
Cave Divers Association of Australia
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No. 134 - DECEMBER 2015
GUIDELINES
CAVE DIVERS ASSOCIATION OF AUSTRALIA
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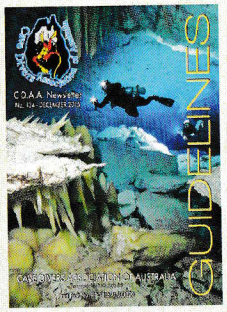

Cover:

Timor Cave Diving.

Image by:
Liz Rogers

CAVE DIVERS ASSOCIATION OF AUSTRALIA

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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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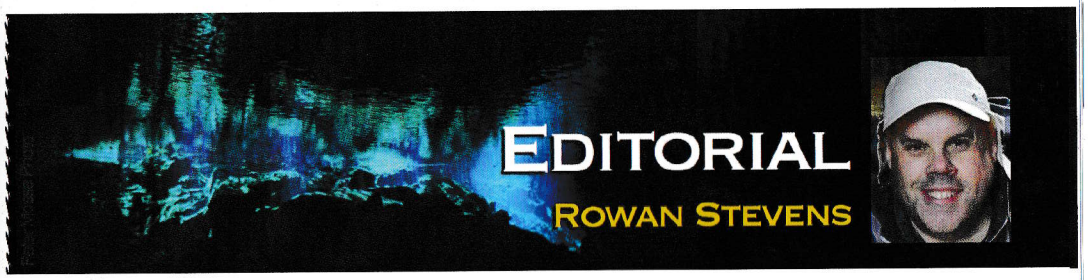
CDAA INSURANCE

Policy Type: Combined Liability Insurance Policy# BN-EAL-14-441680L.
Insurer: Liberty International Underwriters ABN: 61 086 083 605
Level 27, 1 Macquarie Place, Sydney NSW 2000
Name Insured: Cave Divers Association of Australia
Public Liability $20,000,000 any one claim. Expiry: 30 September 2015.



EDITORIAL

ROWAN STEVENS

Festive Greetings!

In this issue … Rod O'Brien explores the birth of cave diving in Australia in the 1950s. Liz Rogers explores Timor while Pierre Constant explores Biak Jungle Cave. Graeme Bartle-Smith and Peter Mosse put forward a case for installing a fixed line at Murra El Elevyn. There is also a review of the Scubapro MK 2EVO – perhaps a Christmas Present?

Signing off for another year.

Have a safe, Merry New 2016.

Rowan Stevens #3177 | Publications and Records Director
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done a cave course?
had a new cave diving experience?
bought some new gear that you absolutely love?
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Articles for Guidelines March 2016 - Deadline is Feb. 20th

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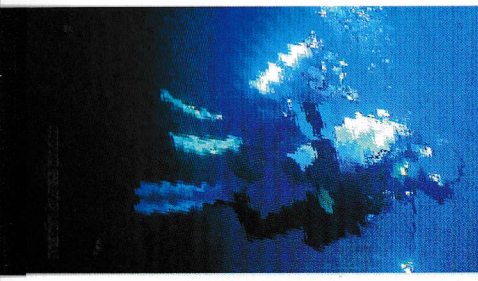


National Committee Update

DECEMBER 2015

It's that time of the year again where we spend time with family and friends and have the time to relax and go diving. It's also a time to reflect on the year that has been and make promises to ourselves what we will do in 2016.

When I look back on what was achieved in cave diving during 2015, I not only see another steady and good year for the CDAA, but a fantastic year of diving for our members. Once again, we saw some excellent local and International speakers at our AGM. We saw a new dive site opened and another site that was closed, reopened. We saw us change our training standards to allow rebreathers to be used at all levels. We saw members break cave diving depth records in NZ and add more line in the exploration of the Roe Plains caves. And, we saw many dozens of members trip to the USA, Asia, Bahamas, France, Mexico and the Sardinia meeting and cave diving with our international friends.

It is this advanced cave diving and the large amount of international travel that reminds us that the Association needs to evolve if it is to remain relevant. No longer can we think as a small club, focused on training and diving just around Mt Gambier and the Nullarbor. Our members are better trained, more experienced and better equipped than ever before. Our members are travelling more and often getting greater experience from their international diving than they get in Australian waters. We have training agencies outside of the CDAA offering cave diver training that meets our minimum competency standards and we are seeing more and more people choose to do training abroad. And we have landowners being challenged with requests for access from organisations outside of the CDAA and now, one private landowner granting this access.

As members, we must ask ourselves, that with training available outside of the CDAA and the growing number of diving sites throughout the world available to us, and an increasing number of sites that require payment to dive, what is the value of our membership fees? Is negotiating access to sites still enough?

For the CDAA to remain relevant in 2016 and beyond, we have to be able to service today's need, not yesterday's needs. For divers, this means a less focus on the basics of cave diver training and more focus on specialised skills. It means more workshops, national and international cave diving information and site access assistance. It means, better information on our web site and equipment support for places like the Nullarbor. It means more support and involvement in conservation and scientific research. It means better facilities like toilets or change areas. And finally it means seriously considering opportunities to lease or purchase land where it will guarantee ongoing site access.

The National Committee's new year's resolution is to reach out and have others manage the things we already have in place, and give ourselves the time needed to focus on those things that will grow CDAA services and membership value.

With this in mind and a great National Committee team, I am really excited about what the CDAA and our members will achieve in 2016. For my new year's resolution, it is to spend more time planning and executing some of the diving that I truly love.

May you have a merry and safe Christmas. As always, may your drysuit remain wet on the outside.

John Vanderleest
National Director
On behalf of the National Committee.

John Vanderleest, National Director

John Dalla-Zuanna, Site Director

Peter Horak, Business Director

Rowan Stevens, Publications and Records Director

Linda Claridge, Standards Director

THE BIRTH OF CAVE DIVING IN AUSTRALIA

Compiled by Rod OBrien.

For decades cavers at Jenolan dreamed about what wonders were to be discovered in the 1.3km distance between where the Jenolan River disappeared downstream in Lower River, Mammoth Cave (at the time the southernmost part of the cave), and Imperial Cave where the river re-emerged into the show caves. At this time there were no caves in between that connected to the underground river.

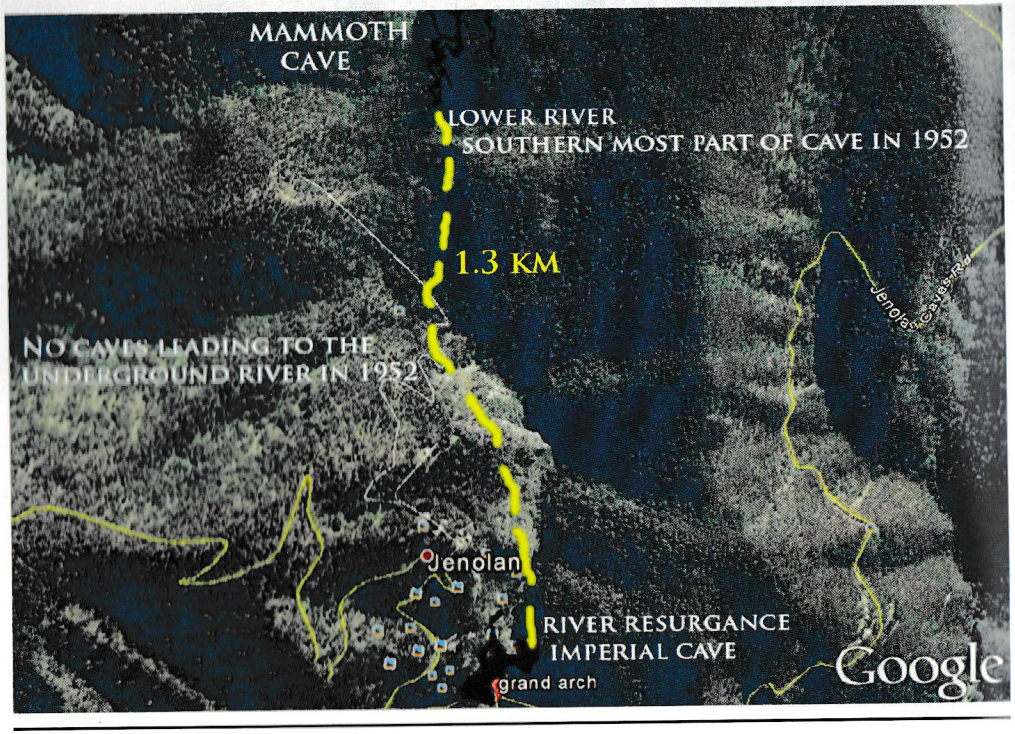
In 1952 a group of cavers consisting of Denis Burke, Fred Stewart and Ben Nurse investigated the possibilities of exploring the Jenolan River system by diving upstream in the Imperial Cave sump and downstream in Lower River, Mammoth Cave.

There was much discussion on what type of equipment would be needed. Many people suggested cylinders of compressed air with a regulator attached.

The group decided that

1. The regulators available could not supply enough air
2. The cost of the equipment was too high
3. Several cylinders would be needed for redundancy

As only limited funds were available, they decided to make their own surface supplied diving system. A WW11 gas mask was used to fit over the face. Air was supplied to this through a length of ? inch hose



Pool Training

connected to an old pair of foot bellows.

A diving trip was planned for the 6/7 December 1952. Denis Burke had been granted the honours of the first dive. Unknown to anyone, Fred Stewart had wanted to be the first diver so he put together some dive gear consisting of a WW11 gas mask, a length of garden hose and a hand bellows to dive the Imperial sump the weekend before the scheduled trip. John Bonwick assisted Fred Stewart to carry the gear down to the sump. Fred tried several times to use the equipment but the modified gas mask kept flooding and he abandoned the attempt.

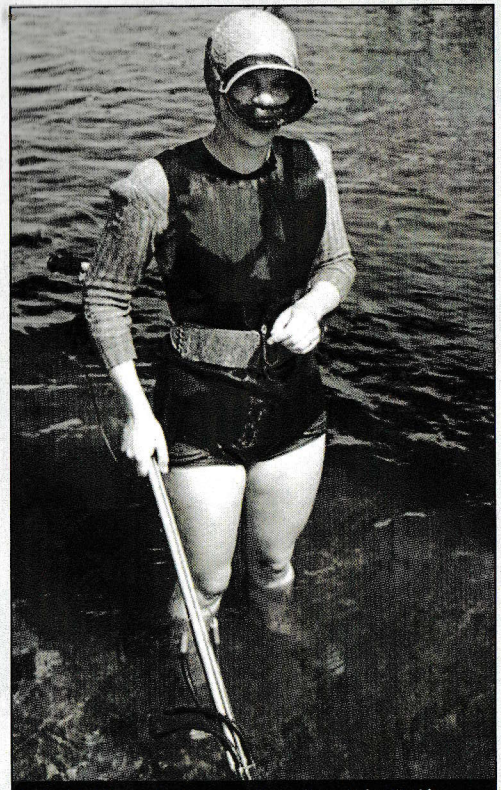
The team joined a Sydney University Speleological Society (SUSS) Jenolan Trip, 6/7 December 1952 to dive the upstream Imperial sump. On the Saturday evening Denis Burke reconnoitered the sump using just a face mask to get some details for the upcoming dive the next day. Denis found the distance from the dive station to the river resurgence was greater than the length of dive hose they had brought so this sump had to be left for another day.

On the Sunday morning a party of 5 including Denis Burke, Ben Nurse and Fred Stewart carried the diving equipment to Lower River, Mammoth Cave. Denis Burke was again volunteered to do the honours.

Whilst the dive station was being set up Denis swam downstream to get a feel for the dive. At the far end of the lake he encountered a muddy slope that extended to the ceiling. He dug some footholds out of the mud and upon reaching the top found a small hole. Some rocks were cleared and Denis squeezed through into a small chamber with a passage leading off. He had just discovered the gateway to the southern section of Mammoth Cave and Slug Lake.

When Denis returned he found the dive gear was ready. He spent the next 30 minutes diving in the lake testing the gear and looking for the downstream underwater passage before the cold water forced him out. During the course of the dive he concluded that several improvements were needed with the dive equipment. Denis failed to locate the underwater passage but thought that it could be next to the mud slope.

The dive in Lower River was the first time diving equipment had been used in a cave. Therefore the first cave dive in Australia.



Lois Linklater in her woollen dive suit 1950's.

