast Limited, PO Box 515, Greymouth
03 768 6424 (work), Mobile: 021 222 2023, Fax: 03 768 6425, Email: <nigelo@timberlands.co.nz>
Chief Executive Timberlands West Coast Limited. (*one day attendance*)

72 KIM THOMAS

Holcim (New Zealand) Ltd, P. O. Box 245, Westport, New Zealand
Tel. 03 789 7259, Fax: 03 789 5892, Email: <kim.thomas@holcim.com>
Laboratory Manager, Cement – Holcim (New Zealand) Ltd, Cape Foulwind, Westport.

Total Delegates: 72. Accompanying Persons: 9. **TOTAL ATTENDANCE: 81**



**A view inside the recently completed “Cave of the Spirit” show cave, Waitomo, New Zealand.
Photo: Peter Chandler.**

ACKMA OFFICE BEARERS: 2005 - 2006

PRESIDENT & NEW ZEALAND MEMBERSHIP OFFICER:

Robyn McBeath, CaveWorks, P.O. Box , Witchcliffe, Western Australia. 6286
Tel.: (+ 61 8) 9757 7411 (office), (+ 61 8) 9758 7437 (home), Email: <robymcbeath@margaretriver.com>

IMMEDIATE PAST PRESIDENT (ACTING):

Brian Clark, PSM, CDT 62, 98007 Miri, Sarawak, Malaysia.
Tel.: (+ 60 85) 433 561 (office & FAX), Email: <brianclark@mulupark.com>

NEW ZEALAND VICE-PRESIDENT, & NEW ZEALAND MEMBERSHIP OFFICER:

Peter Chandler, *Spellbound Tours*, C/- P.O. Box, Waitomo Caves, New Zealand.
Tel.: (+64 7) 878 7621 (office & home), Email: <pete_lib@xtra.co.nz>

AUSTRALIAN VICE-PRESIDENT & AUSTRALIAN MEMBERSHIP OFFICER:

Steve Bourne, Naracoorte Caves, P. O. Box 134, Naracoorte, South Australia. 5271.
Tel.: (08) 8762 3412 (office), (08) 8762 1231 FAX, Email: <bourne.steven@saugov.sa.gov.au>

EXECUTIVE OFFICER:

Dr. Ruth Lyons, 110 Loess Lane, RD2, Wanaka, New Zealand.
Tel.: (+64 3) 433 5518 (home), Email: <ruth_lyons@yahoo.com>

TREASURER & MEMBERSHIP RECORDS OFFICER & A.S.F. LAISION OFFICER:

Dr. Grant Gartrell, P. O. Box 27, Mt. Compass, South Australia. 5210.
Tel.: (08) 8556 9100, (08) 8556 9142 FAX, Email: <blueberrypatch@ozemail.com.au>

PUBLICATIONS OFFICER & ASSISTANT EXECUTIVE OFFICER:

Kent Henderson, P. O. Box 332, Williamstown, Victoria. 3016. Tel.: (+ 61 3) 9398 0598 (Office & Home),
(+ 61 3) 9398 0523 FAX, Mobile: 0407 039 887, Email: <kenthen@optusnet.com.au>

INFORMATION OFFICER & NZSS LIAISON OFFICER:

Dave Smith, Department of Conservation, P. O. Box 38, Te Kuiti, New Zealand.
Tel.: (+64 7) 878 1050 (office), (+64 7) 878 8534 (home), email: <dwsmith@doc.govt.nz>

CONFERENCE CONVENOR:

Phil Wood, 23 Romilly Street, Westport, New Zealand.
Tel.: (+64 3) 789 8800 (office), (+64 3) 789 8106 (home), (+64 3) 789 8800 FAX,
Email: <complex@ihug.co.nz>

INFORMATION TECHNOLOGY OFFICER & WEBMASTER

Rauleigh Webb, 27 Beckenham Street, Beckenham, Western Australia. 6107.
Tel: (+61 8) 9356 5550 (home), Email: <rauleigh@inet.net.au>

KARST SCIENCE OFFICER:

Ian Houshold, Earth Sciences Section, P. O. Box 44A, Hobart. Tas. 7001.
Tel.: (+61 3) 6233 3868 (office), (+61 3) 6239 0191 (home), (+61 3) 6233 4377 FAX,
Email: <Ian.Houshold@dpiwe.tas.gov.au>>

PUBLIC OFFICER:

Professor Elery Hamilton-Smith, AM, P. O. Box 36, Carlton South, Victoria. 3053.
Tel.: (+61 3) 9489 7785 (home), (+61 3) 9481 2439 FAX, Email: <elery@alphalink.com.au>

SUCCESSION OF ACKMA OFFICERS SINCE FOUNDATION

	1987-1989	1989-1991	1991-1993	1993-1995	1995-1996	1996-1997	1997-1998
President	E. Holland	E. Holland	A. Spate	A. Spate	M. Chalker	M. Chalker	G. Martin
Aust Vice President	J. Sutherland	A. Spate	K. Kiernan	N. Kell	B. Allen	A. Augusteyn	A. Augusteyn
NZ Vice President	D. Williams	D. Williams	D. Williams	P. Dimond	G. Martin	G. Martin	P. Chandler
Executive Officer	E. Hamilton-Smith	E. Hamilton-Smith	E. Hamilton-Smith	E. Hamilton-Smith	A. Spate	A. Spate	A. Spate
Treasurer	N/A	N/A	G. Hammond	D. Rebbechi	D. Rebbechi	D. Rebbechi	D. Rebbechi
Conference Convener	K. Wilde	K. Tritton	A. Augusteyn	C. Shaw	P. Dimond	P. Dimond	B. Clark
Publications Officer	K. Henderson	K. Henderson	K. Henderson				
Educ. Off. - Australia	N/A	N/A	N/A	S. Hardy	S. Reilly	S. Reilly	N/A
Educ. Off. - New Zealand	N/A	N/A	N/A	N/A	J. Ash	J. Ash	N/A
ASF Liason Officer	N/A	N/A	N/A	N/A	E. Holland	E. Holland	E. Holland
Info. Off. - Australia	N/A	N/A	N/A	N/A	N/A	N/A	R. McBeath
Info. Off. - New Zealand	N/A	N/A	N/A	N/A	N/A	N/A	D. Smith
Karst Science Officer	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Officer	N/A	N/A	N/A	N/A	E. Hamilton - Smith	E. Hamilton - Smith	E. Hamilton - Smith

	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
President	G. Martin	B. Clark	B. Clark	P. Dimond	P. Chandler*	R. McBeath	R. McBeath
Aust Vice President	R. McBeath	R. McBeath	R. McBeath	S. Bourne	S. Bourne	S. Bourne	S. Bourne
NZ Vice President	P. Chandler	P. Chandler	P. Chandler	P. Chandler	Vacant	P. Chandler	P. Chandler
Executive Officer	D. Gillieson	D. Gillieson	D. Gillieson	R. Lyons	R. Lyons	R. Lyons	R. Lyons
Treasurer	D. Rebbechi	D. Rebbechi	D. Rebbechi	G. Gartrell	G. Gartrell	G. Gartrell	G. Gartrell
Conference Convener	B. Clark	M. Chalker	M. Chalker	L. Little	L. Little	P. Wood	P. Wood
Publications Officer	K. Henderson						
Educ. Off. - Australia	N/A						
Inform. Tech & Webmaster	N/A	N/A	N/A	N/A	N/A	R. Webb	R. Webb
ASF Liason Officer	E. Holland	E. Holland	A. Clarke	A. Clarke	G. Gartrell	G. Gartrell	G. Gartrell
Info. Off. - Australia	P. Bell	P. Bell	M. Thurgate	J. Taylor	J. Vincent	N/A	N/A
Info. Off. - New Zealand	D. Smith						
Karst Science Officer	A. Spate	A. Spate	A Spate	A. Spate	A. Spate	I. Houshold	I. Houshold
Assistant Treasurer	N/A	N/A	G. Gartrell	N/A	N/A	N/A	N/A
Public Officer	E. Hamilton - Smith						

* P. Chandler, then NZ Vice-President, was appointed ACKMA President, by the Committee, upon the death of Peter Dimond, in November 2001.

LIFE MEMBERS OF ACKMA Inc.

Awarded to members who have made an outstanding and long term contribution to the Aims of the Association

Michael Chalker* Alan Costigan
 Kent Henderson* Ernst Holland*
 Elery Hamilton-Smith* Roy Skinner
 Chester Shaw* Andy Spate* Clyde
 Stiff Kevan Wilde *David Williams*
 (* previously elected as Fellows)

FELLOWS OF ACKMA Inc.

Awarded to members who have made a distinguished and ongoing contribution to the Aims of the Association:

Peter Bell Peter Chandler Brian Clark
 Arthur Clarke Grant Gartrell Neil Kell
 Kevin Kiernan Lana Little Greg Martin
 Robyn McBeath Dennis Rebbechi
 Dave Smith Dianne Vavryn
 Rauleigh Webb Nicholas White

PAST PRESIDENTS

Ernst Holland	1987 – 1991	Andy Spate	1991 – 1995
Michael Chalker	1995 – 1997	Greg Martin	1997 – 1999
Brian Clark	1999 – 2001	Peter Dimond	2001 – 2002
Peter Chandler	2002 – 2003	Robyn McBeath	2003 – 2005

AIMS OF ACKMA Inc.

- To develop improved standards in the management of the cave and karst heritage of the Australasian region.
- To provide for liaison between services to, and joint action by, those interested in cave and karst management.
- To carry out or cause to be carried out any scientific research which may further the improvement of standards in cave and karst management.
- To formulate and promote policies and initiatives in cave and karst management.
- To do any other things which are conducive or incidental to the attainment of the above.

A BRIEF HISTORY of ACKMA Inc.

Conferences on Cave and Karst Management have been held in this region since 1973. From then until 1983, they were organized under the auspices of (but not organised by) The Australian Speleological Federation, the first five being termed Australian Conferences on Cave Management and Tourism.

The 6th Conference was held at Waitomo Caves, New Zealand in 1985. In 1987, The *Australasian Cave Management Association* (ACMA) was formed at a meeting held at Yarrangobilly Caves during the 7th Conference in New South Wales. All conferences since have been referred to as Australasian Conferences on Cave & Karst Management.

The Association re-named itself *The Australasian Cave & Karst Management Association* (ACKMA) at the subsequent biennial General Meeting associated with the 8th Conference held at Punakaiki, New Zealand, in 1989. At the 1995 biennial General Meeting at Derwent Bridge, Tasmania, during the 11th Conference, the Association became incorporated as *ACKMA Inc.* Prior to that date Officers of the Association were elected to two-year terms.

The tenure of officers is now twelve months. The *Proceedings* of all fifteen Conferences thus far held have been published.

The first edition of The ACMA (later ACKMA) Newsletter was published in June 1988 – a mere 12 pages. It was thereafter published half-yearly until 1993. For the subsequent 18 months, it was published quarterly, with two full “Journal Editions”, and two (minor) “Newsletter Editions”. The publication was permanently renamed the **ACKMA Journal** from edition 16 issued in September 1994, and from edition 19 (June 1995) it was been issued quarterly as a full Journal.

SIGNIFICANT EVENTS

in AUSTRALASIAN CAVE & KARST MANAGEMENT

since the FOUNDING of ACKMA in 1987

1987

- 10 – 17 May 1987 **7th Australasian Conference on Cave & Karst Management, New South Wales**
16 May 1987 ACMA Founded, Yarrangobilly Caves, New South Wales
October 1987 Blackwater Rafting, Waitorno, New Zealand, opens for business

1988

- June 1988 Edition 1 of the ACMA Newsletter published

1989

- 10 –14 April 1989 **8th Australasian Conference on Cave & Karst Management, Punakaiki, New Zealand**
14 April 1989 ACMA becomes ACKMA - Biennial General Meeting, Punakaiki
February 1989 Ruakuri Cave at Waitomo closed to the public
June 1989 Water Cave re-discovered at Wellington Caves
July 1989 Ruakuri Cave Karst Walkway at Waitomo Caves completed
August 1989 ACKMA team prepares a Report on Cutta Cutta Caves, Northern Territory
September 1989 New Zealand ACKMA team advises on cave management in Tonga

1990

- Early 1990 Jillibenan Cave, Yarrangobilly, re-wired & given universal access
13 –14 May 1990 Ist Cave Guides *Gabfest*, Yarrangobilly Caves, New South Wales
14 June 1990 Waitomo Glowworm Cave comes under a partnership of the Department of Conservation and Ruapuha Uekha Hapu Trust for ownership and management
June 1990 Eastern Chamber Extension, Fairy Cave, Buchan, completed for opening
1 – 2 August 1990 Severe flooding of Wombeyan and Abercrombie Caves, New South Wales
9 – 15 September 1991 **9th Australasian Conference on Cave & Karst Management, Margaret River, Western Australia**

1991

- 3 – 5 March 1991 2nd Cave Guides *Gabfest*, Wombeyan Caves, New South Wales
12 December 1991 National Parks and Wildlife (Karst Conservation) Bill and the Wilderness (Karst Conservation) Amendment Bill pass through the New South Wales Parliament

1992

- 8 January 1992 Jersey Cave Centenary Celebrations, Yarrangobilly Caves, New South Wales (following complete re-wiring and re-development)

8 – 9 February 1992	1st Australian Karst Studies Seminar/Workshop, Buchan, Victoria
17 – 18 March 1992	3rd Cave Guides <i>Gabfest</i> , Naracoorte Caves, South Australia
February 1992	International Network on Cave Protection and Management, established under the commission on National Parks & Protected Areas (CNPPA) with significant Australian involvement
March 1992	New Entrance Tunnel and re-development of Gaden Coral Cave, Wellington Caves, New South Wales, completed
April 1992	Olsens Caves, Rockhampton, Queensland, universal access constructed and opened
17 April 1992	Cammoo Caves, Rockhampton, Queensland, becomes self-guiding
31 July 1992	Benders Quarry near Exit Cave, Tasmania, closed by the Federal Government
9 August 1992	Undara Volcanic National Park, North Queensland, officially opened
August 1992	Neil Kell awarded Churchill Fellowship to study cave lighting in U. S. A.
3 September 1992	ACKMA Committee meets in Melbourne
November 1992	Glowworm Cave at Waitomo, New Zealand, re-lit
Nov – December 1992	Waitomo Museum of Caves extended
26 December 1992	Moondyne Cave, Western Australia, re-opened as an Adventure Tour cave

