

Underwater Speleology

Journal of the Cave Diving Section of the National Speleological Society

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2015 Workshop Preview**

**Volume 42 Number 2
April/May/June 2015**



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(954) 646-5446
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TJ Muller
vicechairman@nsscds.org

TREASURER
Cheryl Doran
cccheryld@aol.com

SECRETARY
Forrest Wilson
secretary@nsscds.org

PROGRAM DIRECTORS

Joe Tegg
directoratlarge1@nsscds.org

Nathan Spray
directoratlarge2@nsscds.org

TRAINING CHAIRMAN
Jim Wyatt
(352) 363-0013
trainingdirector@nsscds.org



ADMINISTRATIVE MANAGER

Bruce Ryan
295 NW Commons Loop
SUITE 115-317
Lake City, FL 32055
(850) 284-1849

CDSManager@nsscds.org

Please mail Section business to:
NSS-CDS
295 NW Commons Loop, Suite 115-317
Lake City, FL 32055

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Cover Photo by Andreas Hagberg: Catfish Hotel is covered in duck weed, but a diver's bubbles will create a temporary clear spot, and you can sometimes see the trees on the surface.

UNDERWATER SPELEOLOGY TEAM

EDITOR ART DIRECTOR

Cheryl Doran
cccheryld@aol.com

ASSISTANT ART DIRECTOR

Carl Griffing

ADVERTISING SALES
uwseditor@nsscds.org

DEPARTMENTS

SKILLS, TIPS, & TECHNIQUES
Georges Gawinowski
george@wdtdive.com

CONSERVATION CORNER
Kelly Jessop
kjessop@bellsouth.net

MILESTONES
Shirley Kasser
sskasser@hotmail.com

THE LOOP
Joe Citelli

BEYOND THE PANHANDLE
Jennifer Idol

OFF TO THE SIDE
Rob Neto
chipoladivers@gmail.com

INSTRUCTOR'S CORNER
Carl Griffing
carl@caveandtechdiving.com

EDITORS

SENIOR EDITOR
Barbara J. Dwyer

ASSOCIATE EDITOR
Russell Edge

ASSISTANT EDITOR
David Jones

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editor's notes

“...I know it's hard when you're up to your armpits in alligators to remember you came here to drain the swamp. (February 10, 1982)”

~ Ronald Reagan~

It has been one of those winters with our alligators being the lawsuit, upgrading and updating. But with the heralding of spring I think I am beginning to see progress. The community education presentations are being shown and there are plans for the diver safety presentation to be debuted.

The new CDS booth worked quite well at Manatee Springs “Spring Into Springs Day” and will continue to mark our presence at community and other events throughout the year. Look for us at Madison Springs Eco Day as well as our own May Workshop and the upcoming NFSA Advanced Skills Workshop just to name a few. Consider taking a few hours of time to help out at these events, we are all volunteers.

We are still looking for someone to spearhead the Midwest Workshop. Please consider being a part of this, without volunteers these events can't happen.

For those of you curious about the answers to the “name the dive sites” article in the last issue, the answers clockwise are Peacock Springs, Cow Springs, Orange Grove, Lafayette and Little River.

And speaking of alligators.....

Dive safe,

Cheryl

from the Chairman

Joe Citelli

The vernal equinox has arrived and cave divers are enjoying the longer days and good weather that comes with spring. As always, we ask all of you to exercise due care and caution when engaging in any form of underwater activity. We also ask that you report any potentially reckless activity you might observe. To take a quote from our government, if you see something, say something.

You may wonder why I continually harp on this aspect of cave diving. Currently there are two reasons: one is the recent damage to a whalebone in Ginnie Springs; the other is the School sink lawsuit.

Whether the whalebone was deliberately vandalized or it fell victim to a cave diver with poor skills we will never know, but, once again Michael Angelo Gagliardi came to the rescue using his talents and skills to restore the damaged artifact. The NSS-CDS wishes to thank Michael Angelo for his selfless dedication to the cave diving community. We also ask that divers be observant of what and who is around them. Often times the mere presence of an observant diver will be enough to cause errant divers to modify their actions.

On an equally unpleasant note, the School Sink lawsuit continues. The legal fees are slowly but surely draining the funds your organization should be using for other, more positive purposes. The irresponsible and reckless acts of a non-cave trained diver resulting in his own death and that of another is slowly becoming the undoing of an organization whose origins date back to 1973. With this in mind, I again ask you to be observant. If you see something, say something. Unfortunately, too many of us have been conditioned to be politically correct and passive and take the tack that it is "none of our business."

Well, I contend that it is your business. Now, I am **NOT** suggesting anyone behave in a vigilante type manner but rather, if you observe something that is obviously not right, report it to the proper authorities. Ultimately, no matter how you view things, it **IS** our business to report what is often times criminal activity.

Alachua Sink is once again in jeopardy. There is talk of developing surrounding property which will negatively impact the aquifer if not done in an environmentally sound manner. An Alachua Town Hall meeting was held to discuss proposed zoning changes and attended by NSS-CDS board member Jim Wyatt and NSS-CDS members Brett Hemphill and Bob Schulte. Thank you to Jim, Brett and Bob. Hopefully we will be able to work with the developers to arrive at an environmentally sound solution that works for everyone.

Your Vice Chairman, Sylvester "TJ" Muller recently attended an NSS Board of Governors meeting in San Antonio, Texas. The purpose was to enhance the working relationship between the NSS and the NSS-CDS. The NSS is a huge organization with a large number of resources that we should be taking advantage of and, the CDS, with its' large membership, is a big contributor to them. We should be taking full advantage of what they have to offer. Thank you TJ.

The annual workshop is around the corner and once again, Jared Hires is doing a great job for the CDS. We have a great line up of speakers and exhibitors as well as some great door prizes. Save the dates of May 15 – 17 and help us make this the best and most successful workshop ever.

