



# UNDERWATER SPELEOLOGY

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*Little Salt Spring Archaeological Project  
(see article page 12)*



# UNDERWATER SPELEOLOGY

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**Magazine Submissions** — We welcome all news items, articles, Letters to the Editor, photos, slides, cartoons, and other items of interest or importance to the cave-diving community from all members, subscribers, and other interested parties. They should be sent directly to the Editor (see address on left column). We can also use text processed in most IBM-compatible formats. (Please contact the Editor directly for details and arrangements.)

**Advertising** — The NSS-CDS Board of Directors has approved the reinstatement of paid commercial advertising for *Underwater Speleology*. Please contact the Editor for information and arrangements (see address on left column).

**The NSS and Cave Diving** — Founded in 1941, the National Speleological Society joins together thousands of individuals dedicated to the safe study, exploration, and conservation of caves. The first cave-diving information ever published in the United States was in a 1947 *NSS Bulletin*. In 1948, NSS divers were responsible for the first cave dives in the United States using scuba. Prior to 1973, cave diving within the NSS was on a purely local level. That year saw the creation of the NSS Cave Diving Section to provide a vehicle for information exchange. Today, with over 750 members, the Cave Diving Section promotes safe cave diving through semi-annual workshops; cavern- and cave-diving training programs; warning-sign installations; search, rescue, and recovery through the National Cave Rescue Commission; cave exploration and mapping; several texts and publications on cave diving; and the bimonthly magazine, *Underwater Speleology*.

**NSS Membership** — The National Speleological Society welcomes the interest of anyone who has a sincere concern about the safety, study, exploration, and conservation of caves, wet or dry. You may join the NSS either by writing directly to its main office (National Speleological Society, Inc., Cave Avenue, Huntsville, AL 35810) or to the Cave Diving Section. Annual membership is \$25.00 and includes subscription to the NSS's monthly magazine, *NSS News*, as well as voting privileges and discounts on publications and conventions.

**CDS Membership** — As a sub-organization or "section" of the NSS, the Cave Diving Section is subject to the bylaws and ethics of the NSS. Membership in the Cave Diving Section is open to anyone who is a member in good standing of the NSS. Annual membership is \$5.00 per year and includes subscription to the CDS's bimonthly magazine, *Underwater Speleology*, as well as voting privileges and discounts on publications and workshops.

**Subscription** — If you do not wish to join the NSS and CDS, but would like to keep current on cave-diving events, exploration and technology, you are invited to subscribe to *Underwater Speleology* for \$15.00 per year.

# "THE CUTTING EDGE" - SPRING WORKSHOP

by Terry DeRouin (NSS #29395)

Another Cave Diving Workshop has come and gone. It was truly a fine testament to the organizational abilities of Gene Broome and Lamar Hires in terms of how well the Workshop went. Gene acquired the Spring Workshop late in the game, but despite having limited time, he did an excellent job putting together one of the best programs ever hosted by the Section. Attendance this year was definitely in the record category, somewhere in excess of 330 attendees.

Jim King opened the presentations with an in-depth insight into rebreather technology. A captivating slide program held everyone's interest as he discussed Cis-Lunar's newest rebreather. Following Jim, Dr. John Zumrick discussed his experience with rebreathers in the Navy and elaborated on some of their possible problems. Together, they made most of the audience drool at the prospects. Both Jim King and Michael Dunning, from Florida State University, had rebreathers on display.

Joe McGrath, the DNR (Department of Natural Resources) officer from Peacock Springs, discussed the new admission-charge policy for the Park. He reiterated how important it is to purchase any individual or commercial passes from the Peacock Park itself so that the State is aware of our support for what they are trying to accomplish.

Michael Menduno of Aquacorp gave a solid presentation on the background of nitrox and how rapidly it is gaining acceptance among the general diving population, as well as among cavers. Tom Morris then followed with a sensitive look at caving conservation and the need to develop better habits. Tom's presentation even demonstrated how something as simple as the mixing of water layers by diving through them can disrupt an environment and affect the biology of a system.

At this point, lunch was served in the school cafeteria by the Branford FHA. The meal was excellent, if a little limited in quantity. I think we stretched the imagination of the girls by how much food we could consume.

After lunch, Wes Skiles offered an alternative approach to dissuading open-water divers from venturing into caverns, as well as teasing us with shots of a JIM suit. Dennis Williams then enlightened us with stories of the research that he and Jill Yager did while identifying *remipedia*, the new class of primitive crustacean Jill discovered in the Bahamas. Dennis then detailed his travels across the Pacific in search of underwater caves and cave biology.

Tom Mount then had the opportunity to present his very personal and detailed look at the psychological aspects of anxiety while diving. His tremendous history of diving made for a very intriguing look at self-reliance in the water. This was also a very important presentation because it marks the first time the NSS-CDS has had the Training Director from the NACD give a presentation at a Workshop. We all welcome Tom and invite him to come back again and again.

John Clayton then concluded the day's presentations with a discussion on the legal and moral aspects of collecting ar-

tifacts. In the evening, Gene and Jerri Broome hosted one heck of a big bonfire and wienie roast—"a Bonfire of the Insanities," if you will. Food and beer were consumed heartily and lies were told by all.

The next two days were filled by many fascinating guided dives and several classroom workshops, including Mark Leonard's ever-popular Nitrox class and John Crea's well-attended Mixed Gas class. Other classes included an Oxygen-Administration class, a PSI Tank-Inspection class, Henry Nicholson's Rescue/Recovery course, and Dennis Williams hosting a Scientific Collections workshop. This year's Spring Workshop had one of the most diverse sets of offerings in recent years.

Of special merit was Gene Broome's hard work towards getting Yana Springs open for cave divers for the Workshop, and, hopefully, for the future on a regular basis. There are many closed sites out there, and Gene's efforts prove that, just maybe, some of them can be reopened.

Also, a special thanks to Denny Willis, who has donated his beautiful designs for T-shirts for the last two workshops. And a big thank you to all the CDS members who staffed the tables and worked behind the scenes to make this workshop a successful reality. Now that we will be having only one workshop a year, I hope that we will have them continue to offer this kind of diversity and information. ■



Phil Sirota assisting Wayne McKinnon on a guided dive at Azure Blue during the Workshop. Photo by Gene Hellwig.

# THE SAFETY LINE

by Wendy Short (NSS #30802), Safety Coordinator South

While we are making a dive, we expect our line clips, stage and oxygen bottles, reels or scooters to remain where we have placed them. It seems that as more traffic appears in the caves, these items that our lives and peace of mind depend on are being stolen.

What kind of person would disconnect a reel from a tie-off and steal it? Or take a stage bottle posted far back in the cave that is needed for a safe exit? Yet these thefts have occurred in popular caves by individuals who were cave diving.

Anytime one of these items is moved or removed, that person is putting at least one other person's life, if not the entire team, at risk. This is a criminal offense and cannot be tolerated. If an accident were to occur, the thief would be directly responsible and should be held accountable. The problem is, the thief is usually not spotted or caught, and gets away with it to put someone else's life in jeopardy another day. Would you want to place your life or trust in an individual

like that? I don't think any of us would knowingly want to dive with someone who has total disregard for another's property or life.

Cave diving is a sport that has always policed itself, and now we must do so in this area, too. If you catch someone stealing or moving someone else's gear, be verbal about it and don't let them get away with it. Report their names to the cave-diving publications so all readers will know who these people are and what they have done. If you notice someone diving with stolen gear, report it. Look out for other cave divers, even if they are strangers to you.

Have all your gear visibly marked with your name or some other unique feature so you can identify it. Don't dive with a buddy who has dishonest tendencies. After all, the next piece of equipment that may get stolen could be yours.

It would be a real shame for a fatality to occur to a diver who is safety oriented and follows the rules, only because gear that that person is dependent on is stolen. ■

## ABE DAVIS SAFETY AWARD

by Wendy Short (NSS #30802), Safety Coordinator South

The Abe Davis Safety Award is presented to cave divers who demonstrate a genuine dedication toward safety by completing at least 100 cave dives. The CDS proudly announces the 1992 recipients: Alan C. Heck and Ralph Walter.

Hopefully, this is only the beginning of a stronger commit-

ment to cave-diving safety in these recipients.

*[Cave divers who have completed 100 safe cave dives may apply for the award by completing the application below and sending it to: Wendy Short, Abe Davis Award Coordinator, 12745 Sand Ridge Dr., Jacksonville, FL 32258.]*

### NSS-CDS ABE DAVIS CAVE DIVING SAFETY AWARD APPLICATION

Having completed and logged 100 safe cave dives, I, \_\_\_\_\_ (name as you want it to appear on certificate), do hereby apply for the *Abe Davis Safe Cave Diving Award*, presented by the Cave Diving Section of the National Speleological Society, Inc. I agree to have my name added to the list of other award recipients.

