



C.D.A.A. Newsletter

No. 120 - JUNE 2012



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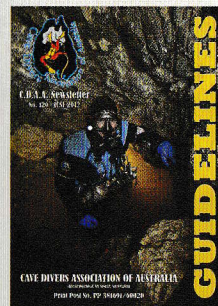
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Cover:
Peter Buzzacott
in Dudnica Cave,
South Poland

Photo by:
Artur Romanek

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GUIDELINES is a newsletter of the Cave Divers Association of Australia. All articles for the following issue are to be sent to the Publications Director, Email: publications@cavedivers.com.au

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Policy Type: Combined Liability Insurance Policy# SY-CAS-08-041140
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'The Basic Rules of Cave Diving'

Through the study of past cave diving related accidents, researchers have found there are a number of common causes for these accidents. By becoming familiar with these causes, divers can learn to avoid similar accidents.

From the research, five main contributing factors have been found in over 90% of cave diving related fatalities.

These causes have led to the five basic rules:

- **Be Correctly Trained.**

In the vast majority of fatalities world wide, the divers involved had no formal cavern/sinkhole (Deep Cavern) training. Of those who did have training, most were diving outside the recognised limits of that training. Many open water Instructors have died in caves.

- **Run a Continuous Guideline to the Open Water (Surface).**

In a large number of overhead fatalities, victims failed to run a continuous guideline from the open water. When silting took place or they became disorientated, exit was then not possible with gas remaining.

- **Always keep a Minimum of 2/3rds of the Starting Gas Supply for Exit when Entering an Overhead Environment.**

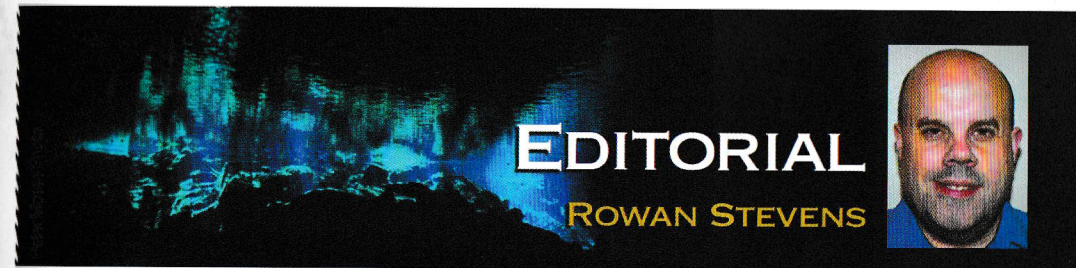
The rule is seen as the minimum in overhead environments and may not offer enough gas if trouble is encountered at the maximum penetration.

- **Always use a Minimum of 3 Light Sources.**

In cave diving this would be a primary and a minimum of two backups, all with the ability of lasting the duration of the dive.

- **Don't Dive Below 40m on Compressed Air.**

The CDAA's maximum depth limit is 40m. Of the trained, well equipped cave divers who have died, almost all were diving beyond 40m on air.



Dear Members,

I am writing this editorial having just returned from the **Adelaide State Meeting** which was attended by almost 40 CDAA members. With both Sydney and Adelaide meetings successfully completed, check our web site www.cavedivers.com.au for dates and agenda of upcoming meetings for Melbourne, Brisbane and Perth. The State Meetings are being chaired by our National Director, John Vanderleest, and this is an excellent opportunity for you to join the conversation and share your thoughts on the future direction of the CDAA.

In this issue ...

Peter Buzzacott takes us on high adventure in the Tatra Mountains, Poland while Pierre Constant takes us diving in Madagascar. Closer to home Michael Mallis shares diving Hells Hole, while Lorna Charlton (WA Department of Environment and Conversation) shows us the new interpretive panels posted out at Cocklebidy Cave in Western Australia. And Guidelines would not be complete without another article from Ian Lewis on Karst Science.

Also in this issue ...

Safety is an important topic for all members – including pre-dive, post-dive and in-water activities. Congratulations to Agnieszka Malkowska who was appointed to the position of CDAA Safety Officer. We also have articles about the Rule of Thirds, Deep Stops and expanding Australia's Cave Rescue and Recovery capabilities.

And finally ...

A reminder that this year the **CDAA AGM** will be held on Saturday 27th October 2012 at the Main Corner Dress Circle, Mt. Gambier. Speakers are being lined up and profiles will be published in the next edition of Guidelines. A general call for Nominations for **Standards Director** and **Business Director, Member Motions** and **Amendments to the CDAA Constitution** has also been published in this edition.

Until next time, happy and safe diving.

Rowan Stevens #3177 | Publications and Records Director
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Articles for Guidelines Sept. 2012 - Deadline is Aug. 20th.

- Send articles by email to guidelines@cavedivers.com.au
- Text files should be saved as Word files or Simple Text
- Pictures saved from digital cameras or scanned from photos must be at least 200-300 dpi at 15cm wide, RGB files, and saved as Maximum Quality JPEG's.

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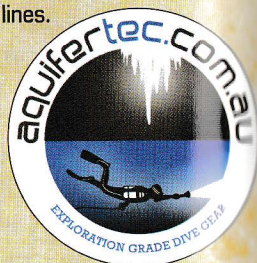


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NATIONAL COMMITTEE UPDATE

JUNE 2012

Dear Members

It hardly seems like 3 months since last penning a report. Quite a lot has happened in this period.

The Constitution Sub Committee has taken quite a lot of feedback and re-drafted the Constitution. This has been posted on the website forum under 'National Committee Announcements' to <http://www.cavedivers.com.au/forum/showthread.php?p=7920>-Presentation-of-Draft-Constitution and is available for final comments from members prior to going to a formal vote and ratification at this year's AGM.

The Tank Cave Management Committee is now in full swing, working on delivering outcomes of its terms of reference, including funding payments for the site including reviewing the guide system to name a few. As work is completed, you will see announcements start to appear on our web site.

Helen and Tammy (our Treasurer) have done a fantastic job getting the accounts up to scratch. We can finally review the accounts at each National Committee meeting and make informed decisions on any spending.

We have a few more roles clearly defined (See Terms of References in the Members Documents Library on the website: http://www.cavedivers.com.au/cdaa-documents?field_download_type_tid=105&=Apply), with appointed staff now being able to represent the National Committee without having to seek approval for every decision.

Members may have also noted some new site improvements. We have placed porta-loos at Kilsby's and Tank Cave, and a new roadside pull over area prior to the gate and a track into the site has been built at Tank Cave. These site improvements improve both members' safety and site hygiene.

Richard Harris, our Search and Recovery Officer, coordinated a training program to start to build our capa-

bility to respond to cave/cave diving accidents. This was a multi organisational course run under the auspices of the IUCRR, an international not for profit cave rescue group.

Congratulations also to Agnieszka Malkowska who was appointed to the role of Safety Officer.

With so much happening, the National Committee wants to ensure members remain informed and engaged. While Guidelines is our traditional method of communication, the National Committee is leaning more towards electronic communication such as email and our web site to provide more interactive and timely communication. For the website, the forum has been divided to two areas; one area for State Reps and the National Committee to post updates and seek member input, and a second area for general member to member discussion. Members are encouraged to regularly log onto the forum to see what's new from the State Reps and the National Committee.

As well as enhancing our electronic communication, State meetings will also be used to facilitate productive discussion. By the time this issue is posted we should have completed most of our State meetings and gained valuable insight into members' needs and desires. The output will provide valuable input into the Association's Business Plan – something very much lacking at present. Our Business Plan will articulate our goals and directions for all areas of the Association. It tells us what we need to spend money on, the reason for raising money, where our efforts need to be directed and timeframes we are working towards. Our desire is to have a business plan drafted and ready for comment by the AGM.

Speaking of the AGM, it's once again time to call for nominations for Business and Standards Directors. When the CDAA established the roles of Directors, the choice of the word was very intentional. The role is to Direct; to control operations, manage or govern. While the roles have accountabilities outlined in the

Constitution and Regulations, the individuals are equal part managers in a five person committee.

Members often think that in order to be nominated, you need to be highly experienced in the area. This is not the case. A good Director is aware of their strengths and weaknesses and ensures their operational team and not themselves, has the necessary skills.

The National Committee encourages members who would like to take on the role of Director, to seek nomination. A good healthy membership based organisation should see people nominating and never assume the incumbent Directors are automatically re-elected. Nominating is not a sign that you that you disagree with the incumbent Directors, but a signal to the members that you too are willing to commit your time and energy to do the role.

See you underwater

Regards,
The National Committee



John Vanderleest,
National Director



Helen Higgins,
Business Director (Acting)



Jane Bowman,
Standards Director



Grant Pearce,
Site Director



Rowan Stevens,
Publications and Records Director

AGM & Symposium 2012

This year the members' symposium will have an Aussie flavour with a number of exciting local speakers presenting on their exploration, mapping, research and training. Guest Speakers include:

Paul Hosie ~ Cave sites on the Roe Plains - Madura, Nurina, Olwolgín, Burnabbie and Slot Caves - Video presentation - 4000m of surveyed passages and a maximum penetration of 1,250m.

Craig Challen ~ Exploration of the Pearse River Resurgence.

John Della Zuanna ~ 3D - Evolution of Mapping Techniques & Software.

Pippa Waterworth ~ Rare mantle communities of the Nullabor Plain.

Richard 'Harry' Harris ~ SAR and Accident Investigation in Australia.

The Symposium will be held in the Dress Circle at the Main Corner in Mt Gambier, commencing at 9:00am.

The AGM will follow at 6:00pm and dinner will be served in City Hall at 7:30pm.

We hope to see as many members as possible attend this year.

**A FULL REPORT OF GUEST SPEAKERS WILL APPEAR
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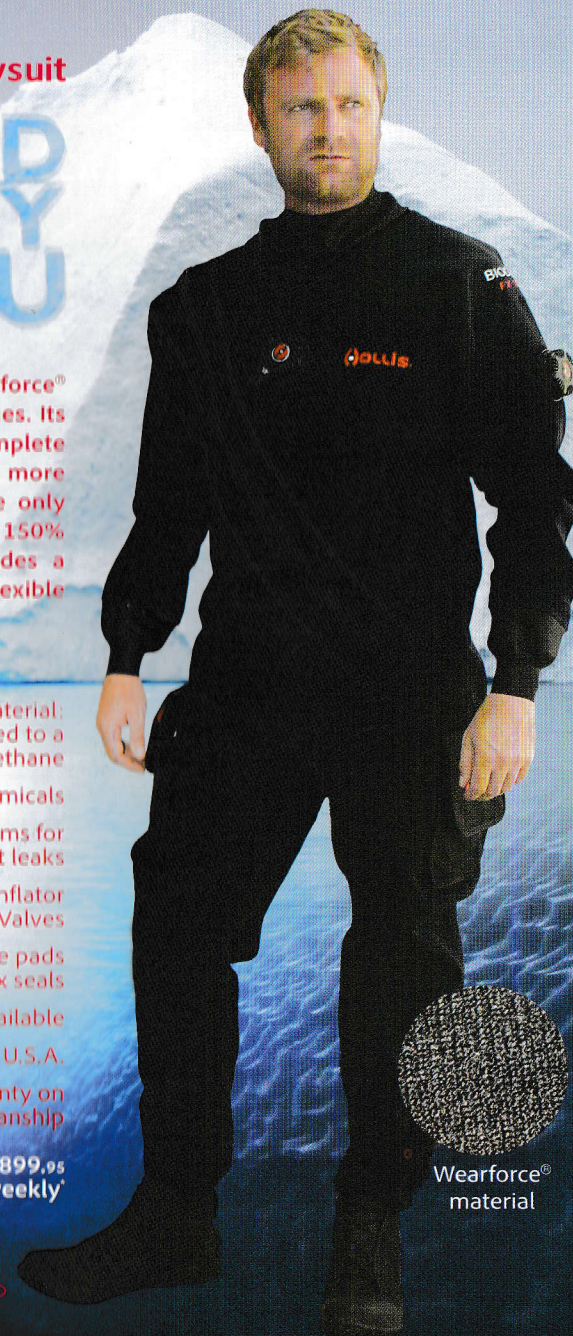
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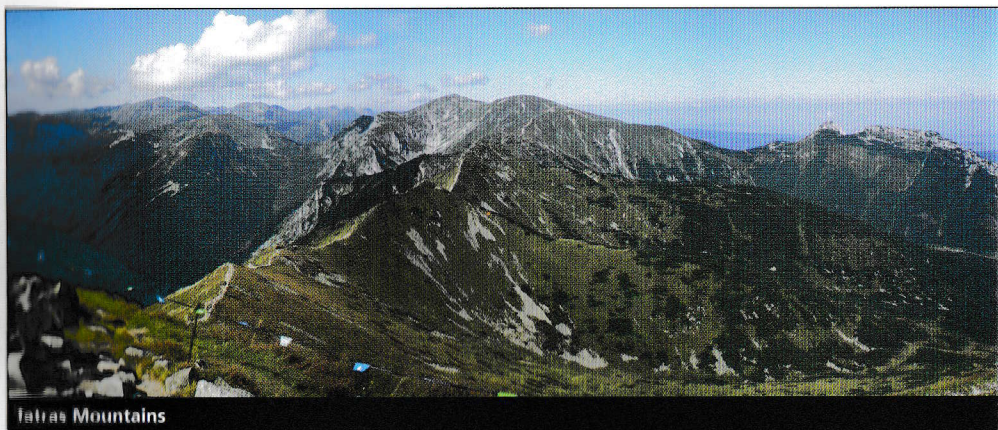
High Adventure in the Tatra Mountains

By Peter Buzzacott #4233

Last year's European Underwater Baromedical Society (EUBS) annual scientific meeting was held in Gdansk, north Poland. The conference offered me an opportunity both to catch-up with my diving science buddies and to visit historic Poland. After four days of diving and hyperbaric medicine it was time to head south for some cave diving.

My wife and I caught the 1950's morning train to Warsaw (pronounced "Var-shav"), passing through endless fields and villages, the scenery so typical of the countryside Poland is famous for. On bench-seats next to us old Polish women chatted away and shared home-cooked pastries while the clickity-clack of the train soon had me nodding off. Arriving in Warsaw our Polish speleo contact "Honzo" materialized out of the crowd to ask "Peter and Cheryl? This way, this way..." He was parked illegally so we didn't hang around, rather we bundled my wife and our bags onto the back seat, I hopped into the front and we left the city behind us. The roads were congested and sometimes cars would mount the footpath, overtake a few vehicles and then push back into the traffic jam.

