

Underwater Speleology

The background of the cover is a photograph of an underwater cave. In the foreground, a diver is seen from behind, wearing a black wetsuit, a large white tank, and a black BCD. They are swimming towards a cave opening. In the background, other divers are visible, and the cave walls are covered in green and blue mineral deposits. The lighting is dim, with beams of light from the divers' flashlights illuminating the scene.

Journal of the Cave Diving Section of the National Speleological Society

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Raises More Than a Few
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2014 Workshop

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July/August/September 2014

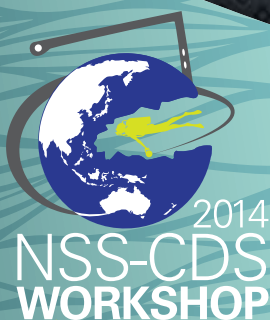
Thank You!

We would like to extend a heartfelt thank you to everyone involved in putting on the incredible 2014 NSS-CDS Conference in Florida in May. A special thanks goes out to, in no particular order: **John Jones, Por Parasu Komeradat, Tom Mount, Paul Heinerth, Carl Griffing, Matt Turner, Richard Walker M.D., Bill Dunn, Joe Dituri, Denis Bourret, Eduardo Macedo, Ricardo Castillo, Jim Wyatt, Cheryl Doran, Pete Murray, Tony Flaris, Li Loriz, Larry Roth, Jared Hires, and Lamar Hires** for the insight and knowledge that they all contributed to the weekend's events.

In addition, we would like to express our great appreciation to our event and door prize sponsors: **The International Association of Nitrox & Technical Divers, Shearwater, Cave Country Dive Shop, Cave Adventures, HOG Equipment, Amigos Dive Center, Dive Rite, Manta Industries, Dive Outpost, NASE Worldwide, North Florida Springs Alliance, Cave Excursions, Chipola Divers, Jill Heinerth, Halcyon, Peter Lapin Photography, Michael Angelo Gagliardi, Dayo Scuba, Crescendo Media LLC, and Scubaboard.**



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**NSS-CDS
BOARD OF DIRECTORS**

CHAIRMAN
Joe Citelli
(954) 646-5446
chairman@nsscds.org

VICE CHAIRMAN
TJ Muller
vicechairman@nsscds.org

TREASURER
Cheryl Doran
treasurer@nsscds.org

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: Indian Springs
Photographer: Michael Barnette

UNDERWATER SPELEOLOGY TEAM

EDITOR ART DIRECTOR

Cheryl Doran
uwseditor@nsscds.org

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 EDITORS
Russell Edge
James Dalgarno

ASSISTANT EDITOR
David Jones

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from the

The May 2014 Workshop was a resounding success thanks to the efforts of our Workshop Chair Jim Wyatt (who is also our Training Director) and Jared Hires, who took over the workshop and ran it for Jim when his mom passed away. I would like to offer our condolences to Jim and his family at this time.

I would also like to extend a hearty thank-you to Jared for a job well done and to all of the member volunteers and sponsors who came together and made this workshop what was probably the most successful workshop ever. I never cease to be amazed at the energy put forth by our members when they are called upon. Thank you to all.

On another note, I learned a bit too late that some committee volunteers were overlooked at the awards session at the end of the workshop. If you were one of them I would like to offer my personal apology. I should have paid closer attention to what was going on and managed things better. As chairman, the buck starts and stops with me, so I accept full responsibility for that oversight. Volunteers are the most valuable asset the NSS-CDS has and I, along with the rest of the board, thank all of you for that.

Elections are over and we have new board members. Sylvester Muller, Joe Tegg and Forrest Wilson were all elected to the BoD. Dave Jones and Tony Flaris stepped down and Cheryl Doran has been reappointed to the board. I would like to thank both Dave and Tony for their service to the CDS. To Joe I say welcome aboard. To Forrest I say welcome home. And to TJ I say glad to see you are still with us. I think this year we will have a well-balanced team of diverse but like-minded individuals.

On a less joyous note, I just learned we were not granted our motion for summary judgment to dismiss the case against us in the School Sink lawsuit. This means we will have to go to trial and the date is set for November 5, 2014. It will be extremely costly, so no matter what the outcome, there is no winning here. If you have the means, and are able, please consider a donation to the School Sink Defense Fund. We

have almost one thousand members and if everyone donated a few dollars it would add up quickly.

While it is contrary to our mission for us to close any dive site, the BoD has unanimously voted to close School Sink for diving until such time as we once again have a workable management plan in place. Because of time constraints, our site manager, Paul Heinerth, is not able to devote the necessary time required to manage the site. The BoD voted to err on the side of caution and close it until we can come up with an acceptable solution.

Looking towards the future, we need to dispel the notion that the CDS is a good old boy's club. Anyone who has heard my NEW YORK accent realizes that can't possibly be true. There is no place for nepotism or cronyism in the NSS-CDS. Your BoD's mission is to do what is best for the NSS-CDS, not what is best for our friends. You, the membership, need to know and feel confident that your BoD is acting in your best interests, not their own. Unfortunately, sometimes perception trumps reality and sometimes perception is reality. When the latter is true we need to be honest enough to see it and fix it.

Also, it seems that, for whatever the reasons may be, there has been a history of friction between the Board of Directors and the Training Committee. This needs to come to an end. We need to be in sync with one another and learn our respective roles and responsibilities.

The NSS-CDS cannot be a leader in education, diving techniques and promoting underwater cave conservation without the training committee. We can't be leaders in something we do not do. A certain symbiosis exists and we must all work to optimize that. Also, the pragmatist in me knows the revenue generated by the instructors helps keep the CDS solvent.

So, going forward, we will be working toward:

- Protecting our assets with conservation easements
- Bringing our fiscal house to the next level and running the CDS more like a business and less like a club
- Solidifying and fostering a strong working relationship between the training arm of the CDS and the BoD.
- Making more professional presentations at the various shows, i.e. DEMA, Beneath The Sea, etc. We have received a generous donation from Tony Flaris and Li Loriz to purchase a professionally-made display booth. Thank you Tony and Li.
- Taking better advantage of social media and computer technologies as a means of advancing our cause.