Respectfully submitted,

Joe Citelli, Chairman NSS-CDS



There Is History In Manatee Springs

By: Gene Page and Richard Black

Photography: Gene Page and Kim Bauldree

Florida is blessed with many wonderful natural sites that we can enjoy and some great historical ones too. (Remember that St. Augustine is the oldest continuous city in the United States and predates Jamestown and Plymouth by five to six decades.) Many of the springs that we're lucky to dive in also naturally have a historical tie-in. Water is as important today as it was centuries ago.

Manatee Springs State Park, located just outside of Chiefland, Florida, is one of these special places. Not only is it a first magnitude spring pumping an average of 117 million gallons of water daily, but it has some pretty cool history connected with it. This includes early Florida Indians and Spanish explorers, the first US female cave diving traverse (Grace Zinn 1961) and even Sheck Exley finding an old Spanish olive jar at Friedman's Sink along with countless explorations that have gone on here for over six decades now. Visiting the area in 1794, William Bartram visited the spring and named it Manatee Springs. His descendants, including Evelyn Bartram Dudas, are still exploring our waterways. Manatee Springs was purchased by the State, making it the first spring to become a Florida State Park.

My first visit to Manatee was with my family on my grandparent's houseboat in the summer of 1970. Back then you could bring a boat in the spring run.



Above: The spring run 1970 and now.

Left: Richard Black, Gene Page and Sean Denney in Sue Sink

Who knew that decades later I would be coming back here to do my open water check out dives and returning time and again to enjoy cave diving. I even bring my family here on a rented houseboat to help continue the tradition.

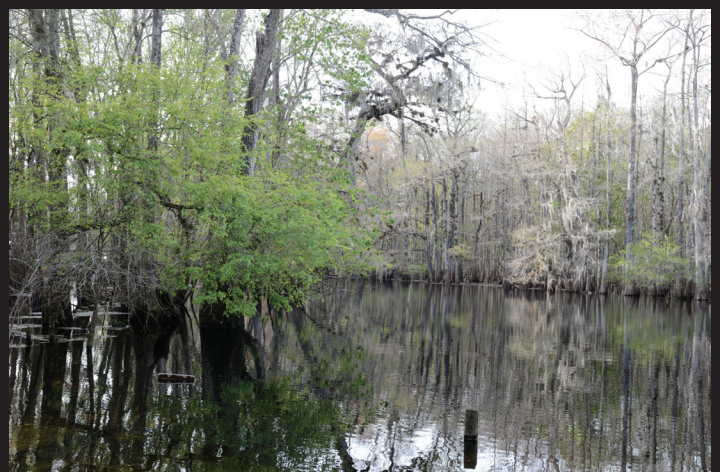
Who can forget their first time down the chimney at Friedman's? I still get excited and look forward to it before my dives. Sheck and his diving partners located Friedman's Sink in the early 1970's and found an old olive jar that was dated to the 16th century. Did DeSoto's men drop it here while trying to get some water as they were beyond thirsty from their hike up the coast from Bradenton and Tampa Bay?

I can't enter Friedman's without thinking about this and I always spend an extra minute or two combing the area with my eyes.

While Manatee is a main destination for open water divers getting certified by area shops far and wide, it's not the major cave diving locale that Ginnie or Peacock is. There are various reasons for this including Manatee Springs



Richard and Gene topside at Friedman's Sink





Richard Black and Kate Blushiy at the head spring, least popular of the entrances due to the flow.

typically high flow and lower visibility due to particulate in the water. But for me Manatee has always been a place I've enjoyed with family and friends. To this day my aunt talks about almost stepping on a water moccasin while getting ready to jump off the diving board that used to be at the head spring in the 1950's and 60's. And the view from the back of Catfish Hotel looking out into the basin is absolutely one of my all-time favorites and has been my laptop and desktop photo now for a decade.

Here in Florida our rainy times are a two edged sword.

The rainfall needed to recharge the aquifer often means that many of our favorite springs are closed to diving due to high river water levels and flow reversal. Often the geography and high flow at Manatee Springs allows cave diving when other area springs are closed. When the rains are breathing new life into our beautiful springs, Manatee is usually a popular destination for cave divers. There is over 26,000 feet of mapped cave



Above: Richard and Sean prepare to drop down the chimney at Friedman's Sink.



Right: Sean and Richard descending down from Sue Sink.





Sean Denney getting ready for the fun ride out of the head spring

accessed via the main spring, Friedman's Sink or Catfish Hotel. A third sink, Sue Sink, is not open for entrance or exit of the system, but you can pop up in it and look around.



Sheck Exley memorial bench near the concession stand. Sadly, few divers know this is here

The Spring is named for the manatees that huddle in the spring run from November to April, escaping the colder Gulf and river water temperatures for the warmth of the constant 72 degree spring waters.

The nearby town of Chiefland offers restaurants, hotels, and shopping just minutes away. The picturesque park has much to offer with camping, picnic areas, and nature trails. Consider visiting Manatee Springs sometime and take the time to really enjoy it. The food concession stand is now open again and with some great smelling specialties, the beautiful boardwalk down to the Suwannee River is also not to be missed and there are deer that sometimes seem to walk right up to you.

Whether camping for the weekend, spending the day or even stopping by on a boat, this is Florida as it was and still is and I wouldn't trade it for anything!



Above: Flood levels in spring marked by year

Below: Kate walking down steps into Catfish Hotel with Sean, Richard and Gene waiting in the water.



Left to right: Richard and Sean check out an old bottle at the bottom of Sue Sink. Catfish cavern. Requisite picture of catfish in Catfish Hotel.

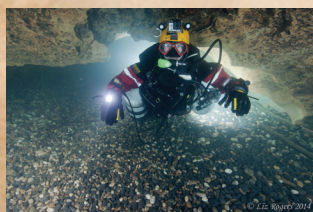
Dear Diary.....