My 100th cave dive was at \_\_\_\_\_ (name of cave and location), with \_\_\_\_\_ (partner[s]) on \_\_\_\_\_ (date).

Signed: \_\_\_\_\_ Printed or typed Name: \_\_\_\_\_  
Printed or typed Address: \_\_\_\_\_

Being familiar with the applicant, I, \_\_\_\_\_, confirm that he/she has made and logged 100 safe cave dives.

Signed: \_\_\_\_\_ Printed or typed Name: \_\_\_\_\_  
Printed or typed Address: \_\_\_\_\_

Mail application to: Wendy Short, Abe Davis Award Coordinator, 12745 Sand Ridge Dr., Jacksonville, FL 32258. ■

# P.A.D.I. COMMENDS CAVE DIVERS FOR ADDRESSING TRAINING NEEDS

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In an article in *The Undersea Journal* (4th Quarter, 1991, pp. 5-7) called "Technical Diving — Does PADI Have Its Head in the Sand," by Drew Richardson, Professional Association of Diving Instructors Vice President of Training and Education, defending PADI's conservative approach to technical specialty training, the cave-diving community was commended for taking the initiative in addressing its training needs.

*...During this industry metamorphosis, a community of nonrecreational or "technical" divers has quietly existed. Technical divers have practiced their art effectively on the sidelines and outside of the definition of recreational scuba diving. Many excellent developments and improvements have emerged from within this community. As an example, the cave-diving community took the initiative to pro-*

*vide the education and training necessary for individuals interested in this activity. By definition, cave diving is not recreational diving. Therefore, a training niche was created for individuals with specialized expertise in the methodology of safe underwater-cave exploration.*

*These individuals evolved their interest into training programs and equipment development and modification to offer education, guidance, standards and control to interested persons to improve the image and safety of cave diving. Generally, it can be observed that this community does not actively market its programs, but rather feels they are necessary and available to individuals interested and motivated to pursue cave diving. With an increasing safety record, this community is to be applauded for these efforts.... ■*

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## CDS HOSTS FIRST "HANDS-ON" INSTRUCTOR WORKSHOP

by Terry DeRouin (NSS #29395)

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The CDS hosted its first "hands-on" Instructor Workshop at Hart Springs, site of the beautiful Black Lagoon, during the weekend of June 20-21. The weekend get-together allowed instructors to exchange ideas, discuss teaching techniques, and learn from some of the finest cavers today.

After a review of standards changes and updates, Bill Main and Dustin Clesi shared their experiences and techniques on driving scooters. The presentation was filled not only with practical modifications and dive-planning insights, but also spiced with many of the personal stories and tragedies that they have both experienced. A DPV Pilot Instructor certification was one of the many activities offered the attending instructors.

Between meetings, the instructors had a chance to dive the Black Lagoon, the sink upstream of Hart Springs. The Black Lagoon is an extremely delicate and geologically fragile system that also poses many hazards because of the extremely high flow and the restricted access at the sink. Much was discussed about the site and the fact that it may be open on a regular basis in the near future. It was definitely decided that the site must be controlled and access limited to those divers with sufficient experience and technique. Otherwise, it could become trashed and destroyed like so many sites have in the past. McBride's Slough was specifically brought up as an example. Using the Abe Davis Award to qualify was one of the best suggestions offered.

During the instructor round table, much consideration was given to slowing students down, especially in regards to

scooter driving. It is still a problem that new cave divers can progress as fast as they do without building a solid foundation. Unfortunately, any caver who can afford a scooter drives one. Skill has very little to do with the decision. A great percentage of the cave damage being done today is a result of inadequate scooter technique, with the only yardstick of ability becoming "How far have I gone?"

Some view it as a testament to training that we haven't had a serious scooter-related accident yet. The instructors unanimously agreed that we have only been lucky, and that someday that luck will run out. One possibility of encouraging competency before growth was issuing an "Abe Davis" sticker for the C-Card and having controlled-access sites restrict the use of scooters without the sticker.

Woody Jasper and Tom Morris did an absolutely wonderful job working with the instructors on teaching stage diving. Many provocative questions were asked and once again, the subject of emphasizing to new students that skill, competency, and experience are critical before "going the distance" by staging was detailed again.

Over all, the weekend was incredibly productive, and hopefully, every instructor interested in bettering his or her performance will support this kind of professional improvement activity in the future. Instructors present included: Training Chairman Lamar Hires, Brent Booth, Kelly Brady, Gene Broome, Pete Butt, Dustin Clesi, Terry DeRouin, Steve Forman, Darel Gum, Billy Hayes, Bill Oestreich, Kelvin Questel, and Eric Tasso. ■

# CDS INSTRUCTOR ROSTER

**TRAINING CHAIRMAN: Lamar Hires, #191, Cave Diving Instructor, DPV Pilot, Sidemount & Stage Diving Instructor**  
Rt. 14, Box 162, Lake City, FL, 32055, 904-752-1087 (bus), 904-755-5913 (res)

**NOTE:** The designation "Cave" Instructor is a higher ranking one which encompasses "Cavern" Instructor. The designation "Sponsor" indicates that the Instructor is qualified to instruct and sponsor new instructor aspirants. This list is current as of June 15, 1992.

- Averill, Harry, #218, Cave Instructor & Sponsor, Pro Dive - Bahia Mar Resort, 801 Seabreeze, Ft. Lauderdale, FL, 33316, 305-761-3413 (bus)  
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Bowden, James L., #226, Cave Instructor & Sponsor, P. O. Box 49461, Austin, TX, 78765, 512-928-4727 (res)  
Bozanic, Jeffrey E., #181, Cave Instructor & Sponsor, P. O. Box 3448, Huntington Beach, CA, 92605-3448, 714-846-5220 (bus)  
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Bromenschenkel, Jay, #222, Basic Cave Instructor, P. O. Box 2445, High Springs, FL, 32643, 904-454-1639 (res)  
Broome, Gene, #225, Cave Instructor & Sponsor, DPV Pilot & Stage Diving Instructor, Branford Dive Center, P. O. Box 822, Branford, FL, 32008-0822, 904-935-1141 (bus), 904-935-0146 (res)  
Brown, Larry, #249, Cavern Instructor, Rt. 1, Box 17, Monroe, NC 27559, 919-542-5343 (res)  
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Butt, Peter L., #186, Cave Instructor & Sponsor, Stage Diving Instructor, P. O. Box 1057, High Springs, FL, 32643, 904-454-3556 (bus), 904-497-4823 (res)  
Clemons, Robert R., #254, Cavern Instructor, P. O. Box 475715, Garland, TX 75047, 214-205-7344 (res)  
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Coke, James G., #193, Cave Instr. & Spon., Recovery, Surveyor, & DPV Pilot Instr., Akumal Dive Shop, Postal 1, Playa Del Carmen, Q. Roo, Mexico, 77710  
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Gerrard, Steve, #192, Cave Instructor, P. O. Box 20006, Tallahassee, FL, 32316-0006  
Gonzalez, Kevin, #220, Cave Instructor, 1667 S. Hwy 17-92, Longwood, FL, 32750, 407-695-0991 (bus)  
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Young, Tom, #215, Cave Instr. & Spons., 26555 Westwood Dr., Spring, TX 77386, 713-367-3999 (bus)

# CDS \$1,000 DONATION PUTS THE PARKER TURNER MEMORIAL FUND OVER HALFWAY MARK

CDS Board Member Kelly Brady reports that the Cave Diving Section's \$1,000 contribution to the Parker A. Turner Memorial Scholarship fund has put it past the \$5,000 halfway point. \$10,000 is needed by Dec. 31, 1992 in order for the fund to be established successfully.

The scholarship fund was created last year after Parker's accidental death due to a massive geological collapse and landslide at Indian Springs near Tallahassee November 17, 1991. Parker was well liked and respected as one of the vanguard in underwater-cave exploration. In addition to his many important leadership roles in the NACD, Parker was the Coordinator of the Woodville Karst Plain Project and Co-

ordinator of the Underwater Speleological Unit for Florida State University.

Kelly would like to urge all members and subscribers to make a contribution to the fund in Parker's memory. All contributions are tax deductible and should be sent to:

Parker A. Turner Memorial Scholarship  
c/o Annette Weglinski  
Florida State University  
College of Arts and Sciences B-155  
Tallahassee, FL 32306 ■

## NSS CAVE DIVING MANUAL - AN OVERVIEW GOES TO PRESS JUNE 18!

It is with great pleasure that we announce that the CDS's new book, the *NSS Cave Diving Manual - an Overview*, went to press on Thursday, June 18. The printer has said that, barring any unforeseen difficulties with preparation, we can expect delivery by Aug. 18, possibly sooner.