Of course, none of this will come fast or easy, and I do not pretend to have a magic wand that will make this all happen at once. But these are our goals and they WILL happen because we have a very valuable resource to make them happen, YOU, the membership.

So, once again I reiterate, this is about the collective "us." If you want to get involved please contact a current BoD member. We have many volunteer opportunities available and if you have a special skill or a new idea that you would like to offer, we will welcome you and make a place for you if one does not already exist.

Respectfully submitted,

Joe Citelli

BEYOND THE PANHANDLE

Article and Photography: Jennifer Idol

Rumors, Cave Diving and the Real Story.....

Jacob's Well Natural Area raises more than a few eyebrows



When I moved to Austin, Texas, 16 years ago, I was an open water diver who frequented our local lake weekly, gaining skills and meeting divers. Back then, there were a few things I declared that I'd never do ... technical diving with trimix, cave diving, and diving Jacob's Well. It would seem I was undoubtedly mistaken, having completely broken all three vows.

I was against all three situations because they were all presumed to be deadly. Jacob's Well has a storied history and at that time, access was widely rumored to be permanently denied, complete with a grate at the first restriction at the end of the cavern zone.



Dr. Jean Krecja analyzes and oversees biological collections.



*Above: This over/under view shows the entrance to Jacob's Well and boulders surrounding the cave
Opposite page: The cavern zone is small but contains interesting limestone formations and fossils*

Why This Cave Attracts Attention

Today, access to diving Jacob's Well is limited. Dive teams that have obtained permits through Hays County---Water Explorers of Texas and Jacob's Well Exploration Project--- volunteer time to help with education and cave conservation by providing documentation and scientific research.

There's nothing unusual about obtaining a permit to dive certain locations in the dive community. Since permits commonly are used to protect private property owners from liability and to manage environmentally sensitive sites, why is Jacob's Well such a head turner?



Gravel movement has created a third new restriction in the cavern

It could be the eight deaths that occurred in the cave from divers who were not cave certified and diving single tanks prior to the early 1980s. Or perhaps, because access is limited to few divers and it is in our bones to explore, we are compelled to seek access to what we are denied.

We're not the only ones who pay attention to this unique cave. Locals have been swimming here for years, often jumping from the cliffs into the entrance. Diving outside the scope of volunteer work for Hays County, jumping from rocks, and drinking alcohol on site are all prohibited at Jacob's Well. However, changing perceptions and behavior takes time.

News media repeatedly reinforces many of these misperceptions about the current situation at Jacob's Well, often publishing photos of swimmers jumping from the boulders. For sensationalism, some articles state that Jacob's Well is one of the top 10 most dangerous dives in the world. While an advanced cave, Jacob's Well is undeserving of the negative press.



Above: B-tunnel is siltier than other sections of the cave and connects to the mail tunnel

Inset: Trey Lessard enters the second restriction in Jacob's Well. Shifting gravel changes the shape of the restrictions periodically

Below: The cave continues through a fissure crack at 100' and descends 30'. This is the largest room found in the cave.





Trey Lessard demonstrates the size of the upper tunnel

The Real Story

Jacob's Well Natural Area, the first Hays County owned nature preserve, includes 81.5 acres surrounding the Jacob's Well artesian spring. This ecological resource is the most significant and largest continually flowing karst spring in the Texas Hill Country. Wildlife depend on the spring, which forms the headwaters of Cypress Creek, a few miles north of Wimberley, Texas.

Jacob's Well itself is a small sidemount cave in central Texas that has clear water, a few salamanders, crawfish, amphipods, isopods, and rumored shrimp.

The 12 ft (4 m) entrance descends vertically for about 23 ft (7 m), then continues at an angle. Two restrictions follow through two rooms before the cave continues. A third recent restriction has developed in the cavern. The cave system reaches a maximum depth of 140 ft (43 m) and is approximately 4500 ft (1372 m) long, with over a mile of total explored passages.

Hays County purchased the Jacob's Well Natural

Area in 2010 with voter-approved park bond funds. The Parks Department is working to restore, protect, and preserve the natural area for the public to enjoy.

In 1924, this spring had sufficient flow to cause water to spout up to 6 ft high. However, development in the Jacob's Well area has lowered the level of the Trinity Aquifer, significantly reducing the flow of water through the spring.

For the first time in recorded history, the spring ceased flowing in 2000 and then again in 2008 and 2011. Due to these events and other considerations, measures to address local water conservation and water quality are being developed.

With the continued droughts the Texas Hill Country experiences along with continued development, the Trinity Aquifer and Jacob's Well are under extreme duress. Early warning indicators are needed to provide for the stability of not only the water, but also for the life that exists both in and around its waters. Therefore, monitoring of Jacob's Well is necessary for continued evaluation and protection.





The Fern Bank Salamander can be found as deep as 140"

What Next?

On May 24, 2014, the Water Explorers of Texas presented at the NSS-CDS Conference in Lake City, Florida. They discussed how team volunteer efforts help local resources. Specifically, they revealed how their contributions for Jacob's Well Natural Area is helping educate the public about this vital natural resource.

Their team has collected amphipods for DNA study, documented the cave with

photography and some videography, and is working to build an educational kiosk at the front of the natural area.

With efforts like these, it can only be hoped that people will learn more about this natural resource and how to protect it for future generations.

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



Left: Fossils such as this crinoid are found in the cavern
Opposite Page: Fossils decorate the cavern walls

Peace...

found in a
hole in the ground

By: Nathan Spray, RN

It's not about finding new passage; it's not about laying knotted line. While in exploration this is usually the goal, it's not always the outcome. Sometimes just being in the moment, just being in the cave, just letting yourself enjoy the dive is all that matters.