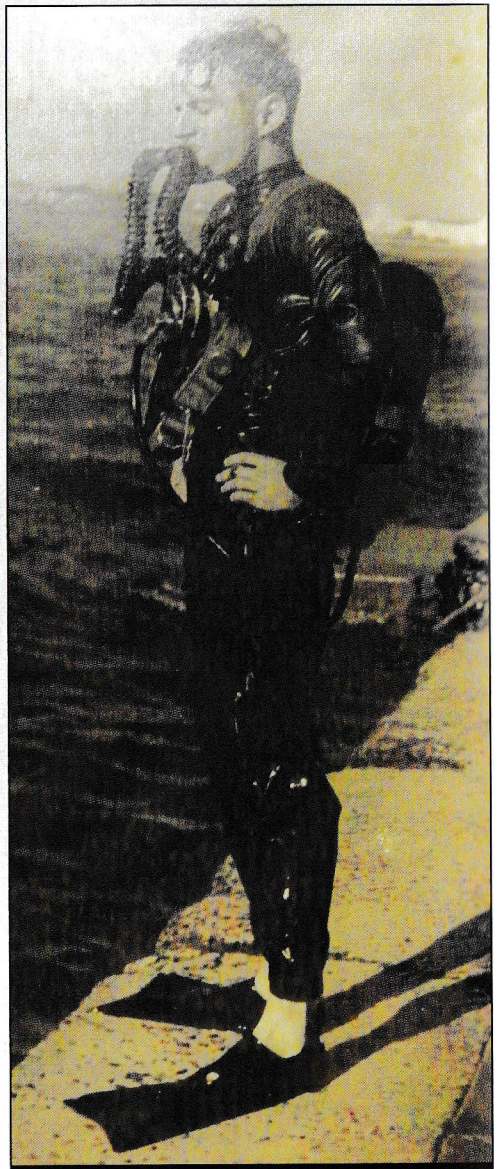
Over the next two months the dive equipment was modified. A side valve was added to the gas mask so that when the divers head was above water he could open it to breathe and the foot bellows could be stopped. 20lbs of lead weight was added and a waterproof suit. A buzzer system was installed for signalling and a waterproof torch was made out of 2 motorcycle batteries and a 6 volt car headlamp.

A SUSS trip to the Imperial sump was made in February 1953 led by Fred Stewart. It included Denis Burke (diver) and Ben Nurse. Denis Burke negotiated the first stage of the sump and entered a small sealed cavern. The underwater passage was spacious and about 1m below the water level in Imperial Cave.

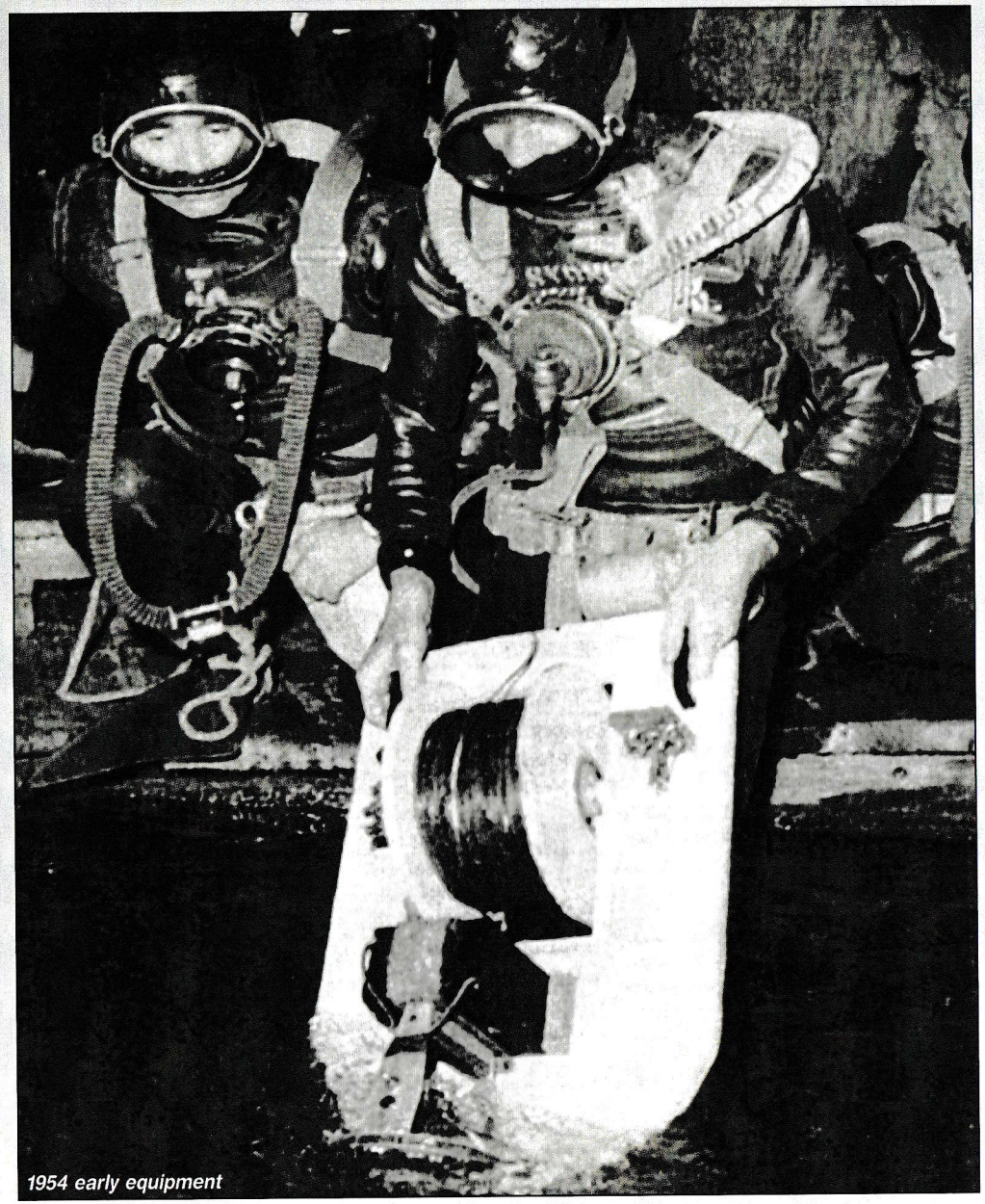
The "waterproof" suit turned out to be more trouble than it was worth. When the water occasionally poured in it was unable to escape. This made it very hard for the diver to walk around.

This dive in the upstream Imperial sump was the second time dive equipment had been used in a cave but the first time underwater passage had been entered.

They returned to Imperial Cave on a SUSS trip 28/29 March 1953. A party of 7 led by Fred Stewart including Ben Nurse, Brian J OBrien, Denis Burke (diver) and Jeff Clyde, carried the surface supplied dive gear down to the Imperial sump. Denis Burke did a short test run to tweak the gear and at 630pm he was ready to go. Denis started walking upstream along the riverbed. He's exhaust bubbles soon disappeared as he entered the underwater passage. He continued



Dave Roots at Clovelly Pool



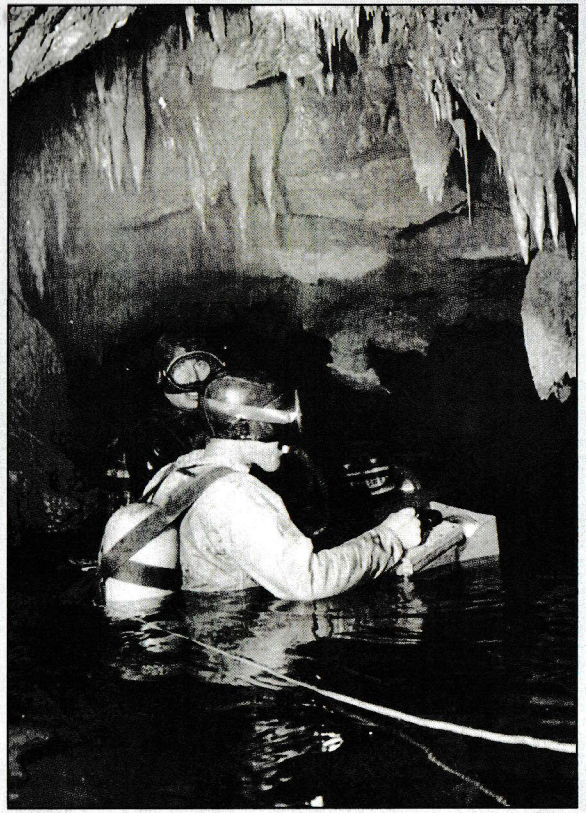
1954 early equipment

on until signalled to return as he had run out of dive hose.

The team had a rest, something to eat and added an extra length of dive hose. Then at 1am Denis Burke re-entered the Imperial sump. He walked upstream until signalled to return. Again he had reached the end of his dive hose without getting through the sump to the other end.

Some modifications were made to the dive gear before the next trip. The dive hose was increased to ?inch diameter and the foot bellows pump was replaced with a proper dive pump.

A SUSS trip on 6/7 June 1953 saw a team including Denis Burke (diver), Ben Nurse (diver), Otto Gram,

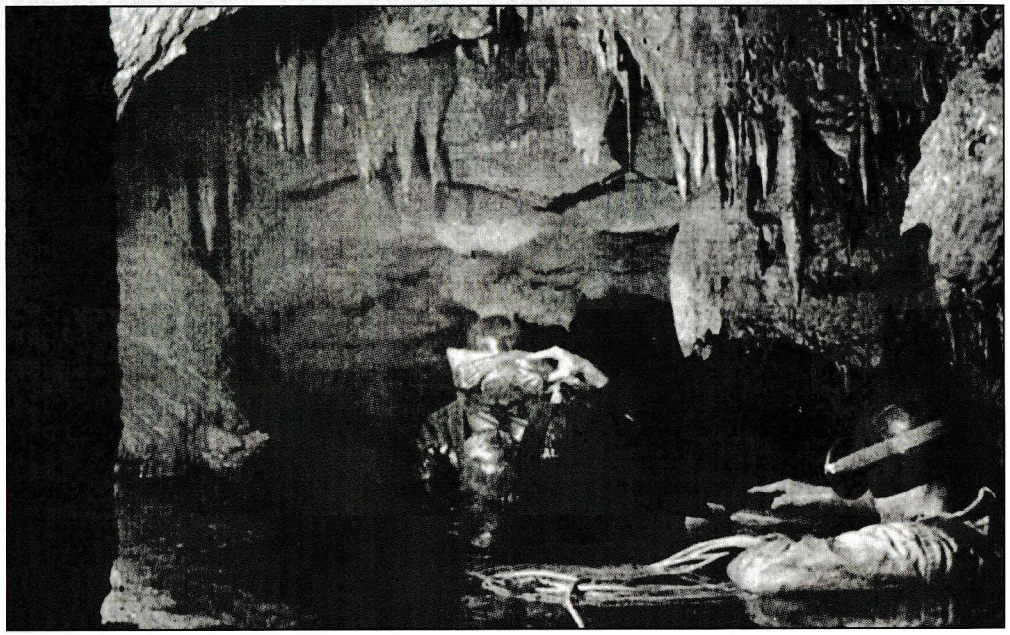


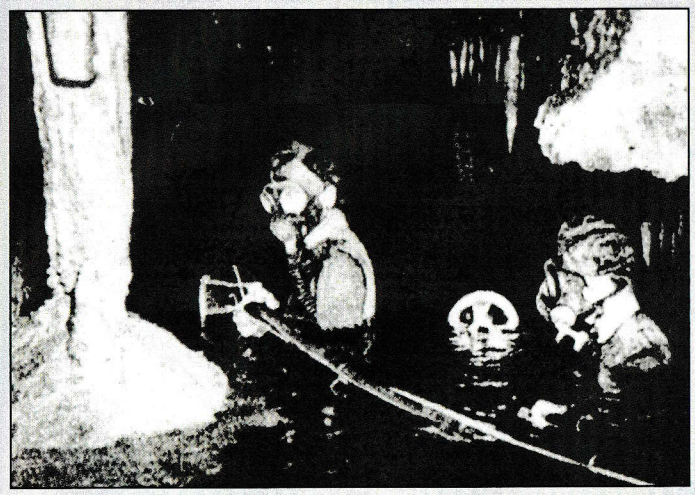
Bruce Cobbin, Fred Stewart and Adelie Hurley (photographer), attempt to get through the upstream Imperial sump. The dive was plagued with mishaps including an anxious moment when a kinked air hose forced Denis to surface in a small air chamber. The dive was wisely abandoned. This was the last attempt using surface supplied diving equipment and the last under SUSS.

Training in the use of aqualung techniques was commenced immediately. Michael Calluaud of the Underwater Explorers Club (U.E.C), based in Sydney, was consulted for the logistics to do the dive and the training. Michael was a dive partner of Jacques Cousteau before he immigrated to Australia in 1952.

The U.E.C/U.R.G supplied the equipment and divers. Specialised equipment was supplied by Don Linklater (U.E.C).The U.E.C was an affiliate of the Underwater Spearfisherman's Association. It folded around 1956 and many of its members joined the Underwater Research Group (U.R.G).