1993

1 January 1993	Peter Dimond, Waitomo Museum of Caves Director, received <i>the Queen's Service Medal</i> , in New Zealand New Years Honour List
24 – 26 March 1993	4th Cave Guides <i>Gabfest</i> , Buchan Caves, Victoria
17 – 23 May 1993	10th Australasian Conference on Cave & Karst Management, Rockhampton, Queensland
24 – 29 May 1993	Post Conference Study Tour to Undara and Chillagoe Caves, Queensland
20 – 22 November 1993	2nd Karst Studies Seminar/Workshop, Wombeyan Caves, New South Wales
October 1993	Wet Cave, Naracoorte, SA, opened as self-guided tourist cave
13 November 1993	Jubilee Cave Centenary Celebrations, Jenolan Caves, New South Wales
11 December 1993	Grand Arch self-guided Tour officially opened, Abercrombie Caves, New South Wales
December 1993	Tinted Cave (self-guided), Wombeyan Caves, New South Wales, completed & opened

1994

14 – 18 March 1994	5th Cave Guides <i>Gabfest</i> , Jenolan Caves, New South Wales
8 April 1994	Newly-constructed <i>Education Centre</i> at the Waitomo Museum of Caves officially opened by Rt. Hon. J. B. Bolger, Prime Minister of New Zealand
10 April 1994	Victoria Cave Centenary Celebrations, Naracoorte Caves, South Australia
14 May 1994	ACKMA Committee meets in Sydney, New South Wales
15 May 1994	Joint ACKMA – ASF Executive Meeting
10 July 1994	2nd Australian Seminar on Spelean History, Sydney University, New South Wales

- July 1994 Rehabilitation Plan for Newdegate Cave, Hasting Caves, Tasmania, released
- August 1994 New Zealand ACKMA members from both North and South Islands meet informally at Waitomo.
- December, 1994 Naracoorte Caves inscribed on the World Heritage List

1995

- 10 January 1995 New Lighting & Re-development of Princess Margaret Rose Cave, Western Victoria, officially opened
- 29 April 1995 Cave Creek Tragedy, Paparoa National Park, South Island, New Zealand
- 29 April – 7 May 1995 **11th Australasian Conference on Cave & Karst Management, Tasmania**
- 4 May 1995 ACKMA Incorporated inaugurated
- 19 June 1995 *Determining an Environmental and Social Carrying Capacity for the Jenolan Caves Reserve* document officially launched.
- 11 August 1995 ACKMA officially incorporated (in Victoria)
- October 1995 ACKMA's *South East Karst Province of South Australia Report* published
- 7 October 1995 *Bat Cave Teleview Centre* officially opened, Naracoorte Caves, South Australia
- December 1995 *Blackwater Cafe* (new Blackwater Rafting headquarters) opened, Waitomo Caves, New Zealand

1996

- January 1996 New Jenolan Caves Reserve Trust building opened in Bathurst, NSW
- February 1996 ACKMA 'multilateral' Cave Guide exchanges
- 13-15 February 1996 3rd Australian Karst Studies Seminar/Workshop, Naracoorte Caves, South Australia
- 4 – 8 March 1996 6th Cave Guides *Gabfest*, Kelly Hill Caves, Kangaroo Island, South Australia
- 20 May 1996 New Ticket Office opened, Jenolan Caves, New South Wales
- 9 June 1996 ACKMA Annual General Meeting, Taralga, New South Wales
- 1 August 1996 *Directory of Caves in Australia & New Zealand* published
- 7 September 1996 Redeveloped Cathedral Cave, officially opened, Abercrombie Caves, New South Wales
- 13 November 1996 Mole Creek Karst National Park, Tasmania, proclaimed
- 15 November 1996 Phosphate Mine "Cave" officially opened, Wellington Caves, New South Wales

1997

- 16 January 1997 New day-use facilities officially opened, Royal Arch Cave, Chillagoe, Queensland
- 21 February 1997 *Caveworks* Interpretation Centre officially opened, Lake Cave, Margaret River, Western Australia
- Early 1997 IUCN *Guidelines for Cave and Karst Protection*, edited by an ACKMA team, is published
- 27 April – 4 May 1997 **12th Australasian Conference on Cave & Karst Management, Waitomo Caves, New Zealand**

- 4 May – 8 May 1997 Post Conference Study Tour - Takaka Karst, South Island, New Zealand
 18 October 1997 Junction Cave Centenary Celebrations, Wombeyan Caves, New South Wales

1998

- 26 January 1998 Anne Atkinson becomes a *Member of the Order of Australia* for services to geology at Undara in Australia Day Honours List
 10 – 13 February 1998 4th Australian Karst Studies Seminar/Workshop, Mole Creek Caves, Tasmania
 15 – 20 March 1998 7th Cave Guides *Gabfest*, Augusta/Margaret River Caves, Western Australia
 March 1998 ACKMA Report on Cape Range karst released by the Western Australian Government
 March-April 1998 ACKMA team undertakes management study on Christmas Island
 June 1998 10th Anniversary Edition of the ACKMA Journal published (No. 31)
 13 June, 1998 ACKMA Annual General Meeting, Jenolan Caves, New South Wales
 July 1998 Severe flooding in the Glowworm Cave, Waitomo, New Zealand
 August, 1998 Wombeyan Caves Plan of Management, released, New South Wales
 September 1998 Mammoth Cave, Western Australia, upgrade completed, opened as a “self guided” cave
 3 December 1998 Giant’s & Calgardup Caves, Margaret River, Western Australia, re-opened as Tourist “self Guided” caves.
 4 December 1998 Wonambi Fossil Centre, Naracoorte Caves, South Australia, officially opened by the South Australian Premier, Hon. John Olsen.

1999

- 18 – 24 April 1999 **13th Australasian Conference on Cave & Karst Management, Mt. Gambier, South Australia**
 24 April 1999 Te Anau Caves, South Island, New Zealand – cave upgraded officially opened
 25 – 27 April 1999 Post Conference Study Tour to Karst & Volcanics of Western Victoria
 April 1999 ACKMA Life Member’s Fund inaugurated
 April 1999 CD Rom – *ACKMA Insights* – launched
 July 1999 Cammoo Caves, Queensland, sold to the Queensland Parks & Wildlife Service, closed as a Tourist cave, and added to the Mt. Etna Caves National Park
 8 October 1999 ACKMA & ASF Joint Executive Meeting, Canberra, Australian Capital Territory
 27 November 1999 Official Handover of Cammoo Caves to Queensland Parks & Wildlife Service
 November 1999 Black Water Rafting Ltd. assumes control of Mason’s Glowworm Caves, New Zealand
 3 December 1999 New Visitor Facilities opened at the Glowworm Cave, Waitomo, New Zealand

2000

- 4 – 7 February 2000 5th Australian Karst Studies Seminar, Wellington Caves, New South Wales
 28 February – 3 March 8th Cave Guides *Gabfest*, Wombeyan Caves, New South Wales
 12 June 2000 Brian Clark, Manager of Naracoorte Caves, South Australia, is awarded the Public Service Medal in the Queen’s Birthday Honour List

- 17 June 2000 ACKMA Annual General Meeting, Buchan Caves, Victoria
- 7 August 2000 New displays of Waitomo Museum of Caves, New Zealand, officially opened
- 11 October 2000 Australian Geological Survey Organisation “Discover Australian Caves” Education Kit launched, Yarrangobilly Caves, New South Wales.
- November 2000 Lake Cave, Margaret River, Western Australia, re-lighting and re-fit, completed
- 6 – 9 November 2000 Limestone Quarrying and Conservation Workshop, Bathurst, New South Wales
- 29 November 2000 Greater Blue Mountains Area, New South Wales (including Jenolan Caves), inscribed on the World Heritage List
- December 2000 Upgrade of Lucas Cave, Jenolan Caves, New South Wales, completed.

2001

- 26 January 2001 Professor Elery Hamilton-Smith awarded Membership of the Order of Australia (AM) in Queen’s Australia Day Honours List.
- 4 March 2001 Official Opening of new Hasting Caves Visitor’s Centre, Tasmania
- 30 April – 5 May 2001 **14th Australasian Conference on Cave & Karst Management, Wombeyan Caves, New South Wales**
- 5 - 7 May 2001 Post Conference Study Tours to Yarrangobilly Cave & Cooleman Plains, and to Abercrombie & Jenolan Caves, New South Wales
- 26 May – 29 May 2001 Asia Pacific Forum of Karst Eco-systems and World Heritage, Gunung Mulu National Park, Sarawak, Malaysia
- 1 – 2 December 2001 Lake Cave Centenary Celebrations, Margaret River, Western Australia

2002

- 3 –8 February 2002 9th Cave Guides Gabfest (Cave & Karst Presenters Workshop), Narracoorte Caves, New South Wales
- 5 May 2002 Professor Elery Hamilton-Smith awarded Honorary Doctorate of Applied Science by RMIT University, Melbourne.
- May 2002 Re-lighting of Newdegate cave, Hastings, Tasmania, completed by Neil Kell.
- 11 May ACKMA Annual General Meeting, Yarrangobilly Caves, New South Wales
- 10 July – 10 August ACKMA has a stand at the International Cave Expo, Korea.
- 4 December New Visitor’s Centre at Buchan Caves, Victoria, officially opened.

2003

- 5 – 12 May **15th Australasian Conference on Cave & Karst Management, Chillagoe Caves and Undara Lava Tubes, North Queensland.**
- May Re-lighting of Cutta Cutta Cave, Northern Territory, completed by Neil Kell
- August River Cave Centenary Celebrations, Jenolan Caves, New South Wales
- 20 December Memorial Dedication Ceremony to the late Peter Dimond, Waitomo Museum of Caves, NZ

2004

- 24 – 28 May 10th Cave Guides Workshop, Mole Creek, Tasmania.
- 29 – 30 May ACKMA Annual General Meeting Weekend, Mole Creek, Tasmania.
- 24 July Launch of 'Friends of Wellington Caves', New South Wales
- 11 September Lucas Cave Upgrade Officially Opened, Jenolan Caves, New South Wales
- 10 – 19 October Limestone Coast (IGCP 448) 2004 Workshop, Naracoorte Caves, South Australia
- August Publication of the Mole Creek Karst National Park Management Plan, Tasmania
- 6 November New Book: *Caves & Karst of Wombeyan* launched, Wombeyan Caves, New South Wales
- November *The Cave of the Spirit*, Waitomo, NZ, opened as a show cave by Spellbound Tours.
- December *Caves and Caving* Exhibit opened at Tasmanian Museum & Art Gallery, Hobart.

2005

- 6 -7 January Bushfires devastate Yanchep National Park, Western Australia
- 29 March – 2 April 10th Conference on Australasian Paleontology (CAVEPS), Naracoorte Caves, South Aust.
- 6 – 10 April ACKMA Pre-Conference Study Tour, South Island, New Zealand
- 10 -17 April **16th Australasian Conference on Cave & Karst Management, Wespport, South Island, New Zealand.**
- 17 – 22 April ACKMA Post-Conference Study Tour, South Island, New Zealand



Scene in Te Anau Caves, South Island, New Zealand

ANNUAL GENERAL MEETING
THURSDAY 14 APRIL, 2005
BULLER WORKING MEN'S CLUB, WESTPORT, NEW ZEALAND
commencing at 5.15pm
AGENDA

CHAIRPERSON: ROBYN MCBEATH – PRESIDENT, ACKMA Inc.

- 1) Confirmation of the minutes of the previous meeting (held at Undara, Qld, on 10 May 2004).
- 2) Any actions arising from those minutes.
- 3) Receipt of reports from the Committee upon the business of the Association during the preceding financial year, except the Treasurer's Report (listed for presentation below).
- 4) To receive and consider the statement to be submitted to the Victorian Incorporation Associations Office by the Association in accordance with section 30 (3) of the Act.
- 5) To receive the Treasurer's Report, and to consider the budget, income and expenditure of the Association.
- 6) To set the membership fees of the Association for 2005-2006.
- 7) To elect Officers of the Association, viz: President, N. Z. Vice President, Aust. Vice President, Treasurer, Executive Officer, Conference Convenor, Publications Officer, and the three ordinary members of the Committee*:

* Currently these positions are allocated the following tasks: Karst Science Officer, Information Officer, and Information Technology Officer/Webmaster. Note that these responsibilities outlined for ordinary members of the Committee are not defined in the Rules of the Association and can be reset according to the wishes of the incoming Committee.

- 8) To consider the day to day operations of the Association, and the following items of general business:
 - a) the conference at Buchan, Victoria, in 2007 – Report from the Dale Calnin, Convenor.
 - b) the venue for the 2009 (18th) Conference – to consider submission(s).
 - c) the venue and dates for the 2006 ACKMA AGM weekend – to consider submission(s).
 - d) recommendations from the ACKMA Committee (if any).
 - e) to elect Fellows and/or Life Members (if nominated).
 - f) other items of general business as the Chairman may accept.
 - g) to make presentations.

Dr. R. Lyons,
Executive Officer,
1 April 2005

MINUTES OF THE ANNUAL GENERAL MEETING OF THE AUSTRALASIAN CAVE AND KARST MANAGEMENT ASSOCIATION, HELD AT MOLE CREEK, TASMANIA ON 31 MAY 2004

OPENING: The President, Robyn McBeath, opened the meeting at 11.15 am, and welcomed all present.

PRESENT: Members: Jay Anderson, Steve Bourne, David Butler, Dale Calnin, Peter Chandler, Arthur Clarke, Penny Davidson, Rolan Eberhard, Grant Gartrell, Elery Hamilton-Smith, Kent Henderson, Ian Houshold, Ruth Lyons, Robyn McBeath (Chair), Stephanie Mahon, Scott Melton, Janelle Payne, Cathie Plowman, Barry Richard, Henry Shannon, Dave Smith, Andy Spate, Mary Trayes, Rauleigh Webb. Visitors: Rosemary Black, Geoff Deer, Paul Flood, Sarah Joyce, Jodie Rutledge.

APOLOGIES: Peter Bell, Michael Chalker, Tony Culberg, Stefan Eberhard, Kevin Kiernan, Lana Little, Derek Mason, Greg Martin, Greg Middleton, Dianne Vavryn, Keith Vanderstaay, Kevan Wilde.