It is a rainy day in February 2013 and I'm driving around a large property with wonder and amazement at the amount of sinkholes I see. After taking my Jeep through places that only logging vehicles have been and trampling through the timber in three short hours I have marked 20 sinks using GPS. My mind is racing with anticipation even knowing that another team of explorers had been on this property doing the same thing several years before. I'm confident that there is new cave passage to be found. I want to lay line. I have several thousand feet of line spooled and knotted, ready to be spun free...



The property I speak of is the Ferrell Property located in Wakulla County, Florida. It is in the flow paths and in close proximity to Turner Sink, Indian Springs and Sally Ward. Knowing my close proximity to these large, well known systems even heightened my curiosity of what may lie beneath.

I had my dive gear in the Jeep ready to go and couldn't resist jumping into one of these holes. I chose a large, circular-shaped sink known as Meeting House. It has clear blue water and is just begging to be dived. I wasted no time; I landed, geared up, jumped in, tied off my primary and slid beneath the surface, not fully knowing what I would find. To my amazement I was quickly in a large cavern; it was hard to judge the actual size as the blue water turned a bit milky but I estimated at the time it was at least 150' across at its widest. I knew the system had been explored and I quickly found an old line, which was turning brown from age and silt. It appeared to still be intact and solid and I tied into it and slid off deeper into the cave.

I was like a kid in a candy store, I was truly astonished. There was something magical about this cave, this was going to be a great dive and I was just getting started.

Depth was creeping up on me fast; looking down at my Shearwater I was now at 130' and passing under a duck-under. The passage was wide open after this minor restriction. It was a huge tunnel, the type that if on a scooter you hit the trigger and open it up wide. I, however, was swimming, taking in the beauty, my head on a swivel trying to see it all. The walls were white limestone with large, black formations. The floor was covered in a layer of silt with an occasional white rock poking through. I was in amazement, I was in awe; this wasn't a new cave, I wasn't laying new line, but it was all new to me.

Alone in this amazing cave I was at peace with everything, a peace only a fellow cave diver can fully understand. All the worries of life, stress, day-to-day issues, work, etc., disappeared, being swallowed up by the passage ahead of me. I was living the moment; it was not the prettiest, the biggest or the smallest cave I have seen, but one of those times that truly opened my eyes in wonder.

I passed a few old arrows, none marking distance, but I estimated at the time I swam approximately 700'. Seeing a large arrow with distinctive markings

let me know who had explored this tunnel before, instantly wondering why the exploration had stopped, and wondering why anyone would not want to dive this hole in the ground.

Coming to a "T" in the line further heightened my curiosity and I decided to go to the right. The line was tied off on the ceiling and then dropped down at a steep angle leading into a small restriction. I could literally feel the syphon as I poked my head into the hole. I was at over 200' and knew I had little time at this depth on this dive. I had to leave, leave going cave for another day.

Curiosity did get me and I took a quick look at the line on the left. It was also tied off on the ceiling and the beam from my HID showed it also led to a small hole in the wall. The flow from this hole was equally as obvious as the syphon was at the other. At this time I concluded this was the upstream section of the system. This was the source for the cave, where all the water was coming from.

I had racked up some deco and knew my time in the system was coming to an end. I gave myself the proverbial thumb and reluctantly turned around. I was so in tune with this dive, so in touch with the cave that even the small things like my exhaust bubbles bouncing off the limestone gave me pure joy. As I was swimming out I was already planning my next dive here. Literally, while on deco I was determining my gas needs, etc. I would be back to this little gem very soon.

While I didn't put in any new line that day, I knew from past reports that there was possible going passage in this cave, and I would be back to tie in, with knotted line, and continue this adventure and start the exploration....or maybe I would just be back to enjoy the dive. It doesn't really matter if you are laying line or following one. All that matters is that you find what you are looking for, whether it be solitude, peace or even something as amazing as a spiritual moment.

We are blessed to have the honor of jumping into these holes in the ground. We are seeing and experiencing things that most people will never see. I challenge everyone to forget the politics of cave diving, to forget the bickering, to forget the stress of life and just enjoy the dive. Go out and find peace in a hole in the ground!

MILESTONES

By: Shirley Kasser

2014 Cave Diving Milestone Awards

It's that time of year again! This year's Cave Diving Milestone Awards were announced at the annual workshop and represented five-thousand six-hundred safe dives logged. Those present received a certificate marking this exciting high point in their cave diving career. The remaining recipients should have already received their certificates by mail.

Reaching 1000 safe logged cave dives, Brian Armstrong and Walter E. Ross achieved the Sheck Exley Award. Nicely done!

Two divers reached the 500 mark earning their Henry Nicholson Award: Michael Stine and Guy Wallis. Congratulations gentlemen!

Twenty-six divers applied in the last year for the Abe Davis Award after reaching their 100th cave dive safely:

Michael Baker, Scott Barnes, Laura Battle, Randy Beeson, William G. Brown, Douglas Bzotte, Jason L. Costa, Mark T. Dame, Richard Dumm, Tom Fothergill, Kurt Francis, Robert "Max" Gilbert, Simon J. Howard-Tripp, David L. Jones, Peter Lapin, Alasdair MacLeod, Harvey Morash, Blair Mott, Brendan O'Brien, Monika Rosenwald, Peter R. Rowe, Jon Sikorsky, Dan Suke, Jonathan Taylor, Matthew Turner, and Helge Weber.

Thank you all for being a great example for our sport.

What's your story? We want to hear all about your milestone dive! Email me your milestone stories and photographs for future publication. Send them to abedavis@nsscds.org, or snail mail them to me at 665 County Road 625, Coffee Springs, AL 36318

Shirley Kasser

Skills, Tips & Techniques

By Georges Gawinowski

Breathing for Buoyancy – Use Lungs First For Fine Tuning

In the last “Skills, Tips and Techniques” column, we talked about starting off the right foot. In particular, we emphasized taking the time to do your in-water check and adjust your buoyancy (see also Underwater Speleology Vol. Mastering buoyancy control is a must for all cave divers. It is essential to safety, cave conservation, equipment protection, and reducing silt formation for everyone in the cave. Good buoyancy technique should be second nature before entering any cave environment, but we can still work on our technique while cave diving.

