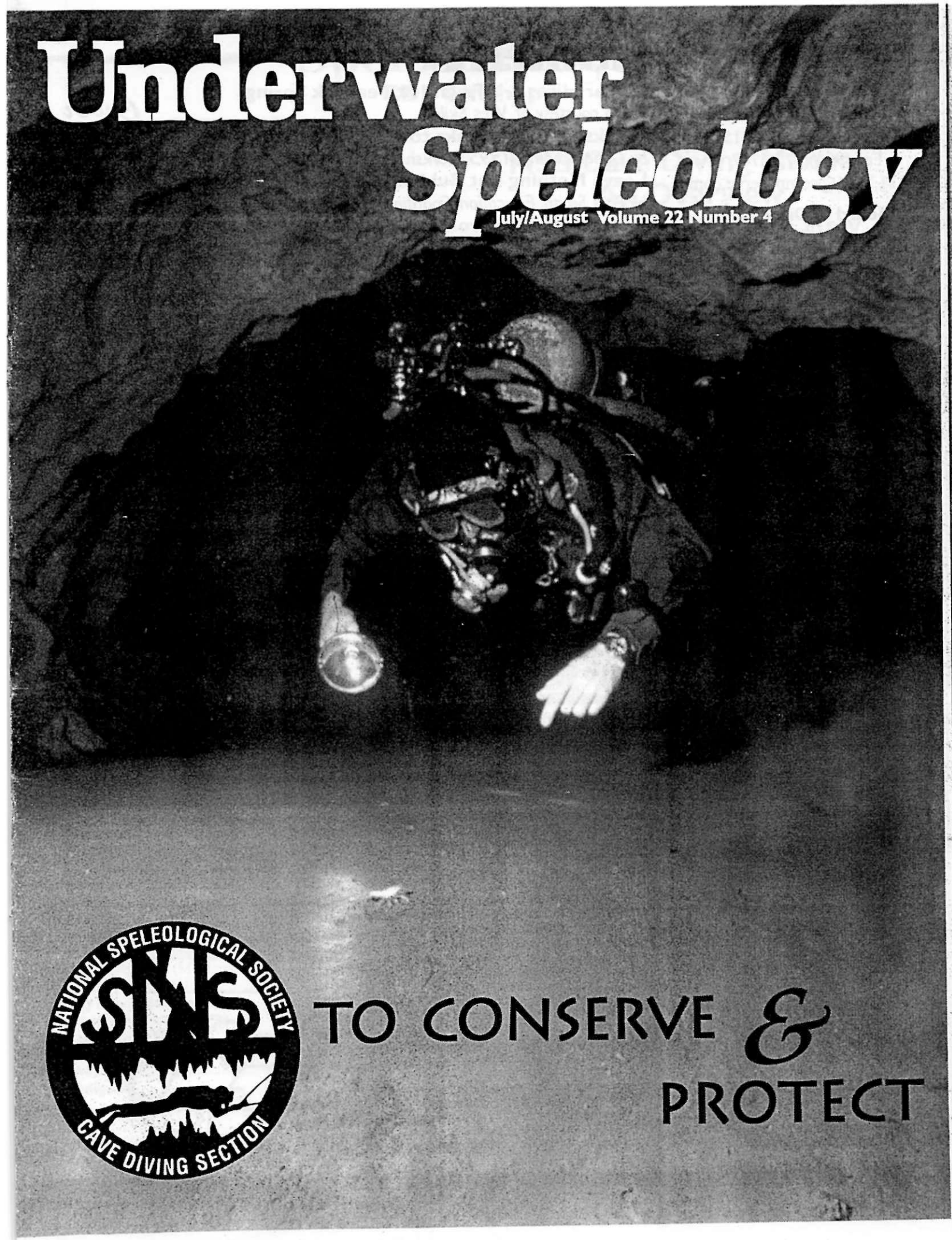
Underwater Speleology

July/August Volume 22 Number 4



NATIONAL SPELEOLOGICAL SOCIETY
NSS
CAVE DIVING SECTION

TO CONSERVE & PROTECT

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Contents

Advertising–Please contact the editor to receive a rate sheet and other information for advertising in *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 by writing to 2813 Cave Avenue, Huntsville AL, 35810 or by contacting the Cave Diving Section with a $25 membership fee. The membership includes discounts on publications and conventions, as well as the *NSS News* and Members Manual. You are also eligible to vote in all NSS elections.