1. **The minutes of the previous meeting**, held at Undara, Queensland on 10 May 2003, having been circulated, were taken as read. Moved Anderson/Bourne that the minutes be accepted as a true record. Agreed
2. **Actions arising:** a) Preservation of cave fossils. Bourne reported that action to obtain legislative protection of cave fossils was continuing. b) Barkers Knob Cave. Spate reported that as he had not received a draft letter from Atkinson and Collins, no further action had been taken.
3. **Receipt of reports from Committee.** Moved Henderson/Butler that the reports as tabled be received. Agreed
4. **Statement to Victorian Incorporation Associations Office.** Moved Henderson/Spate that the report be submitted when prepared. Agreed
5. **Treasurer's Report.** Gartrell spoke to the report as tabled, commenting on the cyclic nature of ACKMA's finances due to the biennial conference, and that the 2004-2005 budget included the transfer of \$1500 from the NZ account, an amount within NZ subscriptions. Membership remains steady with new subscriptions roughly equaling resignations. Moved Plowman/Trayes that the Treasures Report be accepted. Agreed
6. **Membership fees.** The committee recommended that the subscription for 2004-2005 financial year be set at \$50 (full membership), \$30 (student) for Australian and New Zealand members, the amounts to be in their respective currencies, and \$60 (Aust) for overseas members. Moved Melton/Richards that the fees be set as recommended. Agreed
7. The meeting thanked Kent Henderson for keeping the costs of journal production down while maintaining its standard.
8. **Election of officers.** Nominations were as follows:

POSITION	NOMINEE	PROPOSER	SECONDER
President	Robyn McBeath	S. Eberhard	K. Henderson
N. Z. Vice President	Peter Chandler	D. Smith	K. Wilde
Aust. Vice President	Steve Bourne	K. Henderson	K. Kiernan
Treasurer	Dr. Grant Gartrell	A. Clarke	I. Houshold
Executive Officer	Dr. Ruth Lyons	K. Henderson	I. Houshold
Conference Convenor	Phil Wood	G. Schurr	M. Trayes
Publications Officer	Kent Henderson	S. Bourne	A. Clarke

Three ordinary members of the Committee:

POSITION	NOMINEE	PROPOSER	SECONDER
Committee member	Ian Houshold	C. Sharples	A. Clarke
Committee member	Dave Smith	P. Chandler	K. Wilde
Committee member	Rauleigh Webb	S. Bourne	K. Henderson

As the number of nominations equaled the number of vacancies, the nominees were declared elected by acclamation.

7. General Business

a) **16th ACKMA Conference**, to be held in Westland, NZ, 2005. Trayes reported on behalf of the Organising Committee on progress. The conference program is basically as outlined at the previous meeting. The number of papers will be limited to 25 and early registration is encouraged. Information can be accessed through the ACKMA website. The President thanked Mary for attending the AGM, saying that we all looked forward to a great conference. Endorsed by acclamation.

b) **17th ACKMA Conference**, to be held in Buchan, Victoria, 2007. The presentation by Stephanie Mahon was deferred until after the meeting. (The presentation was received with applause.)

c) **Proposal that ACKMA convene a Visitor Information Database** received from Alan Jevons. The Committee, while agreeing with the usefulness of such a database, considered that implementation of the project lay well beyond the ability of ACKMA, and recommended that this worthy project be forwarded to the Cooperative Research Centre for Sustainable Tourism for their consideration. Moved Henderson/Mahon that the Committee's recommendation be adopted. Agreed.

d) **Recommendations of the ACKMA Committee.** All recommendations from the ACKMA Committee are dealt with under other agenda items.

e) Election of Fellows

Andy Spate nominated **Lana Little** for election as a Fellow of ACKMA, speaking of her contribution over a long time, and particularly as organiser of the 15th ACMA Conference. The nomination was seconded by Bourne and approved by acclamation. Steve Bourne nominated **Dr. Grant Gartrell** for election as a Fellow of ACKMA, and spoke of his contribution to caving over more than 40 years, his discovery and enthusiastic exploration of many caves, and his active and continuing fight to protect caves. The nomination was seconded by Spate and approved by acclamation. Grant was clearly lost for words, but recovered sufficiently to thank the meeting.

CLOSURE: There being no other items of business, the President closed the meeting at 11.55am.

**SUBMISSION TO HOST THE 2006 ACKMA Inc. ANNUAL
GENERAL MEETING WEEKEND at KELLY HILL CAVES,
KANGAROO ISLAND, SOUTH AUSTRALIA.**

On behalf of Regional Conservation Kangaroo Island, I wish to make a submission to host the 2006 ACKMA Annual General Meeting weekend on Kangaroo Island, South Australia. I understand that the AGM is likely to take place in May 2006, however that the dates are yet to be finalised.

It is proposed that the weekend commence with the Committee meeting on the Friday evening. Saturday would be spent viewing Kelly Hill Caves and other karst features of the Island, for example Admiral's Arch and coastal cave systems, followed by the AGM in the late afternoon and dinner. Sunday would be an opportunity to showcase other tourism icons of the Island including Seal Bay and Flinders Chase.

Kangaroo Island is located approximately 115 kilometres south of Adelaide and is renowned worldwide for its amazing wildlife and scenery. Home to a number of endemic and threatened species of flora and fauna, it is a popular destination for visitors from all corners of the globe.

Kelly Hill Caves has recently undergone a major lighting upgrade, which Senior Guide Michael Kidd will deliver a presentation on at the upcoming 2005 ACKMA Conference in New Zealand. This state of the art fibre optic system is we believe, the first of its kind in the Southern Hemisphere. Holding the ACKMA AGM on Kangaroo Island will give members a chance to see this latest technology in a working environment and to observe the advances made available in cave management.

Should you require any further information, please do not hesitate to contact me via phone or email Wright.Jacqueline@saugov.sa.gov.au

Yours sincerely
Jacqueline Wright

**SUBMISSION TO HOST THE 18TH AUSTRALASIAN
CONFERENCE ON CAVE AND KARST MANAGEMENT,
in 2009, at MARGARET RIVER, WESTERN AUSTRALIA**

The Augusta Margaret River Tourism Association Inc., The Cape Naturaliste Tourism Association Inc. and the Department of Conservation and Land Management wish to make a submission to host the 2009 Australasian Conference on Cave & Karst Management at Margaret River, Western Australia.

Margaret River is a comfortable three hour drive, 250 kilometres south of Perth. It is the quintessential heart of the Margaret River wine region and renowned for its famous hidden wilderness! Ideally located along the forested banks of the Margaret River halfway between Capes Naturaliste and Leeuwin, the township is a great base from which to visit the caves and karst of the region and experience the local atmosphere.

The town boasts many styles of accommodation, ranging from self catering camping through to luxury 5 star retreats. Gastronomic delights can be found in the many cafes lining the main street and meals prepared by award winning chefs are served in restaurants and wineries throughout the region.

The Augusta Margaret River Tourism Association has extensive experience with conference management having coordinated and hosted the 1st International Wine Tourism Conference in May 2004, with the second scheduled for Margaret River in November 2006.

Conference field trips will take us up and down the scenic Caves Road, a 95 kilometre stretch connecting the townships of Augusta at the south with Yallingup in the north. Most of the land to the west of this gently, meandering route is given over to the Leeuwin-Naturaliste National Park, famed for its towering forests and striking coastline. Beneath this sublime terrain is a famous hidden wilderness, the caves of the Leeuwin Naturaliste Ridge.

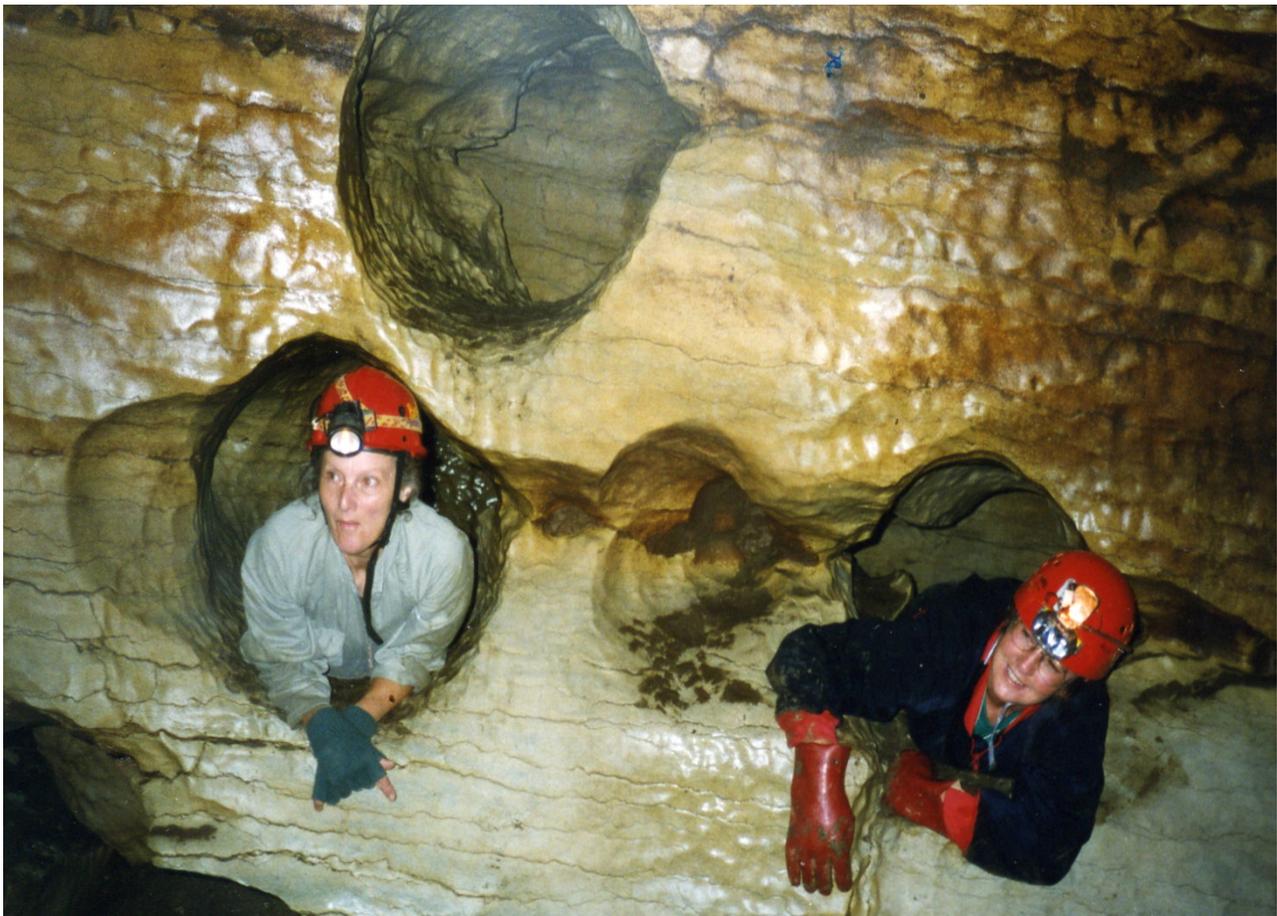
Within the heart of Leeuwin Naturaliste Ridge we'll find the majestic Boranup Forest with its stands of western karri, these are among the world's tallest trees, and forest walks are guaranteed to take the breath away. It is nearby that you'll visit the CaveWorks Interpretive Centre and the Lake, Mammoth, Giants and Calgardup Caves.

The seascapes on the western side of the ridge are regarded as some of Australia's most splendid. Rugged rocky bays, secluded white sandy beaches and crystal clear waters are found along the length of the 130 kilometre Indian Ocean coast. The area is legendary for its excellent year-round surfing, windsurfing and kitesurfing conditions.

So, if you're left wondering what an average day at the conference might be; lets start with a visit to one of the caves, Ngilgi, Calgardup, Mammoth, Lake, Giants or Jewel, then we might take a drive or stroll through the splendid Boranup karri forest, before lunch at a local winery, what about whiling the afternoon away in the sun at one of the regions spectacular beaches? Or visit the fine galleries and studios displaying the superb creations of local craftsmen and artists.

Naturally there'll also be plenty of time to wine taste, go whale watching, climb a lighthouse, surf, taste gourmet produce, take a river cruise, cycle through wildflowers... and if there's time what about a paper or two. Ah, Margaret River: so much to do!

Robyn McBeath,
Caves Manager,
Augusta Margaret River Tourism Association Inc.



The portholes in Xanadu Cave, Paparoa National Park

Committee Annual Reports

2004 - 2005

PRESIDENT'S REPORT

- Robyn McBeath

Aside from providing a quarterly report for the ACKMA Journal, the past twelve months as President has been quiet. The quarterly ACKMA Journal and Website continue to be the mainstay of our Association, special recognition is deserved by Kent Henderson, our Publication Officer and Rauleigh Webb, our Information Technology Officer & Webmaster, for their efforts. Kent continues to generously commit his time in ensuring the journal publications are regular and Rauleigh frequently mediates and updates the ACKMA list and Webpages – thank you to both.

The 2004 ACKMA AGM, followed the Cave Guides Workshop at Mole Creek, Tasmania was held at the end of May 2004. Both events were exceptionally well organised by Cathie Plowman (Parks and Wildlife Service, Tasmania). Along with special thanks to Cathie, I would also like to acknowledge Ian Household and Rolan Eberhard for their participation in organising field trips and knowledge sharing and Trish and Geoff Deer, for the tour of Gunns Plains Cave.

I would like to thank the Executive Committee for their assistance over the last twelve months, also to ACKMA members – without your membership ACKMA would not be the great organization it is. We look forward to your continued support. I have been pleased to serve as the Association as President over the past two years and I wish the incoming president all the very best.

AUSTRALIAN VICE PRESIDENT'S REPORT

- Steven Bourne

The past year has seen some interesting developments in South Australia that will have an interest to ACKMA members. Firstly, Kelly Hill Cave on Kangaroo Island has been relit using fibre optic technology, certainly the first Australia and one of few worldwide. The result is quite startling, with quite pure, white light highlighting the exquisite predominantly white speleothems in the cave.

I have yet to see the finished product with all track lighting in place, but from all reports, the project has been a success. It was a huge step for the Department for Environment and Heritage, the managing agency of the cave, to invest so heavily and ACKMA members Jonathan Woods and Rob Ellis should be congratulated for their work. It may not be for every cave and neither it should be- “variety is the spice of life”!

A discussion paper was released in South Australia on fossil protection, reviewing the current level of protection offered by the *Mining Act 1971* and the *National Parks and Wildlife Act 1972* and the option of developing new legislation. Submissions are being considered with results expected to be released shortly.

This is timely given the increase in fossil sales through web based auctions such as Ebay and the concerns raised at ACKMA in 2003.