Ron Wardrop developed a device nicknamed the "AFLOLAUN", Apparatus for laying out line and Underwater Navigation. The communications wire it would roll out would be the diver's safety line.





It was decided 6 divers would be used. Two would push the sump. The next two would follow a short time later and the remaining two would take the role as rescue divers.

Each diver received he's own aqualung. These were reverse engineered copies of the Jacques Cousteau/Gagnan regulator Michael Calluaud had brought over with him. The Australian version were called the "Lawson Lung" developed by the USFA (Underwater Spearfisherman's Association) and the "Improved Lawson Lung" developed by the URG (Underwater Research Group also an affiliate of the USFA). They wore a Heinke "Delta" cold water suit (drysuit) with frogman mask and fins. Also carried were a torch made of a motorcycle battery and sealed beam car headlamp, compass, knife and depth gauge. They would also carry a Karabiner on a lanyard to clip onto the "AFLO" safety line.

Theory and gear familiarisation dives commenced in Clovelly ocean pool. Many budding cave divers dropped out at this point. The more advanced training involving blacked out masks and buddy breathing took place amongst the wharf piers of HMAS Platypus, Neutral Bay.

A trip was organised for the dive by the Sydney Speleological Society (SSS) on the 9/10 October 1954. The team included joint trip leaders Denis Burke and Ben Nurse, Ron Wardrop (communications), Harry Rowlands (SSS diver and lights), Dr Lee (medical officer), Jim Tasker (constructions), Wally Dove (SSS, built dive platform), B. Mason (SSS photographer), Russell Kippax (SSS diver), Michael Calluaud (U.E.C /U.R.G diver), Keith White (U.E.C/U.R.G diver), Owen Llewellyn (SSS diver), Dave Roots (SSS diver), Rod McNeill (U.E.C), Myra Llewellyn, Grace Aird, Ruth Russell, Dorothy and Alf Lenmonth, Stan Pearce, Max Thompson, Arnold Fleischmann, Don and Lois Linklater (U.E.C), Ian Driscoll, Mick Shanahan (U.E.C) and Les Tattersall (SSS diver).

On Saturday 9 October at 1050am, Russell Kippax and Michael Calluaud entered the water and quietly disappeared. Kippax carried the "AFLO", and Calluaud carried the telephone.

Two minutes later, Keith White and Owen Llewellyn fixed their karabiners to the "AFLO" safety line and also quietly disappeared. The two rescue divers were Dave Roots and Rod McNeill.

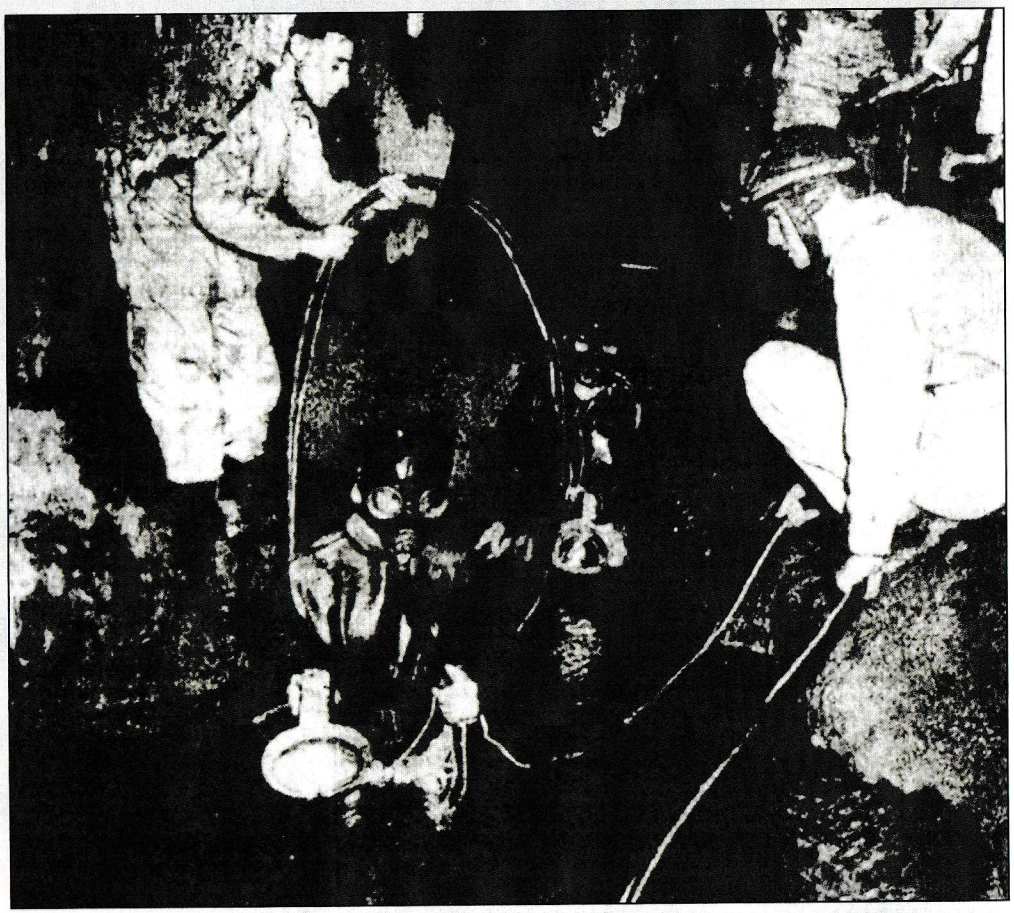
The quiet spell was suddenly shattered by the return of Calluaud repeating "ze mud, ze mud". He had become disorientated and discouraged in the muddy streamway.

After nine and a half minutes Owen Llewellyn returned to collect the telephone and disappeared again upstream. A few minutes later we heard from the party beyond the sump. The sump was about 36m long and surfaced into walking streamway passage. This continued for about 200m until the river sumped again.

This expedition was the first time aqualung (frogman) equipment had been used in a cave, and the first time the upstream sump in Imperial Cave had been passed, discovering the Imperial streamway.

On Sunday 10 October 1954 the dive was led by Dave Roots. Dave had brought along a 150ft length of 1inch cotton climbing rope that he would place through the sump. This would help the other divers and aid in the recovery of the telephone line. Dave dived in jeans and a woollen jumper. Russell Kippax would be he's dive buddy. Other divers to dive the sump to view the newly discovered cave included Don and Lois Linklater (U.E.C divers), Rod McNeill (U.E.C/U.R.G diver), Keith White (U.E.C /U.R.G diver), Mick Shanahan (U.E.C diver), Harry Rowlands (SSS diver) and Les Tattersall (SSS diver) who dived last.

Upon arrival Les Tattersall had found that everyone except for the telephone operator had disappeared into the new cave with all of the torches. He had to remain at the sump until they returned.



During the return dive Rod McNeill, who was in front of Lois and Don, got stuck on a stalactite that wedged between his two back mounted dive cylinders. Rod and all those behind him could not move forward for some time. Both Don and Mick's lamps had gone out leaving them in total darkness. Eventually Rod broke free and all returned safe and well. Lois had torn her dive suit. Rod freed the stalactite from between his cylinders and gave it to Lois as a souvenir.

This was the first cave dive by a woman in Australia.

During the following weekend of the 16/17 October 1954, Dave Roots and Harry Rowlands returned to the upstream Imperial sump and freedived it.
To the Authors knowledge this incredible feat has never been repeated.

Forty years later Rod McNeill rang Don Linklater to tell of his genuine sadness upon hearing the news of Lois's passing away. Don's daughters arranged a reunion. Unbeknown to Rod, Don's daughter Sandy took the stalactite along and returned it to him saying it was now with its rightful owner.

Information compiled by Rod OBrien.

I would like to thank all the people who contributed to this article.

Special thanks to:
The Sydney Speleological Society for caving diving information including firsthand accounts by many of the divers and cavers that participated.
Mel Brown AM, historian of the Underwater Spearfisherman's Association for information on the Underwater Explorers Club, Underwater Research Group and of the history of the diving equipment used.
The Sydney University Speleological Society for the reports on the early cave diving information.

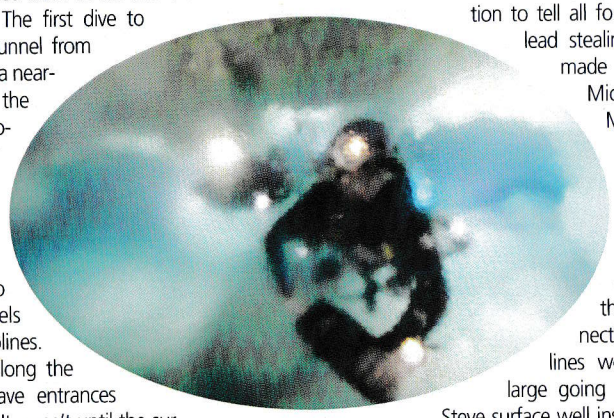
■

Timor!

Story and Photos by Liz Rogers

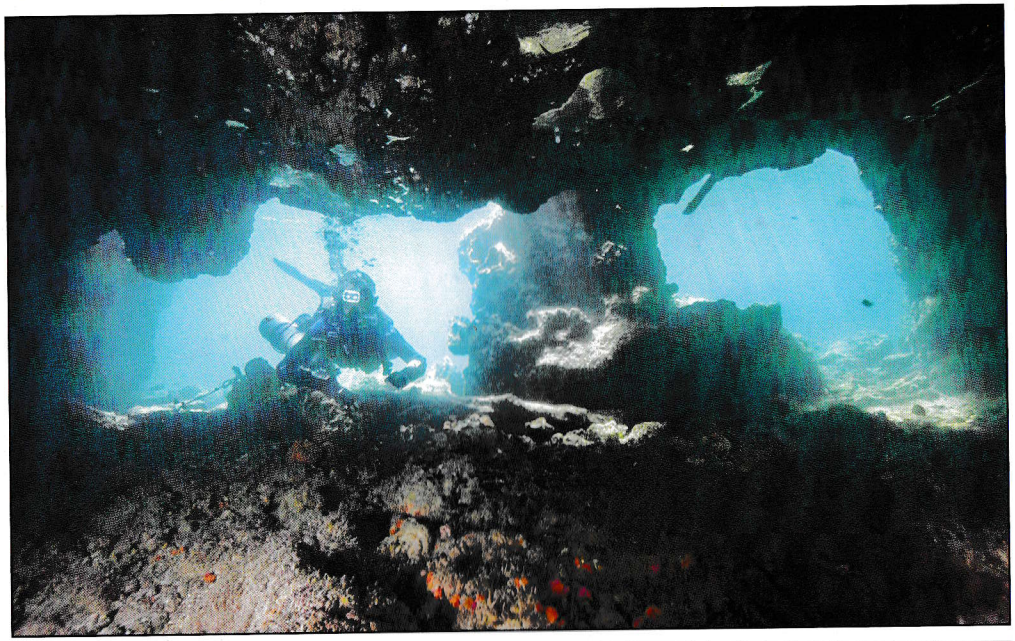
In October I returned from my third annual trip to the karst region of West Timor. In 2013 following some of Stefan Eberhard's research, Stefan and I went for a quick reconnaissance trip. We spent a lot of time driving around looking at dry caves or small puddles in the tropical sun before finding our way into a major underwater system. On the last day we laid half a kilometre of line into massive blue tunnel with crystal clear water beckoning us on.

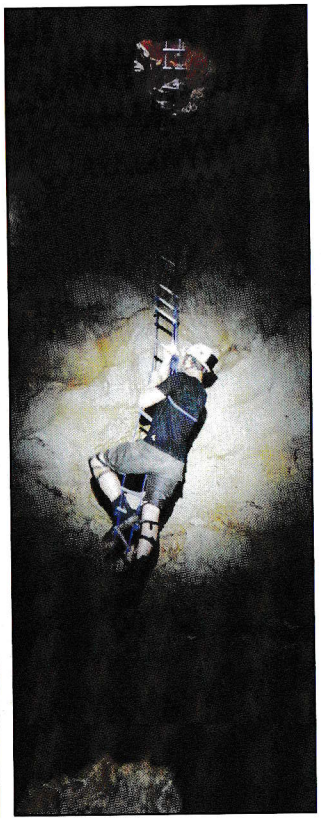
It was enough of a high that organisation for the next trip began pretty quickly. In mid 2014 myself and five others (Dave Bardi, Sandy Varin, Steve Fordyce, Ryan Kaczkowski and Marc Crane) headed back to the same area for further investigations. The first dive to continue the master tunnel from 2013 brought us up in a nearby doline, connecting the two features with a kilometre of underwater tunnel and two air chambers in between. Over the course of a week the group turned up two new massive tunnels beginning in nearby dolines. A day on the boat along the coast revealed sea cave entrances with strong tidal flow. It wasn't until the survey data was taken home and entered that the pattern of the karst became clear. The inland caves were lining up in parallel passages and heading out to sea, and the tidal flow we observed over the haloclines presumably culminated in a rush of water out to the open sea through a similar outflow as the one we dived.