When I started this article, I was just recovering from the final efforts required to prepare the computer disks and layouts for the printer, and had settled back to work on the newsletter while waiting for the "blue line proofs" and four-color separations for the cover. But I can't update the article fast enough to keep pace with it. As I go to press, both of those items have been delivered, ahead of schedule, by the printer. The cover separations look gorgeous and I have signed off on them. Final computer corrections to the bluelines have been returned and signed off, so it should be a matter of only a few days before the presses are rolling. (It's been an interesting process; a few minor snafus with "character sets" when translating our encapsulated IBM format to their Macintosh-driven linotype equipment for 1200-dot-per-inch printout directly to film, but nothing that wasn't resolvable. And the printer has exceeded all expectations for quality and speed.)

The book is 411 pages long, 5-1/2" x 8", with 19 chapters, 6 appendices, and a comprehensive index. There are more than 150 illustrations; Wayne McKinnon really outdid himself with dozens of brand-new high-tech drawings for the equipment and configuration chapters, and the drawings for the survey and biology chapters were provided by Kären Flens and Bill Dyer, respectively.

The beautiful color cover photographs of Sac Actun and Azure Blue were taken by John Zumrick and Jamie Hemp-

stead. Jamie also provided the black-and-white photographs which appear in the text. The cover is a soft-bound lamination, with a special new kind of stitch/glue binding called "ort-binding," which stands away from the pages, allowing the book to lie open completely flat without cracking the spine.

There is a Foreword by CDS Chairman Frank Howard and fully 16 pages honoring our financial contributors. (As you can see, this book has truly been a cooperative effort of practically the entire cave-diving community!) There is also a page

### ATTENTION! FOREIGN MEMBERS

If you would like to purchase the manual with your **MASTERCARD** or **VISA** to avoid the extra expense of translating currencies, we recommend that you wait until the book is available from our parent organization, the NSS, in Huntsville, Alabama.

We're very sorry that we are not able to offer this option directly, but suggest purchase from the NSS as the next best thing.

Just as soon as we know case sizes and have made sale arrangements with the NSS, we will send you a special, separate order announcement. If you don't want to wait and are easily able to translate funds, a special order form is enclosed.

of Acknowledgments recognizing people who contributed to the book in other ways, and a Preface and Introduction which qualify other aspects of the book.

### THE CHAPTERS . . .

- DIVE PLANNING FOR CAVERN AND CAVE DIVING**  
by Jeffrey Bozanic
- BASIC EQUIPMENT**  
by Lamar Hires, Mark Leonard and Joe Prosser
- EQUIPMENT CONFIGURATION**  
by Mark Leonard and Lamar Hires
- PROPULSION TECHNIQUES**  
by James G. Coke, IV and H. V. Grey
- REELS AND GUIDELINES**  
by Mark Leonard and Joe Prosser
- COMMUNICATIONS**  
by H. V. Grey
- BASIC DECOMPRESSION PROCEDURES**  
by Daniel Lenihan
- ADVANCED DECOMPRESSION PROCEDURES**  
by John Crea
- INTRODUCTION TO NITROX AND MIXED-GAS DIVING**  
by David Sawatzky, M.D.
- PSYCHOLOGICAL ASPECTS**  
by Mary Brooks
- HYPOTHERMIA**  
by John L. Zumrick, M.D.
- EMERGENCY PREVENTION PROCEDURES**  
by Woody Jasper
- UNDERWATER CAVE FAUNA**  
by Jill Yager, Ph.D.
- HYDROGEOLOGY FOR CAVE DIVERS**  
by William L. Wilson
- UNDERWATER CAVE PHOTOGRAPHY**  
by Tom Young
- INTRODUCTION TO SURVEYING**  
by John Burge
- INTRODUCTION TO SUMP DIVING**  
by John Schweyen
- RESCUE AND RECOVERY OPERATIONS**  
by Tom Cook, Sheck Exley and Henry Nicholson
- HISTORY OF CAVE DIVING AND THE NSS**  
by Sheck Exley

### THE APPENDICES . . .

- U.S. NAVY DIVE TABLES**
- VOLUME TABLES**  
by Ray Jordan
- DISSIMILAR TANK VOLUMES AND PRESSURES**  
by Brent Booth

### **GENERAL SAFETY CONSIDERATIONS FOR DIVER PROPULSION VEHICLES**

by Joe Prosser

### **ABOUT THE NSS AND CDS**

### **NSS COURSE DESCRIPTIONS**

Because we were not able to release the manual at the Spring Workshop, we are making a special initial discounted mail-order domestic price offer of only \$17.00 plus \$3.00 for shipping/handling. (Fliers have been mailed separately, but with the reliability of bulk-mail being what it is, the offer is being repeated here as well. See order form on p. 15.)

We have a special volunteer handling just the processing of the individual book mail orders. For the initial special-discount sales, these will be handled in a different city, separate from all other regular publications orders. Postal mailers have already been purchased and the packages will be pre-labeled for immediate shipping as soon as the books are delivered. (Or if the books are finished before the orders are processed and forwarded, then the books will be pre-packaged, ready for fast labeling. Treasurer Bill Foote says that the very first orders have already started coming in to the Section's Branford post-office box—which is a pretty good trick, since I didn't even receive my bulk-flier in the mail until today.)

Although the book now appears on the regular publications order form, you will want to be sure to avail yourself of the specially discounted price by ordering the book separately. (Regular prices are \$25.00 for CDS members and \$28.00 for non-members—so the discount is substantial. Processing of regular orders will also be significantly slower.) But the special introductory discount is available only with the special order form, and expires Sept. 30, 1992.

The editors, Joe Prosser and H. V. Grey, again want to express their deepest appreciation to all of the people—authors, illustrators, photographers, reviewers, proofreaders, and contributors—without whose voluntary gifts of time, effort and money, the book would never have come into existence. We thank you all for agreeing to be a part of our project and hope that you will be proud to be associated with the finished product. ■



### BLACK CLOUD SCUBA

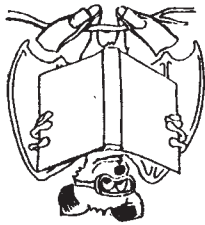
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# BOOKS

## NSS Cave Diving Manual - an Overview

edited by Joe Prosser and H. V. Grey

19 chapters on all phases of cave diving including dive planning, equipment configuration, decompression, mixed-gas use, emergency prevention, sump diving, hydrogeology, biology, photography, surveying, and history, written by leading North American cave divers and technical experts. NSS-CDS, 1992. 411 pages, 5-1/2" x 8", softcover.

Item Number ..... 40120  
Non-Member ..... \$ 28.00  
Member ..... \$ 25.00

## NSS Cavern Diving Manual

by John Zumrick, M.D., Joe Prosser and H. V. Grey

The standard reference work on cavern diving. Covers most of the underlying principles behind safe cave diving as well. NSS-CDS, 1988. 121 pages, 5-1/2" x 8-1/2", softcover.

Item Number ..... 40100  
Non-Member ..... \$ 15.00  
Member ..... \$ 13.00

## Basic Cave Diving - a Blueprint for Survival

by Sheck Exley

5th edition of a "must-read" classic. Extremely clear presentation by our premier explorer of the basic rules of cave diving derived from accident analysis. NSS-CDS, 1986. 46 pages, 5-1/2" x 8-1/2", softcover.

Item Number ..... 40200  
Non-Member ..... \$ 7.00  
Member ..... \$ 6.00

## NSS Student Cave Diver Workbook

edited by Mark Leonard and Lamar Hires

Revised and updated student workbook for Full Cave Diver training. Contains Cavern, Intro to Cave, and Full Cave course outlines and tests — plus numerous in-depth articles, appendices and maps of several popular systems. NSS-CDS, 1991. 113 pages, 8-1/2" x 11", softcover.

Item Number ..... 40300  
Non-Member ..... \$ 15.00  
Member ..... \$ 13.00

## Cave Diving Communications

by Joe Prosser and H. V. Grey

Comprehensive, illustrated text covering all forms of communications in underwater caves: light signals, hand signals, touch contact and slates, with a special chapter on the use of lines and reels. NSS-CDS, 1990. 68 pages, 5-1/2" x 8-1/2", softcover.

Item Number ..... 40900  
Non-Member ..... \$ 8.00  
Member ..... \$ 7.00

## Hand Signals for Diving

by Claudette Finley, Jamie Stone and Carol Vileco

The original book on underwater communications. Hundreds of illustrations. Still highly valuable today. NACD, 1977. 38 pages, 5-1/2" x 8-1/2", softcover.

Item Number ..... 40400  
Non-Member ..... \$ 8.00  
Member ..... \$ 7.00

## Deep Diving

by Bret Gilliam and Robert Von Maier,  
with John Crea and Darren Webb

An advanced guide to deep-diving physiology, procedures and systems, with chapters on equipment, stress, nitrogen narcosis, oxygen toxicity, nitrox, mixed gas, computers, and stage decompression. Watersport Publishing, 1992. 254 pages, 5-1/2" x 8-1/2", softcover.