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 in good standing with the NSS. Annual membership is $10 and includes a bimonthly subscription to this publication, *Underwater Speleology*, as well as voting privileges, publications and seminar discounts. Please send membership requests to Bruce Ryan at the NSS–CDS Main Office. Make checks payable to the NSS–CDS.

Subscription–If you do not wish to join the NSS and CDS but would like to receive *Underwater Speleology*, you may subscribe to just this publication for $20 per year. Send funds to Bruce Ryan at the NSS–CDS Main Office; make checks payable to *Underwater Speleology*.

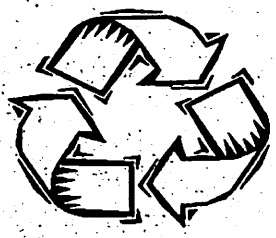
Classifieds Policy–Free Classifieds for personal dive gear are available to members in good standing with the NSS–CDS.

Submissions

UWS welcomes your submission. We assume that anyone submitting photos and/or graphics has obtained proper permission from the cartographer/photographer for reproduction of such material in *UWS*. All submissions are subject to standard magazine editorial practices. Unfortunately, we cannot publish everything we receive. If you have an idea for an article but are unsure if it is suitable, please feel free to contact the editor.

Submission Deadlines

Sept/Oct	August 20
Nov/Dec	October 20
Jan/Feb, 1996	December 20
Mar/Apr	February 20
May/June	April 20
July/Aug	June 20
Sept/Oct	August 20
Nov/Dec	October 20



UWS is printed on recycled paper.

Events

NSS-CDS Social

On Saturday, August 26 at Madison Blue Springs Resort in Madison, Florida, the CDS will hold another social event. Diving begins at 9:00AM, continuing until ????? Guided Dives are available as scheduled in advance. There will also be a party and a bonfire that night.

Call Annette Korn at (904) 728-6536 for details and info on guided dives, or contact Madison Blue Springs Resort at (904) 971-2880. There is a dive shop with air fills at the site. There is also a bath house and camping facilities.

Admission for diving is $10 for the day. Primitive camping is $5 per person and electric campsites are $5 per person plus $5 for each campsite. If you are staying and diving for two days, the camping is free, compliments of Madison Blue Springs Resort. Admission is $3 if you are not diving.

Dive Rite will be there and will have demo TransPacs for doubles, sidemounts, and singles for people to try out, as well as Bridge II computers. Divers Alert Network (DAN) may also be there, doing a little data collecting. If Mother Nature does not cooperate and Madison Blue is not diveable, we will hold the event at Ginnie Springs Resort in High Springs, Florida.

Board of Directors: Nominations

Nominations are now being accepted for three positions on the 1996 BoD. Any NSS-CDS member in good standing is eligible. Nominations should be mailed to: BoD Nominations Committee, PO Box 950, Branford FL 32008, Attention: Gene Broome. Nominations need to be received by October 15.

Letters to the Editor

UWS encourages your input in response to any articles we've run in the past, or in regards to any issues you'd like to raise. Please know, however, that any material that engages in name-calling will not be reprinted. *UWS* is intended as a forum for the exchange of ideas and opinions regarding cave diving. Opinions expressed by individual authors are not necessarily the position of the CDS or the Board of Directors, and are always open for discussion. Write to the editor at the address given on page two of this issue. We look forward to receiving thoughtful and concise responses.

Thanks!

A special thanks to Mary Garvin for all her work in handling international mailings of *UWS*. Many thanks also to Scott Landon for his assistance in proofreading *UWS*.

Moving? Missing Issues of *UWS*?

We hear from members on a regular basis regarding missing issues of *UWS*. One thing we thought many people might not know is that *UWS* is mailed via bulk mail, which is the mail that is not forwarded by the Post Office when you move. Hence, unless you've contacted Bruce Ryan and made an address change with him, you will no longer receive *UWS* in the mail if you have moved, although your membership status may be fine.

UWS Recycles!

With this issue, we are pleased to announce that *UWS* has switched to recycled paper. As this is the first ever Conservation issue, we thought it a great time to make the change. We also hope you enjoy some of the changes in this issue, as we strive to bring you pertinent information in a timely manner. Thanks!

Reprint Requests

Articles that appear in *UWS* can be reprinted in other publications by obtaining verbal or written permission from the editor. Credit for the original publication should be given, and a copy of the journal in which the reprint appears should be sent to the editor for the CDS library files.