A policy on mining on karst is also being developed by Primary Industries of SA (PIRSA), with myself as the Department for Environment and Heritage representative. Progress has been hastened with activity around the Tantoola Caves CP that could affect the integrity of the two known caves in the reserve.

One challenge that lies ahead for Naracoorte Caves and I am sure other cave systems, is ensuring adequate recognition in regional Natural Resource Management Plans. Biodiversity is quite rightly a high priority for natural resource management agencies, but we also need to ensure geological heritage is recognised. For example, karst barely rates a mention in the South East of South Australia Natural Resource Management Plan.

I have had the pleasure of completing the Graduate Diploma in Karst Management offered through Charles Sturt University over the past two years. Although a tremendous amount of work on top of a full time workload, the course is rewarding providing current and potential cave managers essential background knowledge.

NEW ZEALAND VICE PRESIDENT'S REPORT

- Peter Chandler

It has been a busy year for all, not least for the Organising Committee of the West Coast Conference. International visitor numbers continue to climb particularly from western countries, providing opportunities with accompanying pressures on the local karst Resources.

Though not necessarily in karst areas, changing economic climates have continued an increase in North Island hill country sheep farming, and perhaps a reduction in forestry. Other areas have of course seen huge increases in dairy farming, nationally balanced by increasing levels of protection of waterways. Recently, Dave Smith advised a NIWA National Institute water & Atmosphere study of Groundwater a large part focussing on karst. Certainly a highlight was Sir David Attenborough and the BBC film crews visiting Waitomo.

ACKMA New Zealand has had a steady year, with membership at about 45 people, and the bank balance in good shape.

EXECUTIVE OFFICER'S REPORT

- Dr. Ruth Lyons

The Executive Officer's work has been far from onerous this year. Principal task has been to write to thank the many people who contributed to the success of the ACKMA meeting in Tasmania last year, and it was no effort at all to wax enthusiastic. Cathie Plowman's organisation was outstanding; it was cheerful, competent and conveyed a feeling that nothing was too much trouble. She was ably assisted by other Tassie cavers and ACKMA members – our thanks again to all of you.

I would like to thank ACKMA for the opportunity to act as Executive Officer for the last 3 years. I am sorry I am not able to continue in the position at this time, and wish the incoming Executive Officer as pleasurable a time as I have had.

PUBLICATIONS & ASSISTANT EXECUTIVE OFFICER'S REPORT

- Kent Henderson

Publications:

The past twelve months has seen four ACKMA Journals published, Numbers 55, 56, 57, and 58. The success of the Journal is very largely determined by the quality of its contents, and I am most grateful to all our contributors, particularly those ACKMA committee members who contribute regularly, for their ongoing support.

The costs of production has increased slightly over the twelve months, the first increase in many years. The print run per issue is currently 260 copies. In terms of production, the Journal remains in two-column format, and text remains at 9 point. Size is usually 44 pages. I would like to particularly thank my sub-editor, Dianne Vavryn who continues to do such a fantastic job. I usually send her the page proofs with very little notice, which she always turns around in record time. The quality of the Journal is in no small measure a reflection of her efforts.

I would also like to thank the members of the ACKMA Editorial Committee who have been a great support to me over several years now, particularly the Committee Chairman, Professor Elery Hamilton-Smith, although thankfully there services as arbitrators were not required in the previous twelve months.

I would also like to thank our Treasurer and Membership Records Officer Dr. Grant Gartrell, who has done a great job in his dual role. We have worked very well together, and together with the efforts of our Executive Officer, Dr. Ruth Lyons, the administration of ACKMA has flowed very smoothly indeed.

The hard copy Proceedings of the 2003 Chillagoe/Undara Conference should be published in time for the 2005 Conference (fingers crossed...), and it is expected that the CD Rom version will also soon be available – thanks to the excellent efforts of our Information Officer, Dave Smith, who oversees production.

Finally, I would particularly like to sincerely thank to our outgoing Committee. I always rely on the advice of each Committee member at various times, and I greatly appreciate their support and friendship.

Membership:

Membership of the Association is currently 245, compared to 232 last year, which is a good result. Membership is tracked as follows:

April 2005: 245. April 2004: 232. April 2003: 225. April 2002: 204. April 2001: 238. April 2000: 230.

Note that membership includes a small number of reciprocal members (organizations with which ACKMA is cross affiliated or otherwise associated) where no fee is paid either way. There are a few unfinancial members, and efforts to regain lapsed members are ongoing. Membership trends to be somewhat cyclical, with numbers increasing after each full Conference, but otherwise it tend to be relatively stable – in no small measure due to the work of our Treasurer and Membership Records Officer, Dr. Grant Gartrell, and Peter Chandler in New Zealand, to whom we are all most grateful.

NZ INFORMATION OFFICER'S REPORT, and NEW ZEALAND SPELEOLOGICAL SOCIETY (NZSS) LIAISON OFFICER'S REPORT

- Dave Smith

No significant requests for information have been received, as usual. I have been putting together the latest version of the ACKMA CD ROM, which should be available in the near future. NZSS liaison is continual, as I am also on the NZSS Council. There are no issues of note and NZSS says hi!

TREASURER & MEMBERSHIP RECORDS OFFICER'S REPORT & A. S. F. LIAISON OFFICER'S REPORT

- Dr. Grant Gartrell

This report, together with a full financial statement, will be circulated at the Annual General Meeting.

INFORMATION TECHNOLOGY OFFICER / WEBMASTER'S REPORT

- Rauleigh Webb

During the year the <www.ackma.org> website was updated with the following:-

- The ACKMA Membership form was updated online.
- Information & images of caves & karst features around Westport for the 16th ACKMA Conference in NZ in 2005.
- Some members sent in updated information relating to the caves in their area, which was placed online.
- ACKMA 2005 AGM Details.
- The Journal Articles Option with selected articles from each Journal publication was updated after each journal was released with selected articles from the editor.
- A number of excellent links were added to the ACKMA Links page.

The ACKMA Committee mailing list was created following the 15th ACKMA conference to allow members and the committee to easily communicate and has now been used 64 times to date.

The ACKMA mailing list was used 93 times in 2003, 69 times in 2004 and so far 10 times in 2005.

WEB SITE HOSTING

The ACKMA web site hosting was through cheapwebhost.us which was taken over by wehostwebpages.com in 2004. In January 2005 we received notification that the type of account that was held previously will be converted to a Shared Basic plan which will be charged at US\$9.95 per month (previously US\$2.99/month). The features of this account include 200MB of disk space, 10 GB of transfer/month, unlimited email accounts, full MySQL and MSSQL database support and e-commerce support. This supplier only allows monthly billing.

Other web hosting companies have been examined as they offer better value for money. I would recommend that ACKMA choose a Linux hosting website as these are now significantly cheaper than Windows hosting. I have examined the top three from the top 10 web hosting companies (<http://www.thehostingchart.com/?esoj=1&ptkh=422>):-

1. <http://www.ixwebhosting.com/index.php/home.dspPage/page/info.dspUnixHosting>
2. http://www.hostexcellence.com/instant_h.php
3. <http://www.globat.com/packages/index.php?packages=gigabyte>

In appendix 1 below there is a comparison of the features for each website and monthly and annual fees. These top we hosting sites are all relatively similar, however based on this comparison and the simple Control Panel management interface at Host Excellence I would recommend that ACKMA move their website to Host Excellence with the Instant Account. The only additional cost will be the US\$20 setup fee that is charged by all of these companies.

On Line Payment systems

MAL'S E-COMMERCE

I have examined two options, in detail, for online payment systems. The first involves a free secure shopping cart system from Mal's e-commerce. The Wildflower Society of Western Australian uses this system and after correspondence with their webmaster I can confirm that the system is FREE with no hidden costs. They have been using the system for over two years for their seven membership categories (<<http://members.ozemail.com.au/~wildflowers/>> - choose the Join Us menu option to view) and their bookshop which sells 3-4 books per week. The system requires registration with Mal's e-commerce but there are no fees.

The online system just records all of the details for the person performing the transaction and then sends an email to say the Treasurer who is able to "login" securely to Mal's site and retrieve the credit card etc details. The transaction is then processed manually by the Treasurer. If the committee and particularly the Treasurer are happy with this system then it is a very cost effective system for ACKMA but all of the "real" cost is borne by the Treasurer.

PAYPAL

The Paypal system works by users (ACKMA Members) creating a Paypal account (I think it cost about \$2 to setup when you conduct your first transaction). From then on they can pay for anything online, securely, which allows Paypal payments (e.g. ebay and many other online stores). Paypal holds your credit card details so when you pay with Paypal it is charged to the credit card.

Paypal recently (December 2004) advised that they now performed transactions in Australian Dollars. This decision removes the costs of currency conversion, for every transaction, before the money hits the ACKMA bank account. There are also no setup charges, monthly charges, or gateway fees.

Therefore the only costs involved is the transaction charge, which would be paid by the member performing the transaction, \$1.48 for each transaction. Fees for the transfer of monies from the Paypal holding account to the ACKMA bank account are:-

Free for \$150.00 AUD or more, \$1.00 AUD for \$149.99 AUD or less to bank accounts in Australia.

This would just mean that to avoid fees monies would only be transferred once \$150 or more was in the Paypal account.

KARST SCIENCE OFFICER'S REPORT

- Ian Household

My first year as Karst Science Officer, and a useful and enjoyable one from many perspectives. A highlight was the International Karst Correlation and Subterranean Wetlands conference at Naracoorte, where ACKMA members organised a memorable interdisciplinary program. Many Chinese delegates attended, giving us a fascinating perspective on what it is like to live and interact daily with karst terrains and the science and associated technologies which underpin the normal way of life for much of China.

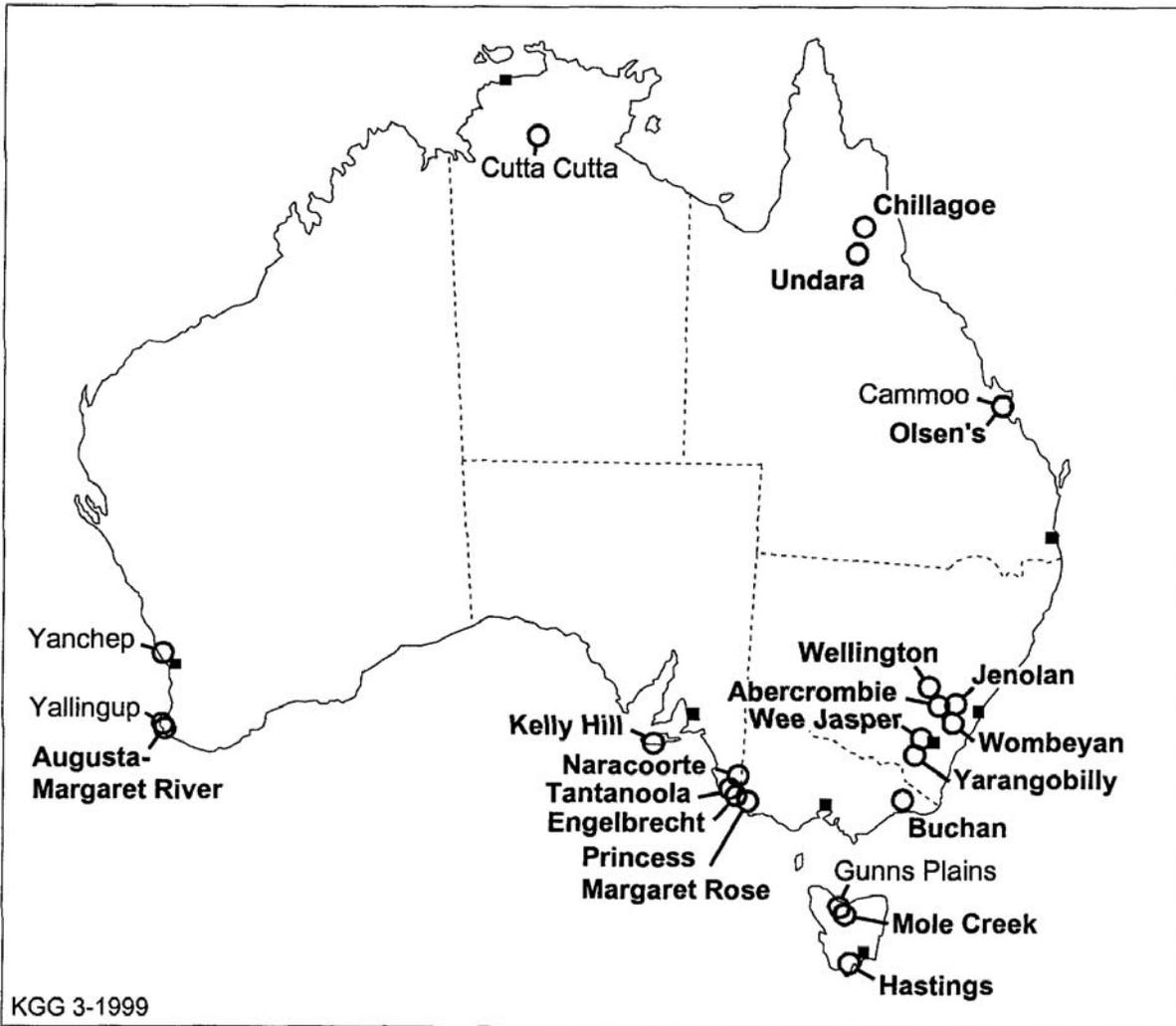
The ASF conference at Dover presented the useful and meticulous work being undertaken by generally non-professional speleologists, from the impressive mapping in the Gregory karst to the intricate databases necessary to store and manipulate karst system and cave data.

From a purely scientific perspective the meeting that most impressed me (and impressed on me the necessity for adequate management and curation of scarce resources such as stalagmites, flowstones and other karstic sediments such as tufas) was the December meeting of the Australasian Quaternary Association at Cradle Mountain.

Ten papers and two posters addressed the palaeoenvironmental interpretation of sediments from caves and karst systems, indicating the high level of interest this work is now generating. Topics included the development of methods of dating and isotopic analysis, reconstruction of past rainfall patterns, reconstructing wildfire frequency, timing of glacial/interglacial transitions, using speleothems to assess the interaction of prehistoric humans and their environment, and the use of tufas for high resolution climatic records.

For cave and karst managers this boom in research is a two-edged sword. The likelihood of excellent palaeoenvironmental reconstruction is there, but there is also potential for unnecessary damage and wastage of sensitive and non-renewable sample materials.