Item Number ..... 40111  
Non-Member ..... \$ 22.00  
Member ..... \$ 20.00

## Basic Underwater Cave Surveying

by John Burge

Everything you could possibly want to know about surveying underwater caves. Sets the standard for the NSS-CDS Survey Course and all underwater-cave survey procedures. NSS-CDS, 1987, 134, 6" x 9", softcover.

Item Number ..... 40500  
Non-Member ..... \$ 15.00  
Member ..... \$ 13.00

## Recovery Diver Operations Manual

by Capt. Henry Nicholson and Joe Prosser

Standard text and reference for the Rescue/Recovery Course. NSS-CDS, 1988. 16 pages, 8-1/2" x 11", softcover.

Item Number ..... 40600  
Non-Member ..... \$ 12.00  
Member ..... \$ 10.00

## Deep Into Blue Holes

by Rob Palmer

A profusely illustrated (many photos in color) account of the British expedition to Bahamian blueholes by one of the world's leading cave divers. Unwin-Hyman, 1989. 164 pages, 7" x 10", hardcover.

Item Number ..... 40700  
Non-Member ..... \$ 45.00  
Member ..... \$ 40.00

## The Cave Diving Group Manual

edited by F. B. Balcombe, J. N. Cordingley,  
R. J. Palmer, R. A. Stevenson, and B. Bradford

The official British manual covering all aspects of the British tradition from history, equipment, and techniques, to photography, sump diving, and mixed gas. Numerous diagrams and photos (many in color). Castle Cary Press, 1990. 268 pages, 6" x 8-1/2", softcover.

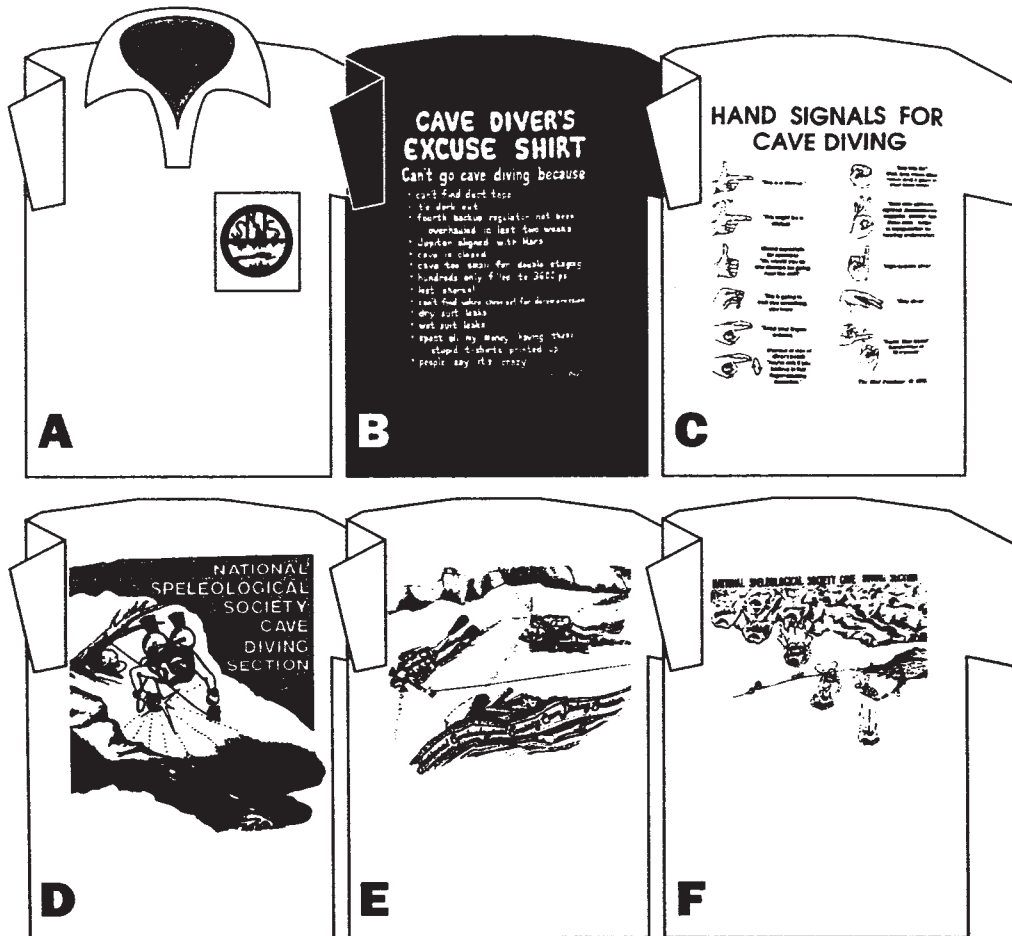
Item Number ..... 40800  
Non-Member ..... \$ 45.00  
Member ..... \$ 40.00

## The Darkness Beckons

by Martyn Farr

Revised and expanded version of the 1980 book on the history of cave diving by one of Britain's foremost divers. Hundreds of photos (many in color). Daidem, 1991. 280 pages, 8" x 10", hardcover.

Item Number ..... 40110  
Non-Member ..... \$ 45.00  
Member ..... \$ 40.00



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## DECALS • PATCHES • STICKERS • WALL CERTIFICATES

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NSS-CDS 2-color adhesive Decal .....	50001	\$ 3.00	\$ 2.50
NSS-CDS 4-color cloth Patch .....	50002	4.50	4.00
"I Support Safe Cave Diving" Bumper Sticker .....	50003	3.00	2.50
Wall-size Training Certificates .....	50004	12.00	10.00

(attach a copy of your CDS certification card for level of training requested)

# **WARNING! There has been a recent rash of underwater thefts of cave-diving equipment at some of the more popular North Florida diving spots by a cave diver or cave divers.**

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*There have been several reported instances of gap reels being removed from several hundred feet inside a cave.* In one particular instance the reel was stolen only moments after its owners exited by another route sharing air from an out-of-air emergency. Had the cave-diving team returned by their original route, in low visibility due to sharing air, and not found their gap reel providing them with their vital continuous line to the surface, they could well have died.

*In at least one other reported instance, a primary reel running from the entrance of the cave to the start of the permanent line was stolen while its owners were deep in the cave.* Again, had they returned to the origin of the permanent line under emergency conditions or zero visibility, they,

too, might well have been accident statistics—or murder victims.

*In a few instances, when caught in the act, the “justification” for swimming off with someone else’s property was allegedly that it was thought to have been abandoned.* No cave diver “abandons” expensive equipment like reels and tanks. These items are sometimes “staged” in a cave during a complex dive, or in preparation for more extensive exploration the next day. Or they may be left in the cave temporarily after a complex dive, or because of an emergency where there isn’t time to remove the gear.

*And there is frequently the possibility that divers may still be in the cave, relying on the equipment — even if there are no vehicles at that particular cave entrance.*

*Cave-diving reels and tanks are life-support equipment.*

Their presence in the cave may mean the difference between life and death to the team that placed them there. Do not remove other divers’ equipment from a cave without their express permission.

*Guard yourself by marking equipment* such as reels or tanks very conspicuously with your name and Social Security number. (With this information, your gear can be traced by the NCIC, the National Crime Information Center.)

*Go to the extra trouble* of having this information very conspicuously engraved indelibly on several sides of the gear. Tape and magic marker can be removed and the reels or tanks sold as ostensibly above-board “used” gear. Having your gear engraved with large, highly visible letters and numbers will make your gear a little less

attractive to thieves looking for a quick resale.

***Be suspicious*** of any used gear offered for sale that looks as though an attempt has been made to cross through identification marks. Don't hesitate to call your local law-enforcement agency to check the bonafides of a piece of equipment being offered with a name and social security number on it, if they differ from those of the person attempting to sell you the equipment.

***Team up with other cave-diving groups*** when possible and coordinate your gearing up, diving, and gearing down so that at least one team is on the surface at all times, guarding vehicles and making note of any other suspicious activities or persons.

***Report any thefts*** immediately to Park Rangers, resort personnel, or local law-enforcement agencies. Also report them to the cave-diving organizations so that they may continue to caution divers against potentially life-threatening hazards from theft.

There was a time once when the dangers of cave diving were primarily focused around the forces of nature. Unfortunately, this is no longer true. Guard yourselves!

Please report incidents for publication to:

NSS Cave Diving Section  
P. O. Box 950  
Branford, FL 32008-0950

National Association for Cave Diving  
P. O. Box 14492  
Gainesville, FL 32604



Printed as a public-service message by the  
Cave Diving Section of the  
National Speleological Society, Inc.  
P. O. Box 950  
Branford, FL 32008-0950

# WARNING!

# Guard Yourself Against Underwater Theft!

# MAPS

Having NSS-CDS maps of Florida's most popular cave and cavern systems enhances the planning, safety, and enjoyment of your dives.

NSS-CDS maps are available in two formats: poster-size blueprint-type "bluelines," and laminated 8-1/2" x 11" note-book-size sheets.