Optimum Buoyancy: “Becoming Like Water Creatures”

Watch a fish in the water, or a marine mammal like a dolphin or a whale. All have adapted to their environment and have special features to swim fast or to hover perfectly balanced in the water column. Human physiology did not evolve to allow us to spend much time underwater, but we can learn by watching marine creatures. Optimizing gear configuration, weighting properly, and using certain other skills will help tremendously. Here are some techniques that I use:

When diving open circuit:

- Start off slowly, and relax before performing drills or tasks such as tying off lines. Take your time, and breathe normally. When your breathing is comfortable and trim is adjusted, start nice and easy when regulating buoyancy with your wings.
- Try this exercise: Using your breathing only and not your wings, hover neutrally in open water (with your tank(s) on). If you have not tried this, you should! In times past, we required open-water students to start without a BCD and required them to learn this skill. Only then could they use a BCD. We all learned: when you inhale you go up; when you exhale you go down. The ideal in cave diving is to stay in the middle with constant and normal inhalation followed by exhalation.

- When using a dry suit, use just enough inflation to minimize “squeeze.” Too much inflation can destabilize buoyancy and/or cause improper trim. If you are diving in cold water, you may have to add more gas to the suit. In this instance you may need to start adding gas into the suit before the wing.

When diving a rebreather:

Some rebreather units (those with over-the-shoulder counterlung configurations, for example) create more drag, so we need to dive smarter. Most rebreather units easily supply at least three hours of bottom time, so we have the luxury of taking things slowly and gradually optimizing our trim and buoyancy.

- Take your time when adding gas to the counterlungs or wing. Rebreather breathing does not affect your buoyancy, so the amount of gas added is really important. Adding either too much or not enough will produce noticeable effects.
- On descent, add diluents first, since this will expand counterlung volume and increase buoyancy. Next inflate your wings just enough to stabilize buoyancy as needed. Finally, inflate your dry suit just enough to offset the squeeze.
- Once you bottom out, check to make sure all readings (PO₂, electronics, and tank pressures) are within acceptable limits. Secure and tighten all gear as needed, and orient yourself as to where you will exit.
- Take your time to get yourself “squared away” before committing to the rest of dive.

Time and practice are necessary to master these techniques. But by doing so, we’ll be diving safer and smarter and having less impact on the delicate cave environment.

OFF to the Side.....

By Rob Neto

Not All Cylinders Are Created Equal!

Even though like cylinders may appear to be the same, they really aren't. Not all low pressure 85's are the same between manufacturers. You must choose your cylinders carefully because they all have very different buoyancy characteristics. The type of diving you do can dictate what cylinders work best for you. Some people have no issues with any cylinders. Others cannot dive certain cylinders because of the change in buoyancy when the cylinders get to a certain gas pressure.

Let's look at low pressure 85s first. Worthington LP 85s are an all-around great cylinder for sidemounting. They're 7 ¼ inches in diameter, making them great for smaller passages. And as you breathe them down, the buoyancy characteristics of the cylinders allow them to maintain horizontal trim. Faber LP 85s are also a great cylinder but they are designed differently from the Worthington cylinders and, as a result, behave differently. As you breathe them down their trim is affected much more by the decrease in weight from the breathed gas.



If you use loop bungees and wrap them around the valve knobs, as the Faber LP 85s decrease in pressure the bottom of the cylinders will begin to rotate around the attachment point and throw off their trim.

Worthington LP 95s may be good cylinders for some, but the general consensus from most people that have had them in the water is they are very heavy. If you need the additional weight, they're the tanks for you. If you don't need more weight you might want to consider Faber LP 95s. Because Faber LP 95s are a couple inches shorter than LP 85s, it takes longer for the bottom to get positively buoyant. This usually doesn't happen until around 1600 psi. Most cave divers aren't going to breathe their cylinders low that much, making them a great cylinder for small passages. However, the 8-inch diameter of LP 95s can restrict the diver from certain passages (if you like going that small). If you primarily dive open water and breathe your cylinders to pressures lower than 1600 psi, you may be better off with Worthingtons because they'll

maintain their trim.

These are just a couple of examples of some of the more common issues encountered with various cylinders. The examples provided are not intended to sway anyone away from purchasing a specific type of cylinder. What works or doesn't work for most sidemount divers doesn't mean it will work or not work for everyone. You don't know until you try it out.

There are a few general attributes to look out for when choosing a set of cylinders for sidemounting. You must consider your height. If you're 5'4", a set of LP 120s probably won't trim out well on you. LP 120s are tall cylinders and will extend below the knees of someone that height. On the opposite end, if you are 6'6", a set of LP 95s probably won't trim out well on you because they're short cylinders. That aspect of choosing a set of sidemount cylinders isn't much different than when choosing a cylinder to carry in any other position.

Sidemount diving doesn't necessarily mean just steel cylinders, either. Many sidemount divers choose to use aluminum cylinders. Some have no choice but to use aluminum cylinders. You may just want to try sidemount the first few times in aluminum cylinders only because you have them available to you.

There are a few considerations when diving sidemount with aluminum cylinders. The most common aluminum cylinder, the AL80, will get positive as you breathe the air down from the cylinder. This means you must carry some weight on you to counteract this change in buoyancy and remain neutrally buoyant at the end of the dive.

You also need to do something with the cylinders to keep them from floating up too much. A method that is used by some is to unclip the bottom bolt snap of the cylinder from the butt plate or rearmost d-ring and clip it to another D-ring located on the side or front of the waist strap. This requires that the second D-ring be located in a position that holds the cylinder down so it cannot float up

Another option is to weight the AL80 so it has buoyancy similar to a steel cylinder. Some sidemount div-

ers will use anywhere from a two-pound to four-pound weight threaded onto the cam band. The positioning of the weight is important. It must be located on the cylinder where it will be on the bottom when you are in a horizontal position so it keeps the cylinder positioned properly.