Volunteers (Always) Needed!

Recently, members of the Board of Directors and *UWS* have received e-mails and letters asking, "What can I do for the Section?" This new section of *UWS* is designed to help hook up volunteers with projects.

Wayne Marshall, member of the Board of Directors and Volunteer Coordinator, will serve as the "contact" person in all volunteer matters, unless otherwise stated. Wayne can be reached at the address on page two of this issue.

One project currently available is an indexing of the Board of Directors Meeting Minutes. This would be a quick reference guide for current Board members, and could also serve as a sort of handbook for being a Board member. Mainly it is envisoned as a way of confirming previous action taken by the Board on any subject.

Many of you may have your own ideas on what you can do for the Section. For example, Robert Laird of Texas has volunteered to put all back issues of *UWS* on electronic media, to be available through the CDS Bookshop (coming soon!). How, you may ask, did Robert achieve this illustrious position? He volunteered. Simple!

If you do have an idea that isn't already being addressed somewhere in the Board or through the Program Coordinators (listed on page 27 of this issue), you should write up a proposal of your idea, send it to the Board members for review and, if possible, make the next Board meeting. If you cannot attend, contact the Secretary of the Board (Gene Broome) and ask that your idea be put on the agenda for discussion.

Volunteers Are Needed For:

1) Board of Directors Minutes Book
See paragraph three of this article for a brief description, or contact Wayne Marshall.

2) 1996 Workshop
Why wait! Get your ideas in now and volunteer your time for next year's Workshop. Send ideas to the NSS-CDS Main Office, PO Box 950, Branford FL 32008, Attention: 1996 Workshop.

Calendar

August

26 NSS-CDS Social at Madison Blue Springs Resort in Madison, Florida. The fun starts at 9AM. Party and Bonfire that night. Contact Annette Korn at (904) 728-6536.

November

10-12 NACD Workshop to be held at the Holiday Inn West in Gainesville, Florida. Contact Lloyd Bailey at (904) 332-0738.

January, 1996

12-14 Tek.96 in New Orleans, Louisiana, sponsored by *AquaCorps*. To register, call (800) 365-2655; (305) 293-0729 (fax); e-mail: 73204.542@compuserve.com.

May

24-27 The 1996 CDS Spring Workshop is now in the planning stages. For more information, see article on page six of this issue. To volunteer, please write to the NSS-CDS, PO Box 950, Branford FL 32008, Attention: Workshop 1996.

The Safety Line

By Wendy Short, Safety Coordinator

The Abe Davis Safety Award was created to recognize those individuals who have planned and executed at least 100 safe cave dives. The Abe Davis sticker was created to recognize technical experience and access delicate or restricted sites. *Safety* should be your primary goal toward achieving this award, and the sticker a secondary purpose.

If you have missed this year's deadline, you may apply at any time during the year. The sticker can be sent to you once you have been approved, but the certificates are only given out once a year at the Workshop. If you are unable to attend, the certificate will be mailed to you.

The NSS-CDS proudly announces the 1995 recipients:

Jesse P. Armantrout
Gary Ashburn
Murray Bilby
Donald A. Black
Karolyn S. Booth
W. David Booth
Stephen Brooker
Ric Browning
Lawrence M. Care
Gena Chenoweth
Michael Garman
Sherry Garman
Richard J. Horgan
J. Scott Landon
Barbara Jo Lewis
Paul T. Logan
Mark W. Meadows
Greta Mullen
Joe Mullen
Allen Pertner
Steven J. Porter
Robert A. Power
Susan Rouse
Harvey Storck, Jr.
William Streever
Mark Strong
Richard Wackerbarth
Robert Wallace
Denny Willis

With this award comes the responsibility to continue to practice safe cave diving, excel in technical expertise, and demonstrate an uncompromising attitude toward safety.

Workshop 1995: "Venturing Through The 90's"

Thanks to all!

by Gene Broome, 1995 Workshop Chairman NSS# 29196

This year's CDS Workshop sure did prove to be one of the most rewarding experiences in my life. The participants, the vendors, the volunteers, and my family sure went the extra mile to pull together one of my most enjoyable cave diving experiences!