## CERTIFICATION REQUIREMENTS

The cave maps are available to all certified cave divers (certified cavern divers may order either of the two cavern maps). Just enclose a photocopy of your certification card with the order form on the next page.

## THE MAPS ARE NOT FOR RESALE

These maps are protected by copyright laws. They may be purchased only from the NSS Cave Diving Section. The maps may not be offered for resale by dive stores, instructors, or other individuals or organizations.

<u>CAVE</u>	<u>Florida County</u>	<u>Blueline</u>	<u>Laminated</u>
Blue Hole (Jug Hole) .....	Columbia .....	70001 .....	71001
Blue Spring (Madison Blue) .....	Madison .....	70002 .....	71002
Bonnet Spring .....	Suwannee .....	70003 .....	71003
Cow Spring .....	Suwannee .....	70004 .....	71004
Green Sink .....	Lafayette .....	70005 .....	71005
Little River .....	Suwannee .....	70006 .....	71006
Peacock Springs .....	Suwannee .....	70007 .....	71007
Rock Bluff .....	Suwannee .....	70008 .....	71008
Twin Springs .....	Jackson .....	70009 .....	71009
Telford Spring (lower section) .....	Suwannee .....	70010 .....	71010

## CAVERN

Ginnie Spring .....	Gilchrist .....	75001 .....	76001
Morrison Spring .....	Walton .....	75002 .....	76002

## MAP PRICES

Non-member - any quantity .....	\$ 8.00 .....	\$ 10.00
Member - single map order .....	7.00 .....	9.00
Member - 2-3 maps per order .....	6.00 .....	8.00
Member - 4-5 maps per order .....	5.50 .....	7.50
Member - 6+ maps per order .....	5.00 .....	7.00

## NSS POLICY FOR CAVE CONSERVATION

The National Speleological Society believes: that caves have unique scientific, recreational, and scenic values; that these values are endangered by both carelessness and intentional vandalism; that these values, once gone, cannot be recovered; and that the responsibility for protecting caves must be assumed by those who study and enjoy them.

Accordingly, the intention of the Society is to work for the preservation of caves with a realistic policy supported by effective programs for: the encouragement of self-discipline among cavers; education and research concerning the causes and prevention of cave damage; and special projects, including cooperation with other groups similarly dedicated to the conservation of natural areas. Specifically:

All contents of a cave—formations, life, and loose deposits—are significant for its enjoyment and interpretation. Therefore, caving parties should leave a cave as they find it. They should provide means for the removal of waste; limit marking to a few, small and removable signs as are needed for surveys; and, especially, exercise extreme care not to accidentally break or soil formations, disturb life forms or unnecessarily increase the number of disfiguring paths through an area.

Scientific collection is professional, selective and minimal.

The collecting of mineral or biological material for display purposes, including previously broken or dead specimens, is never justified, as it encourages others to collect and destroys the interest of the cave.

The Society encourages projects such as: establishing cave preserves; placing entrance gates where appropriate; opposing the sale of speleothems; supporting effective protective measures; cleaning and restoring over-used caves; cooperating with private cave owners by providing knowledge about their cave and assisting them in protecting their cave and property from damage during cave visits; and encouraging commercial cave owners to make use of their opportunity to aid the public in understanding caves and the importance of their conservation.

Where there is reason to believe that publication of cave locations will lead to vandalism before adequate protection can be established, the Society will oppose such publication. ***It is the duty of every Society member to take personal responsibility for spreading a consciousness of the cave conservation problem to each potential user of caves. Without this, the beauty and value of our caves will not long remain with us.***



# PUBLICATIONS ORDER and MEMBERSHIP APPLICATION FORM

— Send completed forms to —

NSS CAVE DIVING SECTION • P. O. BOX 950 • BRANFORD, FL 32008-0950 U.S.A.

**PLEASE TYPE OR PRINT VERY CLEARLY:**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip/Postal Code \_\_\_\_\_

*(U.S. residents please use 9-digit zip if known)*

Country \_\_\_\_\_

Home Phone \_\_\_\_\_ Business Phone \_\_\_\_\_

*(If applying for membership, please indicate if you do not wish to have either or both telephone numbers appear in the membership roster published annually)*

Today's Date \_\_\_\_\_ NSS # (required for discounts unless applying) \_\_\_\_\_ Expiration Date \_\_\_\_\_

*If applying for NSS membership, please read the NSS Conservation Policy on previous page.*

*"I have read the NSS Conservation Policy, and in support thereof, I hereby apply for membership."* SIGNATURE: \_\_\_\_\_

Item Number	Size	DESCRIPTION (please print clearly)	Quantity	Cost (each)	TOTAL

**SUBTOTAL**

Florida residents add 6% sales tax or include copy of resale certificate. **TAX**

Prices include shipping in the U.S. via 4th-class mail. Foreign orders add 10%. **SHIPPING**

**IF APPLYING FOR MEMBERSHIP, PLEASE READ THE FOLLOWING ABOUT MEMBERSHIP CATEGORIES CAREFULLY:**  
 The NSS Cave Diving Section is an independently incorporated suborganization or "section" of the much larger caving organization, the National Speleological Society, Inc. (or "NSS"). As such, the NSS Cave Diving Section is beholden to the Bylaws of the NSS. These Bylaws require that members of sections, such as the Cave Diving Section, simultaneously be members of the parent organization, the NSS. If you are not already an NSS member, this application form allows you to join both at the same time if you wish. Or you may just subscribe to the CDS's newsletter, *Underwater Speleology*. Subscribers do not have to be members of either the NSS or CDS. (Subscription to *Underwater Speleology* is included as a benefit of CDS membership.)

<b>NSS MEMBERSHIP (annual)</b> — includes 12 issues of the NSS caving magazine, <i>NSS News</i> ; 1 issue of the <i>NSS Technical Bulletin</i> ; NSS voting privileges; and publications and convention discounts. Open to any interested individual. (Read notice about conservation policy and sign above.)	<b>\$25.00</b>	
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<b>CAVE DIVING SECTION MEMBERSHIP (annual)</b> — <b>Must be an NSS member or NSS family member</b> — includes 6 issues of the CDS newsletter, <i>Underwater Speleology</i> ; CDS voting privileges; and publications and workshop discounts. Open to any interested NSS member or individual applying for NSS membership simultaneously. Give your NSS # _____ and Expiration Date _____ if not applying at this time.	<b>5.00</b>	
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<b>NSS FAMILY MEMBERSHIP (annual)</b> — includes NSS voting privileges, and publications and convention discounts. (Does NOT include receipt of NSS publications.) Open to any interested spouse, son, or daughter of anyone currently an NSS member or applying NSS membership at this time, who resides in the same household. Name of New NSS Family Member _____ NSS# _____ Name and Kinship of present NSS Member _____ Expiration Date _____	<b>5.00</b>	
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<b>CAVE DIVING SECTION FAMILY MEMBERSHIP (annual)</b> — <b>Must be an NSS member or NSS family member</b> — includes voting privileges, and publications and workshop discounts. (Does NOT include receipt of the CDS's <i>Underwater Speleology</i> .) Open to any interested NSS member or NSS family member who is a spouse, son or daughter of a CDS and NSS Member residing in the same household. Name of new CDS Family Member _____ Name of current CDS Member _____ If not applying for NSS membership at this time, give NSS # _____ and Expiration _____	<b>1.00</b>	
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<b>CDS NEWSLETTER SUBSCRIPTION ONLY (annual)</b> — 6 issues of the CDS newsletter, <i>Underwater Speleology</i> . (CDS Members automatically receive <i>Underwater Speleology</i> , so it is NOT necessary to subscribe in addition to joining. Do one or the other, but not both.)	<b>15.00</b>	
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<b>FOREIGN POSTAGE SURCHARGE</b> for CDS Membership or Newsletter Subscription outside of U.S.	<b>10.00</b>	
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**TOTAL**

Enclose a check or money order made out for U.S. funds. (Include an additional \$10 bank processing fee for checks or money orders drawn on non-U.S. banks.) Checks returned for insufficient funds must be covered promptly. In addition, you must reimburse the CDS for any bank INF check charges it incurs (currently \$20). Send completed forms to: NSS Cave Diving Section, P. O. Box 950, Branford, FL 32008-0950, U.S.A. Orders and memberships are processed by volunteers. Please allow 6 - 8 weeks for processing.

# CAVE DIVERS / SCIENTISTS GET NSS GRANT TO STUDY SULFUR BACTERIA IN UNDERWATER CAVES

by Harris W. Martin, Ph.D. (NSS #26771)

Cave divers/scientists Tom Morris and Harris Martin, and bacteriologist Robin Brigmon recently received a \$500 National Speleological Society grant to collect, culture, and make gene probes for *Thiothrix*, a sulfide-oxidizing bacteria found in some underwater caves.

The following description of the *Thiothrix* project is drawn from the grant proposal submitted to the NSS Research Advisory Committee.