This weight will make the cylinder heavy enough to keep it from floating up as the air is breathed down. The most common AL80s will be either 4 or 4.4 pounds positive when empty, so a 4-pound weight would work well. However, if you don't plan on ever breathing your cylinders below 1000 psi, a 3-pound weight will be sufficient. Just remember to weight yourself as needed so you are neutral with empty cylinders.



Another consideration when choosing sidemount cylinders is whether they are matched pairs. You can't just buy two individual cylinders and match them up. They might not

balance out correctly. I know a diver who purchased two cylinders from two different suppliers to find out the cylinders didn't share similar buoyancy characteristics, even when the cylinders were manufactured by the same company! The two cylinders were manufactured almost two

years apart, and while at first glance they appeared identical, closer examination revealed differences in the cylinders. And in the water, the differences become very apparent. One cylinder was much more negatively buoyant than the other, enough to cause the diver to list to that side significantly. So when you buy a set of cylinders, make sure they are matched pairs!

The main thing is to try as many cylinders as you can before you spend the

money. Beg, borrow, or rent and get in the water. That's the only way you'll know for certain which cylinders will work best for you.

NSS-CDS BUSINESS AFFILIATES



Amigos Dive Center
5472 SW Elim Church Rd
Fort White, FL 32038
386-497-3876
www.amigosdivecenter.com



Bonne Terre Mine/West End Diving
12464 Natural Bridge
Bridgeton, MO 64044
314-209-7200
www.westenddiving.com



Cave Adventurers
5211 Limestone Lane
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850-482-6016
www.caveadventurers.com



Chattahoochee Scuba
5870-K Veterans Parkway
Columbus, GA 31909
706-507-2573
info@chattahoocheescuba.com



Dive Outpost
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Live Oak, FL 32060
386-776-1449
www.diveoutpost.com



Extreme Exposure
25 South Main Street
High Springs, FL 32643
386-454-8158
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Ginnie Springs
7300 NE Ginnie Springs Rd.
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Photo: Tony Flaris



2014 NSS-CDS Workshop

If you missed the 2014 Workshop, you missed a GREAT workshop. Thanks to all the attendees, speakers, sponsors, donors and volunteers as well as our Workshop Chairs, Jim Wyatt and Jared Hires!



Photo: Carree Olshansky



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Photo: Shirley Kasser

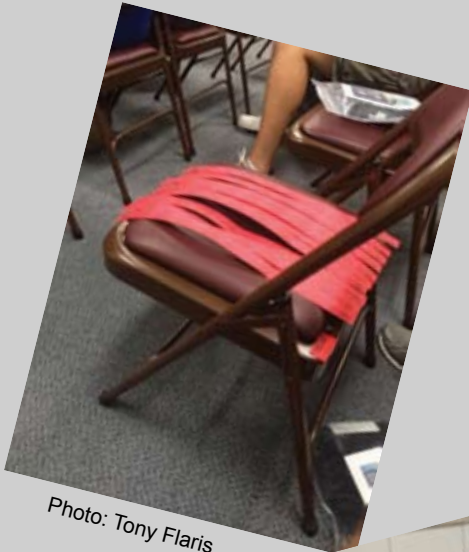


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MORE AWARDS NEWS...



Carl Griffing presents Matvei A. Orsak with the NSS-CDS Life Safety Award.
Photographer: Carree Oshansky

The NSS-CDS awarded Matvei A. Orsak and Aiar T. Ghelber Life Safety Awards.

Unable to attend the 2014 Workshop, CDS instructor, Carl Griffing, is presenting them with these awards on our behalf.

Congratulations to both divers.

Conservation Corner

By: Kelly Jessop

High Flow and Cave Conservation

For so long we have been devoid of high flow caves due to a protracted drought. Caves that were known for being magnitude 1 level caves, greater than 100 cfs, were anemic with minimal flow rates. On a regular basis you would hear stories of swim dives to the stop light in Jackson Blue or the well casing in Little River; something that under normal conditions was practically impossible.

Now, with a large volume of spring rains, these systems are flowing, and are flowing at above the minimum flow requirements to be defined as a magnitude 1 spring. This is presenting a great deal of difficulty to cave divers who were certified during the drought era, or have become scooter dependent to negotiate flow. The question now is, "how can I dive these sites, get around with reduced effort and, most importantly, reduce impact to the caves.

- Use pull and pull when absolutely necessary. I have omitted the term pull and glide, because if someone can glide in high flow, then they can probably swim versus touching the cave. If contact with the cave is absolutely necessary, then use points that have been previously touched to pull from.
- Consider using more modified flutter kicks versus frog kicks. Generally, a frog kick has a propulsion phase followed by a refractory period to prepare for the next kick. In this case flow can stop forward momentum. With the modified flutter kick, forward propulsion is constantly being generated by reciprocal leg movement.

- Swim close to the floor or walls where the current is the least, but be aware of your proximity to these areas to avoid damage.
- If the wall is concave, then swim in this area to "shade" yourself from high flow.
- If the wall is convex, then swim as much as you can behind the unexposed area.
- Swim behind columns and other rock formations which can block flow.
- If there is an upward slope, swim low and parallel to the slope.
- Use of a stage may not produce a lot of penetration gains due to the drag involved.
- Use your buddy. If you are in high flow areas, then place yourself directly behind them and close to them to reduce the flow, almost like drafting in racing.

For some, swimming in high flow caves seems like a tiring effort and they will avoid them because of this. For others, the challenge of "learning the cave" and knowing the positioning to avoid high flow and enhance penetration is part of cave diving.

Most importantly, we want to reduce impact to the cave and knowing how to get out of the flow will reduce your need for physical contact.

INSTRUCTOR'S CORNER

By Carl Griffing

Underwater Cave Surveying & Cartography

Underwater cave maps are resources that cave divers typically use when planning their dives. Making a map of a cave is the best way to describe the cave to other cave divers. A considerable amount of dedication goes into producing a map of an underwater cave and we are fortunate that these maps have been produced and shared with the cave diving community to aid us in planning our dives.