It will be important to maintain good relations with research institutions and individual researchers, develop protocols for sampling and for curation of partially utilised specimens. This will rely on managers developing a sound knowledge of the types of materials used, their rarity and sensitivity, and methods for their long-term storage and care.



Location of Australia's Show Caves.

Map by Ken Grimes

ATTENDANCE AT AUSTRALASIAN CAVE & KARST MANAGEMENT CONFERENCES 1973 – 2005

Note: Attendees at only one Conference are not listed

- | | |
|---|---|
| <p>1ST CONFERENCE Jenolan, N. S. W., 1973.
40 Delegates.
Convenors: John Dunkley & Elery Hamilton-Smith</p> <p>2ND CONFERENCE Hobart, Tas., 1977.
18 Delegates.
Convenors: Roy & Andrew Skinner, Greg Middleton,
& Tony Culberg</p> <p>3RD CONFERENCE Mt. Gambier, S. A., 1979.
30 Delegates.
Convenors: Ed Bailey, Graham Pilkington,
& Tony Robinson</p> <p>4TH CONFERENCE Yallingup, W. A., 1981.
24 Delegates.
Convenors: John Watson, Joy Smith, Keith Tritton,
& Rauleigh Webb</p> <p>5TH CONFERENCE Lakes Entrance, Vic., 1983.
25 Delegates.
Convenors: Alan Costigan & Arnold Clarke</p> <p>6TH CONFERENCE Waitomo, N. Z., 1985.
31 Delegates
Convenor: Dave Williams</p> <p>7TH CONFERENCE New South Wales, 1987.
34 Delegates.
Convenor: Andy Spate</p> <p>8TH CONFERENCE Punakiki, N. Z., 1989.
40 Delegates.
Convenor: Kevan Wilde</p> | <p>9TH CONFERENCE Margaret River, W.A., 1991.
47 Delegates.
Convenor: Keith Tritton</p> <p>10TH CONFERENCE Rockhampton, Qld., 1993.
62 Delegates.
Convenor: Ann Augusteyn</p> <p>11TH CONFERENCE Tasmania, 1995.
63 Delegates.
Convenor: Chester Shaw</p> <p>12TH CONFERENCE Waitomo, N. Z., 1997.
55 Delegates.
Convenor: Peter Dimond</p> <p>13TH CONFERENCE Mt. Gambier, S. A., 1999.
82 Delegates.
Convenor: Brian Clark</p> <p>14TH CONFERENCE Wombeyan, N. S. W., 2001
83 Delegates.
Convenors: Michael Chalker & Andy Spate</p> <p>15TH CONFERENCE Chillagoe/Undara, Qld, 2003.
73 delegates.
Convenors: Lana Little, Val Speedie & David Gillieson</p> <p>16TH CONFERENCE Westport, N. Z., 2005.
72 delegates
Convenor: Phil Wood</p> |
|---|---|

Those noted in **BOLD** below are registered as Delegates for the 16th Conference

15 Conferences

Hamilton-Smith, Professor Elery

I – 1973, II – 1977, III – 1979, IV – 1981, V – 1983, VI – 1985, VII – 1987, VIII – 1989,
IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XVI – 2005

12 Conferences

Spate, Andy

IV – 1981, V – 1983, VI – 1985, VII – 1987, VIII – 1989, IX – 1991, X – 1993,
XI – 1995, XII – 1997, XIV – 2001, XV – 2003, XVI – 2005

White, Nicholas

III – 1979, V – 1983, VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995,
XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005

10 Conferences

Chalker, Michael

V – 1983, VI – 1985, VII – 1987, VIII – 1989, IX – 1991, XI – 1995, XII – 1997,
XIII – 1999, XIV – 2001, XV – 2003.

Henderson, Kent

VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999,
XIV – 2001, XV – 2003, XVI – 2005

Webb, Rauleigh

IV – 1981, V – 1983, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XII – 1997,
XIII – 1999, XV – 2003, XVI – 2005

9 Conferences

Chandler, Peter	VI – 1985, VII – 1987, IX – 1991, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Martin, Greg	VI – 1985, VIII – 1989, IX – 1991, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Holland, Ernst	I – 1973, VI – 1985, VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XIII – 1999, XIV – 2001
Williams, David	III – 1979, IV – 1981, VI – 1985, VII – 1987, VIII – 1989, IX – 1991, X – 1993, XII – 1997, XIII – 1999

8 Conferences

Clark, Brian	VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XIII – 1999, XIV – 2001, XV – 2003
Dimond, Peter *	VI – 1985, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001
Shaw, Chester	IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Wilde, Kevan	VI – 1985, VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999

7 Conferences

Ash, John	VI – 1985, VIII – 1989, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XVI – 2005
Richard, Barry	IX – 1991, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Vavryn, Dianne	X – 1993, XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005

6 Conferences

Augusteyn, Ann	IX – 1991, X – 1993, XI – 1995, XII – 1997, XIII – 1999, XV – 2003
Calnin, Dale	V – 1983, IX – 1991, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Costigan, Alan	I – 1973, II – 1977, III – 1979, IV – 1981, V – 1983, VI – 1985
Houshold, Ian	V – 1983, VII – 1987, XI – 1995, XIII – 1999, XV – 2003, XVI – 2005
Schurr, Geoff	VIII – 1989, X – 1993, XII – 1997, XIV – 2001, XV – 2003, XVI – 2005
Tahi, Robert	XI – 1995, XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Kiernan, Dr. Kevin	VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XV – 2003
White, Sue	V – 1983, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XIII – 1999
Wood, Phil	VIII – 1989, X – 1993, XI – 1995, XIII – 1999, XIV – 2001, XVI – 2005

5 Conferences

Collinson, Neil	XI – 1995, XII – 1997, XIV – 2001, XV – 2003, XVI – 2005
Kell, Neil	VII – 1987, VIII – 1989, IX – 1991, X – 1993, XI – 1995, XIII – 1999
Mason, Derek	XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
McBeath, Robyn	XI – 1995, XII – 1997, XIII – 1999, XV – 2003, XVI – 2005
Millar, Ian	VI – 1985, VIII – 1989, XII – 1997, XV – 2003, XVI – 2005
Smith, Dave	XII – 1997, XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Tritton, Keith *	IV – 1981, VII – 1987, VIII – 1989, IX – 1991, X – 1993
Watson, Dr. John	II – 1977, IV – 1981, IX – 1991, X – 1993, XI – 1995

4 Conferences

Bell, Peter	IX – 1991, X – 1993, XI – 1995, XIII – 1999
Bourne, Steven	XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Carden, Deborah	XII – 1997, XIII – 1999, XV – 2003, XVI – 2005
Clarke, Arthur	XI – 1995, XIII – 1999, XIV – 2001, XVI – 2005
Dunkley, John	I – 1973, III – 1979, V – 1983, XIV – 2001
Gartrell, Dr. Grant	XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Gillieson, Prof. David	XI – 1995, XIII – 1999, XIV – 2001, XV – 2003
Hearn, David	IX – 1991, X – 1993, XIII – 1999, XIV – 2001
Little, Lana	IX – 1991, XI – 1995, XIV – 2001, XV – 2003

Mickie, Dr. Neville	XI – 1995, XIII – 1999, XIV – 2001, XV – 2003
Pierce, Miles	XI – 1995, XII – 1997, XIII – 1999, XVI – 2005
Pierce, Rhonwon	XI – 1995, XII – 1997, XIII – 1999, XVI – 2005
Reilly, Steve	XI – 1995, XIII – 1999, XIV – 2001, XVI – 2005
Rebbechi, Dennis	IX – 1991, XI – 1995, XIII – 1999, XV – 2003
Shaw, Kay	XIII – 1999, XIV – 2001, XV – 2003, XVI – 2005
Tane, Norman	IX – 1991, X – 1993, XI – 1995, XII – 1997
Watson, Van	XI – 1995, XII – 1997, XIV – 2001, XVI – 2005

3 Conferences

Augusteyn, Ken	IX – 1991, X – 1993, XI – 1995	James, Cameron	XIII – 1999, XIV – 2001, XV – 2003
Ash, Martha	VI – 1985, XII – 1997, XIII – 1999	Kermode, Les*	VI – 1985, XII – 1997, XIII – 1999
Baker, Clare	XIV – 2001, XV – 2003, XVI – 2005	Larkin, Patrick	IX – 1991, XI – 1995, XIII – 1999
Bauer, Jo	VII – 1987, VIII – 1989, IX – 1991	Lyons, Dr. Ruth	XI – 1995, XII – 1997, XV – 2003
Bradley, Phil	IX – 1991, X – 1993, XI – 1995	Macrow, Peter	II – 1977, III – 1979, IV – 1981
Callaghan, John	I – 1973, V – 1983, XII – 1997	Matthews, Peter	III – 1979, IV – 1981, V – 1983
Carey, Adrian	I – 1973, III – 1979, VII – 1987	Middleton, Greg	I – 1973, II – 1977, XV – 2003
Culberg, Tony	II – 1977, XV – 2003, XVI – 2005	Scrimgeour, Ray	XI – 1995, XII – 1997, XIV – 2001
Dalzell, Brett	XIII – 1999, XIV – 2001, XV – 2003	Taylor, Neil	IX – 1991, X – 1993, XII – 1997
Eberhard, Roland	IX – 1991, XI – 1995, XVI – 2005	Thurgate, Mia	IX – 1991, XI – 1995, XIII – 1999
Eberhard, Stefan	XI – 1995, XII – 1997, XIII – 1999	Traves, Mary	XIII – 1999, XV – 2003, XVI – 2005
Fletcher, Andrew	XIII 1999, XIV – 2001, XVI – 2005	Walker, Noel	XI – 1991, X – 1993, XI – 1995
Grimes, Ken	XIII – 1999, XIV – 2000, XV – 2003	Wood, Anne	XIII – 1999, XIV – 2001, XV – 2003
Gaukrodger, John	VI – 1985, VII – 1987, VII – 1989	Wood, Peter	XIII – 1999, XIV – 2001, XV – 2003
Hardy, Sue	IX - 1991, X - 1993, XI – 1995		

2 Conferences

Abel, Martin	XIV – 2001, XVI – 2005	May, John	II – 1977, IV – 1981
Aitken, Ken.	III – 1979, IV – 1981	McCabe, Mary	XIII – 1999, XV – 2003
Allen, Ross	IX – 1991, X – 1993	Merritt, David	XIV – 2001, XVI – 2005
Allen, Bruce	III – 1979, XI – 1995	Moulds, Tim	XV – 2003, XVI – 2005
Baird, Jane	VIII – 1989, XVI – 2005	Newton, Mike	IV – 1981, IX – 1991
Butler, David	XV – 2003, XVI – 2005	Osborne, Dr. Armstrong	V – 1983, XIV – 2001
Butz, Mark	I – 1973, VII – 1987	Parkes, Graham	VII – 1987, VIII – 1989
Champness, Graham	VI – 1985, VII – 1987	Plowman, Cathie	XV – 2003, XVI – 2005
Chew, Danny	XIII – 1999, XV – 2003	Rautjoki, Harri	VI – 1985, VIII – 1989
Culley, John	I – 1973, III – 1979	Rea, Tom	XIII – 1999, XIV – 2001
Davey, Adrian	III – 1979, VII – 1987	Rebbechi, Carol	X – 1993, XV – 2003
Davidson, Penny	XIII – 1999, XIV – 2001	Rebbechi, Sylvia	X – 1993, XV – 2003
Ellis, Cliff	III – 1979, IV – 1981	Robinson, Lloyd	I – 1973, IX – 1991
Emery, Ephraim	XV – 2003, XVI – 2005	Skinner, Andrew	II – 1977, III – 1979
Farquharson, Brett	XIV – 2001, XVI – 2005	Skinner, Roy	I – 1973, II – 1977
Finn, Stephanie	XIV – 2001, XV – 2003	Speedie, Val	XIII – 1999, XV – 2003
Flett, David	VII – 1987, X – 1991	Stokes, Tim	XIV – 2001, XVI – 2005
Griffiths, Paul	XIII – 1999, XV – 2003	Swabey, Stephen	XV – 2003, XVI – 2005
Hamilton, David “Jaws”	VII – 1987, IX – 1991	Thomas, Julie	VII – 1987, VIII – 1989
Hardy, Sue	X – 1993, XI – 1995	Vanderstaay, Keith	XIV – 2001, XV – 2003
Heyne, Ken	XII – 1997, XIII – 1999	Vavryn, Joe	IX – 1991, X – 1993
Hunter, Deborah	XI – 1995, XIV – 2001	Woods, Jonathan	XIV – 2001, XV – 2003
Ingafield, Jo	XIII – 1999, XIV – 2001		
James, Julia	XV – 2003, XVI – 2005		
Kyung Sik Woo	XV – 2003, XVI – 2005		
Lindberg, Kriste	XIII – 1999, XIV – 2001		

* denotes deceased

SYNOPSIS of 16th CONFERENCE ATTENDANCE

Delegates attending their:

1st Conference	26	5th Conference	5	9th Conference	2
2nd Conference	12	6th Conference	5	10th Conference	2
3rd Conference	4	7th Conference	3	12th Conference	2
4th Conference	9	8th Conference	1	15th Conference	1