**Principal Investigators:** Tom Morris's cave diving skills and knowledge of cave biology and ecology are well known to the cave-diving community. Morris is also a consulting botanist and holds an M.S. in plant ecology. He has participated in in-cave research sampling with several scientific expeditions, including the Wakulla Springs Project. He is Coordinator of the Science Committee and the Conservation Program of the NSS-CDS. During the last several years, Morris has observed several sulfur and iron seeps and bacterial mats in underwater caves. His observations inspired this project. Morris will collect the bacteria samples from the study caves, describe their settings, and arrange for photography of field work.

Harris Martin is a cave diver who has done research on underwater-cave sediments, iron deposits in underwater caves, soil bacterial inhibitors, and soil and sediment geochemistry. Martin holds a Ph.D. in soil chemistry. Martin initiated the study by bringing Brigmon and Morris together. With the help of Brigmon, Martin wrote the successful grant proposal. Martin will contribute to experimental design, logistics, biogeochemical interpretation, and manuscript preparation.

Robin Brigmon holds an M.S. in microbiology and recently defended his Ph.D. dissertation on *Thiothrix* at the University of Florida. He is not a cave diver, but as a microbiologist, is interested in studying cave microflora. Brigmon will coordinate the bacteria sampling, transportation, culture, analysis, identification, and genetics applications. Brigmon will supervise scientific aspects of Morris's sampling dives and will be responsible for biological and genetics aspects of the study. Brigmon and Martin will write the paper. Brigmon will be first author on at least one paper.

**Objectives:** The objectives of this study are to collect, culture, and identify *Thiothrix* species and possibly other cave bacteria from several underwater caves and springs in North Florida. The investigators hope to gain some insight into the biogeochemistry of the sulfur cycle in subaqueous Florida karst. They also hope to gain some insight into chemoautotrophic sulfur-oxidizing bacteria as a component of the base of the food chain in these cave systems.

**Research Procedures:** Caves to be sampled will be those with visible colonies of sulfur bacteria. These caves are safely accessible to certified cave divers. Azure Blue Cave and Luraville Sink Cave (Suwannee County), Orange Springs (Putnam County), and one or more other locations will be sampled.

Bacteria samples will be collected from underwater caves and springs by NSS Cave Diving Section-certified cave diver Tom Morris. Sampling will be supervised by bacteriologist Robin Brigmon. Bacteria samples will be collected under aseptic conditions and cultured in a spring-water-based growth medium developed by Brigmon. Pure cultures will be isolated by dilution with sterile spring water. *Thiothrix* isolates will be examined to determine species if possible. Any new species found will be comprehensively described. Efforts will be made to photograph colonies of *Thiothrix* as they are found in the caves.

**Relevance of Research:** Results of this study should contribute to a better understanding of the microbial base of the subaquatic cave food chain in these karst settings. New species of *Thiothrix* may be isolated, described, and named.

Genetic material from the *Thiothrix* isolates may be provided to other researchers for production of DNA probes to *Thiothrix*. Such probes would determine if morphologically and nutritionally similar strains from different sites are genetically homologous. Such data would be a good contribution to the largely unexplored subject of groundwater microbial ecology and population genetics.

*Thiothrix* has been associated with filamentous bulking in sewage treatment plants, blockage of irrigation lines, and corrosion in water storage tanks (T. Crom, Crom Corporation, personal communication).

*Thiothrix* deposit elemental sulfur intracellularly from oxidation of H<sub>2</sub>S. Upon cell death and lysis, this elemental sulfur can further oxidize to sulfate, generating sulfuric acid. Thus, *Thiothrix* may play a role in speleogenesis by promoting limestone dissolution in some hydrogeological settings. This may particularly be true below the water table, where carbonic acid is generally not an effective speleogenic (cave-forming) agent. Some unusually large sinkholes may in part be formed by localized sulfuric-acid attack on limestone. *Thiothrix* could indirectly generate locally significant concentrations of sulfuric acid on limestone and clastic sediment surfaces in deep sinkholes and other karst solution features. *Thiothrix* could "catalyze" this acidification indirectly by its oxidation (to elemental sulfur) of sulfide in up-welling anoxic groundwater.

Microbial reduction of sulfate in aquifers and deep sediments has been given some attention by researchers (Fliermans and Hazen, 1990). Microbial oxidation of sulfide in

groundwater and sediments has received relatively little attention. Little or no data exist on microbial oxidation of sulfide in karst aquifers.

Morris, Martin, and Brigmon are very excited about this project. As far as they know, this will be the first time that phreatic underwater caves have ever been sampled for bacteria. Certified cave divers working in conjunction with research scientists will make this possible. Bacteria in dry caves have been sampled extensively. Bacteria below the water table, however, have only been sampled by means of geotechnical drilling.

Techniques will be developed and published for aseptic sampling of underwater cave bacteria by cave divers. *Thiothrix* bacteria have already been sampled by Morris and cultured by Brigmon from Orange Spring in Putnam County Florida. Martin is using data from this study to contribute to an

evolving hypothesis on the role of sulfur and sulfur bacteria in speleogenesis below the water table in limestone karst.

The NSS grant funds will be used almost entirely for microbiological supplies. Smaller amounts will be used for photographic expenses and air fills. Due to limited funds available to the NSS Research Advisory Committee, no grant funds will be used to pay salaries of the researchers. Their time will be entirely volunteered. This research grant is an example of how the NSS is putting your dues money to work to further the science of speleology. ■

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Fliermans, C.B., and T.C. Hazen, eds. *Proceedings of the First International Symposium on the Microbiology of the Deep Subsurface*. Orlando, FL, 15-19 Jan., 1990. Westinghouse Savannah River Corporation Information Services Section Publications Group, Aiken, SC.

## LETTERS TO THE EDITOR

### CORRECTIONS CONCERNING EAGLE'S NEST ACCIDENT

June 30, 1992

I agree completely with Bob Clemons' point in his article in the March/April edition of *Underwater Speleology* ["Field Neurological Assessment and Emergency Oxygen," p. 10-11, Vol. 19, No. 2]: having the proper training and oxygen on hand when a diving emergency happens may very well save the day.

However, in the article there were a couple of factual errors regarding the 1990 incident at Eagle's Nest which, in consideration of those present, need correction.

Though none of the three who first tended to the stricken diver had formal, hands-on CPR training, all had witnessed many demonstrations and began following recognized procedures, with a single exception: the team committed to the procedures immediately, not even pausing to look for vital signs in the drowned diver. One person, the bent diver, began mouth-to-mouth with the victim, and another diver began heart massage. The third, before leaving to summon help, quickly gave an oxygen bottle to the bent, conscious diver, knowing he needed it, and knowing that the unconscious diver could not breathe for himself at all.

The diver applying mouth-to-mouth took deep breaths of the oxygen and transferred them to the unconscious diver. In this crude manner, what we hoped was that oxygen-enriched exhalation was administered to the unconscious diver as often as every other breath and sometimes on the third or fourth, as the attempt at resuscitation continued. The team managed to get very good lung inflation for the stricken diver every time. This process continued for over a half hour, and as others arrived, they in turn relieved the person doing the heart massage. When emergency medical professionals did finally arrive, no vital signs could be detected in the unconscious diver, and CPR ceased. The bent diver suffered a Type 2 hit in one elbow.

Formal training may well have improved the quality of treatment, but regardless—all the gentlemen present made the best possible attempt to apply both standard procedures and oxygen, in concurrence with Mr. Clemons' point. All acted in ways that others, but not themselves, may perhaps consider heroic: desperate, frightened, shocked—but most importantly—acting unceasingly.

Sincerely,

Christopher A. Brown  
Tallahassee, Florida

\* \* \* \*

### CONSERVATION — IS ANYONE EXEMPT?

June 3, 1992

Take nothing but pictures, leave nothing but bubbles, kill nothing but time. NSS-CDS members must pledge to do nothing that will deface, mar, or otherwise spoil the natural beauty and life forms in caves. The NSS-CDS Conservation Motto. Does it apply to everyone? No.

After attending the Spring Workshop, I was left with many questions on this matter. One of the many highlights of the day was the presentation given by Tom Morris. His slides showed us beauty beyond belief in a variety of cave systems, with his remarks on protection and conservation accompanying these dreamlike images. It also gave us a perspective of the damages that are being inflicted in the subaquatic, underground world.

Later in the evening, Wes Skiles (and his students) provided us with a variety of original, creative, entertaining and instructional short films, covering different aspects of cave diving. When Wes mentioned that his new film would be aired on the Discovery Channel in the near future, I was (like most people in attendance) thrilled at the prospect of being able

to reach a large number of the general population with a positive and educational image of both cave diving and cave divers. I must say that there is a lot of responsibility on this film and its director (even though it is an independent project) to show our feelings as cave divers about the cave environment. (Because of Wes's excellent skills and proven abilities as an underwater filmmaker, he is one of the very few people who is able to get a documentary about cave diving on television.)