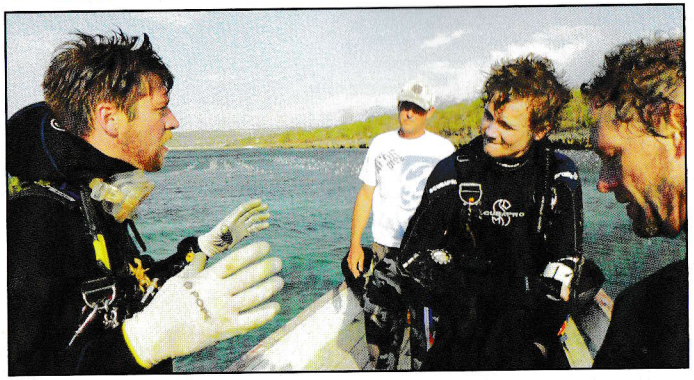


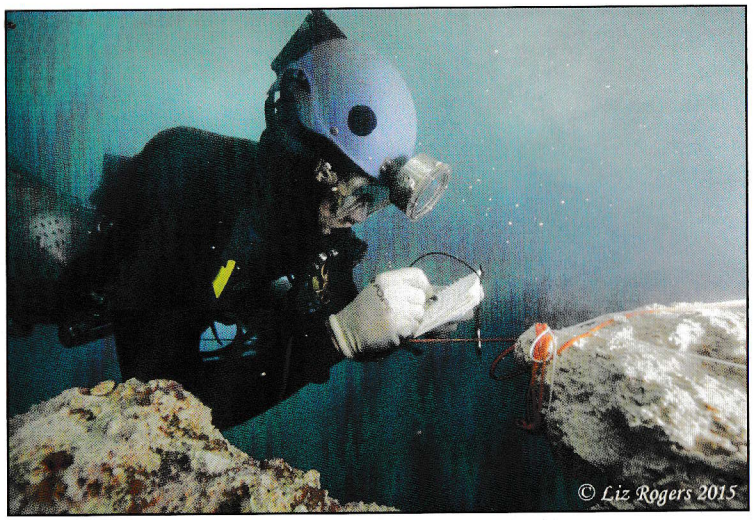
But time was limited and at the end of last year's trip there were three major leads continuing into clear water where we had run out of line and run out of time. It was difficult to come home from a big trip and avoid the temptation to tell all for fear of unscrupulous lead stealing behaviour. But we made it and this year added Michelle Doolan, Tim Muscat and Craig Howell to the group and arrived with eight eager divers and some work to do. The bigger group made quick work of finishing the open leads and connecting the caves along the lines we had expected. One large going tunnel saw Ryan and Steve surface well inside the dark zone of a bat breeding cave which we hadn't been able to enter from the surface. Having run line, surveyed and solved the loose ends we went prospecting from the land and from the sea.

The coastline was productive, with three new sea caves heading inland. Along with some Google Earth marks we





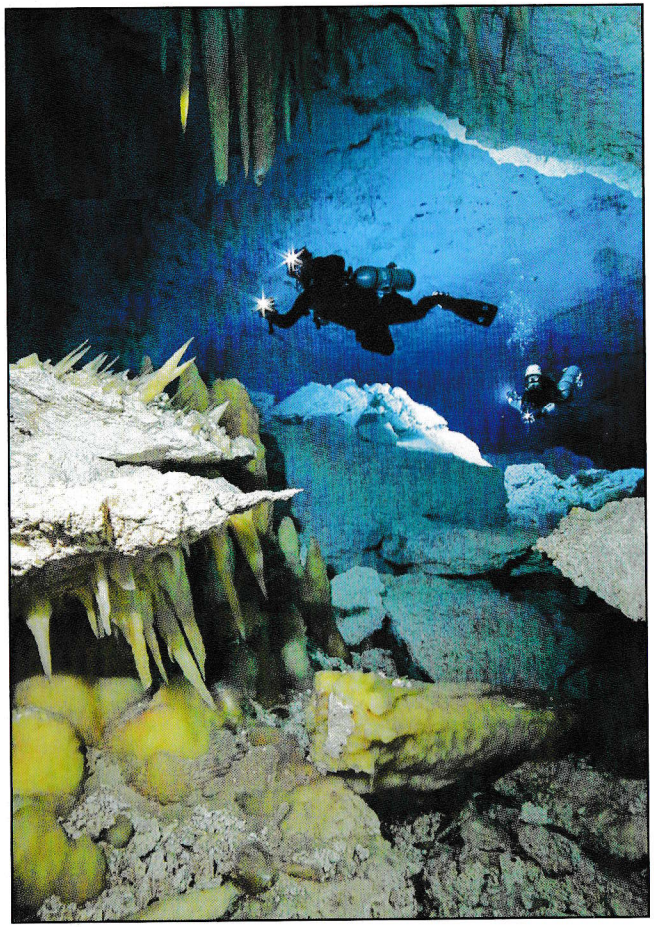




sinkholes in Mt Gambier, holes in Timor get used as a handy rubbish disposal chute. Once past the stinky remains the chamber opens out underneath with pools of warm water on both sides.

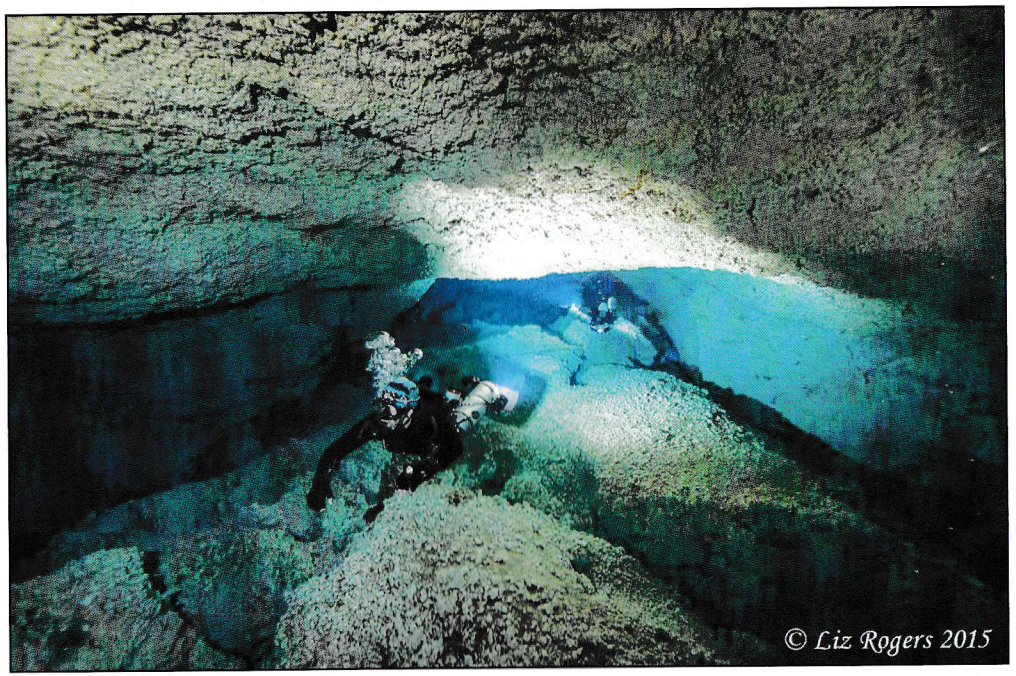
Last year Ryan and Steve put 200m of line into one side of the cave and determined that the other didn't go. After loading tanks in to continue the 200m line onwards, Craig went for a dip in the "no-go" pool. He was tempted in by a small gap between the rocks and squeezed through to find

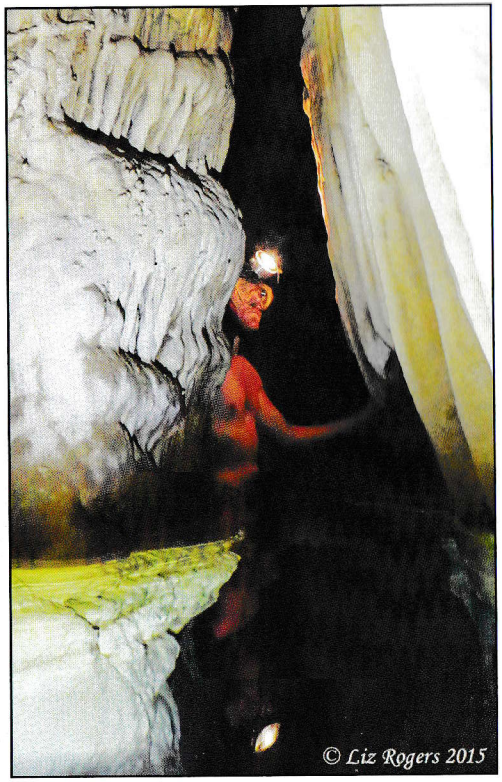
brought the boats close in to shore and locals pointed us to known outflows. Their obvious knowledge was a bit of a mystery to me at high tide. All became clear 6 hours later as noisy water rushed out of cave entrances and across the coral flats and sea weed farms. The full moon gave us some difficulties with very strong flow pumping in and out. Timing slack water accurately on the second boat day let each buddy team get about 150m into various entrances as the caves began to split out into wide flatteners. Sponges and sealife began to reduce as we got further into each system but there was no sign of the clear still water and bare white limestone we had seen in the systems accessed from the land.



The inland prospecting turned up some fantastically deep dolines and beautiful freshwater pools. Each sighting brought great hopes and then disappointment as dry and wet rock collapses refused to let us through. The spines on the local vegetation and tropical sun weren't helping enthusiasm levels.

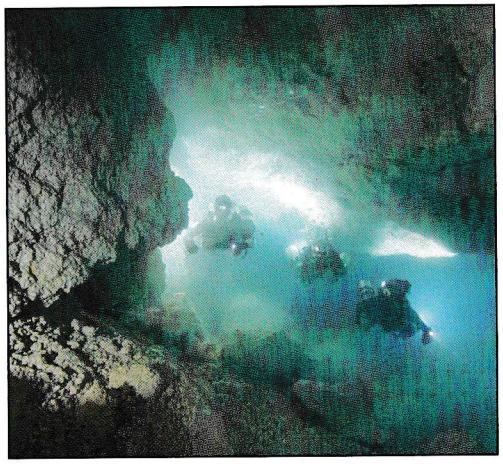
After days of crawling through hot, bat-poopy caves we retreated back to a known and diveable feature from 2014. A small solution tube and a locally made rope & conduit ladder put us down on top of a large breakdown pile, unfortunately right next to a dead cat. As with





blue tunnel. Enough was enough and last year's tunnel was abandoned in favour of the new prospect. Tim and Umbu pulled loose rubble out until the gap was big enough to fit a diver with sidemounts. The tidal flow saw clear water flushing out of the hole with every rock moved. Steve dived through to find a dry rockpile 20m later, with a huge blue pool on the other side.

As you would expect, this all happened on the second to last day. So on the morning of the last day we dumped the tanks down the cave and half the group got to work. Tim and Michelle dropped into the pool on the other side of the



internal rockpile and disappeared. Four of us were off exploring nearby prospects in the area while they got on with it. After climbing out of the first exploration of a beautiful fissure with 50m of decorated and water filled tunnel, Ryan and I got the phone call – it goes! We headed back to the dead cat and down to the water.

Given the size of the tunnel and the fact that Tim and Michelle had run out of line mid-tunnel we decided to go as a four. I strapped a strobe each to Craig, Steve and Ryan and gave my normal lecture about not swimming too fast, even if the tunnel was really big and unexplored. The vis in the early section was fairly milky from the previous dive, and started to clear a little as we reached the end of the line they had laid. With Ryan reeling out and me sprinting around out in front to snap photos we proceeded down the virgin tunnel.

As the water cleared up the tunnel trended up and we found our way between huge blocks to a surface pool. The blocks continued up to a high roof of a big chamber. Underwater exploration across the 40m width of the tunnel didn't turn up any hopeful bypasses. After some scrambling around up top Steve located a small pool on the other side and put it on the list for next year. A very hot and humid porterage out across the first rockpile and up the main chamber saw us on the surface in the dark, with a pile of wet and muddy gear and an early morning flight home. It was a great end to a tropical cave diving trip.