Euro "trek" and "tek" 2014

By: Forrest Wilson

Saturday 13 Sept.

I had been getting up earlier for 2 weeks to get onto "French time" and arrived in Paris at 11AM. Taking a flight from there to Toulouse, I met up with my dive companions.



Photographer: Liz Rogers

Sunday 14 Sept.

This morning we headed for Landenouze, but the parking area was full, so went to le Cunhac (Ressel 2). We swam across the river to the cave and Liz Rogers took pictures as we headed in and swam

along the upper passage. I headed down to the lower level and turned where the line starts back up, stopping for deco at the beginning of the upper level. The dive was 137' for 55 minutes, penetration 310 meters.



across the run, finding the ruins of a house and an out building with what looked like a large oven built into the structure and further along the ruins of what may have been a fortified religious structure.

We stopped at a small "dry" cave which was shaped like a railway tunnel. There was a gate right before the cave was about to become a crawl-way. We then headed for some ruins we spied



Photographer: Liz Rogers

Monday 15 Sept.

We headed to Landeroze and again the parking area was full. After waiting an hour we headed to Ressel, whose parking lot was full there as well, so we headed to St Georges. There was space there and we made a

dive. The entrance area went down to nearly 90', but the cave came back up to around 60' for a ways. We passed under a large air dome and surfaced for a few minutes and then a short way beyond the air dome Ken called the dive. The dive to the air dome was 93' for 25 minutes, and 90' for 41 minutes to go upstream, then exit. I must have stayed shallower on the way out.



Photographer: Liz Rogers

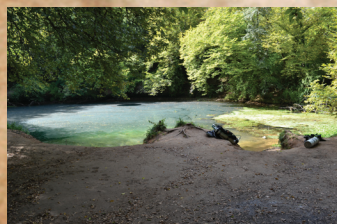
Wednesday 17 Sept.

The camp owner took our gear to Poumayssen where a farmer tracted it to the water. We managed to stir up the headpool a lot, so the trip to the "T" in the cave was pretty much Braille. Once on

the upstream line, we swam along posing for photos. About 400 meters from the "T" Georg found an air space in the ceiling and went up to check it out. I was nearing NDL and getting cold, so I signaled that I was exiting. I later learned that this was an undiscovered lead and Georg laid line in it and found a dry lead. Depth 74', time 62 min.



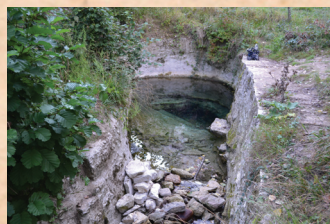
Photographer: Ken Smith



Tuesday 16 Sept.

We got our tanks and headed to St Sauveur. It has a large head pool, and the entrance is on the opposite side from the entry area. You just follow the bottom contour until you see the upline. It

has a low place near the entrance, and continues steadily deeper as you go in. I turned when it got too deep for me on air. Depth was 167', time 36 minutes.



Thursday 18 Sept.

Today we went to Marchepied, which has a sidemount restriction running for about 45'. It gets bigger after the restriction, 6-10' wide, and 10-15' high,

but the cave is mostly shallow, in the 30' range with a few areas of around 50' deep where the passage is smaller. Depth 51' for 41 minutes.

After the dive, we went for a walk along the spring run.



Friday, 19 Sept.

Today we took the train to London. Most of British immigration is cleared in France before boarding the train which is very fast. Ken's GPS showed our speed at

around 290 KPH, faster than my plane flew.



Photographer: Ken Smith

Walls we went to a short "dry" cave before heading back to England. Depth 55' for 14 minutes.



Saturday 20 Sept.

Today was Eurotek and I attended talks about diving in Norway, Spain, New Zealand and Sweden.

Sunday 21 Sept

Last day of Eurotek and

I attended Liz's talk on the push in the Elk River Cave, Chris Jewel's talk about preparation for extreme dives and Martin Robson's interesting and interactive talk about survival.



Photographer: Ken Smith

Thursday 25 Sept.

Today we headed to Vobster Quay (quarry/dive shop) to get air fills and from there we went to Wookey Hole.

We hauled our tanks in tackle bags to the water in Chamber 3 and kitted up. Taking the

green line to Chamber 19-1, and the "Extension" line to Chamber 19, from there, we took the "deep line" to Chamber 20, dropping an arrow at the "T" where the deep and shallow routed merge. We then followed the line to Chamber 22 where we turned the dive. Depth 66' for 60 minutes.



Photographer: Ken Smith



Photographer: Ken Smith

Monday 22 Sept.

We slept at the Wessex Club last night and this morning Clio and Michael Thomson were there and we all went caving in Swildon's. I actually went through Sump 1 this time as there was just enough air space.

Friday 26 Sept.



Photographer: Ken Smith

Ken was leaving and I was going to stay another day so he gave me a lift to the public footpath on the road to Hunter's Pub. The plan was to go to "Nine Barrows" which you can see from Wessex Cave Club.



Tuesday 23 Sept.

This morning we headed to Wales and visited a national park that seems a popular caving area. There were several groups of school children all dressed in little caving suits and wellies.

We went to the "tradesman" entrance to Porth yr Ogof and had a nice dive to the second air bell. I didn't actually see where the water went after that, but Duncan tells me it continues on quite a ways. Depth 20' for 24 minutes.



I followed the footpath marked "Priddy Pool", and passed a small pool. I intersected a larger path that seemed to go in the right direction and found a smaller path that led up the ridge, meeting another path that went to the barrows. It was called "Mendip Pub Trail." There was a crossing at the barrows, so I went over a stone wall and walked up onto the highest barrow. I could see WCC from there, but couldn't make out any path back to it. I decided against crossing a pasture and headed back the way I came.



Wednesday 24 Sept.