REPRESENTATION AT CONFERENCES 1973 to 2005

	<u>Buchan</u>	<u>Chillagoe</u>	<u>Cutta Cutta</u>	<u>Abercromb.</u>	<u>Hastings</u>	<u>Jenolan</u>	<u>Kelly Hill</u>	<u>Marg. River</u>
1st - 1973	✓	✓	✓	✓	✓	✓	✓	x
2nd -1977	✓	x	✓	x	✓	✓	x	x
3rd - 1979	✓	x	✓	x	✓	✓	✓	x
4th - 1981	✓	x	✓	x	x	x	x	✓
5th - 1983	✓	x	x	x	x	✓	✓	x
6th - 1985	✓	x	x	x	x	✓	x	x
7th - 1987	✓	✓	x	✓	x	✓	x	✓
8th - 1989	✓	x	x	x	x	✓	x	✓
9th - 1991	✓	x	x	x	✓	✓	x	✓
10th - 1993	✓	✓	x	✓	✓	✓	x	✓
11th - 1995	✓	✓	x	✓	✓	✓	x	✓
12th - 1997	x	x	x	x	x	✓	x	✓
13th - 1999	✓	✓	x	✓	✓	✓	✓	✓
14th - 2001	✓	✓	x	✓	✓	✓	✓	✓
15th - 2003	✓	✓	x	✓	✓	✓	✓	✓
16th - 2005	✓	x	x	x	x	✓	✓	✓
TOTALS:	15	7	4	7	9	15	7	11
	<u>Mole Creek</u>	<u>Naracoorte</u>	<u>Capricorn</u>	<u>P.M.R.</u>	<u>Tantanoola</u>	<u>Te Anau</u>	<u>Waitomo</u>	<u>Wee Jasper</u>
1st - 1973	✓	x	x	x	x	x	x	✓
2nd -1977	✓	✓	x	x	x	x	x	✓
3rd - 1979	x	✓	x	✓	x	x	✓	x
4th - 1981	x	✓	x	x	x	x	✓	x
5th - 1983	x	x	x	✓	✓	x	x	x
6th - 1985	x	✓	x	x	x	x	✓	x
7th - 1987	x	✓	x	x	✓	x	✓	✓
8th - 1989	x	✓	x	x	✓	x	✓	x
9th - 1991	✓	✓	✓	x	✓	✓	✓	x
10th - 1993	✓	✓	✓	x	x	✓	✓	x
11th - 1995	✓	✓	✓	✓	x	✓	✓	x
12th - 1997	✓	✓	✓	x	x	✓	✓	x
13th - 1999	✓	✓	✓	✓	✓	x	✓	x
14th - 2001	✓	✓	x	x	x	✓	✓	✓
15th - 2003	✓	✓	✓	x	x	✓	✓	x
16th - 2005	✓	✓	✓	x	x	✓	✓	x
TOTALS:	10	14	7	4	5	7	13	4
	<u>Wellington</u>	<u>Wombeyan</u>	<u>Yallingup</u>	<u>Yanchep</u>	<u>Yarrangobilly</u>	<u>Other NZ</u>		
1st - 1973	x	✓	✓	x	x	x		
2nd -1977	✓	✓	x	x	x	x		
3rd - 1979	x	✓	✓		✓	x		
4th - 1981	x	✓	✓	✓	✓	x		
5th - 1983	x	✓	✓	x	✓	x		
6th - 1985	x	✓	x	x	✓	✓		
7th - 1987	✓	✓	✓	x	✓	x		
8th - 1989	x	✓	✓	x	✓	✓		
9th - 1991	✓	✓	✓	✓	✓	✓		
10th - 1993	✓	x	x	x	✓	✓		
11th - 1995	x	✓	✓	✓	✓	✓		
12th - 1997	x	✓	x	x	✓	✓		
13th - 1999	✓	✓	x	x	✓	✓		
14th - 2001	✓	✓	x	x	✓	✓		
15th - 2003	x	✓	x	x	✓	✓		
16th - 2005	x	x	x	x	x	✓		
TOTALS:	6	14	8	3	13	10		

MEMBERSHIP OF ACKMA Inc. as at 1st April 2005

1)	Abel M	South Island	NZ	DOC
2)	Abercrombie Caves	Via Trunkey Creek	NSW	
3)	Ackroyd, P.J.	Horsham	Vic	
4)	Aley C & T	Missouri	USA	
5)	American Cave Cons Association	Kentucky	U.S.A.	Executive Director
6)	Anderson J & R	Cloverdale	WA	
7)	Aquifer Tours	Mount Gambier	SA	Gary Turner
8)	Argent S & K	Muswellbrook	NSW	
9)	Ash J & M	Waitomo Caves	NZ	
10)	Atkinson A & V	Ravenshoe	Qld	
11)	Augusta-Marg. River Tourist Bur.		Margaret River	WA
12)	Australasian Bat Society	Tamarama	NSW	
13)	Axell P	Resteigne	BELGIUM	
14)	Baddeley G	Mount Waverley	Vic	
15)	Baichtal J	Alaska	U.S.A.	
16)	Baird J	Takaka	NZ	
17)	Baker Dr C	North Tamborine	Qld	
18)	Barnes R	Melton West	VIC	
19)	Bat Conservation International	Austin TX	USA	A. England
20)	Bauer J & P	Oak Flats	NSW	
21)	Bell P.	Tumut	NSW	
22)	Benjamin S	Taroona	TAS	
23)	Blanden S	Gunns Plains	TAS	
24)	Borzi M	MAREEBA	QLD	
25)	Bourne S	Naracoorte	SA	
26)	Bradley C	Aranda	ACT	
27)	Bromley R	Westport	NZ	
28)	Buchan Caves	Buchan	VIC	
29)	Burdett Z	Te Kuiti	NZ	
30)	Butler D & Plowman C	Deviot	TAS	
31)	Calnin, D.	Buchan	Vic	
32)	Cango Caves	Oudtshoorn	South Africa	
33)	Cape Naturaliste Tour. Assn Inc	Busselton	WA	Mr. B. Brown
34)	Carden D	Punakaiki	NZ	
35)	Carey's Cave	Wee Jasper	NSW	Geoff Kell
36)	Cave Exploration Group [S.A.]	Adelaide	SA	
37)	Cave World	Waitomo Caves	NZ	Irene Davis
38)	Central Qld Speleo Society	Rockhampton	QLD	Ms. E. Alison
39)	Chalker M	Taralga	NSW	
40)	Chandler P	Waitomo Caves	NZ	
41)	Chew D	Chillagoe	Qld	
42)	Chillagoe Caving Club	Cairns	QLD	
43)	Chitty D	Beechworth	VIC	
44)	Choi M	Hallett Cove	SA	
45)	Claire R	Dover	TAS	
46)	Clark B	Sarawak	MALAYSIA	
47)	Clarke A	North Hobart	TAS	
48)	Collinson N	Te Anau	NZ	
49)	Commins G	Jenolan Caves	NSW	
50)	Cooney C.	Goolma	NSW	
51)	Costigan A	Lakes Entrance	VIC	
52)	Culberg A & P	Lindisfarne	TAS	
53)	Dalzell B	Thevenard	SA	
54)	Davidson P.	Albury	NSW	
55)	Dept for Environment & Heritage		Ceduna	SA

56)	Dept for Environment & Heritage	Tantanoola	SA	E. Wiltshire-Leggett
57)	Dept of Cons. & Land Manage.	Busselton	WA	Mr. N. Taylor
58)	Dept of Environment & Heritage	Via Kingscote	SA	Michael Kidd
59)	Dept of Environment & Heritage	MT. Gambier	SA	Jeffrey Wauchope
60)	Dept of Environment & Heritage	Naracoorte	SA	Steve Bourne
61)	Dept Prim. Ind. Water & Envir	Hobart	TAS	The Librarian
62)	Devevec A	Divaca	Slovenia	
63)	Doorne S	Suva	Fiji Islands	
64)	Downing A	Macquarie University	NSW	
65)	Drysdale Dr. R	Callaghan	NSW	
66)	Dunkley J.	Pearce	ACT	
67)	Eberhard R	Tinderbox	TAS	
68)	Eberhard S	Witchcliffe	WA	
69)	Eddison A & I	Oberon	NSW	
70)	Ellis R	Kingscote	SA	
71)	Engelbrecht Cave	Mt. Gambier	SA	Cave Co-Ordinator
72)	Farquarson, A.	Surfside	NSW	
73)	Farquarson, B	Bowning	NSW	
74)	Farrell G	Mount Morgan	QLD	
75)	Ferrari B.	North Melbourne	VIC	
76)	Fiordland Travel	Te Anau	NZ	Noel Walker
77)	Fleming K	Taralga	NSW	
78)	Fleming N	Waitomo Caves	NZ	
79)	Flinders University Speleos	Adelaide	SA	
80)	Gant-Thompson D.	Coolamon	NSW	
81)	Gartrell G.	Mt Compass	SA	
82)	Gillieson D Prof.	Cairns	Qld	
83)	Giulieri J	Yeppoon	QLD	
84)	Godwin M	Manunda	Qld	
85)	Gough J	Weston	ACT	
86)	Griffin A	Berowra	NSW	
87)	Griffiths P	British Columbia	Canada V9W 8A2	
88)	Grimes. K.G.	Hamilton	VIC	
89)	Grindley D	Mudgee	NSW	
90)	Gunns Plains Caves	Gunn's Plains	TAS	Geoff Deer
91)	Hamilton Tomo Group	Hamilton	NZ	Andrew Fredrikson
92)	Hamilton-Smith. E.	Carton South	VIC	
93)	Hammond. G.	Collingwood	VIC	
94)	Hastings Caves	Hastings	TAS	K. Vanderstay
95)	Haygarth N	Perth	TAS	
96)	Hele A	Mount Gambier	SA	
97)	Henderson. K	Williamstown	VIC	
98)	Highland Caving Group	Georges Hall	NSW	
99)	Hills Speleology Club Ltd	Hornsby Heights	NSW	
100)	Holden C & J	Te Kuiti 2500	NZ	
101)	Holland E	Raglan	NSW	
102)	Houshold I	Collinsvale	Tas	
103)	Hunter D	Caveside	TAS	
104)	Illawarra Speleo Society Inc	Unanderra	NSW	
105)	Indiana Karst Conservancy	Indiana	U.S.A.	Kriste Lindberg
106)	James C	North Rockhampton	Qld	
107)	James J Dr.		NSW	
108)	Jane Gough (Karst/Geoheritage Library)		Queanbeyan NSW	
109)	Jenolan Caves Reserve Trust	Bathurst	NSW	General Manager
110)	Jevons A G	North Parramatta	NSW	
111)	Joy K	Hamilton	NZ	
112)	Joyce S	New Norfolk	RAS	
113)	Kamarudin H	Penang	Malaysia	

114) Kell N	Lacmalac	NSW	
115) Kiernan. K.	Fern Tree	TAS	
116) Kinsella L	Margaret River	WA	
117) Kraehenbuehl J & P	Belair	SA	
118) Lawrence A.	Jenolan	NSW	
119) Le Duc, Matt Ranger in Charge	Portland	Vic	
120) Lewis G	Canberra	ACT	
121) Lindberg K	Indiana	USA	
122) Lipyeat M & D	Christchurch	NZ	
123) Little L	Chillagoe	QLD	
124) Lyons. Dr. R.	Wanaka	NZ	
125) Maclucas J	Valley View	SA	
126) Mandronero G	Cebu City	Philippines	
127) Marble Arch Caves	Florencecourt	Nth. Ireland	R Watson
128) Mareeba Shire Council	Mareeba	QLD	Jennifer McCarthy
129) Marinelli R	Italy	Italy	
130) Martin A S	Via Lismore	NSW	
131) Martin G	Hamilton	NZ	
132) Mason D	Cambridge	NZ	
133) Matthews E. W.	Engadine	NSW	
134) Matthews P.	Park Orchards	VIC	
135) McBeath R	Witchcliffe	WA	
136) McCabe M	Rockhampton	Qld	
137) McKay K & J	Waitomo Caves	NZ	
138) Meehan S	Jenolan Caves	NSW	
139) Melton S	Jenolan Caves	NSW	
140) Merritt, Dr D	St Lucia	Qld	
141) Middleton G	Sandy Bay	TAS	
142) Millar I	Nelson	NZ	
143) Mole Creek Caves	Mole Creek	TAS	The Senior Ranger
144) Moore T	Berry	NSW	
145) Mott K.	Mt. Gambier	SA	
146) Moulds T	Payneham	SA	
147) Mount Morgan Experience	Mount Morgan	QLD	
148) Moylan M & R	Chillagoe	QLD	
149) Nat. Parks & Wildlife Service	Bungonia	NSW	
150) National Caves Association	Kentucky	U.S.A.	S. Berdeaux
151) National Library of Australia	Canberra	ACT	
152) Ngarua Caves	Motueka	NZ	Mike Endors
153) Norwest Adventurers	Westport	NZ	Geoff Schurr
154) NSS Conservation Man.Section	SD 57747	USA	Rodney D Horrocks
155) Nurse B S	Glebe	NSW	
156) NZ Speleological Society	Waitomo Caves	NZ	
157) Olsen's Capricorn Caverns	Rockhampton	QLD	Ann Augusteyn
158) Orange Speleological Society	Orange	NSW	
159) Osborne Dr R	Harbord	NSW	
160) O'Toole D	South Hobart	TAS	
161) Parkes. G.	Halls Gap	VIC	
162) Perkins K	Buchan	VIC	
163) Peters R & V	Mt Gambier	SA	
164) Pierce M.& R.	Mont Albert	VIC	
165) Poulton R K	Albion Park	NSW	
166) Princess Margaret Rose Cave	Nelson	VIC	
167) Ramsay A	Hurstville	NSW	
168) Ramsey C L	Victoria, B.C.	CANADA	
169) Rea T	Indiana	USA	
170) Rebbechi. D. A.	Southport	QLD	
171) Reed L	Naracoorte	SA	

172) Reilly S.	Jenolan Caves	NSW	
173) Reynders D	Tumut	NSW	
174) Richard. B.	Jenolan Caves	NSW	
175) Robinson. L.	Keiraville	NSW	
176) Rowling. J	Thornleigh	NSW	
177) Rowsell K	Westbury	TAS	
178) Ruapuha Uekaha Hapu Trust	Waitomo	NZ	Angela Pope
179) Ruth Hayward	Burnett Heads	QLD	
180) Rutledge J	Cooks Hill	NSW	
181) Samchoek City	Gangwon-Do	South Korea	Hong Sung-Young
182) Scrimgeour R	Te Kuiti	NZ	
183) Seiser P	Carlsbad, NM-	USA	
184) Shades of Death Cave	Southport	QLD	
185) Shannon C H	West Launceston	Tas	
186) Sharples C	Hobart	TAS	
187) Shaw C & K	Mole Creek	TAS	
188) Short J	Waitomo Caves	NZ	
189) Skinner R	SouthPort	TAS	
190) Slabe Dr T	Postojna	SLOVENIA	
191) Smith D	Te Kuiti	NZ	
192) Smith G K	Belmont	NSW	
193) Southern Tasmanian Cavers	Sandy Bay	Tas	
194) Spate. A.	Hall	ACT	
195) Speedie M. V.	Innot Hot Springs	QLD	
196) SRGWA	East Victoria Park	WA	
197) Stacpoole J.	Townsville	QLD	John
198) State Library of Victoria	Melbourne	VIC	
199) Stiff C	Moss Vale	NSW	
200) Stokes Dr T	British Columbia	Canada V9T I97	
201) Stone Dr F	Kurtistown, HI	USA	
202) Stubbs A & A	Te Kuiti	NZ	
203) Swabey S	North Shore MC	NZ	
204) Sydney Speleological Society	Broadway	NSW	Ms. Grace Matts
205) Sydney, Joe	Marrickville	NSW	
206) Taylor J	Goulburn	NSW	
207) Taylor N	Busselton	WA	
208) Te Anoroa Caves	Golden Bay	NZ	Crawford McLellan
209) Thurgate M	Kingston	ACT	
210) Traves M	Westland	NZ	
211) Undara Experience	Yungaburra	QLD	G. Collins
212) Van Dyk J.& K.	Buchan	VIC	
213) Vandeventer C R	Indiana	USA	
214) Vavryn. D.& J.	The Caves	QLD	
215) Victorian Speleo Assn	Melbourne	VIC	
216) Vincent J	Tumut	NSW	
217) W.A. Speleological Group	Nedlands	WA	G. Thomas
218) Waitomo Caves Museum	Waitomo Caves	NZ	Glen Bailey
219) Waitomo District Council	Te Kuiti	NZ	P. Davey
220) Waitomo Glowworm Caves Ltd	Otorohanga	NZ	R. Tahiri
221) Waitomo Glowworm Caves Ltd	Otorohanga	NZ	Emery E.
222) Watson V	Waitomo Caves	NZ	
223) Watson. Dr. J.	Albany	WA	
224) Webb. R.	Beckenham	WA	
225) Wellington Shire Council	Wellington	NSW	Mr. D. Hearn
226) Wells V & G	Kawakawa	NZ	
227) White. N.	Parkville	VIC	
228) White. S.	Parkville	VIC	
229) Whyte R	St Marys	NSW	