Driving well into the night Honzo described his PhD, researching potential therapeutic benefits of scuba among paraplegics. This has been a hot topic at recent EUBS meetings and Honzo is the first doctoral-level researcher I know in the field. We found plenty to discuss (while my wife nodded off). Arriving at our mountain lodge after midnight, we crept inside and crawled into our sleeping bags. In a single day we had left the northern coast of Poland and travelled overland to



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the southern border. Now, at last, we were at the foot of the Tatra Mountains, the tallest in all the Carpathian Range which runs through Eastern Europe. The air was crisp and the stars overhead unfamiliar.

Jaskinia Dudnica (Dudnica Cave)

At breakfast I met two more members of our team; "Homer" and "Hinchick". We packed our rucksacks, loaded the car and set off in search of the Tatra Mountain Rescue Service (TOLPA). The Tatra National Parks do not admit vehicles, except for elegant horse-drawn carriages which have ambled along these trails for centuries, and/or Mountain Rescue vehicles. Without a ride the walk usually takes over an hour, uphill all the way too, but in the back of the TOLPA Landrover we were below the cave in 15-minutes. A smiling Hinchick leaned over and said "Business Class". From there we hiked through forest, following a dry creek-bed up to the cave.

At the cave we met Artur, a dry caver here for the day to photograph our dive for the Polish speleo group. The cave itself had a smallish entry followed by a steep, muddy slope down to a small

muddy pool about the size of a small automobile hood. Honzo was showing me the "French style" of sump diving: sidemounting four litre steel tanks, no buoyancy wing, no fins, no canister light



Loading up the Mountain Rescue Landy



Homer exiting the cave

and basically everyone solo-diving due to the no-vis restriction. To start though, I was overdressed, wearing three layers of undergarment when one would have probably done. Then, being a bit barrel-chested I got stuck in the entry hole like a plug in a sink, my little legs paddling away underneath like a swimming duck, looking hopefully for a step up. By the time I extricated myself I was sweating bullets so I waved Homer on ahead and cooled off in the shade, took my tanks off and slipped through the hole easily. Gearing up in the water made much more sense to me (but that is just what I'm used to), Artur snapped off a couple of shots, I took a firm hold of the line in my right hand and, head-first, in I went. Viz? Well, there was none, it was complete chocolate. At least it was warmer than I'd expected: six-degrees probably.

I felt my way around to the left, made my way through a restriction about the size of an open newspaper, followed the line to the right for some distance and surfaced through a pool into... a raging torrent. Above me to the left a furious waterfall plunged down into the pool I was now standing waist-deep in. To my right Honzo was



Dudnica Cave, in the forest

canyoning along a narrow fissure, his feet either side of a fast-flowing stream pulsing along underneath him and disappearing into the second sump. We shouted to each other over the roar of the water. "No good" shouted Honzo, "it's a one-way dive" meaning even if we made it through there would be no coming back against this flow. I looked around, shrugged, climbed back down into my warm chocolate puddle and felt my way back out. Oh well, that's what you get here in summer.

During the long walk off the mountain, our dive gear packed into backpacks, Honzo described the conditions here in winter, when all previous div-

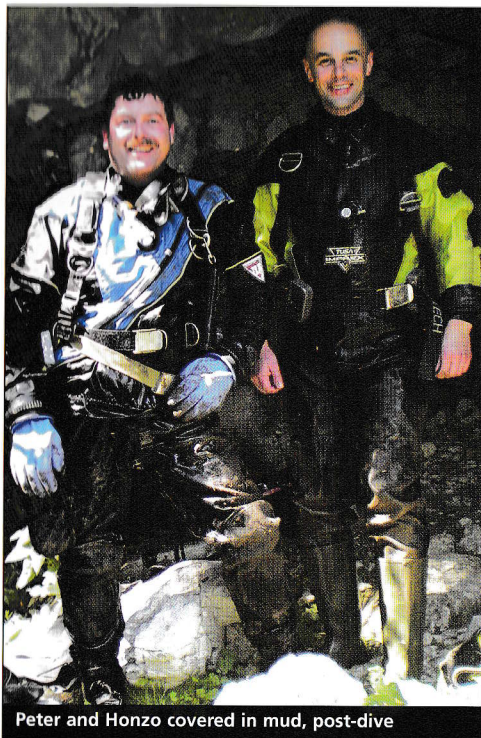
ing has happened. Low flow, great viz, everyone pulling their gear over the snow on sleds. That night back at the mountain lodge we dined on home-made Polish burgers while the guys tried to ply me with Honey-Vodka and, wait for it, milk! I guess that's the beauty of international travel; cultural exchange.



Peter and Homer gearing up

Jaskinia Wodna Pod Pisaną (Pisana underwater cave)

For our last day together we re-packed our loads. Only Homer and I would be diving today so Honzo and Hinchick shouldered some of our burden each. We parked near the entrance to the West Tatra National Park, heaved on our packs and began the hour-long hike amid spectacular scenery. The trail followed a creek upstream, pines clung to the hills above us and the air was mountain quality: crisp and clean. Eventually we reached a stone bridge near a resurgence, gratefully laid down our packs started getting our gear together. Soon we were dressing and the

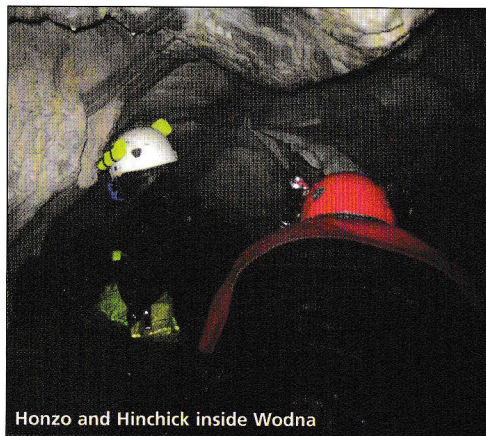


Peter and Honzo covered in mud, post-dive

bridge was full of spectators calling down questions. Honzo chattered away in Polish then, by way of explanation, turned and said to me "Cave diving is unusual in Poland". I said "It's unusual everywhere so we're ambassadors for the sport" which he seemed to agree with. A little PR goes a long way when you're a guest in a National Park. We'd all paid the same entry-fee and yet here two of us were about to visit the inside of the mountain. No wonder there was a crowd.

Stooping below the roof I led into the main passage against the rush of the outflowing stream. Boldly, I fought my way up a narrowing passage till I could go no further and, despite having been though this cave before, I realised I'd led us up a blind alley. We retraced our steps and found the correct route, then crawled for a while over gravel through a low section, then crab-walked sideways through another narrow passage, the rushing water waist-deep and almost irresistible. Fifteen minutes in and we reached the sump, a narrow, low restriction at the bottom of a rectangular

shaft about 0.5m X 1.5m wide and 2m deep (with a river pouring up out of it). I tried negotiating my way through using some upside-down rock-climbing techniques, my mask flooding and regs free-flowing but I'd come in on the wrong angle and needed to turn around, which was impossible once in the rift. With my back against the rock behind me and my nose just inches from the rock in front, I withdrew and Homer had a go. Fighting the flow he pulled himself down and, with brute force, under the ledge and disappeared. I tried again but still couldn't get it so I hovered out of the flow and thought about solving this problem. Below me a light shone, a hand appeared and moved some small rocks away before signalling "Okay?" I dived down, signalled back and tried going feet-first. Gee-whiz, the flow was awesome. Feet-first was definitely the way to go because I could put my legs through, swing them left and finally get my chest down on the deck, ready to slide under the ledge.



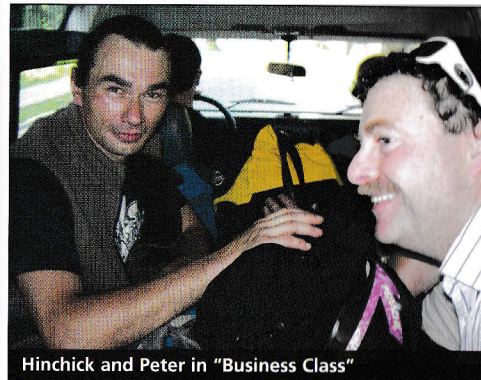
Honzo and Hinck in Wodna



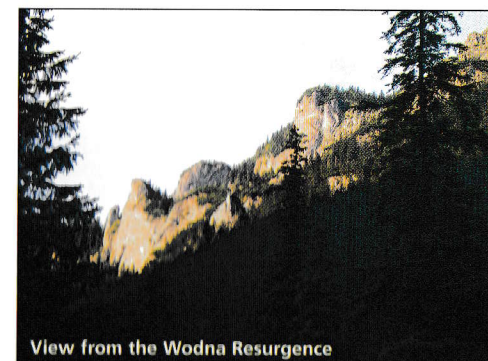
The three amigos; Honzo, Homer and Peter

I slid sideways and I was under. Mask full, regs flowing, I looked up, found the way on and... Homer was there signalling "Turn". Awe, nuts! I back-tracked and surfaced, Homer joined me, we turned to go.

The "walk" out was a battle against being swept away. Careful not to get a leg trapped under a ledge, at last we slipped along in the water towards the exit and emerged into sunlight. The time of year might not have been ideal but now I've dived a siphon near the High Tatra and a



Hinck and Peter in "Business Class"



View from the Wodna Resurgence

resurgence in the West Tatra National Parks. All-in-all it was a great adventure, more caving than cave diving but both caves afforded me experiences we just don't have on mainland Australia. The scenery was breathtaking and the mood jovial as we backpacked our way out of the park. We said our goodbyes and Honzo dropped me in town with a promise to come see me down under. Honzo, you are welcome anytime buddy (I'll even get some extra milk delivered).

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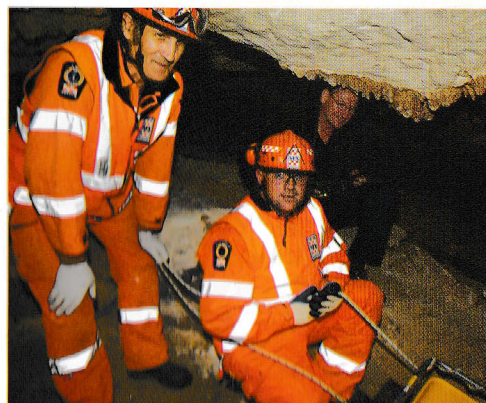
EDUCATION & TRAINING:

Rescue & Recovery

By Richard Harris #1360

Expanding Australia's Cave Rescue and Recovery Capability In March 2012, a group of Australian cave divers met in Mt Gambier to share information about sump rescue and recovery practices, in the country's first Sump Rescue and Recovery Orientation Program (SROP).

This 3-day mixture of lectures and practical exercises was based on the dry caving equivalent (CROP), currently in use by the Australian and USA Cave Rescue Commissions. The SROP was attended by 9 experienced cave divers, 2 dry cavers (who are active in the field of dry cave rescue), the South Australian Police and the State Emergency Service. Lamar Hires from the NSS-CDS conducted the NSS Recovery Diver course as part of the weekend, and the entire event was sponsored by Dive Rite Australia. The information gleaned from this long weekend has now been distilled into a shorter two day SROP, which will be offered by the CDAA. The intent is to offer this program as a two-day course in the future. However, rather than wait until we have this fully developed, we intend to run another workshop to relay what we have learned to date and gather further input from experienced members. What will the program involve? The 2-day SROP will combine a day of talks and practical tasks, with a full day of in water rescue and recovery exercises



at a suitable cave site. Who may apply? Initially we are looking to impart information to our most qualified and experienced members, and to that end we are offering the workshop to Advanced Cave divers who are diving Tank Cave. If such members do not fill the workshop, positions will be offered to other divers. We may also initially give preference to members from outside Victoria and South Australia in order to spread some expertise throughout the country. Non-CDAA divers can do the workshop if appropriately qualified, but preference will be given to members first. What is the cost? Program costs will be limited to covering expenses only, including the cost of adding an endorsement to your CDAA card. Cost is anticipated to be \$50.00. What have I achieved by doing this workshop? Cave divers who complete the weekend will be recognised by an endorsement on their CDAA card. The aims of the SROP are to educate divers on how to respond in the early phases of an emergency, to understand what will happen in the hours and days that follow, and how to best assist the authorities in the event of an incident. By understanding more about accidents, divers will be more likely to plan trips or dives accordingly and stay clear of trouble. What won't I achieve by doing the SROP? You will not be a qualified cave rescuer or recovery diver. The aim is not to train divers to fill these roles, but to increase awareness of the issues involved. However, some individuals may be interested in getting involved in more "hands on" training or roles thereafter. It may be frustrating for some who are interested in doing this workshop to find they are not eligible or they miss out. We hope that over the next few years we will get most of the senior divers involved. We also intend to incorporate some of the key principles of the SROP into every level of cave diver training offered by the CDAA. Richard Harris Next SROP: AGM Weekend, Sunday and Monday 28-29th October 2012. Location: Pine Tank Dive Lodge, Glencoe. Cost \$50.00 (food and accommodation not included) Apply to: sar@cavedivers.com.au ■

CAVE DIVERS ASSOCIATION OF AUSTRALIA Inc.

NOTICE OF 2012 ANNUAL GENERAL MEETING, ELECTION OF OFFICE BEARERS AND VOTING FOR MEMBER MOTIONS AND CONSTITUTIONAL AMENDMENTS

This notice is issued pursuant to Clause 32 of the Constitution and serves to advise members that the Annual General Meeting of the Cave Divers Association of Australia Inc. will be held on **October 27th** at the **Main Corner Dress Circle, Mt. Gambier, SA.** The Annual General Meeting will commence at 6:00pm and will conclude no later than 7:00pm.

This notice also serves to call for:

*Nominations for **Standards Director** and **Business Director**

***Member motions**

***Amendments to the Constitution**

The Returning Officer must receive nominations for the National Committee positions no later than the close of business **Friday August 17th, 2012.**

Mail to: Returning Officer, CDAA - PO Box 9286, Mt. Gambier West, SA 5291

The Business Director must receive member motions and proposals for amendments to the Constitution no later than close of business **Friday August 17th, 2012.** Items received after this date will not be accepted nor will any extensions to this date be granted.

Mail to: Business Director - 3 Harris Crescent, Glen Waverley, VIC 3150

Members intending to nominate for an Office Bearer position must be eligible, paid up members of the Association as defined in the Constitution. Nominations should be accompanied by a précis not exceeding two hundred and fifty [250] words detailing skills, experience and achievements relevant to the duties and responsibilities of the nominated position. The responsibilities of Office Bearers are contained in the Constitution of the Association. Nominations must be in writing and be signed by the nominee, the proposer and the seconder all of whom must be eligible, paid up members of the Association.

The polling date close for the election (if required) is **Monday October 22nd, 2012.** The election of Office Bearers and voting on amendments to the Constitution will be conducted entirely by postal ballot. If you wish to vote you must be an eligible, paid up member of the Association and you must only use the ballot papers to be provided in the next issue of Guidelines (#121) or by special mail out.