This year's event allowed the Section to finally cross over into some uncharted waters for us in bringing together the largest attendance for a Workshop. We had 516 people for the entire event and, judging from the comments and the returned Workshop Questionnaires, we have only begun in terms of the numbers that have said they will be back next year. Also, it appears that we have been able to provide the most financial support of any previous single workshop to the Section. That certainly calls for a very big **Thank You** to each and every one who did join in and attend the show. This is the Section's only fund-raising event of the year, and it is important that it continues to grow so we can continue to grow as a community.

It was truly an honor and privilege to serve as this year's Workshop Chairman. The quality of talent that associated itself with us in this event has made the event even more rewarding than you can possibly know. I really do appreciate the many encouraging and appreciative comments I have received from so many! Already there have been numerous requests from folks who have volunteered to assist with next year's event. I am most honored that so many have felt the desire to get involved, because that is just what we need: more members getting involved in *their* Section.

There has been an increase in the local interest in aiding the Section with next year's workshop, both financially and otherwise. The Branford High School has been offered as a site to be used for camping for the weekend's events next year, complete with use of their shower facilities. Now, doesn't that take us to a new plateau? I am really excited about the potential for our growth. My tremendous thanks to the many volunteers who gladly gave of their time, the sponsors who generously gave us the necessary funding and support to keep it afloat, the speakers and presenters who made the show what it was, and most of all, a *big thanks* to my indulging wife, Jerri. Most of you can imagine how it's been around my house for the months prior to the workshop.

So, my heartfelt thanks to all of you who participated and attended; without each of you, this show would not have been what it was. Thank you also for the opportunity to serve the Section.

Our Workshop was Sponsored by: Abysmal Diving, Beuchat USA, Cochran Undersea Technology, Dive Rite Mfg., Orlando Dive Center, Ocean Management Systems, and American Nitrox Divers International. Please let these businesses know how much we appreciate their support. Orlando Dive Center was the main sponsor of the lunch on Saturday, and the Suwannee County Chamber of Commerce provided the Friday evening Social. Branford Dive Center provided the coffee and doughnuts for Saturday's events.

We hope you will be able to join us again at future workshops. Next time, bring a friend! We promise you a great time of making new friends while visiting with some old ones. Until our next meeting.... ❖

Gene Broome
1995 CDS Workshop Chairman

Dear Gene Broome,

On behalf of *Save Our Suwannee*, I would like to thank you for allowing us to participate in the NSS-CDS Workshop in Branford, Florida on Memorial Day weekend. We believe that the Suwannee River is a natural resource worth protecting. Hopefully, we were able to enlighten some of the Cave Diving community on several potential hazards to the River.

Again, thank you for your cooperation. We really appreciated being a part of the Workshop.

Sincerely,
Marianne Gamble
Member, *Save Our Suwannee, Inc*
Member, NSS-CDS #31304

Leave Nothing but... Bubbles

by Paul Smith, Education Coordinator NSS# 14385F

A recent issue of the *NSS News* had the theme "Conservation–More Than Just a Word." NSS President Dave Luckins found the definition of conservation to be "protection from loss or waste." He suggested that protection requires action. It occurs to me that while we are protecting the caves from loss of quality or waste of their uniqueness, we are also protecting ourselves from loss of the privilege of enjoying the caves or waste of the chance to have free access.

While the NSS is trying to increase conservation awareness to more than just a word, until recently, conservation has barely been mentioned at all in the NSS-CDS.

Let's start a new era of cave conservation awareness by closely reading the *NSS Policy for Cave Conservation* (below), and realizing that it is the foundation on which our beliefs and techniques are based. All members of the CDS and hence the NSS have to read and sign this document as part of membership requirements.

Here it is, fellow members, the ideal for which we strive as a Society. As all this sank into mind, I began to realize that in the past, much of the policy of the Cave Diving Section has come from the business-oriented sport diving industry rather than from the education- and conservation-oriented National Speleological Society, of which it is a part.

This conservation gap has left us with a lot of catching up to do. It will require some extra awareness and effort from all who think of themselves as members of the "cave diving community."❖

Cave Softly...

NSS Policy for Cave Conservation

The NSS 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 the 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 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 a 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 of over-used caves, cooperating with private cave owners by providing knowledge about their caves and assisting them in protecting their caves and property from damage during cave visits, and encouraging show cave owners to make use of their opportunity to aid the public in understanding caves and the importance of their conservation. When there is reason to believe that publication of cave locations will lead to vandalism before adequate protection can be established, the Society will oppose publication. It is the duty of every Society member to take personal responsibility for spreading a consciousness of cave conservation to each potential user of caves. Only by doing this can the beauty and value of caves long remain with us.