After a proper English breakfast we went to Pwll y Cwm. We were unable to get through the restriction with the tanks we had, so after a lunch at White



Saturday 27 September

Duncan picked me up and we went to Bath to catch the train to London. We went to the Pump House next to the Roman Baths where I had a glass of "bowel water." Then we did some sightseeing and went to the William Herschel Museum before I headed back home..

Skills, Tips & Techniques

By Georges Gawinowski

Cave Diver Fitness Preparation

When we return from a cave course or a cave diving trip we may feel tired, exhausted. Cave diving can become a mentally and physically strenuous activity. Being in shape will help cave divers to be more relaxed and probably increase safety. Active cave instructors and cave divers have most likely developed their own physical routines.

In this column you will become familiar with the basics of the physiological source of energy in your body. These tips will help you understand what type of conditioning activity you could begin with, including aerobic training, anaerobic alactic training and anaerobic lactic training.

How do they do it?

I have always been amazed to see active cave instructors and divers and living in cave country being able to teach course after course or do dive after dive. Do they have a special physical routine? Let's say that some do and others probably not. First, they all swim a lot and carry tanks. They also know the cave systems pretty well, which likely helps them to save energy.

Aerobic Training

Aerobic exercise is often intense, uses large muscle groups, tends to be rhythmic in nature and can be maintained for quite a long time (think endurance sports or training). When exercise goes beyond ten minutes, the body relies on aerobic metabolism to fuel activity. The longer physical exertion continues the more the body uses fatty acids as an energy source. Excess glucose can be stored in lipid or fatty tissue; triglycerides yield more than twice the amount of energy for the same amount of mass as do carbohydrates or proteins.

Beyond 40 minutes of effort, the supplies of energy necessary to feed the muscles in action draw from fatty acids. Fatty acid metabolism consists of catabolic processes which break molecules into smaller units, allowing the release of energy and metabolites. This process creates

biologically important molecules from fatty acids and other dietary carbon sources. Anabolism, which constructs molecules from smaller units, is powered by catabolism (metabolic pathways that break down molecules into smaller units to release energy).

To fuel the aerobic phase, the diver must inspire an adequate amount of oxygen. The body's maximum capacity to transport and utilize oxygen during exercise is called the VO_2 max, which, when controlled for variables such as size and gender, reflects a person's level of physical fitness. The term VO_2 max is derived from "V (volume) per time" plus "maximum (max) intake of O_2 (oxygen)."

Marathon running is an aerobic sport.

The aerobic system is:

- Any activity that uses large muscle groups
- Can be maintained continuously
- Is rhythmic in nature
- May be intense
- Involves endurance
- Uses oxygen

Anaerobic Alactic Training

Anaerobic alactic metabolism, from which energy is produced in the first ten seconds of activity, is known alternatively as the ATP-Phosphate (PC) or creatin-phosphate pathway. Phosphates are derived from phosphoric acid and are inorganic chemicals. Creatin is a nitrogen-based organic chemical that occurs naturally in vertebrates and helps supply energy to muscles and nerve cells.

As one can decipher from the term "anaerobic alactic," this system does not use oxygen to create energy and does not produce a substance called lactic acid, also known as milk acid. Lactic acid plays a role in several biochemical processes, including normal metabolism and

exercise. The concentration of lactic acid in tissue does not increase until lactate production exceeds the rate of lactate removal.

The creatin phosphate shuttle or ATP-PC system is unrivaled in the human body for its ability to produce energy almost instantaneously. The system works by breaking down creatin phosphate, which in turn re-synthesizes a percentage of adenosine diphosphate (ADP) to form additional ATP molecules. ADP, which is stored in blood platelets, is a de-phosphatized version of ATP. The ATP-PC system is what creates the energy necessary for very short, powerful movements like a golf swing or a 100 meter sprint.

The anaerobic alactic system is:

- Intense effort
- Fast and short accelerations; 1-9 seconds on average
- Oxygen is not involved in energy production

Anaerobic Lactic Training

During power exercises that last more than nine seconds, the body's demand for energy is extremely high. In these situations lactic acid or lactate is produced faster than the tissues can remove it which forces the lactic acid con-

centration to rise. The lactic acid threshold (LT) is the exercise intensity in which lactic acid starts amassing in the blood stream. This point is also called the anabolic threshold (AT) or the onset of blood lactate accumulation (OBLA). The lactate threshold is a useful measure for deciding what degree of exercise intensity a person can handle when training or performing an endurance sport. Moreover, muscle-building and other exercise training boosts this threshold.

The anaerobic lactic system is:

- Endurance activities
- Uses oxygen
- Crosses the anabolic threshold
- Increases with physical training and effort

We can work out with a personal trainer to get a physical routine started. The idea is to train in a way that will improve the three physiological systems described above.

Let's start to walk, run, swim or bicycle in order to get ready for our future cave diving trips.