The ballot papers must reach the Returning Officer (Darren Walters #3555) no later than close of business, **Monday October 22, 2012.**

Detailed voting information will be provided with the ballot papers.

Questions may be directed to the Returning Officer at returningofficer@cavedivers.com.au

Helen Higgins, Business Director - business@cavedivers.com.au



DESTINATION: MOUNT GAMBIER

Diving Hells Hole

By Michael Mallis #4553

Unlike its namesake Hells Hole is nothing like as bad a dive site as it sounds, it is in fact better than you might think. Diving this site more than most requires major logistics regard equipment, organisation and support, even more than Bakers Cave or the Shaft. The inspiration for writing this article was that this dive site may have further restrictions placed upon it.

Hells Hole is a little dived sinkhole that is controlled by the South Australian Forestry Corporation (SAFC) with dive access administered by the CDAA. It is little dived because of the relative difficulty in organising the logistic support and equipment to stage such a dive. Bookings are made via the SAFC through the usual means. A few specific conditions apply to this site, namely that at least four persons can dive with at least one who has had previous experience at this site. In our case we had nine divers which included Joseph Monks and Tim Muscat along with their combined expert rope experience and expertise which ensured the safety of all concerned. Joseph was especially forthcoming in passing on his rope work knowledge to us lesser mortals.

Two days before our planned dive on 25th March



Tim doing his best 'Michelin Man' impersonation after his dive.

word came through to us that the site had been closed down by the SAFC due to vandalism. This unfortunately is not an uncommon occurrence as reported by the SAFC ranger Mark Whan who oversees the site. Needless to say we were dejected at the lost opportunity after high expectations and planning. However, Joseph was able to negotiate a one-off arrangement with Mark in allowing our group to proceed with the dive in exchange for helping to recover debris and rubbish that had been tossed into the lake. This was a welcomed turn around and one that we were all very grateful for. After meeting Mark I saw an opportunity to record our recovery operation for the SA Forestry Corporation and CDAA. In the final analysis much debris was recovered included two television sets, a microwave oven, chair, assorted bottles (glass, plastic and metal), wood planking and even a SA Forestry sign. Unfortunately we could not retrieve a couch that was found underwater and besides, it was agreed that it was so ugly it probably deserved to be left there (only joking).

On the day of the dive we arranged to meet the ranger Mark near the dive site, unfortunately I missed the turn-off and as I leaned later so did the rest of the convoy; our excuse was that all signage and directions to Hells Hole were removed the day before when it was closed to the public. I was so far off the mark that Tim had to find and escort me back to the meeting place; thank goodness I had my mobile phone switched on (I often forget to even carry it with me) and that I had reception. In a convoy of four cars we followed the ranger's pick-up via a back-road as all other entrances to Hells Hole had been barricaded with large rocks to dissuade others from visiting the site.



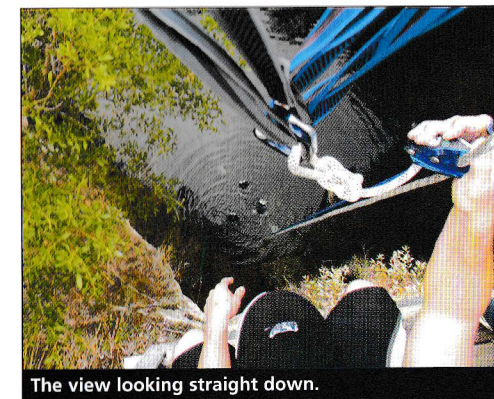
Background: Len preparing about to abseil.

Evidence of the vandalism was obvious in the damaged vegetation, destroyed fence posts and fence and in the graffiti sprayed on the gantry. The normally locked gate had been forced open to allow a vehicle up to the site, no doubt to dispose of rubbish in the lake. As to who caused this damage Mark could only surmise that it is the local disenfranchised youth out for a thrill. This has apparently happened in the past and as a result could possibly close the site for everyone, including the CDAA, through no fault of our own.

The path leading to the site itself is normally padlocked with a chain to a fence post. The key is obtained from the Lady Nelson centre and signed out to a CDAA member as is done with other sites. The key is returned later through the usual key slot in the east side door. On this occasion the gate was damaged and the fence posts destroyed by vandals who broke the lock chain in order to gain access to the site itself. It appeared as though an axe was used to gain entry. Further damage to trees and more fence posts was evident near the gantry along with spray painted graffiti. Further investigation revealed that assorted rubbish had been tossed into the lake. Much floating debris was seen that included various fence pailings, plastic bottles, posts

and what was later identified as a microwave oven, television and a chair. It was agreed with Mark that we would recover as much as we could and for this purpose a metal cage was provided that we could use to hoist up the rubbish. We could only guess as to the other sort of rubbish we might find.

Of the nine divers it was decided to send in first three divers; this was to be Peter, Jo and Len. In sets of three the next group was to be Joseph, Fabrice and Charmaine and finally by Tim, Liz and me. At all times we had people with rope experience topside and someone who could drive Tim's



The view looking straight down.

all-wheel-drive pickup truck. The arrangement was that the next group of three would organise their gear and be ready to abseil down the precipice. A rock-climbing style harness was essential for this dive. Joseph gave us all a review of abseiling technique which most people opted to do rather than be lowered. Tim's utility pickup was used to do the lifting. We had UHF radio communications between the driver and the hoist man which proved invaluable in signalling when and how fast to raise and lower divers into the water. At all times while winch work was being undertaken we were mindful not to place ourselves in near the path of the tensioned rope to the utility because if it should break it will cause an injury. All divers were belayed when lowered and raised even if the main line should fail. At all times there were at least three persons topside.

Anyone contemplating this dive should allow at least one to two hours assessing the site, attaching all ropes, straps, pulleys and whatever else you need to securely lower and raise equipment and divers. Allow yourselves at least another one hour to do a dive plus another half hour to lower, raise gear and yourselves to and from the water. This time also includes donning and doffing of gear. The first order was to clear a vandalised tree from the gantry entrance which was done by Mark who simply



Joseph, Len and Liz offloading rubbish from the cage.

dragged it away and by 9am we started setting up the rigging. By 11am we had the first divers in the water. By 5pm we had all done our dives and left the site. Understand that this was an all day event for nine divers but four to six divers diving in two groups could easily get in two dives each in a day. In our case given that Joseph and Tim were the rope experts at least one of them was top side at all times.

Water clarity close to the surface was very much like Gouldens or Little Blue Lake on a good day but cleared up remarkably at depth to better than 15 metres visibility. We dived in three groups of three and our group comprising of Tim, Liz and me was the last in the water. Tim ran the line followed by Liz then me. This afforded me an opportunity to shoot video and take still photos of the dive. The top six to eight metres has strewn rubbish which tapers off as you go deeper. There is a thermocline here at about 12 metres and looking up from this and greater depth reveals an overhead green glow that casts no shadows and is not dissimilar to One Tree that helps evenly illuminate the bottom. The profile of the lake is a classic cone shape in that it rises to a peak offset slightly from the centre and towards the gantry (eastward) and slopes down the rock/silt mound and undercuts the vertical walls of the sinkhole. The mound itself is capped off with many tree branches and logs which fall away on all sides. So high is this wood pile at the top of the mound that you can actually stand up which affords



Joseph and Fabrice setting up slings and ropes.



Fabrice with his 'treasure' haul which included a SAFC sign.

some ease in donning and doffing your gear unlike the Shaft. This source of all this wood is from the surrounding forest as tree branches and the like naturally find their way into the hole. Finding a primary and secondary tie-off point therefore is quite easy. Most of us did an anti-clockwise dive first heading straight down to the bottom of the mound and reaching 20 odd metres. The bottom was very silty, cold and pristine. I could easily imagine that the water surface even in summer sees very little direct sunlight. We found some nice swim-throughs, interesting rock formations and what initially promised to be some mini-cave systems but these quickly proved to be dead-ends; still, it was nice to think that they might lead somewhere. After 100 metres we exhausted Tim's line and we continued on for about another 100 metres. By my estimation we almost made it all the way round the base of the hole before turning around and slowly



Vandalised fence and gate post.

making our way back. Our dive was exactly one hour. Much rubbish and the occasional small yabbie was seen at the bottom and especially as you made your way up the mound for our safety stop. It's a shame that you are constantly reminded of the thoughtlessness of some people who think it amusing to use this sinkhole as a personal rubbish tip. Glass and plastic bottles litter the silt mound along with the occasional piece of unidentifiable waste however the televisions and microwave were readily identifiable. Water temperature was a mild 16C near the surface and 14C at the bottom.

After his dive earlier on Fabrice returned and stayed on the surface to retrieve most of the floating debris whilst Tim, Liz and I did our dive. Well after the three of us finished our dive and were hauled out Fabrice continued to retrieve and load up the steel cage with all manner of rubbish. Four loads of rubbish were brought up which included two televisions, microwave oven, chair, lots of wood pailings, assorted plastic and glass bottles and even the Forestry Reserve sign. I like to think that our little group brought much credit to the CDAA in helping out the SAFC and try and keep this site open for future CDAA use. Fabrice in particular deserves special praise for his eagerness in retrieving rubbish by staying in the water for nearly two hours; as a result hardly anything was left floating, well done Fab.

I urge anyone who has even an inkling to dive this site to do so as it promises to be a unique experience. Whilst not for the fainthearted it is certainly a dive you must do if ever the opportunity presents itself.

Many thanks to Mark Whan, South Australian Forestry Corporation (SAFC) ranger who graciously permitted our group to proceed with the dive and who was on hand to clear a path to the gantry.

POSTSCRIPT:

A short high resolution and low resolution video of this dive that I knocked up can be seen at the following links, enjoy:

High resolution link: <https://vimeo.com/42185467>

Low resolution link: <https://vimeo.com/42683082>



Karst Science

A brief comparison of four great cave diving areas through documentaries

By Ian Lewis #258

Looking across the Nullarbor Plain, who would think that such a vast flat area would contain anything of interest? Exploring the Nullarbor from the western side, imagine the amazement of whoever first came across the immense valley entrance of Cocklebiddy Cave. When Edward John Eyre crossed the Nullarbor in 1841, he relied upon aboriginal help to find water in the dunes along the coast and passed about 50 kms further south than Cocklebiddy Cave.

The first European to see Cocklebiddy Cave is not recorded but it is almost certain that Aboriginals would have shown the cave to explorers due to the easy access to water within a twilight zone. We know the large caves were used by aboriginals from the extensive digs undertaken by Professor Gallus in Koonalda Cave east of the South Australian border, where excavations reveal charcoal and flint chips to a depth of 8 metres in the cave floor, dating back approximately 25,000 years.

After the first trackways had been made across the Nullarbor as it became "settled", Cocklebiddy Cave became locally well known and the track leading to it became plain. Even when I first visited it on a caving trip in 1969, the cave showed signs of regular visitation and had been knocked around a bit over 100 years. Strangely though, nearby caves at that time were unknown or hardly touched. Hardly anyone visits the large but dry Capstan Cave south of Cocklebiddy towards the road. Further to the south west, Pannikin Plain and Tommy Grahams Caves had only been discovered and visited once by noted WA geologist Dave Lowry in the early 1960's. In January 1974, my second expedition were the second visitors to these caves and we were only able to find them in the scrub by spotting remnants of Dave's vehicle tracks every kilometre or so. The Nullarbor had almost obscured them in 10 years and we had great difficulty twisting and turning through the bush to re-find them. Nowadays, the tracks to these caves made by cave divers can be seen as clearly as highways on Google. From this we learn that the Nullarbor surface is fragile and easily imprinted by human activity.

It's also an eco-barrier. Did you know that for many

years the Western Australian Government had a programme set up to stop starlings from getting across from the eastern States? This consisted of small one-man bird hides made of fencing droppers draped with hessian situated near large cave entrances like Koonalda, Warbla, Weebubbie and Abrakurrie Caves. Shooters were paid to hide there and actually shoot individual starlings as they were spotted migrating westward from cave entrance to cave entrance! I seem to recall that despite criticism, this policy was effective for a decade or two but I don't know if it has been successful since – anyone in WA seen a starling over there?

Now 100 years or so after Europeans first entered Cocklebiddy Cave, the WA Department of Environment and Conservation have provided detailed interpretation signs at the site. They are reproduced here in Guidelines, accompanied by an article written by Lorna Charlton, to whom I am grateful for permission to reproduce her work. Those early settlers would have been gobsmacked to know that the lake in the cave led to 7 kms of long large tunnel, which has taken cave divers 40 years to explore since our first expedition in Jan 1972 when Phil Prust, Dave Warnes, Ron Doughton, Bob Turnbull and myself along with a pile of cavers first hauled tanks down that huge slope!

And everyone had no idea back then that the Nullarbor would reveal other secrets in surrounding caves – giant marsupial kangaroos, wombats, thylacines and of course the biggest, meanest, nastiest top predator of them all – Megalania – the giant lizard bigger than a komodo dragon – all lived across this region. It seems impossible now but the climate on the Nullarbor was once able to support forest and grasslands for these creatures to thrive in until Ice Age climate changes, human arrivals and vegetation changes led to their extinction. These interpretive signs are an excellent explanation of the changes on the surface and the wonder underneath it at Cocklebiddy Cave. Scientific work is continuing to assess how such a large feature was generated by underground water in such a desolate area. That will be the topic of another Karst Science article.

DESTINATION: COCKLEBIDDY

Stamp of Approval

By Lorna Charlton

"There are fantastic new interpretive panels out at Cocklebiddy Cave in Western Australia. Honestly, they are the best thing out there... besides the caves, of course."
Dr Peter Buzzacott.

It's very rewarding to receive such praise when you have put in a lot of hours to produce an interpretive product you feel worthy of presenting to the public, especially when it comes from a specialist in the topic and someone who has a passion for the place. In this case Peter is referring to two large, interpretive panels that were recently installed at Cocklebiddy Cave on the Nullarbor. Peter is a diving scientist and former instructor with wide-ranging interests including diving physiology, research in caves, high-altitude diving, occupational diving and diving epidemiology (injuries and fatalities).

The installation of the panels at Cocklebiddy Cave is the culmination of a lengthy, complex process that is perhaps not readily evident in the panels' brief messages and simple design. Here are some insights into that process, which made this a very special and memorable project.

DESTINATION NULLARBOR

When the opportunity arises to develop interpretive panels for a site on Department of Environment and Conservation (DEC)-managed estate I start with desktop research to become familiar with the location and its values so that I have an understanding of the site before I make my first visit. Fortunately I had the opportunity to visit Cocklebiddy Cave in 2003 as a tourist several years before the project began. At this time the cave was still open to the public.