Have you ever looked at a map of an underwater cave and wondered how it was made? Experienced cave divers, who are interested in learning how to conduct surveys in underwater caves, may choose to take the NSS-CDS Underwater Cave Surveying specialty course.

NSS-CDS Underwater Cave Surveying course description:

The purpose of the Underwater Cave Surveying specialty course is to introduce the trained cave diver to the basic fundamentals of surveying underwater caves while under the direct supervision of a qualified Underwater Cave Surveying Specialty Instructor. This course is intended to motivate more divers to survey caves, encourage the use of cave maps in dive planning and increase the quantity and quality of published cave maps. Additionally, this program is designed to assist in promoting standardization for all survey projects.

To enroll in the course, the prospective student must have NSS-CDS Cave Diver level of training or equivalent.

During this course, the instructor will discuss the history of surveys, including a review of early surveys and the development of surveying standards and procedures. Topics covered include accuracy standards, motivations to survey, composition of the survey team, fabrication and use of special survey tools, safety considerations, survey techniques and methodologies, data manipulation and mathematical calculations, symbology, cartography, copyright, and publication.

Students will use specialized tools and equipment during the course such as a survey slate to record data and a reel with knotted line or a fiberglass tape measure for measuring distances. Other equipment

requirements include graph paper, scaling ruler, circular protractor, a calculator, note pad, pens, and pencils. The text for the course is a book published by the NSS-CDS, which is a great resource for conducting surveys, *Underwater Cave Surveying* by John Burge.

The instructor will present the classroom topics and the students will then get to practice the application of the techniques and procedures on land. Next are the underwater cave survey dives.

Students will get to practice the surveying skills and procedures by performing at least two cave survey dives. The instructor may require more than two cave survey dives to complete the course. After the dives, the students may then use the survey data to create a map.

Cave divers who have an interest in underwater mapping, have knowledge of underwater surveying and want to learn more about the map-making process may be interested in the NSS-CDS Cartography Program.

The NSS-CDS Special Program – Cartography is data management oriented and is designed to introduce the basics of underwater cave map presentations. The goal of this program is to develop the ability to complete the surveying and map-making process and actually produce a map. This program includes a brief review of surveying technique, manual and computer aided data reduction, verifying data and correcting errors, necessary materials and supplies and transforming data into the finished map.

Participation in the Cartography program is open to anyone with an interest in underwater cave mapping. Participants are expected to have knowledge of cave diving and underwater surveying. Underwater activities and techniques are discussed, however, no underwater skill training or evaluation is provided.

To locate an NSS-CDS Instructor who can teach the Underwater Cave Surveying specialty course or the Cartography special program, look for the NSS-CDS Instructor listing in this issue of Underwater Speleology or on the web at nsscds.org/instructorlist

Current NSS-CDS Instructor Listing

Jim Wyatt, Training Director, trainingdirector@nsscds.org

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

Emanuela Bertonni Cave
Quinta Roo, MX
pachacavediving.com
elabertonni@gmail.com

Brent Booth 241 Cave
High Springs, Florida, USA
Stage, Sidemount, DPV, Overhead Nitrox, Sponsor
bcb241@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@wdtdive.com
www.wdtdive.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
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Sidemount
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TJ Johnson 368 Cave
Orlando, Florida, USA
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John Jones 321 Cave
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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
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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

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
Gainsville, 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
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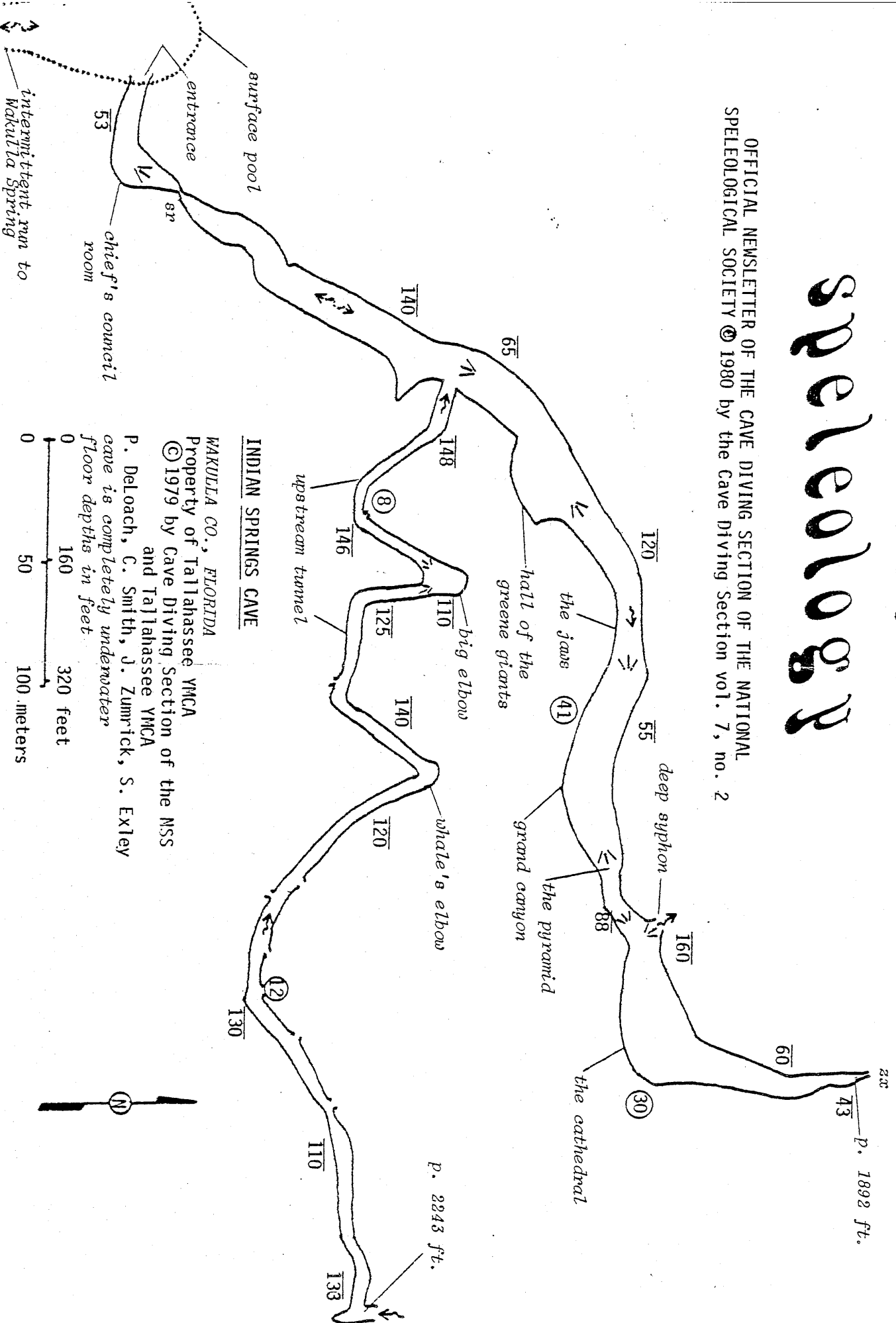
Jim Wyatt 355 Cave
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German Yanez Mendoza, 328 Cave
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www.germanyanez.com
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Cristina Zenato 325 Cave
Freeport, Grand Bahama
czenato@gmail.com