*aerobic training, anaerobic alactic training
and anaerobic lactic training*



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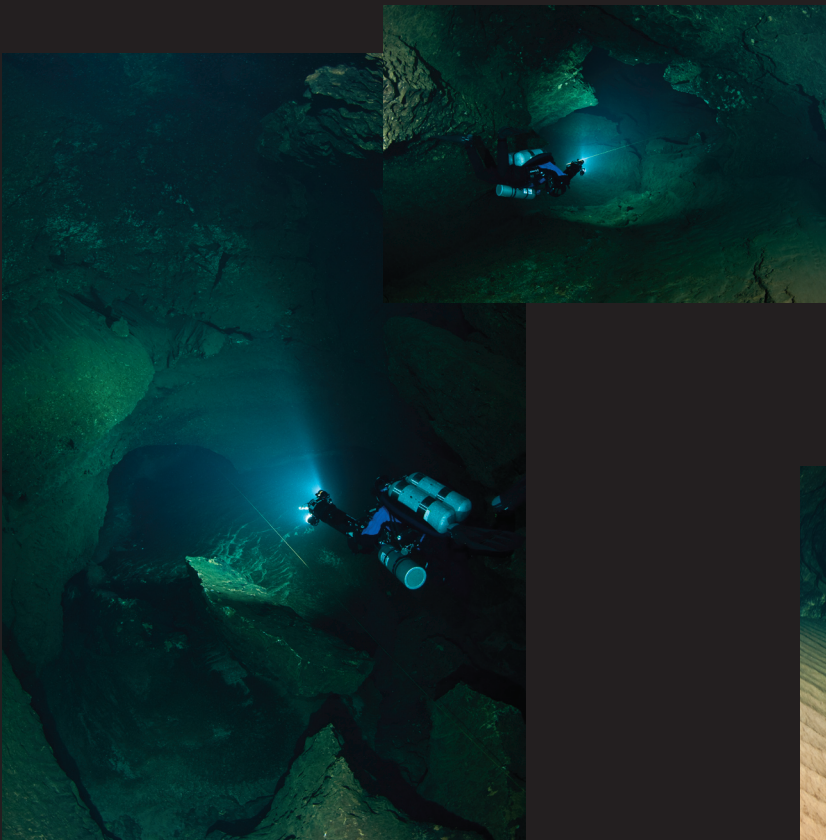


When water levels are high the steps and platform (which are normally dry) will create a convenient spot to start and end your dive

When most other caves in north-central Florida are flooded and unattractive, Manatee Springs gets unusually clear and you can capture scenes like these when you dive here.

Located in Chiefland, Florida, Manatee Springs is a first magnitude spring that flows into the Suwannee River.

Arrive early and bring your cave diver certification card and a buddy. There is no solo diving in Manatee and cave diving is limited to 24 cave divers per day.



Manatee can easily feel like a roller-coaster when using a DPV. Here the tunnel ascends to around 30' only to drop right back down to 90' not far beyond this sandy slope
Inset: Diver navigating one of the many ups and downs not far from Friedman's Sink

Photographer: Andreas Hagberg



In the early part of the cave you will find lots of sand, and the high flow sweeps the landscape



Just past the first spring tunnel you find this Falmouth Scientific flow meter



Above: Typical Manatee conduit



Right: Although varying in size, the Manatee main tunnel is mostly very dark and wonderfully gothic-looking. The cave has many tall rooms as well as lower "restrictions"



Conservation Corner

By: Kelly Jessop

Cave Conservation and Number of Tanks Appropriate to the Dive

I want to thank Lamar Hires for allowing a reprint of the article below because of its' relevance to cave conservation.

March 2, 1997

Technical Training and Caves

by Lamar Hires

As my team walks to the water we review our dive plan one more time. We are setting up the crossover circuit at Peacock.

We enter the water, complete our safety checks and start in. As we approach the log for our primary tie-off I spot three deco bottles with 80/20 Nitrox piled up at the log with a line emerging from the heap of cylinders. I wonder, what is going on today. We lay our line in and tie-off to the permanent line just inside the tube(the shallow side of Peacock). After swimming about 200' something catches our primary lights. More cylinders, stage bottles labeled 36% Nitrox. We go around the bottles being careful not to disturb the line of bottles hanging from main line. I wanted to exit and warn the instructor in the parking lot. He was in the first days of a cave course and planning the emergency drills with his students. Many instructors use this section of passage for the zero visibility drills since it is all rock and difficult to silt out.

As we went over and down the breakdown pile, one of the prettiest sections of Peacock to me, I start thinking about all those bottles. Has the team with all that gas in the water found something new at Peacock? I start going over the map in my mind, the only area that drops below 70' in this part of the cave is the crypt, but this the long way there especially if a lot of deco is planned from the gas in

the water. We went on with our dive and set reels at both ends of the crossover and looked at Olsen. Exiting along the same route leaving the reels in place for the next dive, then up the breakdown pile into the tube, we find the three bottles gone. As we enter the cavern zone we see the other team picking up their deco bottles and moving into the basin. Lots of equipment for a 50 minute dive and no decompression at that.

On the surface my team asks "Where did they go, must be deep because they went in just before us and are back at deco", before I could answer the team surfaced. Puzzled my team left the water and headed back to our vehicles with only our doubles to worry about.

Cave diving is technical diving but, technical diving is not how many cylinders can a diver carry on a dive. Technical diving is analyzing the dive and planning the right combination for the mission. I have been cave diving for more than 16 years, longer than most technical instructors. When students are brought to the cave environment for cave training or a continuation of technical training, one of the most valuable skills an instructor can teach is the right tools for the job. Don't carry stage bottles into Peacock just to complete a training requirement. This is not fair to students or the cave. Peacock, like other maze caves can be enjoyed and explored to almost all it's extend on back mounted doubles. Staging at sites like this sends out the wrong signal to new cave divers. Stage diving is a tool for cave divers. Stage bottles should be used at sites where long distance linear penetrations can be done . Now the technical diver is using staging properly. Yes, I have heard the arguments that Peacock is a good site to gain experience, but so are the sites that stage diving is a needed tool for exploration.

Decompression at multi level shallow sites like Peacock is almost impossible to encounter if the proper tools are used, such as dive computers and proper Nitrox mixtures. So why all the deco gas? Isn't this what the training is all about, the right tools for the mission?

I will get off my soap box now, but I needed to get this off my chest. Training should teach students the proper techniques for the mission, not a glazed look at all missions, following the same procedure at every site on every dive. Plan the dive based on the cave. So next time you cave dive at Peacock or other shallow maze caves, how many cylinders do you need?

When Lamar wrote this 18 years ago the information is still very timely. The more tanks we carry into the cave, be it deco tanks left on the line in the cavern, to stage tanks, it adds some measure of impact to the cave. There is a training philosophy that calls for having a stage tank carried on all dives as a safety but, if we do proper gas planning, is it really needed when compared to the potential impact it can cause? When planning a dive and determining where to go, appropriate gas needed and please add assessment of cave impact relative to the number of tanks taken on the dive.