After watching the film I was very concerned. There was a scene that sparked a few comments from some of the people in the audience afterwards. It showed one of the divers involved in the exploration of the cave, free diving at depth, inside the cave, while spearfishing. The narration at this point of the movie mentions that even cave divers think of this action as "crazy" because of the dangers and risks involved in free diving at such depth and into a cave. Danger, Risks, Adventure, Pushing to the Limit—it sells. Yes, it does sell, but at what price?

By killing that fish (the only reasonable excuse or explanation the free diver could find to show his "great" ability for diving in such a situation), he violated the three rules of the NSS-CDS Conservation Motto. Taking a life form out of the cave environment, risking damage to the cave formation (and injury to himself) while spearfishing (not everyone kills the fish on his first try), and killing marine life from within the cave. Please note that I am not assuming he violated these rules (movie making involves acting and camera tricks), but that the images that will be shown to the viewer will imply so. In other words, it is not the actual scene that concerns me, but what it represents.

Not long ago in the conservation issue of the *NSS News* (Feb. 1992, p. 34), I read the story titled "King Human," where a caver is punished by an army of cave-living animals as revenge for the damage and destruction other humans had brought to their home before him. In today's world we have managed to abuse and destroy the environment we live in; our disrespect for all forms of life is evident. We have many excuses for depleting rain forests, for the loss of wildlife habitat, for animal experimentation in the name of science and research. (Are we going to study blind crayfish to death?—or are we just "collecting" them to provide us with grants from universities that will allow us to continue our exotic and adventurous travels and explorations to other caves for more "collecting"?)

Some scientists will most likely not agree with my points of view, but the fact remains that the blind crayfish do not have a choice in this matter. Are these scientists also exempt from the NSS-CDS Conservation Motto?

The caves are still one of the very few places in this world where man (in most instances) has not yet created total, irreversible damage. As guests of that unique environment and by being part of a small group of individuals who have the opportunity to visit this very seldom human-seen underwater world, I believe that we should treat them with respect in a non-aggressive and non-destructive manner to the best of our abilities. Remember the Conservation Motto next time you visit as a guest your favorite cave.

Carlos J. Muinelo-Alvarez (NSS #32580)  
Hollywood, Florida

## ATTEMPTED MURDER?

May 14, 1992

On Sunday, May 10, 1992 at about 2:00 p.m., a primary line reel was stolen from its tie-off to the permanent line at Peacock I. It is obviously another cave diver that has done this insane act, and it makes you wonder what kind of person would disconnect a reel from the permanent line and steal it.

Does this person not care that he has put a fellow cave diver's life at risk? Obviously not. In my opinion, this is a severe problem and makes the cave diver have to deal with one more problem that he shouldn't have to deal with. Are we now going to worry about our stage bottles being gone when we go back to get them, or our O<sub>2</sub> bottles getting stolen? Where will this end!!! I have a few suggestions, and welcome any ideas:

- The NACD and NSS-CDS offer a reward of a few hundred dollars to anyone providing information leading to the identify of a cave-gear thief.
- Permanently revoke the membership of any person found to have stolen cave gear in a cave.
- Print the names of these persons in publications.
- Seek legal action for the theft, and potentially other legal action for putting the cave diver's life at risk.
- Humiliate these persons in any way possible.

This is becoming a serious problem and needs to be dealt with in a severe manner. I welcome any suggestions and assistance in getting these ideas to the people that have the power to make a difference.

Ray Skelton  
258 Indian Branch Way  
Lawrenceville, GA 30243 ■

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# LITTLE SALT SPRING ARCHAEOLOGICAL PROJECT

by H. V. Grey (NSS #23062)

The cover photo this issue is of Little Salt Spring, located in North Port, Florida approximately 16 miles southeast of Venice. I was recently invited to attend an open house at the spring by Steve Koski, a professional underwater archaeologist who has been working at the site, and who was several years with the archaeological project at Warm Mineral Springs, located 2 miles southwest of Little Salt. The invitation came as a nice surprise, as I had heard and read about the spring for many years, but had never been able to visit it.

The DNR's Bulletin 31, *Springs of Florida*, describes the area surrounding the spring as "flat and sandy with range grass, scrub oak, palmetto and cabbage palm dotting the hammocky landscape." But that doesn't begin to do justice to the pristine beauty of what is to me, the "real" Florida—raindrops falling lightly on a calm pool of water, with a background of verdant greenery sunlit with a golden cast against a gray, thundery sky. But enough poetry! Down to business.

The spring pool is approximately 230' in diameter and has a spring run on the south side, which joins with the Myakka River emptying out to the Gulf of Mexico. The sinkhole has a classic hourglass shape, with a ledge and cave openings at depths of 70' and 90', where the diameter of the sink narrows to about 75'. Below that, it bells out to depths ranging from 215-250' to form "an inverted funnel of unknown diameter." (Give John Burge and Frank Howard 30 minutes and it won't be unknown any longer!)

Although Little Salt Spring is located fairly close to Warm Mineral Springs, the mineral content of the water is significantly different, suggesting different aquifer sources. The shallower areas of the spring pool contain many species of fish, turtles, some alligators, and even a tarpon, thought to have been transported as an egg on the leg of a bird. Below about 30', the oxygen content of the water is extremely low, preventing aerobic decomposition of organic remains.

It is widely held that water levels during the last glaciation would have put the water levels below the 90' ledge. As Little Salt and Warm Mineral would have been two of the very few places in the vicinity where potable water would have been available, they were unquestionably focal points of the two major waves of human habitation there during the past 12,000 years, as burial sites within the spring basin and along the slough areas confirm. The early epoch of human habitation was between approximately 12,000 and 9,000 BP (before present). The spring level rose to within one meter of present levels, and then receded again between approximately 6,800 and 5,000 BP, during which time the immediate spring environs were once again inhabited.

Human and other skeletal remains were recovered from the easterly side of the 90' ledge in the early 1970's by underwater archaeologists working under the auspices of the Florida Bureau of Historical Sites and Properties. *Springs of*

*Florida* cites radio-carbon datings of the human remains at 5220 +/-90 years BP. Wood pins (radio-carbon dated to 9645 +/-160 years BP) were also recovered at that time from 35' of water, where they had been driven into the limestone.

One of the most exciting early discoveries was a sharpened wooden stake (dated 12,030 years BP), found in direct association with a huge tortoise shell (*Geochelone crassiscutata*). It was thought that the stake was used by humans to kill the tortoise, which was then cooked in situ. Bones of other extinct Pleistocene species such as bison, mammoth and giant ground sloth have also been recovered from the 90' ledge. Many human bones, including a well-preserved human skull, have been recovered from burial sites in very shallow water. Weapons and tools such as a hunting boomerang and carved oak mortar have also been recovered.

There is considerable evidence to indicate that late Paleoindians lived immediately around the spring pool (the areas of the basin which are now submerged). Later, in "Archaic" times, when sea levels were close to what they are now, inhabitants were burying their dead in the surrounding areas.

The property was donated in 1982 to the University of Miami by General Development Corporation, a local land-development company. Marine Affairs Associate Professor Dr. John Gifford of the University of Miami Rosenstiel School of Marine and Atmospheric Science, received a grant from the Bureau of Historic Preservation, Florida Department of State, to undertake new excavations this year. Graduate students from the University, as well as professional archaeologists, have been assisting Dr. Gifford with the research.

The shallow-water burials are not being examined during this season; instead, research has been focused on the basin floor and the 90' ledge. Important new finds include a human



University of Miami graduate students manning the Dive Control Hut with underwater video and voice monitors.

femur and vertebra, which were found on the 90' ledge, as well as more extinct tortoise remains. The 2m excavation squares in the basin have yielded a variety of bone, wood, and shell artifacts, including a number of worked deer antlers in an exceptional state of preservation. The artifacts are labeled carefully and kept in water until they can be treated with preservative chemicals. The site is well documented with sophisticated computer location techniques and videography in situ.

Diving techniques include full-face-mask and half-mask

surface-supplied rigs for diving in the basin, and nitrox for work at the 70' and 90' ledges. There is a diving platform with a walkway extending out into the center of the spring pool, and a control hut on shore where support personnel monitor the excavations on video and are in voice contact with the divers. A careful scheme of pony bottles and back-up banks for the air-compressor has been rigged.

The site is normally closed to the public, and we request that all CDS members and other cave divers respectfully abide by the wishes and rights of the University. ■

## AIR AND SAFETY CONSIDERATIONS FOR TRAVERSE AND CIRCUIT CAVE DIVES

by Frank R. Lavalley (NSS #27829)

For most of us, a typical cave dive involves penetrating a certain distance into a cave system until we reach a minimum of 2/3's of our air supply. At that point, we turn the dive and exit the system, and subsequently surface with a minimum of 1/3 of our air supply (if nothing went wrong!). We, of course, all know this as the "Rule of Thirds." It's a simple rule to follow and it keeps us alive.