I had previously crossed the Nullarbor several times by car and train, the sort of trip where your focus is on the endless line of bitumen ahead and the scenery on either side is just a blur, but this time my destination was the Nullarbor. I spent two glorious weeks exploring homestead ruins, historic wells, the plains and woodlands, the cliffs and whales of the Bight and of course some of the caves.

I didn't have the equipment or the experience to

enter these caves and so Cocklebiddy was a great opportunity to do so. For a non-caver it was quite an adventure to descend deeply into a cave that has not been developed for tourism – one without artificial lighting, stairs or boardwalks. My lasting impressions are of cool water on my fingertips, the peaceful stillness and utter blackness in that large space, and the small reassuring circle of sunlight in the distance that marked my return route to the cave entrance and the surface. It truly was unlike anything I had ever experienced and worth every step along the steep, boulder-strewn slope that led down to the water's edge.

KEY MESSAGES

My experiences as a tourist on the Nullarbor and in Cocklebiddy Cave were just the beginning of a growing appreciation for this unique landscape. When asked to create interpretive panels for the

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John, Sharon and Erica.

Welcome to Cocklebidy Cave

Home on the plain

Cocklebidy Cave is one of many thousands of caves that dot the Nullarbor 'karst' ... the largest and area of exposed limestone in the world. A karst landscape is formed by water dissolving limestone over time to create distinctive karst features. These include rocky ridges, broad pavements, caves, dolines (sinkholes), blowholes and circular clay-filled depressions called 'dongas'. The entrance to Cocklebidy Cave is an example of a collapsed doline.

In this vast, flat landscape of scattered bluebush and open acacia woodlands, the caves and dolines provide vital habitat for some species of bats and birds which roost or nest within them. These include the welcome swallow and Australian kestrel. Watch for these birds as you venture across the Nullarbor.

Viewing Cocklebidy Cave



Due to unstable rock at the entrance, Cocklebidy Cave is CLOSED to public entry. Do not go beyond the entrance barrier and please maintain a safe distance from the edge of any nearby overhangs or steep, unstable surfaces. Your safety is our concern but your responsibility.

Caring for Nullarbor Caves and Culture...

Be respectful: For many thousands of years the Nullarbor region has been the traditional country of the Ngadjui and Mirning Aboriginal people. Natural features within this landscape, including the rocks, are of great cultural significance.

We, the indigenous owners of this area, welcome you to our country. This area, which was occupied by our ancestors, is still used and looked after by Ngadjui and Mirning people today. Please respect this special area and help us preserve it for the future. Please take care when exploring this area and ensure that you do not disturb or take anything away with you or leave anything behind. - Ngadjui and Mirning people.

Stay on tracks: Pedestrians and vehicles - please keep to existing paths and tracks to reduce your impact on this fragile environment.

Be wise: Please carry out all litter and leave this natural environment as you find it for all to enjoy.

Be safe: Most of the Nullarbor caves are difficult or dangerous to locate and enter. The cave environment and its inhabitants are extremely fragile and can be easily damaged or destroyed. Visits to caves on the Nullarbor are restricted to speleological (caving) clubs and for research, monitoring or management purposes. Within Western Australia, DEC issues the required entry permit for Nullarbor caves only to visitors from approved organisations. Some DEC-managed caves in other regions of the State do not require a permit and are open to the general public.

Further information: Department of Environment and Conservation (DEC) 92 Dempster Street, Esperance. Phone: (08) 9083 2100 or visit www.naturebase.net

Water wonderland

Most of the caves on the Nullarbor were formed by the action of groundwater, which dissolves the limestone in all directions to create telltale rounded walls. Some passages collapse to become large underground chambers with high domed ceilings. Others penetrate the groundwater and lead from cool, clear lakes into a submerged and mysterious world few people have seen.

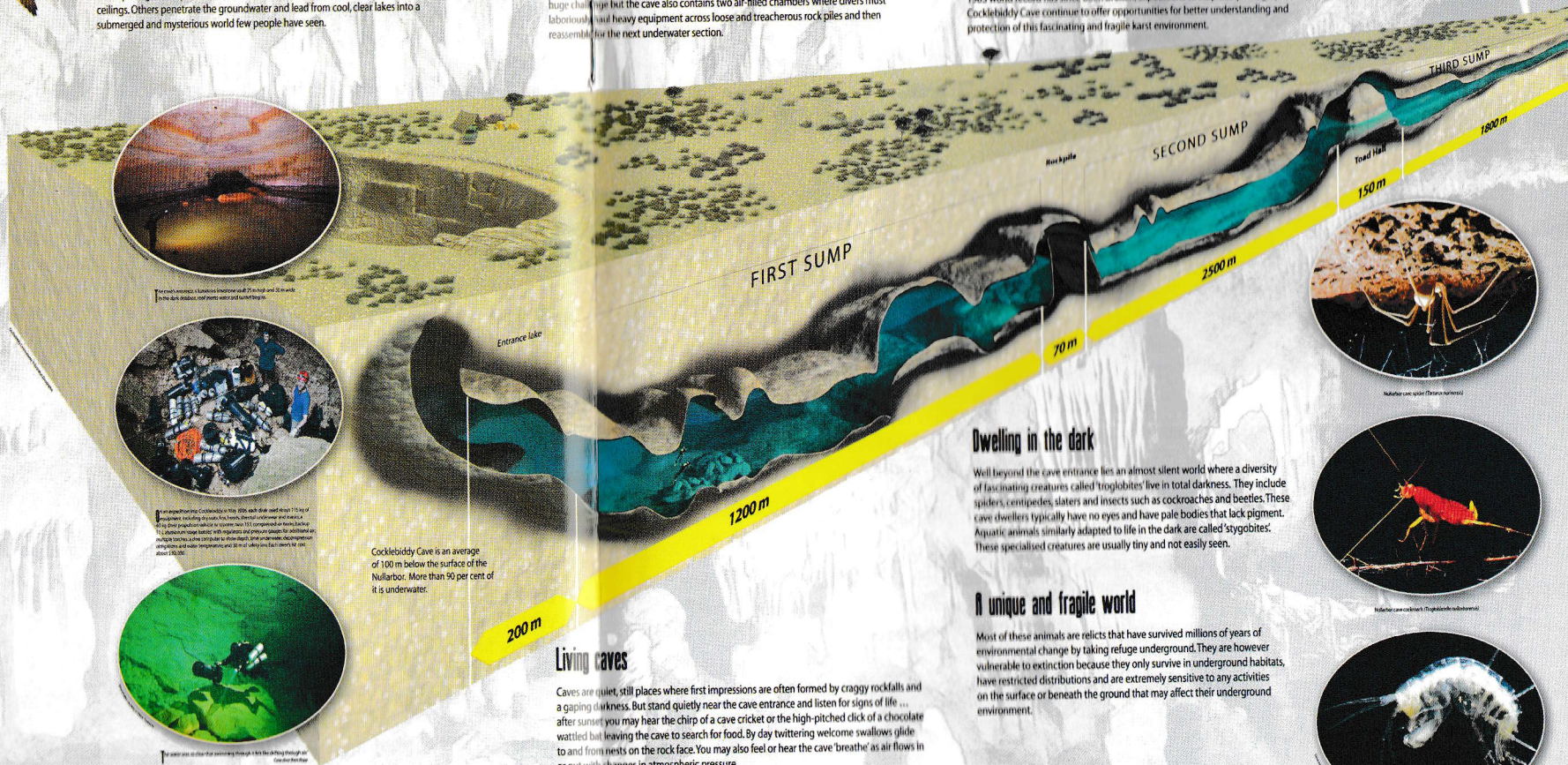
Going to great lengths

Cocklebidy Cave is arguably the Nullarbor's most famous cave, being the object of numerous expeditions and the world's longest cave diving penetration in 1983 when a distance of 6.34 kilometres from the cave entrance was reached. The dive in itself is a huge challenge but the cave also contains two air-filled chambers where divers must labouriously haul heavy equipment across loose and treacherous rock piles and then reassemble for the next underwater section.

Innovation and inspiration

Expeditions to the end of the cave have only been made possible by building on the experience of previous dives and innovations such as rebreathers, underwater scooters and underwater sleds to carry food, water and equipment. Although the 1983 world record has since been broken, expeditions to map and photograph Cocklebidy Cave continue to offer opportunities for better understanding and protection of this fascinating and fragile karst environment.

The cave was extended in 2008 by Craig Challen to 6.380 km and this has been declared the end of the main passage.



Dwelling in the dark

Well beyond the cave entrance lies an almost silent world where a diversity of fascinating creatures called 'troglobites' live in total darkness. They include spiders, centipedes, slaters and insects such as cockroaches and beetles. These cave dwellers typically have no eyes and have pale bodies that lack pigment. Aquatic animals similarly adapted to life in the dark are called 'stygobites'. These specialised creatures are usually tiny and not easily seen.

A unique and fragile world

Most of these animals are relicts that have survived millions of years of environmental change by taking refuge underground. They are however vulnerable to extinction because they only survive in underground habitats, have restricted distributions and are extremely sensitive to any activities on the surface or beneath the ground that may affect their underground environment.

Some of the ways we protect caves and cave life.

- Paths and infrastructure to limit damage.
- A cave permit system to regulate access.
- Cave leader training to improve knowledge of safe caving behaviour and minimal impact caving practices.
- Guided opportunities in caves open to the public.
- Ongoing monitoring programs and conservation projects.



Nullarbor cave system (Dempster road)



Nullarbor cave system (Dempster road)



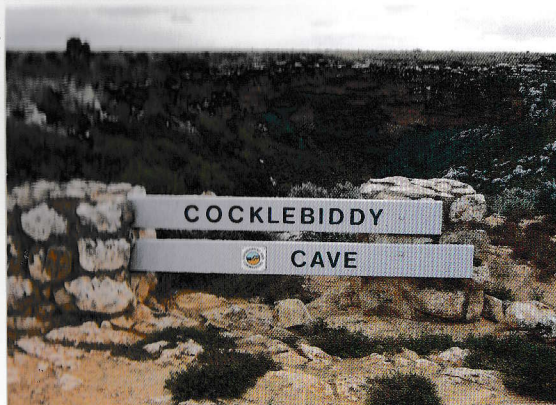
Nullarbor cave system (Dempster road)

cave several years later, the challenge then lay, as always, in the ability to convey the wonders of a place in just a few words. To encourage readability, interpretive panels have tight word limits. This means that we avoid unnecessary use of facts and

figures, which are easily forgotten, and place greater emphasis on important take away messages. After reading numerous scientific and newspaper articles, attending fascinating talks by Jay Anderson

on karst and John Long on the megafauna, and scanning management strategies and stories posted on the internet, it became clear that the Nullarbor karst contained a wealth of stories and values.

In a nutshell this is what I discovered... Cocklebidy Cave is one of many thousands of caves that dot the Nullarbor 'karst', the largest arid area of exposed limestone in the world. These caves are significant because they contain unique terrestrial



and aquatic communities, endemic species, unusual formations and the fossils of an extinct Australian megafauna. For many thousands of years the Nullarbor Region has been the traditional country of the Mirning and Ngadju Aboriginal people. Natural features in this karst landscape are therefore also of great cultural significance.

Cocklebidy Cave is arguably the Nullarbor's most famous cave, being the object of numerous expeditions and the world's longest cave diving penetration in 1983 when a distance of 6.24 kilometres from the cave entrance was reached. The cave was extended in 2008 by Craig Challen to 6.380 km and this has been declared the end of the main passage. The interpretive panels at Cocklebidy Cave were designed to help visitors understand and appreciate this great diversity of natural and cultural values. The panels also promote minimal impact and safe behavior.

A CREATIVE COLLABORATION

As the project progressed I also consulted with DEC Esperance staff and specialists in caving, cave diving, karst geology, ecology and management, palaeontology and cultural heritage. This group included individuals who provided invaluable help with references, images and feedback on the draft panels and included Gavin Prideaux, Peter Buzzacott, Steve Trewavas, Norman Poulter, Ken Grimes, Susan and Nicholas White, Stefan Eberhard, Paul Hosie and Tim Payne. When all of the elements had been gathered together, Shaun Bunting, a Senior Graphic Designer with DEC's Interpretation Unit,

worked his magic. He selected a colour palette and fonts suited to the topic and setting and created a design that leads readers on a visual journey across the two large panels. The images include a stunning collage of the Australian megafauna painted by noted Australian artist Peter Trusler for Australia Post. You may recognise them from the stamp series, which was released in 2008.

With a myriad of knowledgeable and passionate stakeholders involved in the consultation, this proved a complex but rewarding project. Now that the panels are complete and installed in the shelter that stands near the entrance to Cocklebidy Cave, it's a terrific outcome to get Peter Buzzacott's 'stamp' of approval.

Lorna Charlton is Senior Interpretation Officer with Department of Environment and Conservation's Interpretation Unit in Perth, Western Australia.



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The Rule of Thirds

By John Vanderleest #1965

The rule of thirds has always been one of the golden rules of cave diving. But is it still relevant today? The principle is simple. You use 1/3 of your air supply swimming into the cave, 1/3 to swim out, keeping 1/3 for reserve. But what does this really mean in practice? Let's look at a few dives.

Dive One

1. You have 2 cylinders with 2400lt of air in each cylinder. That gives you a total of 4800lt.
2. You dive to the maximum penetration, using 800lt from each cylinder (total used 1600lt or 1/3 of your air).
3. You now have 2 cylinders with 1600lt each, for a combined total of 3200lt or 2/3 of your original amount.
4. You lose one cylinder, leaving you with one cylinder holding 1600lt.
5. You used 1600lt for the swim in, now have only 1600lt left, but enough for the swim out.

So for this dive the rule of thirds works. The maximum penetration is 1/3 of your starting air supply.

Dive 2

Let us now add a third cylinder into the equation and see what happens with the 1/3 rule now. Simple I hear you say, you should use 1/3 of the third cylinder, the same as your first two. OR DO YOU?

1. You have 3 cylinders, each containing 2400lt. That's a total of 7200lt.
2. You dive to a maximum penetration, using 800lt from each cylinder (2400lt in total).
3. You now have 3 cylinders, each with 1600lt. That is a total 5400lt.
4. You lose one cylinder, leaving you now with two cylinders holding 1600lt each, or a combined total of 3200lt.
5. You used 2400lt for the swim in and still have 3200lt, 800lt more than you need.

So in this dive, the maximum penetration of 1/3 of your air supply seems to leave you will excess gas. Does this really mean that when using 3 tanks, you can penetrate for more than 1/3 of your starting air supply?

Let's now plan this dive again, this time using rule of thirds for our twins and rule of halves for the stage tank.