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OFF to the Side.....

By Rob Neto

How Low Can You Go?

No, this isn't a question concerning passage size. Although that could be an interesting topic in itself. Rather, this is about tank band placement on sidemount cylinders. There's some variety in where tank bands are placed on the cylinders as well as the reasoning for why they're placed where they are. Many bands are placed lower on the cylinders, toward the bottom. The most common reason I've heard for this is to position the cylinders farther forward on the body, toward the head. On the surface, this appears to be sound reasoning. However, it's not as sound as it appears.

With sidemounted cylinders, the center of gravity of the body is shifted toward the feet. This is why divers in sidemount tend to be foot heavy. Naturally, we want to shift the cylinders forward so we can counteract that and shift the center of gravity back toward the head. The standard response, and what some teach, is to position the tank bands lower on the cylinders to get them farther forward.



While this works to a degree, there is only so far the tank bands can go before moving them farther down is ineffective.

The cylinders can only move so far forward on the body before the valves will be shifted from just inside the armpits to in front of the shoulders. This is not where we want the valves. So whether the tank bands are in the center of the cylinder or at the very bottom of the cylinder won't matter once the valves are as far forward as they can go.

So what's the big deal? Why not position them on the bottom?

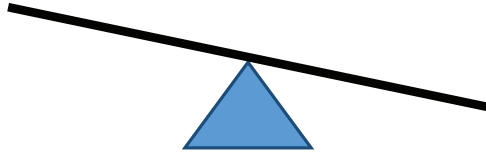
Or maybe a better question is why position them so low. In order to position them that low on the cylinder and keep them horizontally even with the body, the leash will have to be fairly long.



Having a long leash can cause some instability in the cylinder. This is subtle but it does exist. An alternative option is to position the bands so the clip is even with the point on the harness where it is going to attach, either a butt plate or D-rings on waist webbing. By positioning the bands at this level the leash can be shorter and have less area of movement of the cylinders. A leash may not even be needed in some cases (this all depends on how wide or narrow your hips are).

This alternative option may not always work. If positioning the bands so they line up with the butt plate rails or waist D-rings places them farther forward than the center of gravity of the cylinder, then going lower is more appropriate. Think of a teeter-totter or see-saw. If you place a board on the fulcrum so one side is longer than the other, that side will remain on the ground. The same principle

applies with the bands being the fulcrums.



With longer cylinders such as LP108s or LP120s, bands will need to be a little lower on the cylinder. Otherwise, the bottom of the cylinder will hang lower. The band does not have to be at the center or lower half of the cylinder. Having a valve and first stage on one end makes that end slightly heavier, so the center of gravity is farther toward the valve than the bottom. The band does need to be placed so the valve end is slightly heavier and can be held up by the bungee.

So take a look at your sidemount cylinders and where the bands are positioned. Put your rig on and place the cylinder next to you so the valve is positioned in your armpit and then move the band so it is in line with the rail or D-ring. Make sure to adjust the length of the leash as well.



The next step is to test them in the water. You should find that you are no more foot heavy than with the bands lower along the cylinders.

Whatever method you choose doesn't really matter. Use the positioning that works best for you. Just don't go lower just because you think it will help your trim. That's just not the case.

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BEYOND THE PANHANDLE

Article and Photography: Jennifer Idol

Building A Team On A Strong Foundation With Purpose

Cave diving is exhilarating. The curiosity of wondering what's around the next bend propels us onward, and as cave divers we accept certain risks and balance those with the reward of the experience. We also dive with other divers with whom we build trust. Over time, the number of regular dive buddies grows and that is how it began for the Ozark Cave Diving Alliance (OCDA).

A group of friends learned how to cave dive in the Missouri Ozarks started wondering about other local dive sites. Some of these people knew about other springs in the area and they began to research and learn about these diveable springs. They realized they were missing out on a lot of them because often a government entity managed the spring and limited access to it.





In order to be able to dive these springs, you had to produce data for scientific purposes. Out of the desire to dive these springs, the OCDA was born.

They decided to approach the government-controlled sites and get special permission for scientific research. Past efforts by others sometimes misrepresented the scientific research they could produce for owners, so earning the trust of land managers proved a challenge that the OCDA would need to overcome.

Fortunately, the divers who chartered the OCDA had a history of diving together and used established diving practices developed by the Woodville Karst Plains Project (WKPP) which maximized their efficiency and safety. This is important to Ozark cave diving because there is a small window to accomplish any task and when the conditions are right, you need enough divers to complete the task. At the outset, the OCDA was set up to deliver on promises, and in time, they would demonstrate their skill.



*Previous page: Ben Perkins heads out for a dive at one of the OCDA's permit access sites, charting the course for survey work.
 Top of page: David Moore, Bill Crowley, and Chris Hill disassemble DPVs at the end of a long day of diving. Often, we'll immerse late into the night due to long expedition dives.
 Above: Shannon Wallace prepares to exit a dive with his teammates at an unusual dive location.*



Clockwise from top of page: 1)Dirk Bennett is full of energy as he immerses for an expedition dive, 2)Ben assembles his semiclosed rebreather as part of training the team for supporting him during expedition dives. 3)Chris Hill looks back as we exit a site near Roubidoux Springs. 4)After diving in Roubidoux Spring, Steve Gridley decompresses in the habitat, Next page: Ben Perkins exits the spring after checking on decompression cylinders.



They also love science! The science and data they collect will remain and be useful long after they're gone. Every kind of science has to be repeatable, or it's bad science. To be able to repeat what you do, you must know where you got that sample from and be able to return to the same spot to retrieve another sample. If you send the same person, you might be able to relocate a sample location, but if you have a map, any team member can recreate where the sample was collected. This is why the survey and exploration conducted by the OCDA has purpose beyond our individual interests

Times have changed since the OCDA met in harsh conditions, camping in tents and hauling compressors to mix all their gas on-site. They have a history from which they have learned how to continually evaluate their procedures and improve upon their safety and efficiency.