Somewhere during our cave-diving career, however, many of us decide to make the more complex traverse and circuit cave dives. The Rule of Thirds still applies. However, because these dives differ from the typical "1/3 in, 1/3 out" cave dives, special considerations need to be given to air planning and safety.

What are traverse and circuit cave diving? A traverse cave dive involves entering a cave system at one spring or sink and exiting at another spring or sink. The horizontal distance in between is called the traverse, which may contain a single continuous guideline or may require closing one or more gaps with gap reels to maintain a continuous guideline between both openings. A circuit cave dive generally involves a single entry/exit point with passages going off in different directions. Penetration is made through one passage to other connecting passages, which then lead back to the cave entrance. Gaps in the guideline between passages are also closed with gap reels to maintain a continuous guideline throughout the circuit.

A team making a traverse cave dive that they are not familiar with should make two separate dives first, one from each entry/exit point. On the first dive, penetration is made, using the rule of Thirds, closing any gaps along the way. The turnaround point is then marked with an *identifiable* line marker. [Editor's Note: "Clothespins are preferred over line arrows for this purpose when setting up traverses or circuits because they avoid the possibility of having directional markers on the line which could point away from the closest exit, which could be disastrous in an emergency."—*NSS Cave Diving Manual - An Overview*, p. 91.]

On the second dive, penetration is made from the other entry/exit point, following the same procedures. If all goes

well, your line marker from the first dive will be located. If the line marker is not located on the second dive, you can assume that one of the following has occurred: penetration on the second dive was not far enough to reach the line marker, or, if the traverse does not utilize a single continuous guideline and requires closing one or more gaps, you may have taken a wrong passage.

Let's assume everything went well on both dives. What have you accomplished (besides logging two more cave dives)? You have determined that the traverse can be made *within* 2/3's of your air supply. You have established a *definite* continuous guideline between both entry/exit points. You have *confirmed* that entry and exit can be made at both points.

A team making a circuit cave dive that they are not familiar with should also make two separate dives first. On the first dive, penetration is made on one side of the circuit, using the Rule of Thirds, closing all gaps along the way between passages. The turnaround point is then marked with an identifiable line marker. On the second dive, penetration is made on the opposite side of the circuit, following the same procedures. If all goes well, your line marker from the first dive will be located. If the line marker is not located on the second dive, you can assume that either penetration on the second dive was not far enough to reach the line marker or you took a wrong passage, failing to close the circuit.

Let's again assume everything went well on both dives. What have you accomplished? You have determined that the circuit can be made *within* 2/3's of your air supply. You have closed the circuit with gap reels to insure a *definite* continuous guideline.

Traverses and circuits can, however, present a particular problem—gap reels. Let's assume you have already closed a traverse or circuit in a popular system with several gap reels on previous dives and you are not planning to make the complete trip until a day or two later. You need to insure that the traverse or circuit will still be closed when you make the dive. Leaving a slate with a message near the cave entrance at the start of the permanent line will catch other dive

teams' attention. Cave-diving etiquette would tell other divers to leave gap reels in place and not to tamper with the continuous guideline for a team that may be further back in the system. But you have to consider the possibility of a dive team with a "finders, keepers" attitude, and leave your gap reels intact behind you. Being halfway through a circuit dive, collecting gap reels along the way, only to find the circuit broken and a gap reel missing on the opposite side, could tend to be somewhat stressful. [Editor's Note: Collecting gap reels behind you on a traverse or circuit is also a willful violation of the "prime directive": *utilize a continuous guideline from the entrance and throughout the dive*. While retrieving your gap reels during the traverse or circuit is certainly more "convenient" than retrieving them on subsequent one-way penetrations, it robs the team of its vital continuous guideline for

a contingency-plan retreat back the way it came. See "Traverses" and "Circuits," pp. 96-97, *NSS Cave Diving Manual - An Overview*.]

I'm not going to harp on jumping gaps visually to avoid leaving gap reels behind to pick up on a second dive. Many of us do it in the more popular systems and in systems we are very familiar with. I just hope Murphy's Law doesn't bite us back! The "snap-and-gap" method for short, visual jumps is a good idea. Unfortunately, some of the old ones are no longer there.

To summarize, if a traverse or circuit cave dive cannot be made *within 2/3's* of your air supply, the route of travel cannot be *definitely* established and linked, and the accessibility of entry/exit points is not *confirmed*, the dive should *not* be made. Trusting in blind luck is not worth it! ■

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## YANA SPRINGS PROJECT RECEIVES MANY DONATIONS FROM CDS MEMBERS

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Gene Broome, the CDS Instructor who organized this year's fine Spring Workshop and hosted the big Bonfire Party on his property in Branford, has courageously volunteered to undertake the delicate task of negotiating with the owners of Yana Springs to attempt to regain access for cave divers.

As the official Yana Springs Project Coordinator, Gene has been working closely with the owners, their legal counsel, and the County officials. He was miraculously able to arrange for limited diving during the Workshop, and we have high hopes that his hard work, patience, and diplomacy will be rewarded with a successful contract agreeable to all.

The CDS Board of Directors wants to encourage all members and other cave divers to follow Gene's lead and give him every cooperation. It is important that cave divers demonstrate their respect for property owners' rights and wishes and their concern for conservation both above and below the water.

In response to the initial announcement by Gene and Lamar Hires that negotiations were underway, several people

made generous contributions. They are:

- Darel Gum, a CDS Instructor from The Dive Shop in Fairfax, Virginia
- Dan Tench, of Macon, Georgia
- John Bateman and Nancy Pike of Balisan Park, Florida
- Ken Wiglund of Largo, Florida
- Bruce Campbell of Clearwater, Florida

(These were copies of letters that our Treasurer, Bill Foote, forwarded to me; if I have inadvertently left anyone out, my sincerest apologies.)

Bruce Campbell's letter had some informative and instructive remarks:

*...My diving career began at that system back in 1985, with my Cavern Class. I continued to dive there until it was closed, because of misuse. We used to pick up at least two big bags of garbage every time we dove there, but it was a losing battle....* ■

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## CARL SUTTON TO BE NEW EDITOR

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At the May 22, 1992 CDS Board Meeting, Training Chairman Lamar Hires announced that CDS Instructor Carl Sutton of Gainesville, Florida has volunteered to edit *UWS* after he returns from cave diving in Mexico sometime in August.

I am not personally acquainted with Carl, but look forward to meeting him and to giving him every cooperation in making a smooth transition. I urge *UWS* readers and contributors to give Carl the same wonderful enthusiasm and support that they have given me all these years in the hope that we will

all be able to continue enjoying the wide variety of articles, photographs, maps, letters, and humor that we have in the past. (Several other members have since come forward and volunteered, and a very special thanks to them, too!)

With any luck at all, I will be printing the new editor's address, phone number, etc. in the next issue, and you can be looking forward to an exciting new look and approach for the Sept./Oct. issue. Safe diving!

— H. V. Grey, Editor ■

# MEMBERSHIP / SUBSCRIPTION RENEWALS AND EXPIRATIONS, AND ELECTIONS

**EXPIRATIONS.** In preparation for printing out the membership list for the new Member's Manual being spearheaded by Kelly Brady, the mailing list will be purged of all expired memberships and subscriptions after this issue of the newsletter.

Please check the numerical date in parentheses on the first line of your mailing label. If it is earlier than July 1992 (07-92), that means that our records show that your membership or subscription has expired. If you believe our computer records are in error, please let us know. If you wish to renew, there is an application form on the last page of the 4-page publications insert.

**NORMAL RENEWALS.** Because the CDS Board of Director terms of both the Secretary and Treasurer will expire at the end of the year, and neither intends to run for reelection, both of these jobs will suddenly fall on new people. In order to try to make these transitions as painless as possible, we plan to mail out the normal renewal forms earlier than usual so that the majority of renewals will have been received and processed before the end of the year.

Despite the fact that renewals are mailed out in the fall, in plenty of time for return before the end of the year, there are always stragglers who don't get around to renewing until sometime in May or June. To give the new Treasurer and Secretary, whoever they may be, a break, we would ask that you try to mail in your renewals promptly this year.

**ELECTIONS.** It's not too soon to start thinking about this year's elections for the Board of Directors. Three general Board positions will be opening up, as the terms of Bill Foote, Dan Lins, and H. V. Grey expire. (The positions of Chairman, Vice-Chairman, Treasurer and Secretary are determined by internal election by the Board of Directors.)

A call for nominations will be made in the next issue of the newsletter. Nominees must be members in good standing of both the CDS and NSS. You are welcome to nominate yourself and will be given an opportunity to write a platform statement which will accompany the ballots. Serving the cave-diving community in this fashion can be very fulfilling. Feel free to contact any of the Board Members listed on the inside cover for more information about the B.O.D. ■

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