As of the end of the 2015 trip there are three large inland cave systems and four sea caves with between 150m and 1km of line in them so far, with varying levels of accessibility. All are Advanced Cave level and require sidemounts and some rock hopping abilities. If you're interested in organising your own trip over there, drop me a line at liz@lizrogerphotography.com and I can help with logistical details and a summary of touristing options and leads to be checked. ■

Graeme Bartle-Smith and Peter Mosse

CASE for a Fixed Line at Murra

You've organised two week's leave. All the planning is over, you're on the way. Murra el Elevyn, and others, is in your sights. You've talked the talk and trolled the photos. This time it will be yours.

Travel gives you plenty of time to think. You feel excitement for the unknown, anticipation of vast underwater spaces, trepidation over the apparent effort needed. There is a little bit of nervousness, too. Will you find them, will you find your way inside them? We were a little different from many who venture to the Nullarbor - we were not with others who had travelled the path before.

Information we could glean from the website and from our contacts is not so clear about how to navigate the caves. Are there lines or not? How representative of the cave are the drawings that are available to us. We're not so confident because the different drawings are ... different.

The diagrams of Murra show an entrance line and some line further out. What does this mean?

What are we actually going to find?

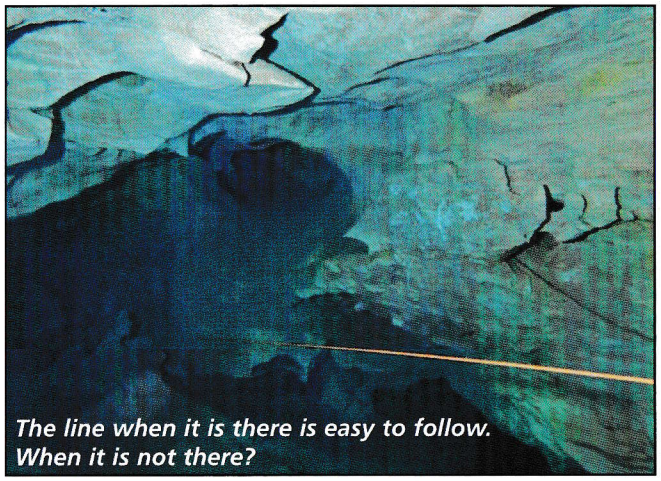
Now you have arrived. You set up, lug the gear in and finally you're there at the water's edge ready to go. It's been four days since you set out - three days driving and one lugging.

And yes there is a line, but oh no. It really does end. A huge space is in front of you with lots of room and lots of places to go. Out comes the reel and you start laying line.

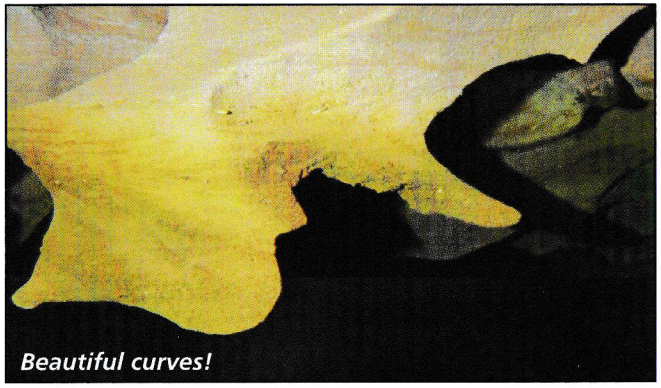
You can't find the distant tunnels that do have the fixed line. Frustration builds. Why is there a fixed entrance line and some fixed line deeper in but absolutely no indication of where to go? It's pretty big and there are lots of options.

You know your holiday time is ticking away.

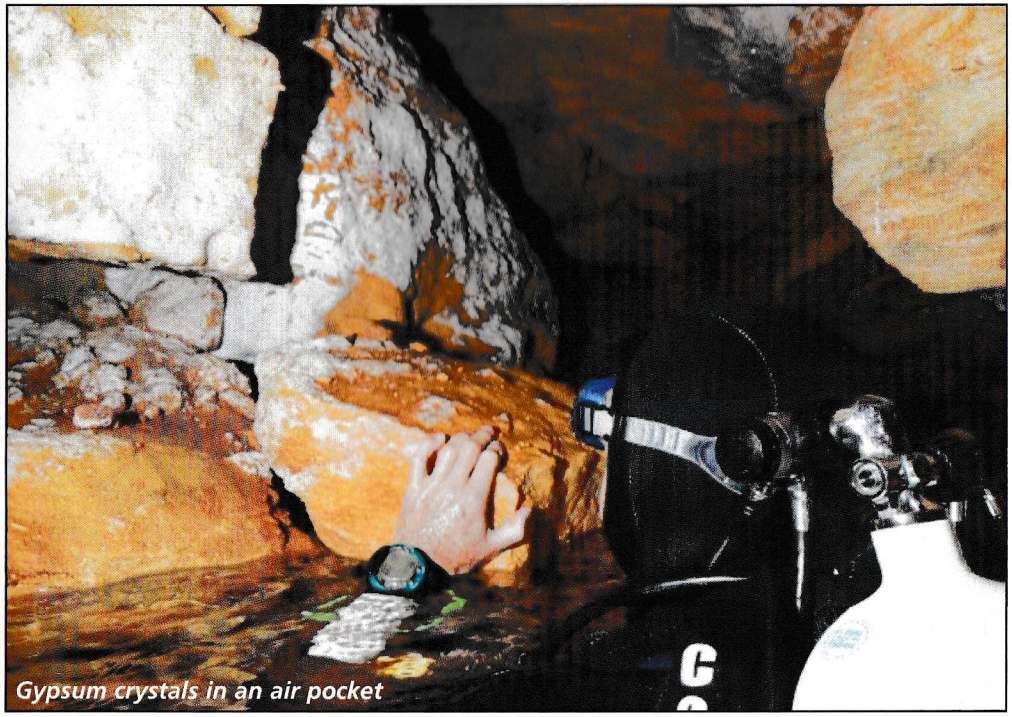
Our interest is to explore, to go where others have been and to see the extraordinary sights we've only heard about until now. We do not have the luxury of time on our side to spend trying this way and that, pushing here and pushing there, laying out and reeling in, twisting and turning. When you think about it, the original explorers of the caves



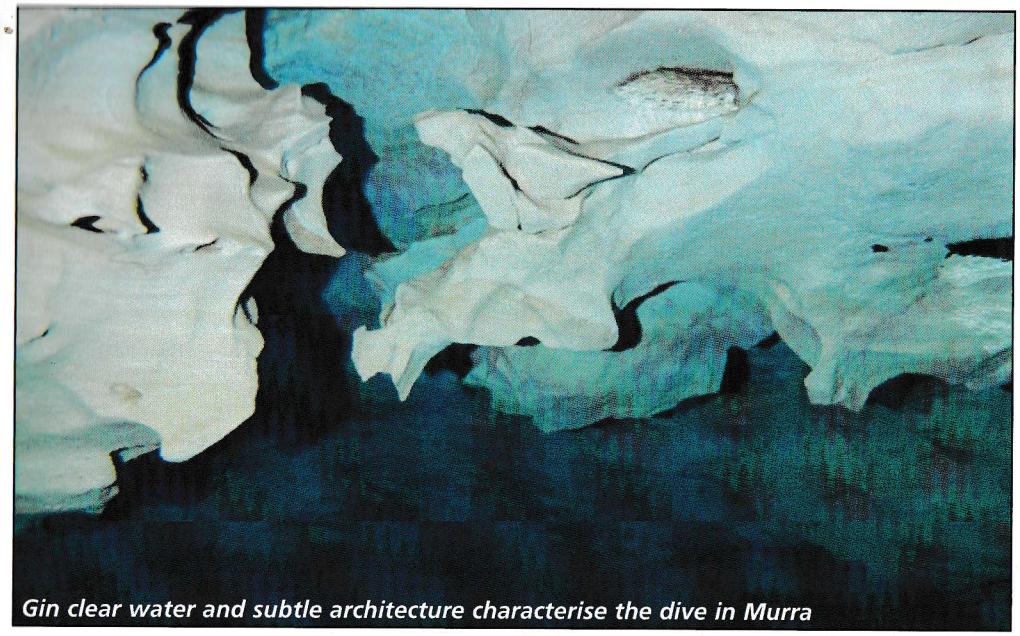
The line when it is there is easy to follow. When it is not there?



Beautiful curves!



Gypsum crystals in an air pocket



Gin clear water and subtle architecture characterise the dive in Murra

spent hours and hours over many dives figuring the layout. Our intent is to benefit from the amazing work they did, not to repeat it.

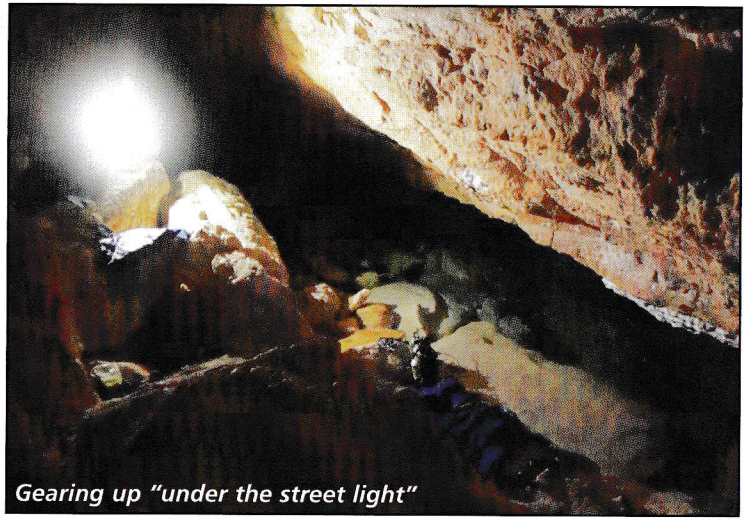
So why is there not a fixed line in Murra? We're told that it is a training destination for Perth people to learn their line skills. Perfectly valid intent. The cave is huge with many tunnels available for practising laying lines. So, back to my first question, why is the main tunnel not marked with a fixed line so that newcomers like us can enjoy the exquisite sites found and explored by others?

Ah, newcomers need to be guided on their first visit, you say? We may be newcomers to Murra but we're not newcomers to cave diving. With hundreds of hours in caves in the Mount, in Mexico and in Tassie over 40 years, we know how to look after ourselves and the caves.

Well, as it turned out, we were lucky. A pair of experienced Murra divers turned up while we were there and showed us the way (thanks Pete and Andrew). And what a way it is. Have a look at the photos. Imagine missing out on seeing all this because you spent so long finding your way; or maybe you didn't find your way as happened to us on our last dive after our companions had pulled their line out!

The photos attest to the awe-inspiring brilliance of Murra el Elevyn. It's inspiring enough for us to recommend to anybody to make the trip for the experience. But please Mr CDAA, make the trip as exhilarating as you can for occasional visitors by installing fixed lines in the primary tunnels.

■



Gearing up "under the street light"

DCI in Australian Cave Divers

A recently published study1 by two CDAA members and their colleagues has attempted to quantify the risk of developing significant decompression illness (DCI) whilst diving in the common Mt Gambier dive sites. The research was based on a retrospective review of all cases of DCI treated at the Alfred and Royal Adelaide Hospitals, over the10-year period 2002-2012.

To estimate an incidence based on the 16 cases treated during this period, a denominator was required. As with most diving research, establishing how many dives are performed over a period of time is fraught with difficulty and potential error. By examining multiple sources of data (Forestry permits, CDAA bookings figures, DEWNR permits, Lady Nelson key loan figures and more) an estimate was made. Over the 10-year period, it was conservatively estimated that 57,000 dives took place. This gave a DCI incidence of 2.8/10,000 dives or 0.028%.

This figure compares favourably when other cold-water dives series are considered. However in the subset of Mt Gambier dives performed to beyond 90 mfw the incidence was very much higher (over 6%).

As would be expected, most DCI-producing dives were performed in the 35-60 m depth range, and air was the commonest gas breathed. Only 50% of divers received oxygen first aid at the dive site, and two divers were treated unsuccessfully with in-water recompression (IWR).

It is not known how many divers with symptoms of DCI were successfully treated with first aid or IWR, or whose symptoms spontaneously resolved such that they did not present to one of the two chambers for formal treatment. It is also possible that some divers were treated at another hyperbaric facility. It is likely that a significant number of divers developed DCI but for various reasons did not present for treatment at a hyperbaric facility.

Eleven divers were successfully treated with full resolution of symptoms. Four divers had residual symptoms at the end of treatment, and one diver was not followed up.

The study highlights that DCI is a genuine risk of our sport. The incidence appears to be in keeping with other comparable recreational dive populations. Divers need to be vigilant for symptoms, both in themselves and their buddies. Early use of 100% oxygen whilst seeking medical advice is strongly encouraged, and definitive treatment in a recompression facility will usually ensure a good outcome and a safe return to diving. Advice can always be sought from the DAN Hotline (Divers Emergency Service 1800 088 200 (within Australia), +61-8-8212 9242 (outside Australia).