Aside from being a group of talented, trustworthy divers with integrity, one aspect of the team that remains consistent is passion for their work. Charter member Steve Gridley speaks fervently on conservation and giving back to the community.

"We're all about science and we're all about doing things to inform the public about the resources they have and help

them understand that what they do affects the spring."
—Steve Gridley, OCDA Director

Gridley also translates the science in a way that resonates with owners. He compares underground cave systems to rivers, twisting and winding. Dye tracing was conducted in the 1960's and 1970's in area springs to help owners understand where their springs go. Unfortunately, a dye trace only reveals a straight line path for entry and exit points of the spring and if you're trying to manage the land above the cave system a more helpful approach is to use an accurate map created by underwater surveys. This is yet another reason why mapping is an integral part of the OCDA.

In the beginning, the OCDA bonded over a desire to see the springs. They later found that they really enjoy the scientific tasks and appreciate that the science and data will be their most valuable contributions.

Follow them as they inspire us with this year's trailblazing and as they continue their dedicated craft.

Jennifer Idol, The Underwater Designer, is an underwater photographer and graphic designer.

Spring Into Springs Day

Manatee Springs State Park



The NSS-CDS participated in Manatee State State Park's first annual **Spring Into Springs Day**.

A host of organizations set up booths presenting information on subjects ranging from water monitoring to natural gardening.

The NSS-CDS set up a booth presenting information on water and cave conservation and how cave divers contribute.

Copies of our information and conservation pamphlets were available, as were past issues of the UWS.

The CDS community education presentation, ***Cave Divers, Conservation and You*** was shown on a continuous loop and participants stopped throughout the day to view all or parts of the showing, often asking questions.



Park visitors then had the opportunity to see first hand the equipment used in cave diving and exploration, as well as view a map of the Manatee Springs cave system and gain a perspective of the caves and park.

The NSS-CDS thanks our volunteers for their time and efforts. Roy and Marie Reynaud for providing and manning the equipment and map portion of the display and Tim Waldo, Forrest Wilson and Cheryl Doran for manning the table and education presentation.

And Bubba, the NSS-CDS ambassador of sticks and petting, was also available throughout the day



We are looking forward to another exciting workshop in Lake City, FL this May. The workshop will take place over the weekend of May 15-17 at the Robert B. Harkness Armory.

Friday night will be the social taking place at the conference venue. Along with hamburgers, hot dogs and all the fixings; there will be craft beer too. This is great time to socialize with fellow cave divers and kick off the workshop weekend.

For the Saturday conference, the heavy hitting lineup of speakers continues to grow including:

- Dr. Peter Buzzacott (DAN Researcher) - Highlighting research published by DAN from the analysis of over 300 cave fatalities. He will also describe some new planned research and how divers can help.
- Brett Hemphill and Matt Vinzant - Ongoing exploration of Twin Dees and Weeki Wachee. Covering the team exploration and conservation efforts of the Karst Underwater Research (KUR) group.
- Chip Peterson and Robbie Schmittner - Discussing their exploration in Belize of Giant Cave, Winter Wonderland, Boca Ciega, and more. Armed with Closed Circuit Rebreathers and other tools that were not available to Paul Heinerth and other early explorers, Robbie and Chip have pushed beyond the early exploration and continue to push further into this sparsely explored cave system.
- Bob Schulte - Status of ongoing survey projects in North Florida, effective teamwork-based methodologies to obtain survey data, and the use of computer programs for data assembly and map presentation.
- Edd Sorenson - Ongoing exploration projects in the Marianna, FL area, including a big push in Jackson Blue.
- Cristina Zenato - After five years of exploration between an inland cave and an ocean blue hole in the Bahamas, on December 31st 2012, a connection was made. This is the story about the attempts; difficulties, failures and successes during Cristina's solitary quest for a connection she was told didn't exist

On Sunday guided dives will be available at area caves, along with a "Rebreather Try and Fly" event at Ginnie Springs. At the rebreather event divers will get the chance to learn more about some of the latest rebreathers on the market, as well as get to take one for a dive!! More info about Sunday events are coming soon and can be found on the registration website

Current NSS-CDS Instructor Listing

Jim Wyatt, Training Director, trainingdirector@nsscds.org

Jon Bernot 378 Basic
High Springs, Florida, USA
jbernot@me.com

Emanuela Bertoni Cave
Quinta Roo, MX
pachacavediving.com
elabertoni@gmail.com

Brent Booth 241 Cave
High Springs, Florida, USA
Stage, Sidemount, DPV, Overhead Nitrox,
Sponsor
bc241@aol.com

Peter Butt 186 Cave
High Springs, Florida, USA
Stage
kes@atlantic.net

Juan Carlos Carrillo 342
Mexico DF, Mexico
Cave, Sidemount
undergrounddiving@gmail.com

Andrey Chivilev 377 Cave
Tyumen, Russia
Chivilev65@mail.ru

Mel Clark 373 Cave
Mill Creek, Washington USA
CCR Cave, DPV
scubagrunt@gmail.com

Bill Dunn 170 Cave
Conyers Georgia, USA
Stage, Sidemount, DPV, Training
Committee
bill.dunn7@gmail.com

Van Fleming 296 Cave
Kernersville NC, USA
DPV
scubiedo@aol.com

Steve Forman 106 Cave
Winter Haven, Florida, USA
Stage, DPV, Training Committee
Scubaetc@AOL.com

Mark Fowler 379 Cave
Wicomico, Virginia, USA
CCR Cave
Dolfinmsdt1@aol.com
www.markfowlerscuba.com

Georges Gawinowski 369
Live Oak, Florida, USA
CCR Cave, Stage, Sponsor
Info@wtdtdive.com
www.cavedivertraining.com