230) Wild West Adventures	Greymouth	NZ	Paul Schramm
231) Wilde K	Waitomo Caves	NZ	
232) Williams D	Otorohanga	NZ	
233) Williams. Prof. P	Auckland	NZ	
234) Wombeyan Caves	Taralga	NSW	
235) Woo Kyuan Sik Prof.	Chuncheon Kang	South Korea	
236) Wood A	Busselton	WA	
237) Wood J	Kingscote	SA	
238) Wood P	Westport	NZ	
239) Wood P	Margaret River	WA	
240) Woodward A & P	Tuakau	NZ	
241) Woodward B	Glenfield Park	NSW	
242) Worthy T	Masterton	NZ	
243) Wurst D	Borrooloola	NT	
244) Wylie J & G	Blackheath	NSW	
245) Yarrangobilly Caves	Tumut	NSW	



Exit – Metro Cave Glowworm Rafting, South Island, New Zealand

RULES OF THE AUSTRALASIAN CAVE AND KARST MANAGEMENT ASSOCIATION INC.

NAME

1. The name of the Incorporated Association is the Australasian Cave and Karst Management Association Inc.(in these rules called "The Association").

INTERPRETATION

- 2.(1) In these Rules, unless the contrary intention appears—
"Committee" means the Committee of Management of the Association.
"Financial Year" means the year ending on 30 June.
"General Meeting" means a general meeting of members convened in accordance with Rule 11.
"Member" means a member of the Association.
"Ordinary Member of the Committee" means a member of the Committee who is not an officer of the Association under Rule 21.
"The Act" means the Associations Incorporation Act 1981.
"The Regulations" means Regulations under the Act.
- (2) In these Rules, a reference to the Secretary of an Association is a reference—
(a) where a person holds office under these Rules as Secretary of the Association—to that person; and
(b) in any other case, to the Public Officer of the Association.
- (3) Words or expressions contained in these Rules shall be interpreted in accordance with the Interpretation of Legislation Act 1984 and the Act as in force from time to time.

APPLICATION FOR MEMBERSHIP

- 3.(1) A natural person who is nominated and approved for membership as provided in these Rules is eligible to be a member of the Association on payment of the annual subscription payable under these Rules.
- (2) A person who is not a member of the Association at the time of the incorporation of the Association (or who was a member at that time but has ceased to be a member) shall not be admitted to membership—
(a) unless nominated as provided in sub-clause (3); and
(b) the admission as a member is approved by the Committee.
- (3) A nomination of a person for membership of the Association—
(a) shall be made in writing in the form set out in Appendix 1; and
(b) shall be lodged with the Secretary of the Association.
- (4) As soon as is practicable after the receipt of a nomination, the Secretary shall refer the nomination to the Committee.
- (5) Upon a nomination being referred to the Committee, the Committee shall determine whether to approve or to reject the nomination.
- (6) Upon a nomination being approved by the Committee, the Secretary shall, with as little delay as possible, notify the nominee in writing of the approval for membership of the Association and request payment within the period of 28 days after receipt of the notification of the sum payable under these Rules as the first year's annual subscription
- (7) The Secretary shall, upon payment of the amounts referred to in sub-clause (6) within the period referred to in that sub-clause, enter the nominee's name in the register of members and, upon the name being so entered, the nominee becomes a member of the Association.
- (8) A right, privilege, or obligation of a person by reason of membership of the Association—
(a) is not capable of being transferred or transmitted to another person; and
(b) terminates upon the cessation of membership whether by death or resignation or otherwise
- (9) An Annual General Meeting may elect no more than three persons at any one such meeting to the standing of Honorary Life Members.
- (10) Such Honorary Life Members shall have the same responsibilities and privileges as other members, but shall be excused the payment of any annual subscription.

ENTRANCE FEE AND ANNUAL SUBSCRIPTION

4. The annual subscription is \$45, or such other fee as is determined from time to time by resolution of the Annual General Meeting and is payable in advance on or before 1 July in each year.

REGISTER OF MEMBERS

5. The Secretary shall keep and maintain a register of members in which shall be entered the full name, address and date of entry of the name of each member and the register shall be available for inspection and copying by members upon request.

DISPUTES AND MEDIATION

- 6.(1) The grievance procedure set out in this rule applies to disputes under these Rules between-
 - (a) a member and another member; or
 - (b) a member and the Association.
- (2) The parties to the dispute must meet and discuss the matter in dispute, and, if possible, resolve the dispute within 14 days after the dispute comes to the attention of all of the parties.
- (3) If the parties are unable to resolve the dispute at the meeting, or if a party fails to attend that meeting, then the parties must, within 10 days, hold a meeting in the presence of a mediator.
- (4) The mediator must be—
 - (a) a person chosen by agreement between the parties; or
 - (b) in the absence of agreement—
 - (i) in the case of a dispute between a member and another member, a person appointed by the committee of the Association; or
 - (ii) in the case of a dispute between a member and the Association, a person who is a mediator appointed or employed by the Dispute Settlement Centre of Victoria (Department of Justice).
- (5) A member of the Association can be a mediator.
- (6) The mediator cannot be a member who is a party to the dispute.
- (7) The parties to the dispute must, in good faith, attempt to settle the dispute by mediation.
- (8) The mediator, in conducting the mediation, must—
 - (a) give the parties to the mediation process every opportunity to be heard; and
 - (b) allow due consideration by all parties of any written statement submitted by any party;
 - and
 - (c) ensure that natural justice is accorded to the parties to the dispute throughout the mediation process.
- (9) The mediator must not determine the dispute.
- (10) If the mediation process does not result in the dispute being resolved, the parties may seek to resolve the dispute in accordance with the Act or otherwise at law.

RESIGNATION AND EXPULSION OF MEMBER

- 7.(1) A member of the Association who has paid all moneys due and payable by the member to the Association may resign from the Association by first giving one months notice in writing to the Secretary of his or her intention to resign and upon the expiration of that period of notice, the member ceases to be a member.
- (2) Upon the expiration of a notice given under sub-clause (1), the Secretary shall make in the register of members an entry recording the date on which the member by whom the notice was given, ceased to be a member.
- 8.(1) Subject to these Rules, the Committee may by resolution—
 - (a) expel a member from the Association;
 - (b) suspend a member from membership of the Association for a specified period; or
 - (c) fine a member an amount not exceeding \$20—
 if the Committee is of the opinion that the member—
 - (d) has refused or neglected to comply with these Rules; or
 - (e) has been guilty of conduct unbecoming a member or prejudicial to the interests of the Association.
- (2) A resolution of the Committee under sub-clause (1)—
 - (a) does not take effect unless the Committee, at a meeting held not earlier than 14 and not later than 28 days after the service on the member of a notice under sub-clause (3) confirms the resolution in accordance with this clause; and
 - (b) where the member exercises a right of appeal to the Association under this clause, does not take effect unless the Association confirms the resolution in accordance with this clause.
- (3) If the Committee passes a resolution under sub-clause (1), the Secretary shall, as soon as practicable, cause to be served on the member a notice in writing—
 - (a) setting out the resolution of the Committee and the grounds on which it is based;
 - (b) stating that the member may address the Committee at a meeting to be held not earlier than 14 and not less than 28 days after service of the notice;
 - (c) stating the date, place and time of that meeting;
 - (d) informing the member that he or she may do one or more of the following: (i) Attend that meeting; (ii) Give to the Committee before the date of that meeting a written statement seeking the revocation of the resolution; and (iii) Not later than 24 hours before the date of the meeting lodge with the Secretary a notice to the effect that he or she wishes to appeal to the Association in general meeting against the Resolution.

- (4) At a meeting of the Committee held in accordance with sub-clause (2), the Committee—
 - (a) shall give to the member an opportunity to be heard;
 - (b) shall give due consideration to any written statement submitted by the member; and
 - (c) shall by resolution determine whether to confirm or to revoke the resolution.
- (5) If the Secretary receives a notice under sub-clause (3), he or she shall notify the Committee and the Committee shall convene a general meeting of the Association to be held within twenty-one days after the date on which the Secretary received the notice.
- (6) At a general meeting of the Association convened under sub-clause (5)—
 - (a) no business other than the question of the appeal shall be transacted;
 - (b) the Committee may place before the meeting details of the grounds for the resolution and the reasons for the passing of the resolution;
 - (c) the member shall be given an opportunity to be heard; and
 - (d) the members present shall vote by secret ballot on the question whether the resolution should be confirmed or revoked.
- (7) If at the general meeting—
 - (a) two-thirds of the members vote in person or by proxy in favour of the confirmation of the resolution, the resolution is confirmed; and
 - (b) in any other case, the resolution is revoked.

ANNUAL GENERAL MEETING

- 9.(1) The Association shall in each calendar year convene an annual general meeting of its members.
- (2) The annual general meeting shall be held on such day as the Committee determines.
- (3) The annual general meeting shall be specified as such in the notice convening it.
- (4) The ordinary business of the annual general meeting shall be—
 - (a) to confirm the minutes of the last preceding annual general meeting and of any general meeting held since that meeting;
 - (b) to receive from the Committee reports upon the transactions of the Association during the last preceding financial year;
 - (c) to elect officers of the Association and the ordinary members of the Committee; and
 - (d) to receive and consider the statement submitted by the Association in accordance with section 30 (3) of the Act.
- (5) The annual general meeting may transact special business of which notice is given in accordance with these Rules.
- (6) The annual general meeting shall be in addition to any other general meetings that may be held in the same year.

SPECIAL GENERAL MEETING

- 10. All general meetings other than the annual general meeting shall be called special general meetings.
- 11.(1) The Committee may, whenever it thinks fit, convene a special general meeting of the Association and, where, but for this sub-clause, more than fifteen months would elapse between annual general meetings, shall convene a special general meeting before the expiration of that period.
- (2) The Committee shall, on the requisition in writing of members representing not less than 5 per cent of the total number of members, convene a special general meeting of the Association.
- (3) The requisition for a special general meeting shall state the objects of the meeting and shall be signed by the members making the requisition and be sent to the address of the Secretary and may consist of several documents in a like form, each signed by one or more of the members making the requisition.
- (4) If the Committee does not cause a special general meeting to be held within the month after the date on which the requisition is sent to the address of the Secretary, the members making the requisition, or any of them, may convene a special general meeting to be held not later than three months after that date.
- (5) A special general meeting convened by members in pursuance of these Rules shall be convened in the same manner as nearly as possible as that in which those meetings are convened by the Committee and, all reasonable expenses incurred in convening the meeting shall be refunded by the Association to the persons incurring the expenses.

NOTICE OF MEETING

- 12.(1) The Secretary of the Association shall, at least 14 days before the date fixed for holding a general meeting of the Association, cause to be sent to each member of the Association at the address appearing in the register of members, a notice by pre-paid post stating the place, date and time of the meeting and the nature of the business to be transacted at the meeting.
- (2) No business other than that set out in the notice convening the meeting shall be transacted at the meeting.
- (3) A member desiring to bring any business before a meeting may give notice of that business in writing to the Secretary, who shall include that business in the notice calling the next general meeting after the receipt of the notice.

PROCEEDINGS AT MEETINGS

- 13.(1) All business that is transacted at a special general meeting and all business that is transacted at the annual general meeting with the exception of that specially referred to in these Rules as being the ordinary business of the annual general meeting shall be deemed to be special business.
- (2) No item of business shall be transacted at a general meeting unless a quorum of members entitled under these Rules to vote is present during the time when the meeting is considering that item.
- (3) Five members personally present (being members entitled under these Rules to vote at a general meeting) constitute a quorum for the transaction of the business of a general meeting.
- (4) If within half an hour after the appointed time for the commencement of a general meeting, a quorum is not present, the meeting if convened upon the requisition of members shall be dissolved and in any other case shall stand adjourned to another day in the same week at (unless another place is specified by the Chairperson at the time of the adjournment or by written notice to members given before the day to which the meeting is adjourned) at the same place and if at the adjourned meeting the quorum is not present within half an hour after the time appointed for the commencement of the meeting, the members present (being not less than 3) shall be a quorum.
- 14.(1) The President, or in the President's absence, a Vice-President, shall preside as Chairperson at each general meeting of the Association.
- (2) If the President and Vice-Presidents are absent from a general meeting, the members present shall elect one of their number to preside as Chairperson at the meeting.
- 15.(1) The Chairperson of a general meeting at which a quorum is present may, with the consent of the meeting, adjourn the meeting from time to time and place to place, but no business shall be transacted at an adjourned meeting other than the business left unfinished at the meeting at which the adjournment took place.
- (2) Where a meeting is adjourned for fourteen days or more, a like notice of the adjourned meeting shall be given as in the case of the general meeting.
- (3) Except as provided in sub-clause (1) and (2), it is not necessary to give notice of an adjournment or of the business to be transacted at an adjourned meeting.
16. A question arising at a general meeting of the Association shall be determined on a show of hands and unless, before or on the declaration of the show of hands a poll is demanded, a declaration by the Chairperson that a resolution has, on a show of hands, been carried or carried unanimously or carried by a particular majority or lost, and an entry to that effect in the Minute Book of the Association is evidence of the fact, without proof of the number or proportion of the votes recorded in favour of, or against, that resolution.
17. (1) Upon any question arising at a general meeting of the Association, a member has one vote only.
- (2) All votes shall be given personally or by proxy.
- (3) In the case of an equality of voting on a question, the Chairperson of the meeting is entitled to exercise a second or casting vote.
- 18.(1) If at a meeting a poll on any question is demanded by not less than three members, it shall be taken at that meeting in such manner as the Chairperson may direct and the resolution of the poll shall be deemed to be a resolution of the meeting on that question.
- (2) A poll that is demanded on the election of a Chairperson or on a question of an adjournment shall be taken forthwith and a poll that is demanded on any question shall be taken at such time before the close of the meeting as the Chairperson may direct.
19. A member is not entitled to vote at any general meeting unless all moneys due and payable by the member to the Association have been paid, other than the amount of the annual subscription payable in respect of the current financial year.
- 20.(1) Each member is entitled to appoint another member as a proxy by notice given to the Secretary no later than 24 hours before the time of the meeting in respect of which the proxy is appointed.
- (2) The notice appointing the proxy shall be in the form set out in Appendix 2.