1. You have 3 cylinders, each containing 2400lt. That's a total of 7200lt.
2. You dive to a maximum penetration, using 1/3 or 800lt from each of your twins and ? or 1200lt from your stage, for a total of 2800lt.
3. You now have 3 cylinders, two with 1600lt and one with 1200lt (total 4400lt)
4. You lose one of your twin cylinders (the ones with the most air), leaving you with one cylinder holding 1600lt and your stage cylinder holding 1200lt for a total of 2800lt
5. You used 2800lt for the swim in and still have 2800lt left for the swim out.

So, in theory at least, the rule of only really thirds applies to your twins, while you can use the rule of ? for your stage tanks.

So does this mean we should be modifying the rule of thirds for stage tank diving?

The problem with the rule of thirds for twin tank diving or using thirds plus halves for stage tank diving is that it assumes a consistent gas consumption during a dive.

Being slightly colder, slightly fatigued, mild stress, reduced visibility and unbalanced weighting are all things that will influence your air consumption on the way out. These are the gotchas in your dive planning. Where you think you have enough air to exit in your emergency situation, you actually don't. Using the rule of thirds when diving on just twins or using 1/3 and ? when stage tank diving is a theoretical limit that may not actually be enough when put into practice.

So how do you deal with this?

Firstly, plan your dives to stop and look around on the way in. This way, you limit your penetration distance.

Secondly, take a buddy if you want to push the penetration limits of your gas supply. Apart from having someone to share your experiences, your dive

buddy can provide that very important secondary air supply if you do consume more than you thought.

Thirdly. Do not think diving with a manifold will mean you can always access the gas in both cylinders. This is simply not true. The loss of one cylinder can happen and it can happen fast. Emergency air planning is not about probability, it's about possibility.

Finally, think again about the rule of thirds. If you are on twins, dial it back a little. If your tanks have 240bar in them, plan the dive on say 210 bar or 70 bar penetration instead of 80bar. Alternatively if you are staging, work on thirds for all cylinders.

To really help you plan, try recording your consumption during the dive. This way, you will start to better understand what happens to your air consumption at various stages of the dive. You will learn a lot more about your air consumption as you get colder, tired, dealing with silt, reeling in, etc. Your air consumption is not flat. It varies tremendously and the more you know about yourself, the better you are able to plan your dives.

The most valuable technique you can adopt is to start planning your dives in reverse. Plan for the air you need to come home, and focus less on the air you need to get there. Talk to any diver who is truly involved with exploration and they will all tell you that planning for a safe trip home is the biggest part of their dive planning.

So is the Rule of Third still relevant today? Yes, but it's not a dive plan. It should not be used to plan your penetration into the cave, but used as a reminder that you need to plan for the trip home before planning for the trip there, and a reminder that cave dive planning is about possibilities, not probabilities.

Most importantly, do not think your formal training is the end of your education, It's the start – there is no end. Never look at someone with 30 years of experience and think that their planning in minimal, so that is the base line. It's what you don't see that really counts.

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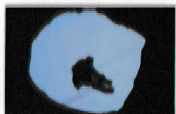
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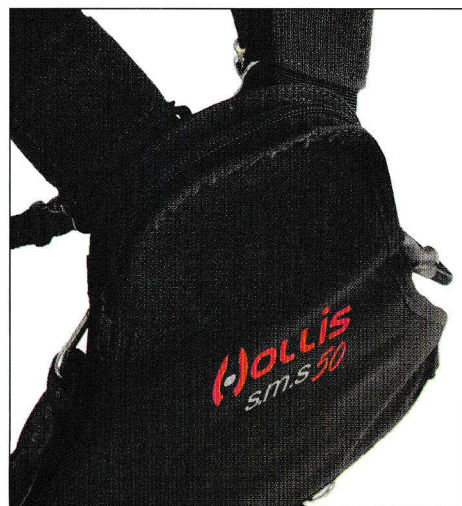
NEW GEAR:

Hollis - SMS 50 Harness

Hollis "SMS" sidemount systems have been designed not just with cave divers in mind, but any sidemount diver. The new SMS50 is no exception. Built for sidemount only, this kit can be used in any environment from open water to overhead. Includes an adjustable, one size fits most harness based on a minimalist design; also ideal for traveling sidemounters. Ready to dive out of the box (RTD). Updated ETA: SMS50 is shipping in this Winter.

Features:

- Inner located elbow to avoid overhead interference.
- Built-in trim pockets - 3lbs upper shoulders and 3lbs (Pair) for lower torso.
- Neoprene covered shoulder straps.
- Ready out of the box! (2) Tank bungees, (2) SS Cam bands, (4) SS Bolt snaps and line included with kit.
- Also includes a Sternum strap and Crotch strap.



NEW GEAR:

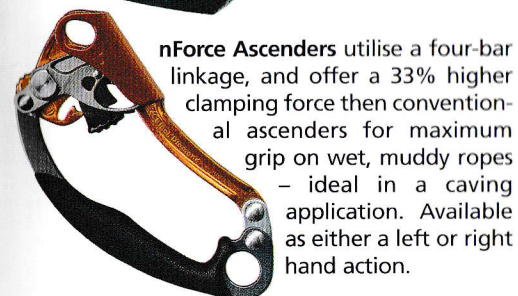
Climbing, Caving & SRT

Climbing, Caving & SRT Gear is now available On-Line for CDAA Members. Dive Stuff, Australia's on-line portal for everything Cave Diving, has just announced the addition of a great range of Caving & SRT equipment. The equipment has been chosen as the best available, meeting the needs of Cave Divers for most Caving & Vertical Access situations.

The Black Diamond Storm LED Headlamp offers a waterproof (not dive proof) compact headlamp with a huge 100 lumen output from 1 Triple Power and 2 Single Power White LED's, with the addition of 2 Single Power Red LED's for night vision.



The larger Icon Professional Level LED Headlamp utilises a separate battery pack to provide a massive 200 lumen output, with the combination of red and white LED's. The Icon is also waterproof (not dive proof) and is ideal for the longer Nullarbor expeditions.



nForce Ascenders utilise a four-bar linkage, and offer a 33% higher clamping force than conventional ascenders for maximum grip on wet, muddy ropes - ideal in a caving application. Available as either a left or right hand action.

Alloy & Steel Carabiners, Pulleys, Figure-8 Descenders: A range of carabiners & caving hardware ideally suited to caving. Carabiners in steel for superior strength, and alloy where weight is an issue. Big-D Screw Gate & Light Alloy for various applications. Standard Figure-8 descenders and an 11.5mm fixed cheek pulley for vertical gear transport.

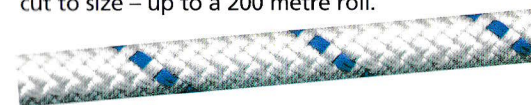


Vario Speed Harness: The Vario Speed is the ideal cave divers harness: One size, with fully adjustable leg loops for either with or without wet & dry suits. The large, quick adjust leg loops make this an ideal abseiling harness for the long drops into some cave systems.



Beal Static Rope:

The Spelenium semi-static rope is a purpose built caving rope with a 10.5 mm diameter. Spelenium offers a perfect balance between abrasion resistance & flexibility, for ease of use in the specific caving environment. Available in 50 metre lengths, or cut to size - up to a 200 metre roll.



Check out the entire range at: www.DiveStuff.com.au



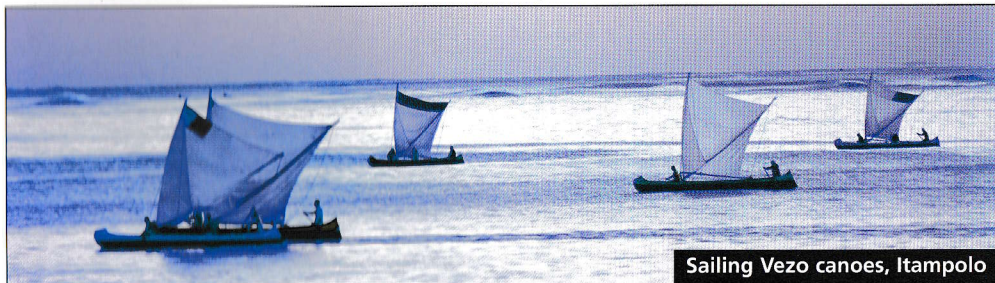
DESTINATION: MADAGASCAR

Mahafaly Dreaming

By Pierre Constant #3732

Stretching west and north of the Isalo Ranges, the Mahafaly Plateau runs like a dragon's tongue to the very tip of Madagascar's south west coast. This, by all means, is a far away country in the Great South of the Big Island, where numerous historical shipwrecks lie below the waves, since the 16th century. Created in the geological Eocene times (Tertiary era), the limestone table is rather conspicuous when seen from the Mozambique Channel, south of Tulear. It conceals an extensive circulation (run off) of underground water, evidence being the numerous springs encountered in the lower valley of the mighty Onilahy River, close to the seashore.

The Mahafaly Plateau has been affected by post-Eocene tectonic movements with a northwest south east distension, which tops an older tectonic event affecting the underlying substrate. There, seismic activity is a common happening. The karstification process is intense in the lower Eocene with very deep caving systems, whereas in the mid-Eocene sinkholes are only visible. Number of these 'avens', as they are locally known in the French language, were brought in evidence by the aerial photography realized by the French (Battestini 1964, IGN 1966). Looking like cauldrons, these collapsed sinkholes, round or oval in shape, measure anything from a few dozen metres up to 500 metres, for a depth varying from 40m to 100 metres. A natural wonder that makes you hold your breath for a minute.



Sailing Vezo canoes, Itampolo

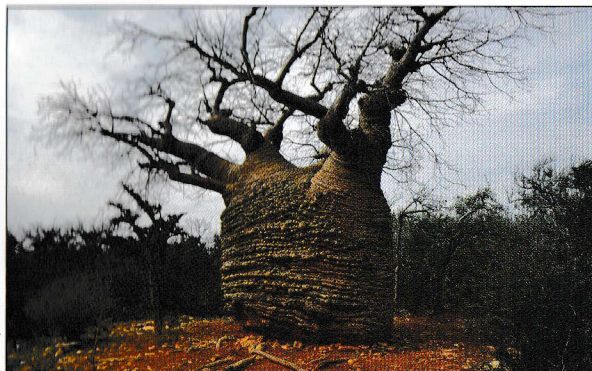
August 2011

Crossing the Bay of St Augustine on a flat sea, by a sunny morning, the speedboat takes me to Anakao, a Vezo fishermen village and a holiday resort area, south of Tulear. The white sandy beach is fringed by a turquoise green lagoon, sailed by local outrigger canoes, cradled between the historic Nosy Ve Island and the mainland. The picture perfect postcard is an impression of paradise rediscovered. From there, a coastal track follows the west coast 56 km down to Efoetsy. This is the gateway to Tsimanampetsotse National Park, an exquisite Malagasy word meaning: 'there are no dolphins'. A nature reserve created in 1928 during the French colonial administration, it comprises a huge lake, 15km long and 2km wide, equaling a surface of 3750 hectares, home to two species of flamingoes: "Phoenicopterus ruber" and "P.minor". From September to May, these gracious birds have a migration to the Ngorongoro Lake in Tanzania, in search of shrimps on which they feed. They come back to nest in November. The single egg, laid on a little mud tower, is taken care of by both the male and the female, on an islet in the north of the lake. The natural reservoir is fed by the springs coming out of the cliff, and by the avens as well. Tsimanampetsotse National Park is a refuge to 16 species of lagoon birds and some 80 species of land birds (mostly from the forest), among which the endemic red shouldered vanga.

A few caves and spectacular sinkholes are found in the park, where giant tentacular banyans are growing. Awesome roots are climbing down into the



Androinpany sinkhole, and inserted: Pierre at Avintany sinkhole.

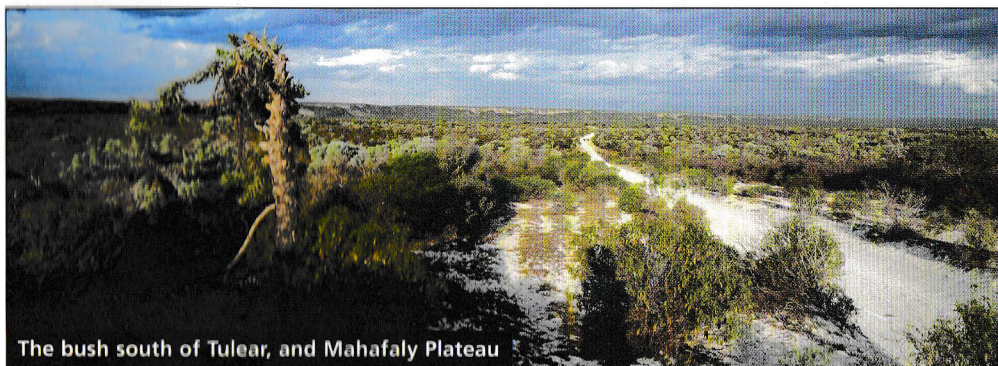


Baobab 'Grand mère', Tsimanampetsotse National Park.

holes in search of water. At Mitoho Camp, a cave with a small lake contains some albinos eleotrid blind fish, pink and white, of the Typhleotris genus. These small creatures skim the surface shyly. The loop circuit of Tsiamaso (1h30), meaning 'without eyes' and related to spirits, allows access to the cave of Andranolovy, where a giant five stemmed "Pachypodium geayi" tree guards the entrance. A stone throw away, one comes to the aven of Vintany, where a curtain of roots of the Aviavy tree comes down like a waterfall to the existing water table. A slender tree grows from the middle of the pit. The team of Jean Michel Cousteau came here to shoot a documentary in 1996. A bit further, the lone baobab 'grand mère', "Andansonie rubrostipa", puffed up and covered with open warts, stands still like a patriarch lost in time. A remarkable sight. The dirt road continues south into white sand, across a sun parched and arid countryside. The so called spiny bush in a landscape composed of almond green "Euphorbia stenodactyla" with spiny branches and rather exotic octopus trees of the "Didieraceae" genus, that look like candelabra cac-



Eleotrid blind fish, Avintany



The bush south of Tulear, and Mahafaly Plateau

tus but are definitely not. In fact, their trunk is made of wood, they have spines, but also tiny leaves. Itampolo, a site meaning '10 cameleons' is another two hours further. Besides the idyllic beach on the waterfront and the picturesque fishing village, the attraction here lays in the existence of two sinkholes, worth visiting. "Avintany" in the lowlands, in an aven 10 to 15 metres deep, full of water and accessible only through the roots of an aviavy tree. The vision of the lake with clear water is enticing. The cream coloured limestone cliff is

quite hard, with the presence of flintstones, sandstone and sedimentary tuffs. A second aven, 5 km inland, is located on the top of the Mahafaly Plateau, in a forest of spiny Alluaudia, another species of octopus tree.