underwater speleology

OFFICIAL NEWSLETTER OF THE CAVE DIVING SECTION OF THE NATIONAL
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FROM THE BACK OF THE CAVE.....

A Little Cave Diving History

The following article is reprinted from the UWS Vol. 7 No. 2 (1980)

INDIAN SPRINGS

By: Paul Deloach

Map By: Sheck Exley

It was December 1974, a cold night as I prepared to dive with numbed fingers. The moon lighted our path to water's edge. The surface pool at Indian Springs looked murky, but felt warm in comparison to the freezing air temperature. Lewis Holtzendorff, Bob Goodman and Kirby Sullivan were anxious to show me their new "find."

Dive plans confirmed, equipment checked, watches synchronized, we quietly descended through 20 feet of dark swamp water with reel in hand, wrapping on a prominent rock on the floor. We had three to five feet of visibility: we located the beginning of the permanent line, with Lewis leading. Swimming through the first room (the Chief's Council Room), we could see no floor or ceiling, only an occasional left wall and the solitary #18 guide line. We reached a wrap; thereafter the line plummeted straight down to a depth of 125 feet, where we encountered a minor restriction and clear water. After poking through, Lewis motioned for me to take the lead. We proceeded through widening tunnel with a silty floor and the white of Ocala limestone. The walls showed evidence of scalloping; there were several large solution domes, and floor to ceiling distances greater than 30 feet, and in places, 70 feet wide.

We entered the upstream tunnel as planned. Court Smith had discovered it several dives previously. It was one of the most beautiful and interesting tunnels in North Florida. With the help of 80 to 100 feet visibility, we observed a widening tunnel exceeding 25 feet, white limestone walls, multiple breakdown areas, with several leads and moderate flow. We added several hundred feet of line, coming to our terminus just short of the "big elbow." Exploration was to continue intermittently for several years.

Early Exploration

The first to explore Indian Springs cave system were Bob

Goodman Kirby Sullivan and C.W. Chaukley. It was reported that Tex's eyes "looked like saucers" after free-diving approximately 20 feet to find clear water and large cave entrance; that was early fall 1974. After finding the cave diveable: Lewis Holtzendorff, Bob and Kirby returned and added 600 feet of line stopping just short of the "Hall of the Greene Giants." Needless to say the group exited with great excitement." Several weeks later, Lewis returned with his faithful sidekick and companion, Court Smith. Bob had asked Sheck Exley over to look at their new "find" and he and Lewis gave both Court and Sheck a "tour." As they approached the end of the previously laid line near the entrance of the upstream tunnel, they saw the ceiling dropping to meet the floor; but continuing on another 20 feet past the end of the end of the line the ceiling gave great relief with ceiling heights of 35 feet and one of the largest and most beautiful rooms in the state was discovered. This room was later named "Hall of the Greene Giants" in recognition of Charlie and Jane Greene's interest and support of our diving efforts.

It was at this point the Sheck was seen fumbling underneath his buoyancy compensator; several previously hidden spool were produced and the exploration party continued. The foursome continued through the "Jaws" and another long room, terminating at the "Pyramid." Everyone had expected that the exploration of Indian Springs would necessitate going "deep" to get to the large clear tunnels characteristic of the "Big Bend" area systems such as: "Little Dismal", "The River Sink System", "Fish Hole", "Sally Ward" and "Promise."

It was late November when Bob, Kirby, Sheck, Lewis and the Melton's (Gene and Mary) installed an additional section of line terminating in the "Cathedral" room. Lewis continued another 50 feet to see that the cave continued, large and expansively. Lewis apprised the group in characteristically conservative tone that "it may go." On the

way out, Scheck spied the "Deep Syphon", later to be explored by Peacock, Fulghum, Young, Zumrick and myself on multiple dives.

Several days later, Lewis, Court and Scheck returned to add another section onto the "Cathedral" room, finding the downstream terminus at 1,892 feet. It was here that they found what appeared to be a previous surface opening which had been clogged by debris. Disappointment had been met before, and besides, possibilities existed in the "Syphon."

Upon exiting the cave, and near the "restriction" in the "Hall of the Greene Giants", Court stumbled across what seemed to be a "lead", or at least he felt a slight current. Deciding to check it out, he swam through a breakdown pile and discovered the "upstream" side of Indian, an important breakthrough in the system's exploration.

Further Exploration

Exploration in the upstream section continued with Bob, Kirby, Court Smith and myself, and later with a number of person including Billy Young, Jim Nagle, William Wingate, Steve Forman, John Zumrick, Scheck Exley and Dale Sweet.