COMMITTEE OF MANAGEMENT

- 21.(1) The affairs of the Association shall be managed by the Committee of Management constituted as provided in Rule 22.
- (2) The Committee—
- (a) shall control and manage the business and affairs of the Association;
 - (b) may, subject to these Rules, the Regulations and the Act, exercise all such powers and functions as may be exercised by the Association other than those powers and functions that are required by these Rules to be exercised by general meetings of the members of the Association; and
 - (c) subject to these Rules, the regulations and the Act, has power to perform all such acts and things as appear to the Committee to be essential for the proper management of the business and affairs of the Association.
- 22.(1) The officers of the Association shall be—
- (a) a President;
 - (b) two Vice-Presidents;
 - (c) a Treasurer;

- (d) a Secretary
 - (e) the Convenor of the Association's next ensuing conference
 - (f) a Publications Officer
- (2) The provisions of Rule 23 so far as they are applicable and with the necessary modifications, apply to and in relation to the election of persons to any of the offices mentioned in sub-clause (1).
- (3) Each officer of the Association shall hold office until the annual general meeting next after the date of his or her election but is eligible for re-election.
- (4) In the event of a casual vacancy in any office referred to in sub-clause (1) the Committee may appoint one of its members to the vacant office and the member so appointed may continue in office up to and including the conclusion of the annual general meeting next following the date of the appointment.
- 23.(1) Subject to section 23 of the Act, the Committee shall consist of—
- (a) the officers of the Association;
 - (b) no more than three ordinary members— each of whom shall be elected at the annual general meeting of the Association in each year, and
 - (c) the immediate past president.
- (2) Each ordinary member of the Committee shall, subject to these Rules, hold office until the annual general meeting next after the date of election but is eligible for re-election.
- (3) In the event of a casual vacancy occurring in the office of an ordinary member of the Committee, the Committee may appoint a member of the Association to fill the vacancy and the member so appointed shall hold office, subject to these Rules, until the conclusion of the annual general meeting next following the date of the appointment.

ELECTION OF OFFICERS AND VACANCY

- 24.(1) Nominations of candidates for election as officers of the Association or as ordinary members of the Committee—
- (a) shall be made in writing, signed by two members of the Association and accompanied by the written consent of the candidate (which may be endorsed on the form of nomination); and
 - (b) shall be delivered to the Secretary of the Association not less than seven days before the date fixed for the holding of the annual general meeting.
- (2) If insufficient nominations are received to fill all vacancies on the Committee, the candidates nominated shall be deemed to be elected and further nominations shall be received at the annual general meeting.
- (3) If the number of nominations received is equal to the number of vacancies to be filled, the persons nominated shall be deemed to be elected.
- (4) If the number of nominations exceeds the number of vacancies to be filled, a ballot shall be held.
- (5) The ballot for the election of officers and ordinary members of the Committee shall be conducted at the annual general meeting in such usual and proper manner as the Committee may direct.
- (6) A nomination of a candidate for election under this clause is not valid if that candidate has been nominated for another office for election at the same election.
25. For the purposes of these Rules, the office of an officer of the Association or of an ordinary member of the Committee becomes vacant if the officer or member—
- (a) ceases to be a member of the Association;
 - (b) becomes an insolvent under administration within the meaning of the Companies (Victoria) Code; or
 - (c) resigns from office by notice in writing given to the Secretary.

PROCEEDINGS OF COMMITTEE

- 26.(1) The Committee shall meet at least once in each year at such place and such times as the Committee may determine.
- (2) Special meetings of the Committee may be convened by the President or by any four of the members of the Committee.
- (3) Notice shall be given to members of the Committee of any special meeting specifying the general nature of the business to be transacted and no other business shall be transacted at such a meeting.
- (4) Any four members of the Committee constitute a quorum for the transaction of the business of a meeting of the Committee.
- (5) No business shall be transacted unless a quorum is present and if within half an hour of the time appointed for the meeting a quorum is not present the meeting shall stand adjourned to the same place and at the same hour of the same day in the following week unless the meeting was a special meeting in which case it lapses.
- (6) At meetings of the Committee—
- (a) the President or in the President's absence a Vice-President shall preside; or
 - (b) if the President and Vice-Presidents are absent, such one of the remaining members of the Committee as may be chosen by the members present shall preside.

- (7) Questions arising at a meeting of the Committee or of any sub-committee appointed by the Committee shall be determined on a show of hands or, if demanded by a member, by a poll taken in such manner as the person presiding at the meeting may determine.
- (8) Each member present at a meeting of the Committee or of any sub-committee appointed by the Committee (including the person presiding at the meeting) is entitled to one vote and, in the event of an equality of votes on any question, the person presiding may exercise a second or casting vote.
- (9) Written notice of each committee meeting shall be served on each member of the Committee by delivering it to the member at a reasonable time before the meeting or by sending it by pre-paid post addressed to him or her at his or her usual or last known place or abode at least two business days before the date of the meeting.
- (10) Subject to sub-clause (4) the Committee may act notwithstanding any vacancy on the Committee.

SECRETARY

27. The Secretary of the Association shall keep minutes of the resolutions and proceedings of each general meeting and each committee meeting in books provided for that purpose together with a record of the names of persons present at committee meetings.

TREASURER

28. The Treasurer of the Association—
 - (a) shall collect and receive all moneys due to the Association and make all payments authorised by the Association; and
 - (b) shall keep correct accounts and books showing the financial affairs of the Association with full details of all receipts and expenditure connected with the activities of the Association.

REMOVAL OF MEMBER OF COMMITTEE

- 29.(1) The Association in general meeting may by resolution remove any member of the Committee before the expiration of the member's term of office and appoint another member in his or her stead to hold office until the expiration of the term of the first-mentioned member.
- (2) Where the member to whom a proposed resolution referred to in sub-clause (1) makes representations in writing to the Secretary or President of the Association (not exceeding a reasonable length) and requests that they be notified to the members of the Association, the Secretary or the President may send a copy of the representations to each member of the Association or, if they are not so sent, the member may require that they be read out at the meeting.

CHEQUES

30. All cheques, drafts, bills of exchange, promissory notes and other negotiable instruments shall be signed by two members of the Committee.

SEAL

- 31.(1) The Common Seal of the Association shall be kept in the custody of the Secretary.
- (2) The Common Seal shall not be affixed to any instrument except by the authority of the Committee and the affixing of the Common Seal shall be attested by the signatures either of two members of the Committee or of one member of the Committee and of the Public Officer of the Association.

ALTERATION OF RULES AND STATEMENT OF PURPOSES

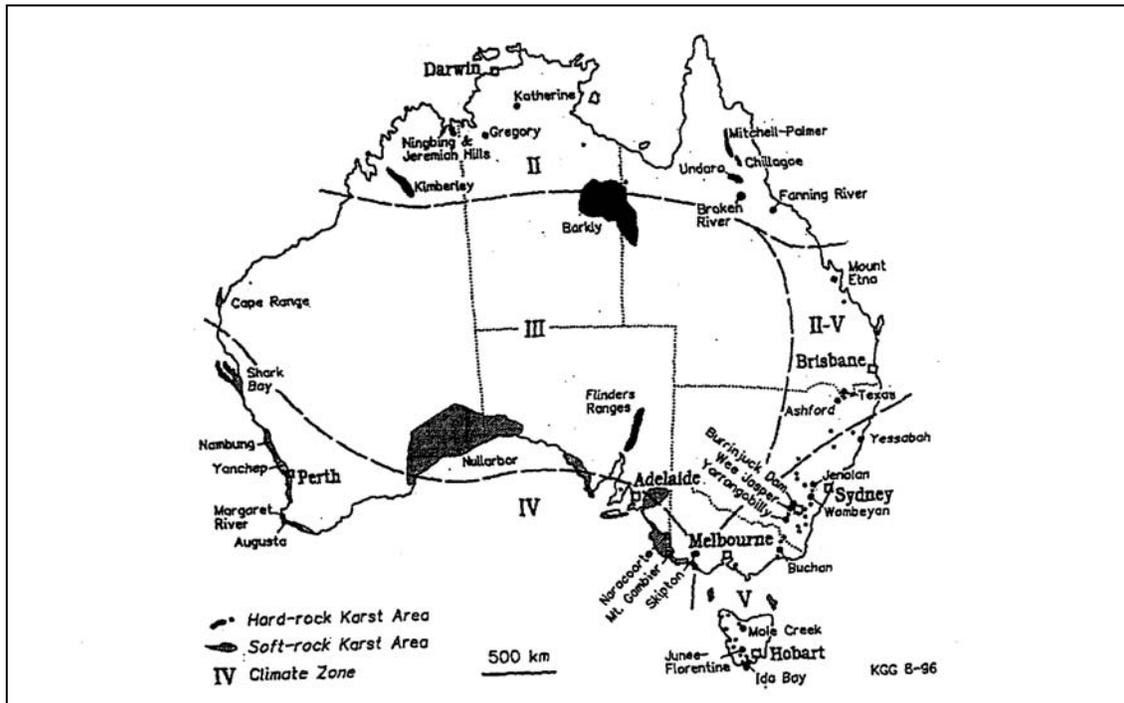
32. These Rules and the Statement of Purposes of the Association shall not be altered except in accordance with the Act.

NOTICES

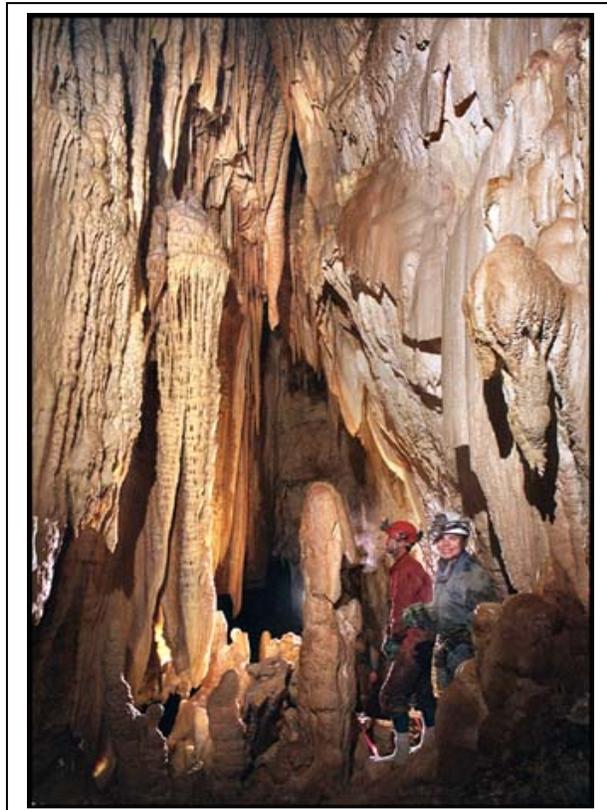
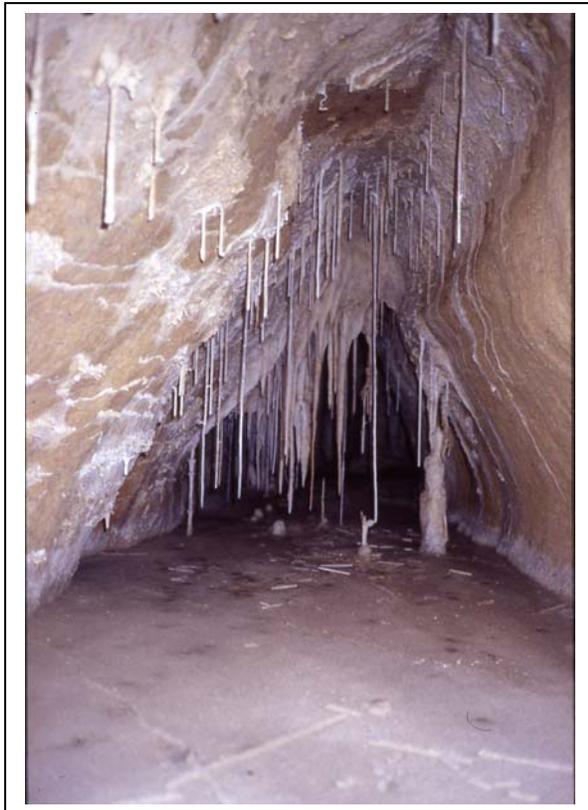
- 33.(1) A notice may be served by or on behalf of the Association upon any member either personally or by sending it by post to the member at the address shown in the Register of Members.
- (2) Where a document is properly addressed prepaid and posted to a person as a letter, the document shall, unless the contrary is proved, be deemed to have been given to the person at the time at which the letter would have been delivered in the ordinary course of post.

WINDING UP OR CANCELLATION

34. In the event of the winding up or the cancellation of the incorporation of the Association, the assets of the Association shall be disposed of in accordance with the provisions of the Act.



Distribution of karst areas and climate provinces in Australia. Tropical-climate zone (II); subtropical dry-climate zone (III); transitional zone with winter rain (IV); warm-temperate zone extending to warm-temperate/tropical transitional climates zone (V, II-V). Map compiled by Ken Grimes from data in Bridgewater (1987); Gillieson & Spate. Reference: Smith, D. W. (Ed). Cave and Karst Management in Australasia XII. Proceedings of the 12th Australasian Conference on Cave and Karst Management, 1997. p 17.



LEFT: Decoration in Honeycomb Cave. RIGHT: The *Pleasure Dome* in Abyssinia Cave