1. Harris RJD, Frawley G, Devaney BC, Fock A, Jones AB. A 10-year estimate of the incidence of decompression illness in a discrete group of recreational cave divers in Australia. Diving and Hyperbaric Medicine. 2015 September; 45(3):147-153.

Scubapro MK 2EVO ... Evolution In Action!

Simple, reliable, easy to maintain and use has been the calling card of the MK2 for decades. Now, with the introduction of the XTIS, the MK2 EVO performs in cold water conditions as well as it does in the tropics. For divers who want a reliable, inexpensive reg that can handle cold water conditions, the MK2 EVO is not only the best choice, it's the only choice.

Classic Piston First Stage Now Primed for Cold-°©?Water Diving

The new MK2 EVO comes with the Extended Thermal Insulating System (XTIS), a patent pending anti-freeze system that offers thermal insulation from the environment by fully isolating the mechanical elements of the first stage from the cold, increasing its freezing resistance by an average of 50 percent over the current MK2, without compromising breathing performance. This enables divers to enjoy an ultra-fast breathing response and the instant delivery of maximum airflow with minimal effort, regardless of water temperature.

A BIT OF BACKGROUND

For decades the MK2 has been the go-to workhorse reg for discerning rental shops and training centers due to its simplicity and bullet-proof reliability. It's also been a favorite among new divers looking for an air delivery system they can trust, that's easy to use, and that won't put too big a dent in their pocketbooks.

This classic downstream piston first stage enters 2015 as tough and diverfriendly as ever, only now it's also able to deliver dependable airflow even in the coldest conditions.

The new MK2 EVO comes with the Extended Thermal Insulating System (XTIS), a patent pending anti-freeze system that offers thermal insulation from the environment by fully isolating the mechanical elements of the first stage from the cold, increasing its freezing resistance by an average of 50 percent over the current MK2, without compromising breathing performance. This enables divers to enjoy an ultra-fast breathing response and the instant delivery of maximum airflow with minimal effort, regardless of water temperature. Additional internal technical improvements include a new spring insulating bushing and coating, a new insulating piston bushing, a new insulating sleeve and a new antifreeze cap, all of which work with the XTIS to ratchet up the MK2 EVO's resistance to freezing and improve its overall breathing capabilities. The body of the MK2 EVO is actually a tad smaller than the standard MK2, even though its piston is a bit larger, contributing to a 15 percent increase in airflow.

The new stainless steel removable orifice (patent pending) allows for easier maintenance and extends regulator life. The chrome plated brass body features one high pressure and four low pressure ports.

It's available in INT or DIN versions, and meets the new EN250-2014 test standards.

THE MK2 EVO IN BRIEF

- Patent pending XTIS (Extended Thermal Insulating System) offers thermal insulation by fully isolating the mechanical elements of the first stage from the cold, increasing freezing resistance by an average of 50 percent.
- Additional internal technical improvements include a new spring insulating bushing and coating, a new insulating piston bushing, a new insulating sleeve and a new antifreeze cap, all of which contribute to the increase in freezing resistance.
- Oversized piston provides better breathing performance by increasing airflow by 15 percent.
- Reduced overall body size results in a lighter, more compact first stage.
- Stainless steel removable orifice allows for easier maintenance while extending regulator life.
- Updated cosmetics give the first stage a modern look while matching the new piston's range.
- Classic downstream piston design features a chrome plated brass body with one high pressure and four low pressure ports.
- Many of the 2015 changes are in-line technical improvements geared more to the servicing of the units than to the end user.
- Available in either 232bar/3364psi INT or 300bar/4350psi DIN configurations.
- Meets the new EN250-2014 standards for cold-water breathing performance.

THE MK2 EVO ADVANTAGE

The MK2 EVO is the only downstream piston style first stage in its price range to offer systems and internal components specifically designed to resist freezing in extreme cold water conditions. Teamed up with this workhorse first stage is SCUBAPRO's R195, a lightweight second stage featuring classic downstream valve technology. Well known for its reliability and ease of use, the R195 offers a pretuned VIVA for safe and uncomplicated diving. For 2015 it comes with a restyled, more streamlined look, but offers the same performance divers have come to depend on.

SUMMARY

Simple, reliable, easy to maintain and even easier to use—that's been the calling card of the MK2 for decades. Now, with the introduction of the XTIS, the MK2 EVO performs in cold-water conditions as well as it does in the tropics. It's the right choice for rental shops and training centers, and the perfect go-anywhere reg for new divers as well as for veterans who just like to keep their diving simple and fun. For divers who want a reliable, inexpensive reg that can handle cold water conditions, the MK2 EVO is not only the best choice, it's the only choice.

Destination: West Papua – Jul/Aug. 2015 ~ Pierre Constant

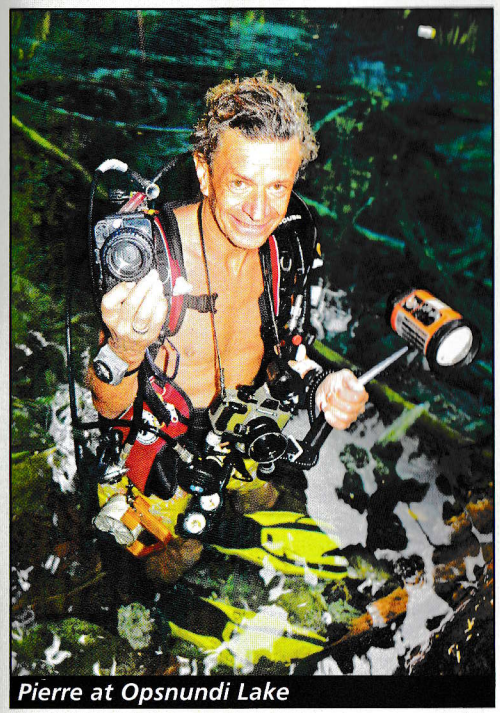
Biak Jungle Caves

Forget about Irian Jaya! Although it may sound pleasant to your ear, the name was once given by Indonesian rulers. It refers to the liberation of Papua from Dutch rule, and the subsequent occupation by Indonesia, who committed many wrong doings to the indigenous population. By presidential decree of Gusdur in 1999, the Indonesian half of New Guinea – second largest island in the world - has been renamed West Papua or Papua Bharat, to recognize the ethnic difference of the Papuan culture. Its purpose obviously serves to ease the tension with Indonesia. Since their failed declaration of independence in 1971, most Papuan aspire for freedom. The July 1st 1998 anniversary of the Papuan declaration led to the so called Biak massacre, where 200 demonstrators were murdered by Indonesian military, and thrown into the ocean offshore. Furthermore, even though 50% of Biak is muslim, the reality is that 90% of mainland Papua is Christian, in a country that is predominantly muslim.

The Biak Numfor culture is Melanesian, originally animist. North of Cenderawasih Bay, the island was first sighted by Portuguese navigator Jorge de Meneses in 1526 during his journey from Malacca to Maluku. Spanish navigator Alvaro de Saavedra sailed by in 1528. More recently, history has it that Biak was a stronghold of the Japanese imperial army during WWII, until the arrival of American general Douglas Mac Arthur. Towards the end of the war, 11000 Japanese, under colonel Kuzume Naoyuki, were hiding in caves under the cover of the jungle, awaiting American invasion, with loads of ammunitions and 9 Type 95 HaGo light tanks. Only 5 km away from Kota Biak, one of these was Gua Binsari or Gua Jepang, commonly known as Japanese cave. It was the refuge of about 3000 Japanese troops, that lived in an underground cave system that extended 3km towards Parai beach. After one of their plane had been shot by a missile, the American bombed the site and killed them all, a massacre. At the end of the 'Battle of Biak' that lasted from May 27th to August 17th 1944, the US suffered 3000 casualties plus 474 killed, while Japan had 6100 killed and 450 captured. Colonel Kizume Naoyuki committed 'Hara Kiri'.

After a two days journey from France, via Jakarta, my plane lands in Biak at 5:30am. I am totally jetlagged. It will take me two days to recover and feel in phase again. On the sunday morning of my arrival, I head for Gua Jepang on the back of Jake's motorcycle, receptionist of the Asana Biak hotel. The once upon a time museum has been relocated in an open yard, in front of the reception office, where the Rp.50000 entrance fee is duly collected. A cemented pathway, covered in green mosses, leads after a short walk to a stairway that disappears underground in a zigzag. The archway entrance is like a cathedral, rather wet with streamlets of water dripping from the ceiling. The enormous chamber reveals an exit to the right and another gigantic exit to the left. Broken glass bottle lay about everywhere. I discover a golden brown bone inbedded into the cave floor. An impressive curtain of vines and roots runs down the wall on the left, that opens into a large sinkhole. Without the shadow of a doubt, the site is atmospheric. Slim pandanus trees with their crown of long spiny leaves, stand erect in the middle of the sinkhole, adding a touch of Jurassic Park to this eerie environment. Old rusty Japanese barrels are found at the foot of the hanging vines. The trail loops around the interior, climbing up slowly to a rise overlooking the core of the hole. Suddenly, Jake points out to the figure of a copper brown snake, about a metre long, resting motionless straight ahead of me. "Mangabasio!...", he warns, taking a step back. "Poisonous"... I'll find out later on that it is not. Taking a few shots, I keep a safe distance of 2m, before the snake ventures up the cliff side with amazing facility, as if it were the easiest task in the world. On the way out, the trail passes by the top of the sinkhole for a panoramic view. The open air museum displays machine guns, mortars, shells, bombs, airplane rockets, a collection of Japanese canteens, helmets, bottles, even old jeeps and an airplane propeller.

Air Biru cave entrance, Anggraidi



Pierre at Opsnundi Lake

Some distance eastwards, it is market day in Bosnik – once the site of the amphibious American landing of May 27th

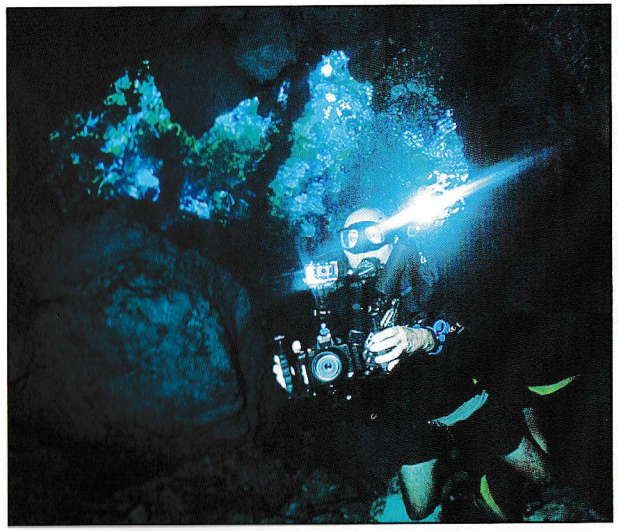
Salmon before a dive at Opsnundi Lake

1944. The stalls sell typical Papuan food such as areca nut, cassava, sweet potatoes, sago cakes, as well as smoked octopus and beads of smoked shells, fresh fish, papaya leaves, beans and bananas. Everybody is chewing areca nut all day long and grants me with a friendly if vivid red mouthed grin, as I stroll by, stranger in a strange land. "Hello mister!..." is the common salute. Bosnik is the departure point for public boats to the nearby Padaido islands –known for their attractive dive sites, on Tuesdays, Thursdays & Saturdays. The guesthouse of Mrs.Augustina, -ex-wife of American 'Winkie' that passed away 10 years ago-, accommodates visitors, providing all meals.

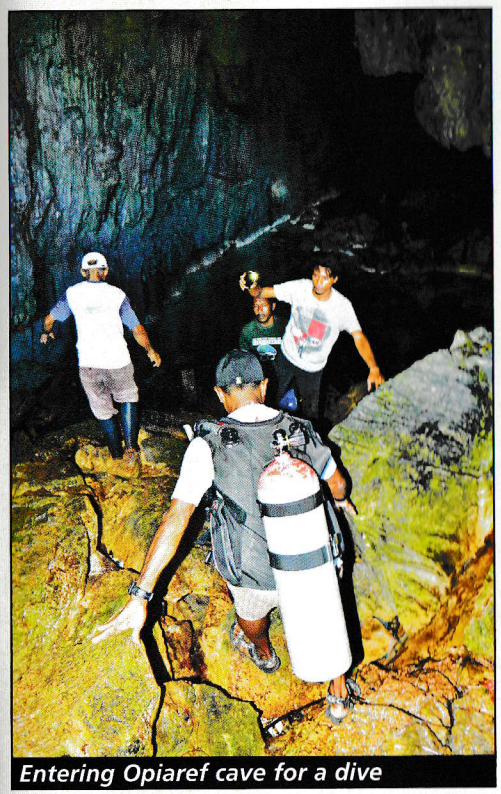
Chris before a dive at Air Biru

A conspicuous limestone ridge, 40 metres high, runs like a spine along the south coast, covered in jungle, all the way to Tanjung Barari, the eastern cape of Biak. Most certainly an old fringing reef, that evolved into a karst environment with caves and underground rivers. This is precisely what I want to explore in the next few days, possibly doing some cave diving as well.