Named "Androinpany", it appears like a circular pit, 15 metres across, with sheer walls that plunge 66 metres deep in one drop. Impressive enough, it is inhabited by a couple of maki lemurs, that live in cracks near the entrance of the sinkhole. The site is also home to black vasa parrots, rather inquisitive, and a couple of kestrel falcons. An eagle will swoop over the hole during my visit. "Some years ago, two Portuguese men came here with ropes and climbed down to the bottom", inform Dongary. I distinguish a pile of debris in the centre of the aven, with a ring of water indicating a possible cave underground.

March 2012

Intrigued by these fascinating sinkholes - that

Alluaudia trees and bottle boabs, Androinpany



reminded me of similar formations in the Mt Gambier region of South Australia, I return to Itampolo in March 2012. A 4x4 is absolutely necessary and it's best to hire a vehicle in Tulear, for it is hard to find one locally. Judy, accompanied by Anselme, accept to help me with a rusty red Nissan Patrol. We meet up in Anakao, for Christina and myself, will make our way there by speedboat. The sandy track follows the Mahafaly Plateau, with its conspicuous outline to the east. It runs as a straight



Vanity Sinkhole, Tsimanapetsote N.P.

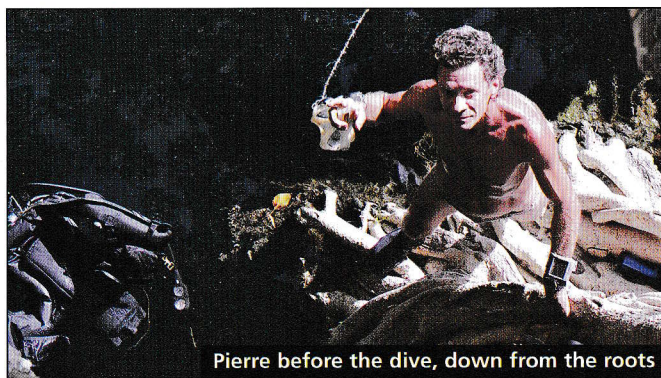
bee line, 100 metres above the coastal plain. We make a stop at Ambola, on the sea shore, near Tsimanampetsotse National Park, where I hope to hire some scuba tanks from the local dive centre. Bad luck, the fellow has vanished the day before, because of a health problem that required treatment. Disappointed, we head off to Itampolo nevertheless, and settle in a bungalow on the beach. Alain, the owner, a resident 'vazaha' for 30 years, displays a protuberant colonial egg, hanging cheeks and a double chin like Goofy the duck. He drags his flip flops like an old man and smokes like a fireman. It is already mid-afternoon, when we make our way to Avintany. I find the sinkhole with a little luck, after a moment of hesitation. The lake is bathed in a nice soft light. The water level being hardly 10 metres down the cliff, mask, fins, snorkel, and torch will be brought down with a string, to which a clip has been attached. The line is tied up to a branch. The vertical roots of the Aviahy tree are not really inspiring, as I am no lemur. However, taking my courage in hands, I manage to climb down, to my pleasant surprise. Rather unstable on two stumps of wood, I don mask and fins, then let go of myself backwards into the water. Visibility is excellent and the temperature is 28.3°C. Curtains of aquatic plants fall vertically under the roots of the tree, to a depth of 5 metres. These are extremely fragile and full of sediments.

The aven is nearly 50 metres across. The central part is a pile of debris, covered with an apple green vegetation. A mini forest of stems with what seems like 'whiskers', that one should avoid touching, for it is highly delicate. As expected, the side wall drops 5 metres straight, before it disappears under the ceiling into the darkness. At once, I spot some blind fish along the rock face, or

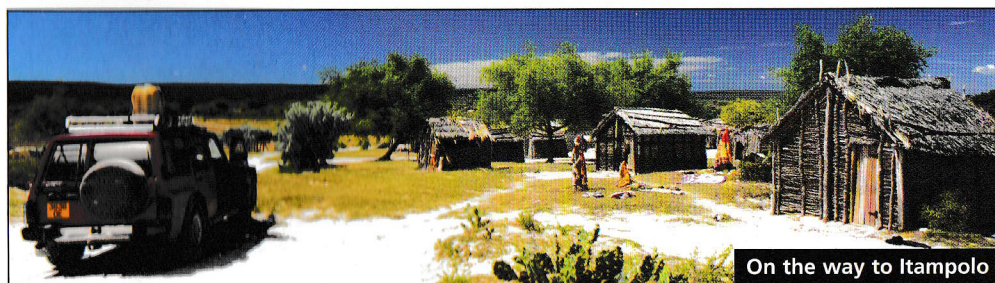


Water mantis feeding, Avintany

on the roof of the cavern, where these hover in a sleeping mode. Brown to yellowish in colour, the creature is 5 to 8 cm long, with 2 dorsal fins, 2 pectorals and two pelvic fins. The head is tapered, with a broad curved front, that resembles a duck's beak. The fish does not react to the light of the torch, but to the movements of the water. These blind species belong to the genus "Typhleotris", however it seems distinct from the species seen at Mitoho Cave in Tsimanampetsotse, in pink and white colour. I also marvel at the presence of numerous aquatic insects, 10cm long, mimicking stick insects, elongated with a pointed tail, two antennae like appendices and 4 articulated legs, which they use for



Pierre before the dive, down from the roots

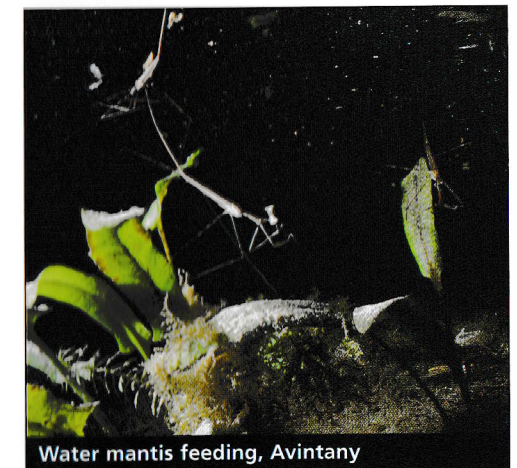


On the way to Itampolo

swimming in a synchronized manner. These dive to a depth of 2 metres, along the rock, but also rest on the roots underwater, feeding on micro-organisms. Further inspection leads me to think that they look more like water mantis, displaying articulated arms with three sections, that allow the capture of preys. Also visible are golden green scarabs, that swim comically, with two rear articulated flippers. Catching a breath of air, I skin dive down to 10 metres under the roots of the aviahy tree. The ceiling of an apparent cavern fades into the dark. The slope of sediments clearly indicates a continuation at depth. On the surface, the cave has an overhang of about 8 metres, 10 to 15 metres wide. A conspicuous shelf, a metre wide, is seen just above the water. There, I find the moult of a snake, and the dried scat of a mammal which could well be that of a lemur, for no other animal could reach this spot. Highly puzzling, clusters of translucent insects appear on roots or stones, at the edge of the water, that look like dried up exoskeletons of chitinous crickets. Repetitive apnea take me around the sinkhole. A small cave reveals itself in the south part, another one in the west, where curtains of weeds climb down from the walls. To my surprise, I come across some translucent shrimps in the water column, with long bent backwards feelers, which indicates some

salinity in the water and probable connection to the ocean. To the north, the wall has a maximum depth of 5 to 7m, dropping again at 10m at the entrance of the east cave. Coming up from the sedimentary floor, I observe streams of bubbles rising towards the surface, not far from the roots of the tree. A proof somehow, of the existence of a volcanic or hydrothermal activity, most certainly ancient and not apparent.

The silty bottom is highly volatile. A mere contact of



Water mantis feeding, Avintany



Avintany Sinkhole



Blind fish, Avintany

the fins translates into an instant cloud of particles, and the visibility reduces to nil. After an hour long exploration, I come to the conclusion of a conspicuous cave to the east, and maybe to the west as well. Further investigation is compulsory, this time scuba tanks are unavoidable. Otherwise, I shall be filled by an uneasy frustration!

A conversation with driver Judy, brings up a concern about fuel, as well as trouble resulting from overheating of the engine. We make our way back to Anakao, 3h30 north. Christine, the new French owner of Atlantis Diving, welcomes my arrival with her Australian mate Ryan, who has a solid experience as a diver with the Australian Royal Navy. "Far out!..." she exclaims, as I try to explain my unusual request. After a while, she accepts to lend me a couple of steel tanks. The following morning sees us heading off to Soalary, a village 12Km away at the mouth of the Onilahy River. Time for a refill of 45 litres of diesel, which we pour manually in a handful of 5 litres containers. As we happily cruise back to Itampolo in the 4x4, I get wired by a new stimulation. The quest into the unknown can be pushed further.

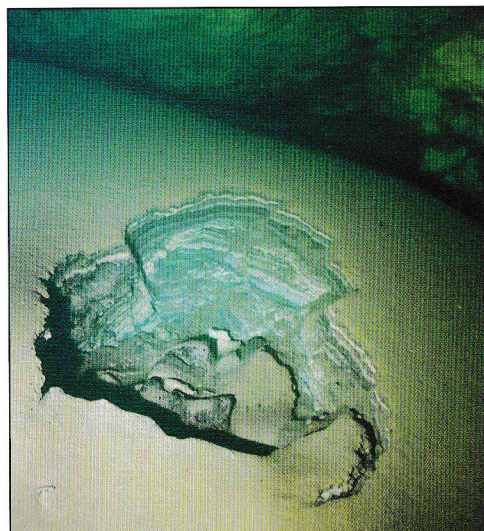
Dongary, the friendly guide at "Sud Sud" provides me with a rope and a bucket, which I will use to lower down my Nikonos V camera into the aven. We reach Avintany (meaning 'born from the ground') with a great weather. The BCD is strapped onto the 15 litres tank, and inflated before we bring it down with the rope -clipped around the tank valve- to the water table. Minutes later it floats conveniently. I climb down the roots like a new trained lemur, don mask and fin, and finish gearing up in the water. Judy lowers the bucket with the camera inside, and the trick is complete!

I submerge along the wall, with the reel clipped to my BCD, just in case. Holding the camera in hands, I cannot do everything. Comforted by my cave diver training of the renowned CDAA, I am fully aware of

the risk involved. I keep clear off the bottom to avoid silting out. Furthermore, finning should be froglike and horizontal, for the above reason. Surely not with the usual fin kicks, that would stir up the dirt. Dive light turned on, I follow the roof of the cavern at first, turning around regularly to check the light on the surface. The apple green haze slowly dissipates, as I sink into the deep. A lunar landscape reveals itself, with ridges of silt criss-crossing, punctuated with small craters where the sediment appears to be sucked in. Smaller depressions are filled with shells of Turitellidae gastropods, ornated with spires. Following a progression of about 80m, I bump into a solid rock wall. Blind fish are still skimming the sedimentary floor at a depth of 25 metres, often hovering motionless. The wall veers to the left side, until I am contemplating the pastel green light again. Fantasmagoric draperies of aquatic plants partly mask the entrance of the cavern, and a tree trunk has fallen sideways.

The circumferential exploration of the aven does not lead to additional discoveries, except for minor caverns to the south and west, with a narrow passage at depth, where it would be risky to slip through, silting out being guaranteed.

The day after, I go for another dive into the cave, clockwise this time. At the far end, I notice a deeper passage that sinks down to 30m, in a sort of bottleneck crowned with white sediments. Again, a definite 'no-no' for a solo diver. Nevertheless, at the top of the passage, dug into the silt, I gaze upon



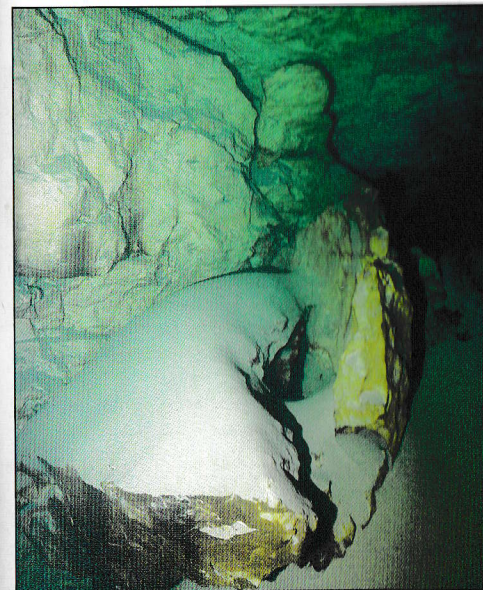
Depression in the cave, Avintany

some blackened bones. Struck with awe, I suddenly realize those are the vertebrae of an animal. I just have time to take a close up shot, when a small cloud of silt comes from behind me, drawing an instant veil onto the scene. When I turn around, too late, it has vanished! Could that be the skeleton of a prehistoric mammal? or that a mythical creature... such as the "Aepyornis", this giant ostrich, 3m tall, which used to roam the Great South of Madagascar and is now extinct? The enigma lives on...

A walk around the top of the sinkhole, in search of photographic opportunities, leads me to find remains of an Aepyornis egg shell in the sand. Big bird did come here to nest, and probably to drink, at a time when the water table was highest.

For the Malagasy people, these avens are 'fady', ie. Taboo or sacred. Locals are afraid of those indeed, for they believe dreadful spirits inhabit them. Others come here to practice rituals and bring offerings, such as the bottles of rum that I find in between the roots of the aviavy tree. "Women pray for fecundity, in the hope to have a child...", I am told.

For the cold headed 'vazaha', it is for sure another story, furthermore when one is a geologist, with an interest in karstic formations. In South Australia, where the same phenomenon is recurrent, sinkholes, chasms and related deep caverns have turned to be a gold mine for paleontologists. A vast amount of fossil bones have been brought to light,



Limestone and silt, Avintany Sinkhole

allowing scientist to have an insight about the once upon a time forms of life, now gone extinct, such as the marsupial lion, the Diprotodon and giant tree kangaroos....

Led by Jean Claude Dobrilla, Jean Nicolas Debatty and Florent Colney, among others, French speleological missions have explored parts of the Mahafaly Plateau in the recent past. "Some of these caverns are as deep as 125 metres, requiring technical equipments and heavy logistics...", explains Florent Colney, who is a veteran of the game. To top it all, difficult access conditions into a hostile natural country, without any dirt tracks for 4x4, will keep these Ali Baba cave secrets for a long time. For a cave diver, this is a pristine playground where everything is still open. Call it 'Mahafaly Dreaming'. Beyond pain and fear, this is Pandora's box, full of hopes, promises and mind boggling treasures. As for myself, I am aware this is only the top of the iceberg. I am certainly up for more. Without the shadow of a doubt... Anyone interested?