Instructors: The Front Line

by Lamar Hires, Training Chairman NSS# 23991

At the last joint cave diver instructor workshop at Indian Springs, all the instructors present agreed on one topic: conservation issues need attention. It says a lot to have more than forty cave instructors from the NSS-CDS and the NACD agree on something, when there are so many things taught differently.

Tom Morris gave the instructors a presentation on conservation. He continually promotes this subject and wanted the instructors to help spread the word, since we are the front line when it comes to new cave divers. Conservation of the caves is and will continue to be a main focus of the cave diving community. As more divers enter this community, the increased traffic in the caves will start to take its toll. Many of us who have been cave diving for years have seen drastic changes in the appearance of our caves.

Let me give you an example. A section of passage in the Devil's Ear cave system 300' from the entrance is called the Cornflakes. Today, new cave divers have to verify they passed through this section by a description of passage shape, distance and depth. In earlier years, anyone who found the Cornflakes knew he or she was there because the name fit the passage appearance. The floor in this section was covered with chips and flakes of reddish-brown iron deposits. Not today: there has been so much traffic that the iron deposits have been crushed, powdered and washed away by flow and turbulence from diver activity (see related photo, page 12).

Everyone must do his or her part to minimize the diver impact on sites. Some people complain about restrictions on diver activity at sites, but this is a control to limit our impact on the environment. This will continue to grow as more divers want to enter the cave diving community.

Those present at the instructor workshop (many who have been around long enough to see the impact on the environment) agreed to follow the new training site limitations. In an effort to minimize the impact on caves, both the NSS-CDS and NACD have asked all their Cave Instructors (through the instructor newsletters) to limit zero visibility drills to particular caves and areas of these caves. The areas mentioned are the most popular training sites where the drills are performed now, so this won't interfere with training. The hope is that the instructors will reinforce their environmental message by explaining the reason for limiting the zero visibility drills.

Site Limitations

The site limitations presented by the NSS-CDS Training Committee are:

Peacock Springs–The shallow tunnel, or no further than the breakdown pile (approximate penetration 400').
Telford Springs–The first 500' of main line.
Devil's Ear–Downstream of the Keyhole and only the first 200' of the Catacomb area.
Madison Blue Springs–The Blue Room (cavern); from the Monkey Room out, and on the main line up to the Martz sink jump (approximately 700' in).
Cow Springs–Downstream section of gold line.
Manatee Springs–Catfish to Sue Sink.
Little River–From Tablerock out.
Orange Grove–From the warning sign out.

Environmental Awareness

Now the trained cavern and cave divers need to do their part. What follows is a brief list of things to ask yourself about your awareness of the environment.

1) Do you stay on the ceiling to avoid the bottom sediment (silt)?

Divers should avoid both floor and ceiling. Pick a point above center line in the cave to swim. The distance from the ceiling is controlled by the size of the passage, not a fear of bottom sediment.

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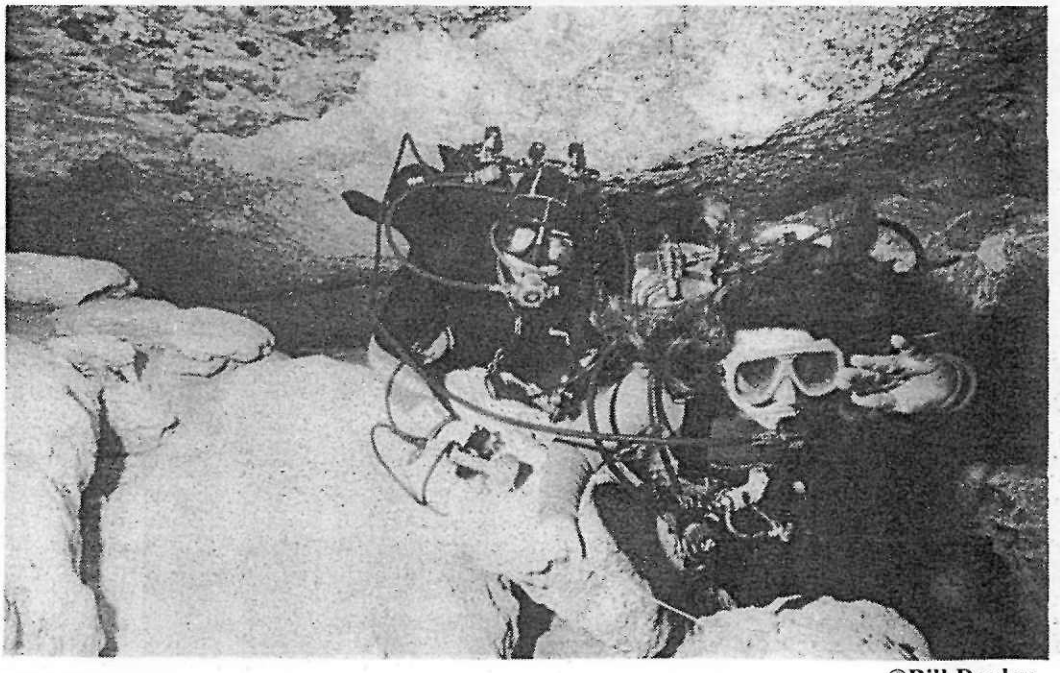
Lights Out Drilling