Still prone to my jetlag, I get up at 3am and can't sleep until 5am, when I get out of bed. Dive master Yulius Kapitarau pops in sometimes later on his motorbike, but frowns upon the sight of my pile of bags and equipment. He arranges with Mrs. Emmy to provide with her personal car for my needs, and adds up a few tanks in the trunk for my expectations. We are headed for the village of Opiaref, beyond Bosnik, where I have heard of a large cave with some pools of water, playground of the school kids. Just what I am after, anticipating some stimulating cave diving, although Yulius is only a recreational island diver. To be politically correct, we pay a visit to 'bigman' Demikianus Arwakon, who does not have any objections to my whereabouts, even eager to know whether I'll discover something in there. Behind the elementary school a path leads to a giant opening in the limestone cliff, big enough for a subway tunnel. Gua Serumi (Opiaref Cave) certainly looks like an underground river, despite the rock pile at the entrance and in the middle of the cave. The water pools are stunningly clear, all promising at first glance. It happens to be the freshwater reservoir of the village. Donning equipment on a slippery rock covered in bat guano, I jump in. The first pool is maybe 2-3m deep, but I find a passage to the right under the rock that plunges into a narrow tunnel with restrictions. I shall not venture too far, afraid that I will not be able to turn around. Some fish life come to meet me. In slaty grey color, with double dorsal fin, opaque cobalt blue eyes and protruding lower jaw. Rather tame and passive. Some large shrimps with long blue pincers, inquisitive, are attracted to the beam of my torch, a pleasant surprise!...



Backtracking, I make my way to the second pool. The main tunnel, easily 10m high, ends with a rock wall, about 60m from the entrance. Climbing over the rocks in the middle of the cave, I notice that depth increases on the other ide.



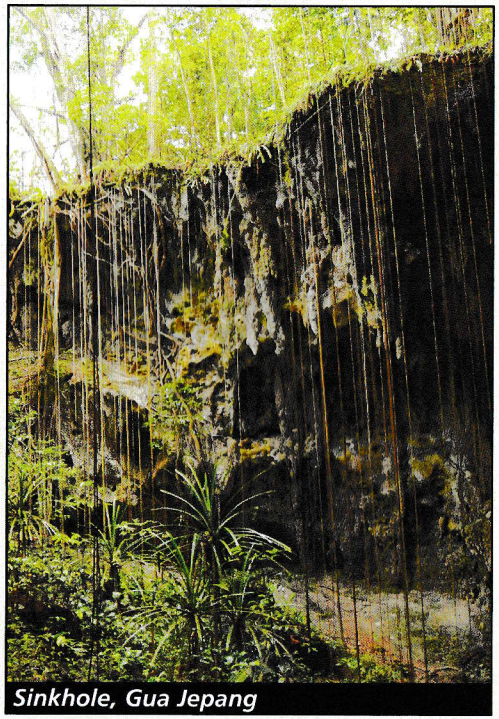
Entering Opiaref cave for a dive

Another passage opens on the right, getting narrower and snaky. The rock wall still in front, I wonder about a sheer contrast in coloration between the white limestone, and some conspicuously dark brown sedimentary rock, that seem to be well eroded inclusions. A narrow corridor with an exquisite vertical oval shape, opens up on my left and shows me the way to a side chamber, oblong and parallel to the main tunnel. The bottom is covered in fine silt, highly volatile, that a kick of a fin can disturb in a second. Some fish hovering above the floor, oblivious to my presence. The excellent visibility is a plus for underwater photography. To be continued... too bad the Gua Serumi cave is rather small in development, with a maximum depth of 8,8 metres.

Inland beyond Opiaref, we visit two waterholes that turn out to be muddy. Yulius introduces me to one of his friends, Salmon, a bearded jovial Papuan farmer, who happens to

Dive master Yulius

Japanese WWII mortars and rockets



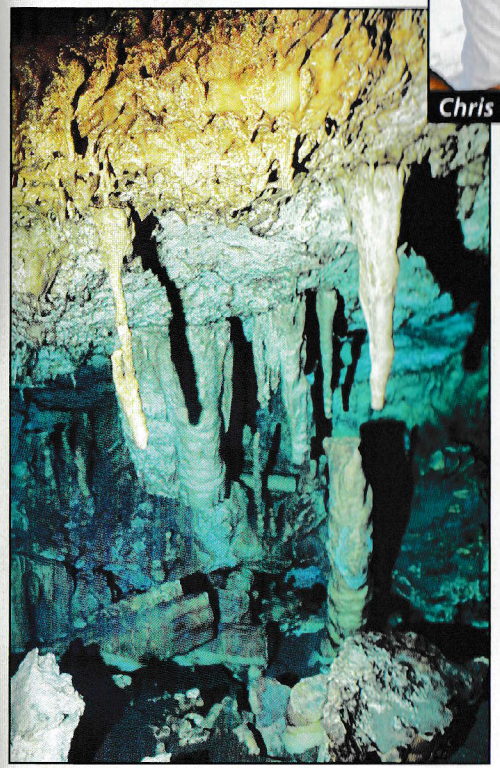
Sinkhole, Gua Jepang

be a diver too. He knows of a freshwater lake, likely a sinkhole, near Samares Beach on the north coast. "Let's go!...". The road meanders for a while, to become a dirt track carved with gullies by the rains. We reach a mountainous area of thick jungle with big trees. Leaving the car behind, we have to proceed on foot, uphill, then steeply downhill for the next 45 minutes. "I can't imagine doing this walk with tank on my back and all equipment", I think for myself. There is a lot of logging going on in the area, and the awful sound of chainsaw silences the joyful shrieks of sulphur crested cockatoos, Eclectus parrots and black capped lories. Pantai Samares is a deserted beach on the Pacific ocean. A road branches to the left; a while later a trail climbs up a into the jungle, between large buttress root trees and nipa palms. Opsnundi (jumping man) lake appears in a clearing, like magic . A turquoise blue pool of water. Lots of big logs have fallen into it, but the water is gin clear! A visual enchantment it is. A young Indonesian couple has obviously found the site to be idyllic, and we'll soon join them for a dip, to cool down after a good sweat. My feelers tell me of a hole in the middle, but I won't know for sure until I venture under the surface.

Late afternoon sees us at the village of Anggraidi, where the cave of Air Biru or 'Bluewater warmbekra' is the local attraction. A Rp.20000 is levied by the owner who opens the rusty gate to a stairway downhill. The large opening looks like a gargantuan mouth with fangs –alias bulging rounded stalactites. The pool a clear water makes it a must to investigate. A big fish is already checking me out. I am in for a 15 minutes dive. Unfortunately I do not find any leads. Seen from underwater the big stalactites allow creative photography. Only missing would be the proper sunbeams to highlight the background! I find the big dark grey fish with yellow rimmed fins in a corner, same species as in Opiaref, but 25cm long. On my second occasion to dive there, an eel comes out of the darkness into the light, only to disappear in a flash before I could take a photo!

A good tar road links Biak town to Korem on the north coast. At Km.30, three freshwater lakes give me the illusion of possible sinkholes, but sadly the green color of the water take away any hope. As a matter of fact, Snermus and Snermas lakes may be a decent swimming pool for the local kids with their floating rafts and logs, but the underwater visibility is hardly 50cm and the maximum depth is 12m on silt. Disappointing. I find at depth a necklace of colorful beads with a metal cross and a name. Cradled in a U shaped bay, Korem beach was the site of a devastating tsunami in 1996, responsible for the death of many people. The scenic north coast road passes by Tanjung Saruri, a cape with uplifted coral terraces that make a very photographic shelf, with pools of water at low tide. Further west is the village of Warsa, with a local waterfall and beyond is

Chris and Salmon on the boat to Owi Island



the bridge that is the gateway to Supiori island. Rather mountainous in comparison to Biak. There, the road divides between north and south, all the way to Korido. Some 45 minutes south of the bridge is the interesting cave of Mankruro, used by Japanese soldiers. Ask for guide Utrek at Amin village. It is only a 10 minutes walk from the main road on the right hand side.

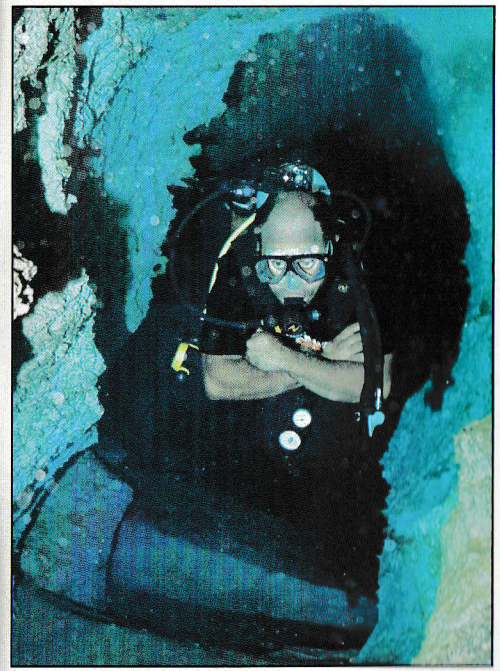
Against all odds I make my way back to Opsnundi. With a burst of courage, considering the 1h30 return walk, with all the gear. Fortunately, Salmon, all smiles, volunteers to carry the tank, arguing that 'no problems', Papuan are strong men. I am more than happy to give him the pride and the merit! As for myself, I have enough with my backpack, the gear in a mesh bag and the Nikonos V camera at arm's length. Despite the lack of sunshine, the dive proves to be a thrilling experience. In blue water, I marvel at a capharnaüm of logs draped in mosses and hanging algae. Some fish in there too, that never saw a diver before. With a maximum depth of 13 metres, I only find a small cave in limestone, nothing flash!... By the time I finish the 52 minutes dive I am shivering cold. No mention made of the strenuous return uphill walk. Suffice to say that I'll sleep like a log that night.

An interesting spot is that of Ruar village, before Bosnik. There, an underwater stream flows out of a cave in the cliff side. Logically, I got to poke my nose in there. After a progression of 10 metres in the underground tunnel, I witness that the water comes out of a deep vertical pit with sharp limestone all around it. Never mind, in I go with my torch and a strong line attached to a rock above the hole. At a depth of 3,5m, the corridor is level, but I face a dead end, as there is nowhere big enough for me to squeeze through. The Dutch, in their own time, have built a water treatment plant on location. Simpsons, the 'bigman' in charge, reckons I would be eager to see some more Japanese caves in the jungle behind Ruar village. He gives me a doubtful glance when he realizes I am wearing flip flops only, buy reassures me saying that it is only 200 metres away. It turns out to be steep uphill, slippery and through the jungle, for a one hour return trek! For sure, I am making a long face… when we finally get to the gaping jaw of the cave, steep down a cluster of boulders, I am not visualizing myself in there with flip flops…

I return on the following Sunday morning. All dressed up in white shirt and black tie, Simpsons is ready to go to church. "I'll be back after an hour", he says. After 5 and a half hours of desperate waiting time, I am fast asleep on the chair of his balcony. Sometime later we are back on site. Simpsons swiftly chops down a couple of slim straight trees, and turn those into a ladder which allows us to negotiate the cave entrance. Once inside, I realize that the cave is huge, with hidden chambers, stalactites, shawls, huge columns or thin pillars. The floor is littered with broken glass bottles, rusty tin cans, square biscuit tin boxes, in each and every possible corner of this 'swiss cheese' environment. We explore all passages. I can barely imagine the dreadful conditions in which these Japanese soldiers lived in the darkness like rats. It must have been miserable and mentally depressing. Some remains of gas mask's round spectacles lay on the ground outside the entrance. I also find two buttons and the tip of a cartridge. I decide to name the site 'Gua Ruar' or 'Simpson's cave', to give him the credit of showing me around.

A stone's throw away from Simpson's house, hidden downhill into the jungle on the left side of the road, lays a humble Japanese memorial with an old wooden pillar carved in Kanji inscriptions. Nearby is the entrance hole to "Lima Kamar", a subterranean cave with five chambers. "This used to be a Japanese hospital during the war", explains Simpson. Well worth a visit, it is a cluster of small chambers linked together by narrow secluded passages, behind limestone pillars. A collection of medicine flasks and empty bottles lay scattered in a corner. This rat hole of Lima Kamar certainly gives a chilling dimension to the horror of a bygone past.