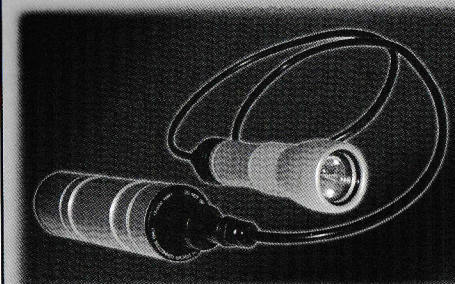
Pierre Constant.



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7. Anyone wishing to add a Nitrox, Trimix or Rebreather Endorsement will need to include a photocopy of their certification. Please note that Trimix or Rebreather assumes Nitrox.
8. If your membership has lapsed, you will need to provide evidence of diving experience during the lapsed period. Failure to provide relevant experience may result in the rejection of the application or downgrading of your most recent CDAA diving certification level. For each year your membership has lapsed a fee of \$45 per year is payable to a maximum of 5 years.

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Phone (H): _____ Phone (W): _____

Gender: ☐ Male ☐ Female Date of Birth: ____/____/____

In consideration of me being accepted as a members of the Cave Divers Association of Australia Inc., I agree to indemnify the Association and any other officer, employee, instructor, or guide of the Association, or any other person organizing, controlling, or assisting with a function, event, dive, expedition, training, testing, or administrative task or obligation, associated with the Association, from and against all claims, costs, demands and lawsuits that I have or may, have for personal injury or property loss, whenever occurring, against the Association or any of those people, arising out of or in relation to any function, event, dive, expedition, training, testing, or administrative task or obligation, associated with the Association or with the sport of Cave Diving. I have read and understand the Constitution and Regulations of the CDAA and am in support thereof. I hereby apply for membership.

Signed: _____ Dated: ____/____/____

This form does not need to be filled out if paying online at www.cavedivers.com.au

Please tick applicable boxes:

- ☐ I am paying \$70 for annual membership from 1 July ____ to 30 June ____, a total of ____ year(s).
- ☐ I am paying \$45 late fee for renewal in **current financial year** after August 31.
- ☐ I am paying \$45 back fee per year (max 5 years) 1 July ____ to 30 June ____, a total of ____ year(s).
- ☐ I am paying \$35 for non-active membership (no diving) from 1 July ____ to 30 June ____.
- ☐ I have electronically transferred \$ ____ on date ____/____/____ to account:

BSB = 085-070, Account Number = 69-701-2377
Account Name = CAVE DIVERS ASSOCIATION OF AUSTRALIA INC
Please insert your CDAA number into transaction description.

- ☐ Please charge to my credit card for the amount: \$ _____

Bankcard / Mastercard / Visa (Please circle one) Card number

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Expiry Date: ____/____/____ Signature: _____

Office use only

Database:

Payment:

Card:

Deep Stops, Deep Trouble

By Dr Andrew Fock, The Alfred Hospital Hyperbaric Unit, Melbourne.

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This is an article which raises questions about the safety of deep stops in deep diving.

Jamie and Bob had been tech diving for about a year. While they had done their tech diving course together, Jamie usually let Bob do the planning and deco schedule, after all, he had been diving longer and enjoyed doing it.

As they headed out to the dive site, a small wreck located at the base of a reef in 50 metres of water, both laughed about all the paraphernalia they now dived with. It seemed only yesterday that they would have been diving to almost the same depth on a single tank and recreational gear. Now they had twin back-mounted cylinders filled with air and two sling cylinders filled with nitrox 36 and oxygen to decompress on. Bob joked about how difficult all this gear was. How would they ever carry enough gas to dive to 100 metres?

They struggled as they lifted the gear and did a giant stride into the clear, warm tropical water. The sudden weightlessness was an incredible relief even after just those few short minutes. The descent to the wreck was textbook and once they reached the bottom each diver headed out in his own direction. The visibility was good so they thought there was no need to keep close buddy contact.

The plan had been for 25 minutes on the bottom. So Jamie was rather surprised when Bob appeared at his side at just under 20 minutes looking a bit agitated and signalling that he wanted to "turn" the dive. Jamie responded and turned around to get the attention of one of the other divers to let him know they were leaving. When he turned back, Bob was gone. Jamie ascended up the reef to the first of the deco stops that Bob's plan dictated. It was one of the new bubble models and Bob always used the conservatism set high so the first stop was at 42 metres. Jamie was relieved to see that Bob was already at the stop and he swam over to check that all was OK. However, all was not right. As he approached, he noticed that Bob was breathing from his stage cylinder containing 36% oxygen. Jamie queried Bob with the OK signal but Bob just stared back at him with a wild look. Fearful that Bob might convulse at any moment from oxygen toxicity, Jamie grabbed his long hose from his back gas containing air and offered the regulator to Bob, but Bob wouldn't take it. Jamie insisted, but Bob pushed him away. The pair had now sunk several metres deeper. Suddenly Bob seemed to realise his peril and started swimming vigorously towards the surface. Jamie began to chase him upwards and the pair ascended rapidly to 36 metres. Jamie could hear his instructor's voice yelling at him in his head, "a decompression stop is a virtual ceiling, break it and you will suffer permanent injury or death!" Reluctantly he stopped chasing his friend and Bob sped to the surface.

Bob broke the surface like a breaching whale, white froth emanating from his mouth. By the time the boys in the boat made it over to him he was already blue and clearly not breathing. Neither had any first aid knowledge, not that it would have likely done any good anyway. With a substantial struggle they pulled his limp body into the boat and waited for the other clients to return and tell them what to do, Bob's now lifeless body was resting on the floor of the boat.

While some of the facts have been altered, this story is largely based on a real event. As it turned out, Bob's isolation manifold was shut and this had led to him running out of back gas. But the question that struck me was why did he stop at 42 metres? The answer possibly lies in deep stop theory.

Deep stops are a *sine qua non* in technical diving. Everyone knows how good they are and how you will get bent if you don't do them, just look at any internet forum!

Most technical divers ascribe their origins and popularity to the American Ichthyologist Richard Pyle in the late 1980's. However, while Richard certainly helped to popularise the idea with the diving community, deep stop theory predates his contribution by more than 15 years.

Back in the 1970's diving physicians began to ultrasound divers looking for gas bubbles in their blood post dive. These bubbles are called venous gas emboli (VGE). The diving decompression theory of the time said that if the model was correct then there should be no bubbles. Unfortunately, the studies showed that bubbles were occurring, sometimes even before reaching the surface. The conclusion the researchers came to was, that if bubbles were occurring during the decompression, then the model must be wrong even though no one was actually developing decompression illness. The reasoning was that the divers were developing sub-clinical decompression illness and that the tables then compensated for this by having to have a long time at the shallow stops to fix the problem....."*Bend then mend*". Therefore it seemed reasonable that if they did deeper initial decompression stops then they would not need to do the long shallow stop and that they might actually be able to reduce the total time of decompression, a win / win situation. Unfortunately it didn't work. When DCI was used as an endpoint, the deep stop profiles usually required far more decompression time and seemed to offer no advantage. The researchers moved on to exciting stuff like saturation diving and much of the knowledge of these trials were lost in the literature mountain.

However, some research continued. Reasoning that the basic premise was correct and basing his ideas on the behaviour of bubbles in gelatine, David Yount developed VPM (Variable Permeability Model). This was then welded to the Buehlmann gas compartment model to produce a usable decompression model based on bubble behaviour. The underlying assumption of this model was that if the number and volume of the bubbles created during a decompression could be limited and controlled using bubble theory, then a safe decompression would result. The model's profiles were compared to other more traditional models and found (in the air diving range) to have generally longer total dive times and deeper initial decompression stops and was hailed as a significant step forward. However, no manned testing was performed.

The model and its underlying principles were then further developed along two parallel streams, RGBM and VPMB. Both have had a significant following from the technical diving community and both have been readily available over the internet - both support their products with testimonials and large data bases of reputedly successful dives.

However, all was not rosy ...

Several high profile dives were conducted with these profiles and resulted in significant DCI incidents. Invariably, blame was placed on the user ... the wrong version was used ... or the stops were not accurately followed ... or the diver was dehydrated ...

Nevertheless, the reported success of these models and technique resulted in the U.S. Navy and the French Navy taking notice. Unlike the tech divers, they wanted some evidence before changing their ways - even if it was a foregone conclusion.

The results of these studies were presented at the 2008 Undersea and Hyperbaric Medical Society (UHMS) workshop into Deep Stops held in Salt Lake City in the U.S.A.

The meeting had a number of high profile speakers from all over the world. And, while much was said anecdotally in favour of deep stop profiles, I will limit this discussion to the scientific experimental studies that were presented.

Wayne Gerth, from the U.S. Navy Experimental Unit presented a study where they compared two diving profiles for an air dive to 51 msw (170 fsw) for 30 minutes using U.S. Navy divers. The two profiles were matched for total dive time, but one had deep stops as derived by a U.S.N. bubble model, and the other shallow stops as per a Haldane-type model. It was expected that the deep stop model would show both a lower DCI rate and lower VGE scores. While some 750 dives were planned, an interim analysis was conducted half-way which resulted in the trial being terminated. At this point some 11 cases of DCI had been observed in the deep stop profile while only 3 had been seen in the shallow stop profile. In addition, the deep stop profile was associated with significantly higher VGE scores than the shallow stop profile, a result that was quite opposite to what deep stop theory would suggest should happen.

Jean-Eric Blatteau, of the French Navy, also presented their work on deep stop profiles. They have done both air and trimix diving, comparing deep stop and traditional models using VGE scores as their endpoint. In general, their profiles are not matched for time so that in some cases the deep stop profiles have longer total dive time than the comparable shallow stops profiles. Some profiles also included oxygen decompression. Their finding was that, for the air range dives (50-60 msw), there was no statistical difference in VGE scores for deep stops versus shallow stops. However, in the study group who did a repetitive dive, the deep stop group showed significantly higher VGE scores. In the deep dive trimix group, the deep stop profiles produced significantly higher VGE scores even when the profile total dive time was considerably longer than the shallow stop profile.

Finally, Alf Brubakk's group from Norway presented their data on decompressing pigs. They compared two types of dives, a long shallow dive and a deep, short dive and looked at each with deep or shallow stop profiles. Interestingly, in the long, shallow dive, the deep stop profile produced significantly lower VGE scores than the shallow stop profile. However, in the deep, short dive, it was the deep stop profile that once again produced significantly higher VGE scores than the shallow stop, traditional type profile.

So what does all this mean?

From these studies it would appear that deep decompression stops are associated with both higher VGE scores (i.e. more bubbles in the blood) and a higher rate of DCI. For longish, shallow dives, the addition of a decompression stop has been seen to reduce VGE in some studies.

But why should this be?

If we look at the traditional models, we find that they were based on human or animal experimentation, the limits prescribed by the model being based on the appearance of decompression illness symptoms. If we compare some of the newer bubble models (BM) to these experimentally-based results, we see that for an air range dive, the traditional model would see the result from the BM as being quite conservative. However, if we move into the deep trimix diving range, the situation is reversed and the result from the BM would be expected to have a significant (though not guaranteed) DCI incidence due to the increased time spent at depth (and uptake of extra gas) and the failure of the model to increase the shallow time enough to account for it. Therefore, from the perspective of the traditional model, the experimental results are not unexpected.

So how does this relate to Bob?

Had Bob understood the limitations of deep stop theory, he would have known that there is in fact no evidence to support stopping so deep from such a dive. An emergency back-up table based on a more traditional decompression model such as a Buehlmann model would have allowed him to ascend to less than 20 metres before requiring a decompression stop. This may have allowed him to remain on his backgas until he reached the correct switch depth and would have allowed him to ascend to a depth where he could safely breathe his deco mix without having to worry about oxygen toxicity. He then could have completed his decompression schedule without needing to worry about running out of gas.

While there were a multitude of contributory factors to this accident, running out of breathing gas at depth and his subsequent failure to understand the realities and limitations of the decompression programs that kept him deep, exacerbated the problem.

So, despite their popularity on the internet, the best available scientific data would not appear to currently support the deep stops as currently practised. Whether there is some middle ground that may provide the best solution is yet to be determined, but before blindly adopting deep stops, stop for a moment and think whether deep stops are going to cause you deep trouble.

About the Author

Dr. Andrew Fock is an anaesthetist and consultant in diving and hyperbaric medicine at The Alfred Hospital in Melbourne. He is a keen technical diver and rebreather user and has a special interest in decompression algorithms. Andrew is also a member of the DAN AP Board of Directors.

Who is the Divers Alert Network (DAN)?

For scuba divers worldwide, DAN means safety, health and peace of mind. DAN are the experts in diving accident management. The organisation is committed to improving the safety of diving for all divers. DAN strives to achieve this goal via activities that include providing Worldwide Emergency Evacuation Coverage and optional Dive Injury Insurance Services for Members; funding and/or manning 24-hour diving emergency hotlines throughout the region; offering non-emergency diving medical advice, accident management training; and undertaking data collection and research to enhance dive safety. www.danasiapacific.org

CDAA INSTRUCTORS

NAME	Deep Cavern	Cave	Adv Cave	NAME	Deep Cavern	Cave	Adv Cave
A.C.T.				VICTORIA. cont.			
APPS, Heike (CDAA 2776) BH 02 6249 9170 E: heike.apps@ga.gov.au	Yes	Yes	Yes	CLARIDGE, Linda (CDAA 2214) Mobile: 0408 052 070 E: garinda@tpgi.com.au AH (03) 5565 8793	Yes	Yes	Yes
NEW SOUTH WALES				DALLA-ZUANNA, John (CDAA 236) Penetration instructor Phone: 03 9480 1316 E: jdz@paintandcustom.com.au	Yes	Yes	Yes
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SOUTH AUSTRALIA				LESLIE, Paul (CDAA 3184) Phone: 03 9459 4111 E: paul@melbournediving.com.au	Yes	Yes	Yes
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VICTORIA				WESTERN AUSTRALIA			
ALLEN, Terri (CDAA 3483) Mob: 0419 176 633 E: terri.allen@baker.edu.au	Yes	Yes		PAYNTER, Geoff (CDAA 3784) Mob: 0407 445 112 E: gpaynter@geo.net.au	Yes		
BARCLAY, Gary (CDAA 1735) AH: 03 5565 8793 E: garinda@bigpond.com	Yes	Yes	Yes				
BOWMAN, Jane (CDAA 1880) BH: 03 9579 2600 E: janelbowman@hotmail.com	Yes	Yes	Yes				

INSTRUCTOR ADVOCATE: PAUL LESLIE.