Carl Griffing 372 Cave
Houston, Texas, USA
www.caveandtechdiving.com
carl@caveandtechdiving.com

Harry Gust 337 Cave
Tek-Center MX
info@cave-diving-mexico.com
www.cave-diving-mexico.com

Jill Heinerth 340 Cave
High Springs, Florida, USA
CCR Cave, Survey, Stage, Sidemount,
DPV
www.IntoThePlanet.com

Paul Heinerth 165 Cave
Hudson, Florida, USA
CCR Cave, Stage, Sidemount, DPV,
Sponsor, Training Committee
www.scubawest.net

Ken Hill 326 Cave
Lakeland, Florida, USA
kenhill@tampabay.rr.com

Lamar Hires 191 Cave
Lake City, Florida, USA
CCR Cave, Sidemount, Stage, Sponsor
Lamar@diverite.com
www.diverite.com

Falk Hoffman 313 Cave
Henstedt-Ulzburg, Germany
Deep Cave
info@specialdiver.de

Tom Illiffe 156 Cave
Galveston, Texas, USA
Sidemount
www.cavebiology.com

TJ Johnson 368 Cave
Orlando, Florida, USA
Survey, Stage, DPV, Deep Cave,
Sidemount, Sponsor
www.dayo.com
TJ@dayo.com

John Jones 321 Cave
Lake City Florida, USA
Stage, DPV, Survey, Deep Cave, CCR
Cave, Sponsor, Sidemount, Training
Committee
www.jpjscuba.com

Brian Kakuk 366 Cave
Abaco Bahamas
Stage, Survey, Sidemount
www.bahamasunderground.com
bahamacave@aol.com

Elena Kryzhanovskaya 382 Cave
St. Petersburg, Russia
elena.spb@gmail.com

Adam Korytko 364 Cave
Tulum, Quintana Roo, MX
www.caveheaven.com
adam@caveheaven.com

Maxim Kuznetsov 352 Cave
Gainesville, Florida, USA
DPV, Stage, Sidemount, Sponsor
www.vodolaz.com
max@vodolaz.com

Jeff Loflin 360 Cave
Bonifay, Florida, USA
Sidemount, Stage, DPV, Overhead Nitrox,
Deep Cave, Sponsor, Training Committee
www.JeffLoflin.com

Mal Maloney 374 Cave
Bermuda Dunes, CAL, USA
Sidemount
Mal@divetri.com

Bill McDermott 266 Cave
Nags Head, NC, USA
Stage, Sidemount, DPV, Survey,
Cartography, Sponsor
www.obxdive.com

Jim McMichael 376 Basic
Brooksville, Florida, USA
jmcmichael67@gmail.com

Steve Mortell 356 Cave
Broomfield, CO, USA
Stage
Steve.Mortell@padi.com

Tom Mount 123 Cave
Lake City, Florida, USA
Stage, DPV, Deep, CCR, Sponsor,
Sidemount, Survey
Tom@iantd.com

Robert Neto 370 Cave
Greenwood, Florida, USA Stage,
Sidemount, DPV, Survey
www.chipoladivers.com
rob@chipoladivers.com

Michael O'Leary 335 Cave
Lake City, Florida, USA
Survey, Stage
www.cavediving.org

Bill Oestreich 253 Cave
Crystal River, Florida, USA
CCR Cave, DPV, Sidemount, Sponsor
www.birdsunderwater.com

Conrad Pfeifer 287 Cave
Mars, PA, USA
conrad2@zoominternet.net

Daniel Patterson 353 Cave
High Springs, Florida, USA Stage,
DPV, Deep Cave,
Sponsor, Training Committee
www.danpattersondiving.com

Luis Augusto Pedro 318
Sao Paulo, Brasil
Cave CCR Cave
info@iantdbrasil.com.br

Mark Pergrem 319 Cave
Dallas, Georgia USA
www.atlantatechnicaldivers.com
mpergrem@comcast.net

Bil Phillips 315 Cave
Tulum, Quintana Roo, MX
Stage, Sidemount, DPV, Survey,
Cartography, Sponsor
www.speleotech.com

Renee Power 383 Basic Cave
Altamonte Springs, FL
renee@divebydesign.com

Olivier Prats 384 Basic Cave
Q-Roo, Mexico
olivieroim@yahoo.com

Martin Robson 350 Cave
Somerset, UK
CCR Cave, Stage, DPV, Survey, Deep
Cave, Overhead Nitrox, Sponsor,
Sidemount
www.eau2.com
martin@eau2.com

Reggie Ross 286 Cave
Gainesville, Florida, USA
Stage, Sidemount, DPV, Sponsor, Training
Committee
reggie@reggieross.com
www.ReggieRoss.com

Evgeny Runkov 371 Cave
Ekaterinburg, Russia
jekadiver@gmail.com

Phillip Short 365 Cave
Bournemouth, UK
CCR Cave
www.philshorttechnical.com

Edd Sorenson 375 Cave
Marianna, Florida, USA
Sidemount, DPV
caveadventurers@hotmail.com
www.caveadventurers.com

Terrance Tysall 264, Cave
Orlando, Florida, USA
Sponsor, DPV, Sidemount, Survey, Stage
ttysall@gmail.com

Jim Wyatt 355 Cave
High Springs, Florida, USA
Deep Cave, Stage, DPV, CCR Cave,
Sponsor, Training Chairman
[Cave Dive Florida.com](http://CaveDiveFlorida.com)
trainingchairman@nsscds.org

German Yanez Mendoza, Cave
Cozumel, Q-Roo Mexico
Cartography, Sidemount, Stage, Overhead
Nitrox
www.germanyanez.com
german@germanyanez.com

Cristina Zenato 325 Cave
Freeport, Grand Bahama
czenato@gmail.com

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5211 Limestone Lane
Marianna, FL 32446
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www.diveoutpost.com



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www.ginnespringsoutdoors.com



Luis Sánchez

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