©Bill Dooley

Threat to Wakulla Averted

by Jarrod Jablonski, NSS# 38312

The numerous research and exploration projects currently being conducted by the WKPP have expanded to the international level, yet perhaps the most groundbreaking research has recently been conducted at Wakulla State Park for the National Park Service. For years, the WKPP has focused many of its exploration efforts in the vast expanse of the Woodville Karst Plain of Tallahassee. Recently, the group has been focusing on the hydrodynamic relationship between Indian, Sally Ward, and the Wakulla system.

The group's ardent search to explore the remote portions of these mammoth systems recently became of special interest to Wakulla State Park. The property adjacent to Wakulla Springs had come before the city council in a rezoning attempt. It seems the owner of the property desired to rezone the property "commercial" and develop it as a trailer park. The proposed development plan included underground gasoline tanks and, as a result, posed a serious environmental hazard to one of the State's true jewels. In addition to the risk of fuel contamination, the park had the very real risk of effluent spillage to protect against. With only one gallon of gasoline capable of polluting 10,000 gallons of groundwater, the threat to the natural splendor of Wakulla Springs was significant.

The most significant question before the zoning committee proved to be the concern over the likelihood that effluent spillage could reach the local groundwater. The property owner provided a report that claimed the area to be relatively non-porous. This information originally induced the city council to accept the zoning change. However, when the WKPP provided a topographic map with the expanse of the local cave systems plotted over it, a more accurate picture of the region evolved. It soon became clear that the property was not only quite porous, but it was also at the intersection of the Sally Ward and Indian cave systems. Video footage, coupled with the topographic cave overlay, allowed the city council a more accurate picture of the sensitive interactions that lie within the county's interior.

No longer hampered by the questionable accuracy of a limited surface evaluation, the council was able to witness the immense tunnels and high domes located in the area below and adjacent to the property in question. This information allowed the council to make their decision based upon more extensive information. Given the immensity of the caves in question, and the tremendous volumes of groundwater at risk, the council opted to deny the rezoning request.

In our search for a method to better appreciate the delicate natural balance in the groundwater system, scientists and planners must develop an accurate method to gather information and thus make more educated decisions. Undoubtedly, the future of land management and groundwater planning will play a key role in our society's future and, hopefully, research like that conducted by the WKPP will assist in a productive and knowledgeable assessment of these crucial resources by providing future planners with the valuable information necessary for such crucial decisions.❖

The Front Line continues...

2) Do you have valve protection on your cylinders? Why?

Valve protection is intended as a last resort in protection of equipment. It was designed for use with fast DPV's where impact could be more severe than when swimming. If you bang your valves swimming and use valve protection for this, rethink the problem. Get off the ceiling. Buoyancy control and technique are the answer, not a bigger hammer.

3) What are the two best propulsion techniques to use in regards to cave conservation?

The Modified Flutter and Frog Kick. The pull & glide (more often the pull & grab) and ceiling walk put the diver in contact with the cave surface. The pull & glide should be used in high flow (can't swim against). The ceiling walk or push should be used in low flow, low floor-to-ceiling clearance when attempting to minimize silt potential.

4) When and where should DPV's be used?

DPV's are tools for the cave diver, not equalizers for those without ability. DPV's allow the diver to cover more distance in less time, putting the diver further away from an exit. You should never ride a DPV further than your physical capability to swim! After proper training in the use of a DPV and emergency procedures, limit use to large caves in which floor-to-ceiling clearance allows a safe ride with no contact with the cave surfaces.