By Mid-1976, exploration began on the "Deep Syphon." David Peacock and I cautiously added line at a depth of 160 feet. Subsequent dives by Court Smith, Billy Young, Steve Forman, Ken Fulghum, Scheck Exley, John Zumrick and myself were made in an attempt to find a way through the low areas where the ceiling almost meets the white, sandy floor with a strong uplifting siphon. The "Deep Syphon" represents one possibility of continued exploration.

Mapping

Several attempts to survey Indian were made in 1976-77 by court Smith, William Wingate and myself, which found us surveying 1,200 feet of the expansive system.

In 1978, with renewed determination, Zumrick, Exley and I returned to survey the system. Just under a dozen dives later, we had accumulated the necessary information for Scheck to begin plotting our azimuth distances, depths and notes of the cave structure and foundation.

By May 1979, we presented Charlie Greene and the Tallahassee YMCA with the long-awaited map which is on display in the Indian Springs Campground Office.

With wonder and anticipation, we hope to "come back" as eels to continue our exploration. The upstream section has been explored to a distance of 2,243 feet, with the line ending just as the cave makes a sharp northerly turn;

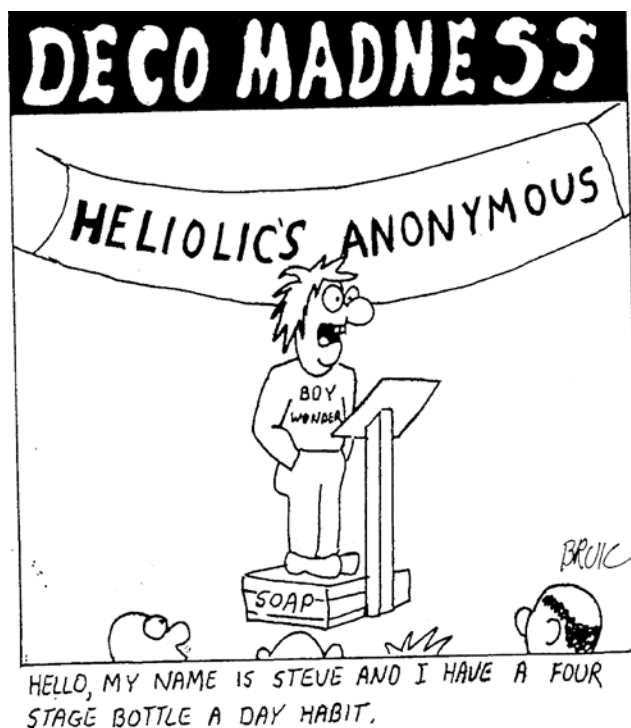
the downstream has been explored 1,892 feet, giving it the distinction of being the 11th known largest surveyed underwater system in the state. Several leads, including the "Syphon", have yet to be surveyed, and there are many side passages awaiting our investigation.

The white limestone, sand floors, scalloped walls and large passages all combine to make Indian Springs one of the most enjoyable dives in North Florida. During the "monsoon" season, however, the visibility is generally reduced. Low visibility can also be found when a long drought lowers the spring's hydrostatic head drawing the swamp water into the cave.

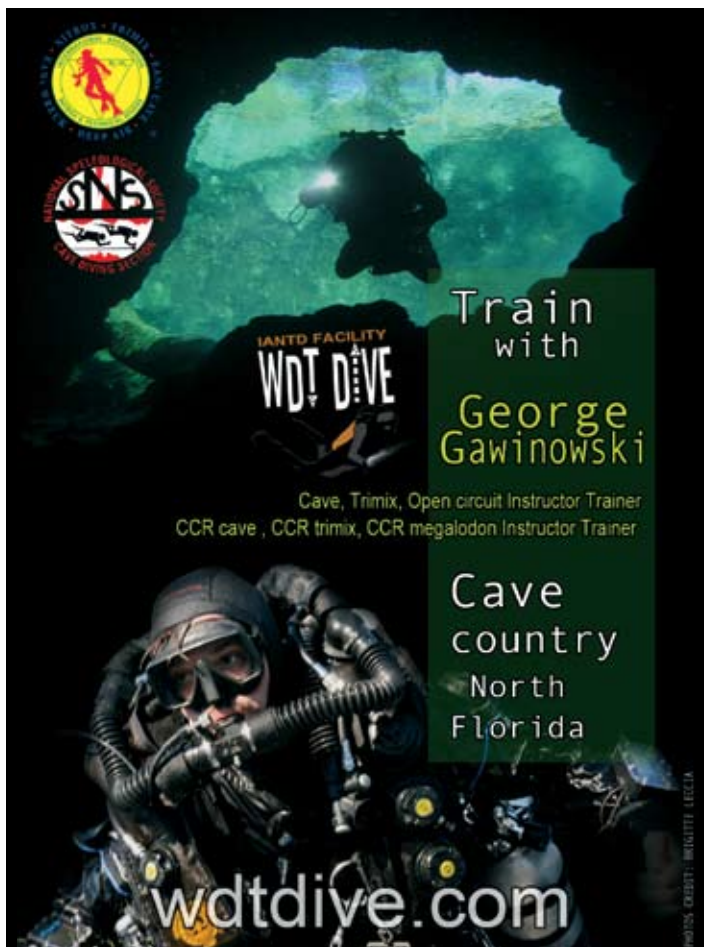
Cave diving at Indian Springs was arranged through our contacts with the management of the Tallahassee YMCA. Barry Kerley and Dale Malloy were instrumental in developing the initial guide-system. A number of guides have been added to the list to facilitate access by a greater number of qualified divers. The YMCA requires that all participants have a notarized Release and Waiver Form on file. Camping, canoeing and horseback riding are also available September through May. The environment, hospitality and the presence of Old Zeus, the diving Labrador, make Indian Springs a favorite dive-site in the "Big Bend" area.

The Guides include: Rory Dickens, Scheck Exley, Ken Fulghum, Lewis Henkle, Barry Kerley Dale Malloy, Jim Nagle, Billy Young, John Zumrick and the author.

(x) Information based on notes from dive logs and correspondence with C. Smith, B. Goodman, S. Exley, L. Holtzendorff and P. Deloach.



Reprinted from Vol 22 No 3



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