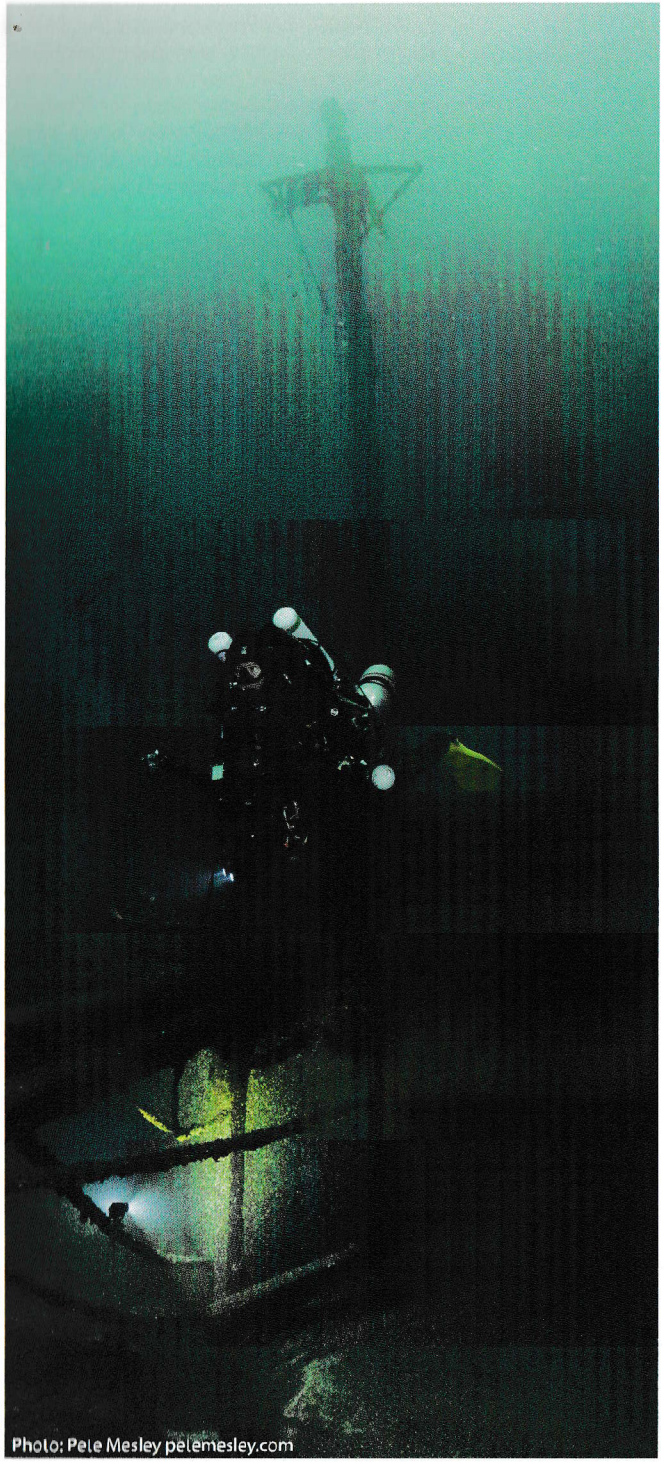
One evening, upon suggestion from Emmy, I meet the 'Bupati', Yusuf Melianus Maryen, who was once the political leader of the Biak Regency. He had been in charge of the island for over 10 years. A warm and affable man, he greets me heartily with a traditional ceramic plate - displaying the Cenderawasih bird of paradise - and a big coffee table book on Papua. I explain the nature of my work and express my interest in discovering more of Biak. Bupati offers to take me to Owi Island with his boat. Salmon has revealed the existence of caves with 'blue water' there. Frustrating trick of fate, the boat is mysteriously not in working order on 'D' day and the project falls short. My Australian videographer friend Chris,



arrives from Bali, eager to join my explorations. Yulius puts his boat at our disposal, we just have to pay for the fuel and the crew. Off we go! The crossing on a flat sea takes half an hour and we land on Owi Island's northern shore. White sand beach fringed with swaying coconut trees, a kid paddling his dug out outrigger canoe, the classic paradise postcard. A catholic church displays a signboard "Rarama bebye" in the background, meaning 'you are welcome'. We pay a ritual visit to 'bigman' Pete Demaras, a white bearded fellow with a red ring of areca nut juice around the chin. In the footsteps of Salmon, we proceed to a nearby waterhole at the bottom of a limestone crack, rather small and full of garbage. "Is this what you call a blue water pool?", I ask ironic. "Oh, there is more over there!...", he says, pointing to the west of the village. With some villagers in tow, we climb on the top of a ridge. Hidden by vegetation is another hole. A small freshwater lake is found here, but no lead anywhere. A stone throw away, a new cave opens down a slippery slope. "This one is called Funfundei, which means 'Feel Good'… During the war the American soldiers used to come here to collect water". There was a US army base and an airfield on the island. Switching on the headlamp on my forehead, I sneak in. The way is rather acrobatic and challenging, with narrow passages and stalactites overhead. To my surprise there is a clear water pond, which seems to have various chambers at depth. No hesitation, I'll check that one out! "No way I am climbing down there with a tank, I am not surefooted…", coughs Chris. Anyway, he has the courage to come down and do some filming. Soon, I am marveling at two exquisite chambers underwater, with stalactites, stalagmites, shawls and straws. I also find a few fossils. A comb shell with 5 fingers, some Trochus turban shells, clams. The maximum depth is 5.5 metres only, for a 20 minutes dive, which does not allow any further passages. 'Feelgood' cave was obviously formed above water and later flooded by rain water percolating through the rooftop.

Before leaving the island, Salmon reckons we should be interested in some plane wrecks in the interior. "*Not far!...*", he promises. The 25' walk through a coconut grove on an old cemented walkway into the bush of Owi Is. takes us to an overgrown tar highway. Immediately, we get the message: this was the American airfield. Glad to be there at last, I wipe the sweat off my forehead. "*How about the airplane wrecks?...*", I enquire to Salmon, still craving for the real stuff. "*The airplanes? Oh… they are gone already!*"

■



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CDAA Instructors

NAME	Deep Cavern	Cave	Adv. Cave
NEW SOUTH WALES			
 BOULTON, Alex (CDAA 4125) E: kartzone@gmail.com Mob: 0404 878 720	Yes		
SOUTH AUSTRALIA			
 PAYNE, Timothy (CDAA 2640) Mob: 0448 147 927 E: Tim@diveessentials.com	Yes	Yes	
VICTORIA			
 ALLEN, Terri (CDAA 3483) Mob: 0419 176 633 E: terri.allen@bakeridi.edu.au	Yes	Yes	Yes
 BARCLAY, Gary (CDAA 1735) Mob: 0407 527 921 E: garinda@bigpond.com	Yes	Yes	Yes
 BOWMAN, Jane (CDAA 1880) Mob: 0407 566 455 E: janelbowman@hotmail.com	Yes	Yes	Yes
 CHAMBERS, Geoffrey (CDAA 3484) Mob: 0438 059 886 E: geoffie1@gmail.com	Yes		
 CLARIDGE, Linda (CDAA 2214) Mob: 0408 052 070 E: garinda@tpgi.com.au	Yes	Yes	Yes

NAME	Deep Cavern	Cave	Adv. Cave
VICTORIA Continued			
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 McDONALD, Warrick (CDAA 1882) Mob: 0408 374 112 E: info@oceandivers.com.au	Yes	Yes	Yes
 MONACO, Rubens (CDAA 1731) Mob: 0413 429 533 E: info@idcscuba.com.au	Yes	Yes	Yes
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 Josip BICANIC (CDAA 4691) Mob: 0421 571 779 Email: joseph_b@me.com	Yes		
 PAYNTER, Geoff (CDAA 3784) Mob: 0407 445 112 E: gpaynter60@bigpond.com	Yes	Yes	

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 AC = ADVANCED CAVE

SITE	LEVEL	OWNER	ACCESS DETAILS
MT. GAMBIER - SA			
Ewens Ponds	Nil	DEWNR - P.O. Box 1046 Mt Gambier 5290	Groups of 6 or more, phone/mail to Dept. for Environment, Water & Natural Resources (DEWNR). Smaller groups, no need. (08) 8735 1177 Fax: (08) 8735 1135
Gouldens	CN	DEWNR	**General Diving:** Divers to contact DEWNR and notify of date and site to be dived. Please make requests by phone or fax only.
2 Sisters	CN	DEWNR	Divers must have the correct CDAA diving endorsement for the site and carry current financial CDAA membership card.
Fossil	C		The diver must have signed an indemnity with DEWNR before access is permitted and original copy must be received by DEWNR prior to diving. **Training:** The Instructor is to notify DEWNR of the date the sites are needed and to forward signed indemnities from each student and their temporary card number/ membership number.
Piccaninnie Ponds	S	DEWNR	Bookings can be made online via the CDAA web site.
Horse & Cart	CN	Dale & Heather Perkins	At least 1 week prior by email: dhperkins@bigpond.com or phone (08) 8738 4083.
Tea Tree	CN	Dale & Heather Perkins	
Little Blue	S	District Council of Grant	Permission not required - must carry card. Obtain key from Lady Nelson Tourist Information Centre.
Allendale	C	District Council of Grant	
Ela Elap	S	Dean & Carol Edwards	Key available from Simon Livingstone at the Bellum Hotel.
One Tree	S	Mr. Peter Norman	Visit the house before diving. If no one is home - no dive!
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/AC	**Forestry Sth. Australia** Phone: (08) 8724 2876 Fax: (08) 8724 2870 or book on-line via the CDAA website to arrange permit. email: conservationandrecreation @forestrysa.com.au	Unrestricted days or numbers - Cave rated divers must not enter Penetration sections (stop signs)
Mud Hole	C		Unrestricted days or numbers.
Nettle Bed	AC		Open every weekend. Maximum of 4 divers per weekend undertaking 1 dive only (check an update on CDAA site).
Stinging Nettle Cave	AC		Open every w'end max 3 divers per day undertaking 1 dive per day (check updates on CDAA website).
Iddlebiddy	AC	**Forestry Sth. Australia**	Open every Saturday max 4 divers, 1 dive only (check an update on CDAA website)
		Forestry Sth. Australia	**IMPORTANT:** Divers must advise Forestry SA of their online booking. Collect permits from the Forestry Office, RHS of driveway to Carter Holt, Jubilee Hwy, Mt Gambier. • No diving on Total Fire Ban Days. • Permit also required to runcompressors during fire danger season. • Keys for Hells Hole, Nettle Bed, Iddlebiddy and Stinging Nettle Cave can be obtained from Lady Nelson Visitor Ctr on presentation of Forestry SA permits.
Kilsby's	S	Landowner leased to CDAA	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.

CDAA SITE ACCESS - www.cavedivers.com.au

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SITE	LEVEL	OWNER	ACCESS DETAILS
MT. GAMBIER - SA (continued)			
Shaft	S/C	Generally open one weekend a month. Trevor Ashby	For access dates go to 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.
Engelbrechts - East	C	Mt Gambier Council Lessee: Ph: 08 8723 5552	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 contaminance. Diving hours are now restricted to 8am to 8pm CST.
- West	AC	Owner: John & Sue Douglas	
Three Sisters	AC	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.
Tank Cave	AC	CDAA	Access Manager: Noel Dillon. Email: tankcave@cavedivers.com.au
Baker's Cave	C	Janet & Bruce Saffin	Access Manager: Matthew Skinner. Email: bakerscave@cavedivers.com.au Climbing equipment required. One member must have previous dive experience at site.
NULLARBOR - WA			
Cocklebiddy	C/AC	DEC	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	C/AC	DEC	
Tommy Grahams	C	DEC	
Burnabbie	AC	Department of Lands, WA	Apply in writing or email for permission to dive at least four weeks in advance of trip. Miss Shannon Alford, Email: Shannon.alford@lands.wa.gov.au Phone: (08) 6552 4661 Fax: (08) 6552 4417 P.O. Box 1143, West Perth WA 6872. A site indemnity form must be filled out for each visit to the site. Diving permission acknowledged by official letter from Land Owner.
Olwolgin Cave	AC	Department of Lands, WA	
Weebubbie	S/C	Department of Lands, WA	
WELLINGTON CAVES - NSW			
Limekiln (McKavity) cave	C/AC	Wellington Caves	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) cave	C	Wellington Caves	Affected by high CO_2 levels during Summer/Autumn. Access is co-ordinated with the Wellington Caves management by Greg Ryan - Email: gjryan@gmail.com. Phone (02) 9743 4157.
Rum Jungle Lake	S	Coomalie Community Govt Council	Unrestricted access currently exists – Please refer to website.
Burrinjuck Dam	S/C/AC	NSW Parks & Wildlife	Please refer to website. There are no specific access arrangements.

Birth of Cave Diving ~ 1952