Everyone must play a part to conserve our caves so future cave divers can see them like we see them today. If you see things that are not environmentally sound, write about it! We need to increase everyone's awareness.❖

TO CONSERVE

by
Tom Morris,
Conservation
Coordinator
NSS# 24256

We've got a bit of a problem. No, a big problem. Namely, the unacceptable amount of damage that we cave divers are inflicting on our caves. This is an issue that we must deal with now. If we don't, there are likely to be unfortunate consequences, such as cave closures, in our future, not to mention beat-up caves. The Section's mission is to promote safety, exploration and conservation. We've done a pretty good job with safety and exploration: the Section mobilized the education campaign that dramatically reduced the sad number of openwater divers drowning in caves (and thereby derailing legislation to regulate our activity), and we have always led the way in diving innovation. Now it's time we got rolling on conservation. The first thing we need to do is admit that we have a serious problem on our hands, get the discussion going within our organization(s), and do whatever we can to solve it.

PROBLEM? WHAT PROBLEM?

We do have a conservation problem. Damage is accumulating in our caves, most of it unnecessary, and much of it permanent. Cave divers are responsible for every bit of it. Furthermore, the *rate* of damage is increasing, presumably the result of the recent dramatic rise in cave diver numbers.

The problem is pretty serious, but I don't think some of us realize just how serious. So, let's discuss a cave almost everyone is familiar with that typifies the problem: Devil's Eye. This is a unique cave, a world-class cave. Twenty-five years ago, in its pristine state, this cave was black from front to back. Peer under the boulders just inside the Eye entrance and you will see the remains of geothite (pronounced gur-thite). Every passage looked like it was covered in black velvet. Vents blowing crystal-clear water were called black smokers because the deposits in their throats looked like soot. It was hard to find the Keyhole because the ubiquitous black reflected little light (see photo, page 11). Everyone felt intimidated by the Cornflakes restriction, with its two-foot diameter tilted plates forcing you against the ceiling (see photo, page 12). Past the Y, the only sign that a human had ever been there was a thin white trail along the rim of the small meandering canyons. One small trail followed the upper walls on to the Big Room, where an unbroken clay and silt floor stretched on into the unknown. It was a frontier; it was exciting, and it was beautiful. But things have changed. Today the black walls are gone in the front part of the cave, except in the small nooks and crannies that a diver cannot fit into, and the once-perfect floors now bear the marks of our passage. We have managed to touch, bang and scrape just about every inch of the front of this exceptionally fragile cave.

Were those student divers who did all that? Can we feel secure knowing that the more distant parts of the cave are safe? Sadly enough, we cannot. Very large passages (even some several thousand feet in) now have marks on literally every square foot of the walls, ceiling and floor. The remarkable area just past the Split, where the floor is composed entirely of large geothite plates, looks worse by the week. Several plates have been ripped up from their clay bed and overturned. Some have been broken; almost all of them are now smeared with clay. Small tunnels that obviously go nowhere are scarred by forced entry. Clay floors are marred with hand, fin, knee and scooter marks. Rocks knocked off ceilings litter the floor. All this in a cave that only has to be touched in three places: the entrance restriction, the Lips and the Cornflakes. The list goes on, and similar damage is now widespread in all of the popular caves. What will our caves look like in ten years if we keep this up? The Section has long held the reputation for turning out the most

& PROTECT

highly trained and skilled divers in the world, but when I see the kind of unnecessary damage we are inflicting on our caves, I have to wonder if our reputation is deserved.

The damage is largely unnecessary, because a skilled diver can and should move through caves without breaking rocks, destroying geothite and mauling soft floors. Sadly, much of the damage is permanent, because damage to many cave features, such as geothite, does not heal. Ever!