CDAA Member Profile ~ Skanda Coffield-Feith #4707~

I have been diving for six years now, but the first four of those years I was solely a tropical diver. Two years ago I joined the Monash Underwater Club and started to dive pretty regularly in and around Melbourne. I became interested in cave diving after hearing about the skills required as a cave (or cavern) diver and more importantly, about the sites. Following a whirlwind tour to look at some of the dive sites on a trip back from Adelaide and a dive at Ewen's Ponds I decided to get on a course.

I completed my Deep Cavern course with a couple of friends from my dive club and another couple of great guys over the Australia Day long weekend. This meant we had an additional day after the course for diving without the pressures of having to pass and gave us a bit more of a chance exploring sites other than Goulden's. My last dive was the Shaft. It was a fantastic dive, an amazing site, and really fun getting all the gear and

divers both into and out of the water. I'm looking forward to getting back to the Shaft again soon. I have plans to head over to the Philippines and do some warm water diving and have a look in at some wrecks. There are so many places to dive at home and overseas that it's hard to pick!



CDAA SITE ACCESS - www.cavedivers.com.au

Remember! Access is a privilege, not a right. Please be considerate of landowners wishes. CN = CAVERN S = SINKHOLE C = CAVE P = PENETRATION

SITE LEVEL OWNER ACCESS DETAILS

MOUNT GAMBIER - SOUTH AUSTRALIA DEH SITES

Ewens Ponds	Nil	DEH - P.O. Box 1046 Mt Gambier 5290 (08) 8735 1177	Groups of 6 or more, phone/mail to Dept. for Environment & Heritage (DEH) Smaller groups, no need. Fax: (08) 8735 1135
Gouldens	CN	DEH	General Diving: Divers to contact DEH and notify of date and site to be dived. Please make requests by phone or fax only.
2 Sisters	CN	DEH	Divers must have the correct CDAA diving endorsement for the site and carry current financial CDAA membership card. The diver must have signed an indemnity with DEH before access is permitted and original copy must be received by DEH prior to diving.
Fossil	C		Training: The Instructor is to notify DEH of the date the sites are needed and to forward signed indemnities from each student and their temporary card number/ membership number. Permit holders by phone or fax. Be aware of delicate vegetation. \$26/dive or annual Permit \$60.
Piccaninnie Ponds	S	DEH	NOTE: Indemnity form to be completed with m'ship renewal & lasts same length as M'ship. NOTE: Divers should renew their Piccaninnie Ponds indemnities at least 2 weeks prior to their intended dive date.
Horse & Cart	CN	Peter Cunningham	By phone or mail, 1 week prior. Ph: (08) 8738 4003.
Tea Tree	CN	PO Box 2168, Mt Gambier 5290	
Little Blue	S	District Council of Grant	Permission not required - must carry card.
Allendale	C	District Council of Grant	Obtain key from Lady Nelson Tourist Information Centre.
Ela Elap	S	Mr. Peter Norman	Visit the house before diving.
One Tree	S		If no one is home - no dive!

FORESTRY SA SITES

Dave's Cave	C	Maximum 3 divers all weekends between May & November inclusive (check and update on CDAA website).
Hells Hole	S	At least 4 divers in group - 1 with previous site experience.
Pines	C/P	Unrestricted days or numbers - Cave rated divers must not enter Penetration sections (stop signs)
Mud Hole	C	Unrestricted days or numbers.
Nettle Bed	P	Open every weekend. Maximum of 4 divers per weekend undertaking 1 dive only (check an update on CDAA website)
Stinging Nettle Cave	P	Open every weekend max 3 divers per day undertaking 1 dive per day (check an update on CDAA website).
Idlebiddy	P	Open every Saturday max 4 divers, 1 dive only (check an update on CDAA website)

Owner: Contact Forestry SA by email: conservationandcreation@forestrysa.com.au. Fax: (08) 8724 2870 or Phone: (08) 8724 2876 or book on-line via the CDAA website to arrange permit. Divers must advise FSA of their online booking. Collect permits from the Forestry Office, RHS of driveway to Carter Holt, Jubilee Hwy, Mt G.

IMPORTANT: • No diving on Total Fire Ban Days. • Permit also required to run compressors during fire danger season. • Keys for Hells Hole, Nettle Bed, Idlebiddy & Stinging Nettle Cave can be obtained from Lady Nelson Visitor Centre on presentation of Forestry SA permits.

Kilsby's S Landowner leased to CDAA Access - We have access fortnightly. Minimum of 3 divers in the water at one time. Refer to CDAA website. Twin Tanks - Maximum depth of 40 metres on Air.

Meet at gate of property at 8.55am or 12.55pm. Book on-line at www.cavedivers.com or contact Craig at kilsby@cavedivers.com.au

No animals, visitors or mid-week diving allowed. **No diving on Total Fire Ban Days.**

BARNOOLUT SITES

Yen Eighty	S/C	Scotts Agencies P/L	Access: ALL BARNOOLUT SITES ARE CLOSED.
Blacks Hole	S/C	Scotts Agencies P/L	
Shaft	S/C	Generally open one weekend a month. Trevor Ashby	For access dates refer to Guidelines or the CDAA web page. Nitrox as a diving mix is not allowed in the Shaft unless a trimix endorsement is held but deco mixes attached to the shot line are permissible. Refer to Shaft access bulletin within CDAA Regulations. Divers applying to dive in the Shaft for the first time must document dive experience with twin tanks. Download form off website. Obtain key from Mt Gambier Tourist Information Centre. Access agreement must be signed prior to diving. 2 divers must sign out keys, all divers must sign in advising which groups they are diving with. Diving should be avoided after heavy rain due to possible water contamination. Diving hours are now restricted to 8am to 8pm CST.
Engelbrechts - East	C	Mt Gambier Council	
- West	P	Lessee Ph: 08 8723 5552 Contact: Brenton & Kemelee	
Three Sisters	P	Millicent Council	Download Indemnity from Web Page. Access available for experienced Penetration divers only. Access agreement must be signed prior to diving. Allow 4 wks for indemnity process. Contact Email: site@cavedivers.com.au
McKay's Shaft	S		Access Manager: David Fielder. Email: tankcave@cavedivers.com.au
Tank Cave	P	CDAA	Access Manager: Matthew Skinner. Email: bakers@cavedivers.com.au
Baker's Cave	C	Manager: Brad Dibble	Climbing equipment required.

NULLARBOR - WESTERN AUSTRALIA

Cocklebirdy	C/P		Apply in writing for permission to dive at least 4 weeks in advance of trip to: District Manager, Department of Environment and Conservation (DEC), PO Box 234, Esperance, W.A. 6450. Phone: (08) 9083 2100 Fax: (08) 9071 3657.
Murra El Elevyn	P/C		
Tommy Grahams	C		The Department of Regional Development and Lands, Perth, South East Region. PO Box 1143, West Perth 6872. Contact Shannon Alford, E: Shannon.alford@rdl.wa.gov.au Phone: (08) 6552 4661 Fax: (08) 6552 4415
Weebubbie	S/C	DPI	

N.S.W. - WELLINGTON CAVES

Limekiln (McCavity)	P/C	Both Penetration and Cave Level are being accepted for this cave depending on its water level at the time. The cave has a restriction at the entrance which is underwater making it a Penetration Dive. During drought, the water level drops to form a small lake below the restriction allowing experienced Cave Divers access to this delicate cave.
Water (Anticline)	C	Affected by high CO ₂ levels during Summer/Autumn. Access is co-ordinated with the Wellington Caves management by Greg Ryan - greg@cs.usyd.edu.au . Phone (02) 97434157
Rum Jungle Lake	S	Unrestricted access currently exists - Please refer advice Guidelines #68 or check CDAA website.
Burrinjuck	S/C/P	This is a tri-rated site. Please see details in issue No. 73. There are no specific access arrangements.



Featuring a meaningful showcase of the very best that the world of diving has to offer, an international cast of speakers and presenters drawn from among the world's most accomplished diving authorities, plus non-stop presentations, workshops and seminars, a photo competition, an evening in the company of some of diving's most dynamic explorers, and culminating in the acclaimed Gala Awards Dinner, OZTeK2013 is again poised to push back the boundaries of underwater knowledge and establish a new standard of excellence for Dive Shows.

With more than 75% of the exhibition space already booked, OZTeK2013 (to be held at Australian Technology Park, Sydney over the weekend of the 16th & 17th March 2013) is shaping up to deliver another memorable event that will be as inspiring as it is entertaining.

Aimed at promoting the excitement and adventure of diving to an enthusiastic audience, exhibitors already booked to attend OZTeK2013 include: Aquanaut; AquaTech Australia; AquiferTec; Asian Diver Magazine; Cave Divers Association of Australia; Closed Circuit Divers; Digital Diver; Dive 2000; Dive Adventures; Dive Centre Bondi; Dive Centre Manly; Dive Pacific Magazine; Dive Rite; Diversion Dive Travel; DiveTek; DKG Drysuits; Draeger Safety Pacific; Eezycut; eScuba; Far Asia Co., Ltd.; Fourth Element; Global Underwater Explorers; GreenForce; Halcyon Australia; Inon; Historical Diving Society; Hollis; JJ-CCR; Light Monkey; Liquivision; Mares Asia Pacific; Mike Ball Dive Expeditions; Nauticam; Oceanic; O.W.U.S.S.; PADI Asia Pacific; PADI TecRec; Professional Divers Training Academy; Rags II; rEvo Rebreathers; Scuba Diver Magazine; Scuba Imports; Scubapix; Scubapro; SDI Australia; Seacam; Shearwater Research; Southern Cross Divers; Spirit of Freedom; SSI Australasia; SS Thorrfinn; TDI Australia; Tech Asia; The Dive Tube; Truk Lagoon Dive Centre; TUSA; Underwater Kinetics; Wakatobi Dive Resort; Waterproof Suits; Zeagle Diving Systems, and more.

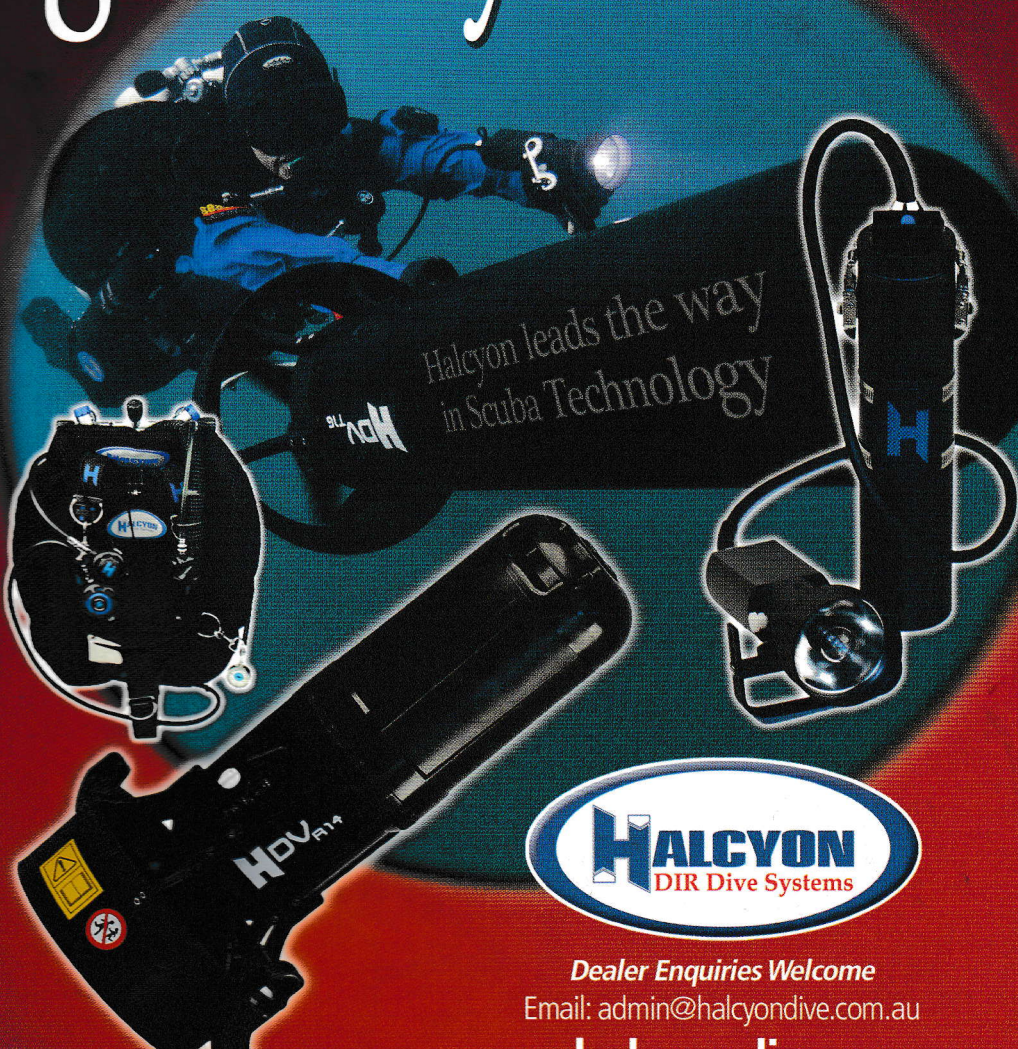
providing the diving community with a unique opportunity to meet, listen to, and learn from some of modern diving's most accomplished personalities - the growing number of speakers already confirmed to attend OZTeK2013 includes: Samir Alhafith, (AUS); Liam Allen, (AUS); Assoc. Professor Terri Allen, (AUS); Curt Bowen, (USA); Craig Challen, (AUS); Chris Coxon, (AUS); John Dalla-Zuanna, (AUS); Kevin Deacon, (AUS); Joe Ditur, (USA); Dr Andrew Fock, (AUS); Max Gleeson, (AUS); Grant Graves, (USA); Kevin Gurr, (UK); Dr. Richard Harris, (AUS); Jill Heinerth, (Canada); Paul Hosie, (AUS); Dr Tom Iliffe, (USA); Trevor Jackson, (AUS); Brian Kakuk, (USA); Steve Lewis, (Canada); Michael Menduno, (USA); Pete Mesley, (NZ); Professor, Simon Mitchell, (NZ); Martin Parker, (UK); Simon Pridmore, (Indonesia); Paul Raymaekers, (Belgium); Ben Reymenants, (Thailand); Lance Robb, (AUS); Martin Robson, (UK); Richard Stevenson, (UK); Peter Szyska, (AUS); and Richard Taylor, (AUS).

A must-visit event for all divers - regardless of experience level - keen to check out the very best that the entire world of diving has to offer, OZTeK2013 will once more prove that: **"Few shows in the world can pack a punch quite like Australia's OZTeK."**

For further information on all that's planned for the OZTeK2013 event, please visit the website at: www.diveoztek.com.au or contact David Strike at: admin@diveoztek.com.au

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