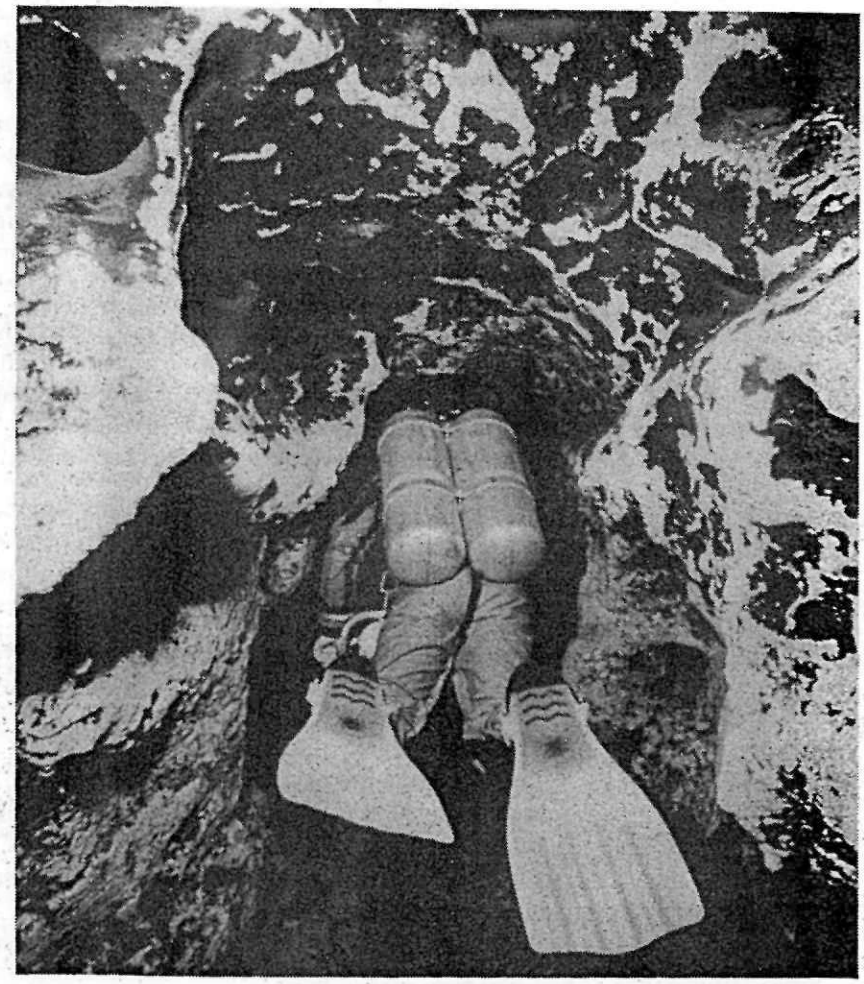
"INITIAL CONDITION"

Some divers who have not been around too long may think I am overstating the problem. If so, consider this. There is a concept in mathematics and computer science called "initial condition." The initial condition is the beginning point for calculations, and all change is measured from that point. Our personal calculations of change are also based on an initial condition, namely the way things are when we first see them. Neophyte divers entering caves such as Devil's Eye do not realize what has already been lost, and unconsciously measure change (damage) from an already degraded initial condition. This is an insidious process that has undoubtedly figured in the degradation of our caves.

Even a few of the old timers may feel that I am blowing the cave damage problem out of proportion. In fact, after calling for action at the Winter 1995 Instructor Workshop (where there seemed to be a consensus that the problem is serious and requires action), I have already heard rumors of grumbling. This is to be expected. After all, I am suggesting that our collective behavior is wanting, and that a thorough examination of our personal and organizational way of doing things is in order. We have to decide if we really care enough about these caves to tighten up our act.

The holder of a cave diving certificate is assumed by the State and many private cave owners to be capable of safely exploring caves. That is essentially what our certificate guarantees. But our certificate must also guarantee that the divers we turn out have the necessary skills, knowledge, and attitude that will enable them to explore our underwater caves without degrading them. We owe this to the caves, to the cave

The Keyhole: No longer hard to find because the black geothite has been scraped from the walls by divers, leaving the walls bare.



©Wes Skiles

CONSERVE & PROTECT & CONSERVE

©Tom Morris

The Cornflakes: Tilted plates and flakes of reddish-brown iron deposits.

owners (including the State), to ourselves, and to future generations of cave divers. Otherwise our certificates are nothing but permission to degrade the very environment we all profess to love.

THE ANSWER: GOOD, CONSCIENTIOUS DIVERS

When it comes right down to it, conservation is up to the individual diver. That is where the rubber meets the road. Three things are necessary to become an accomplished, non-destructive cave diver: **Knowledge**, **Attitude** and **Skill**. They overlap, each is equally important and, if any one is lacking, a diver will not reach his/her full potential, and the caves will suffer. Let's take a look at each of these.

KNOWLEDGE

By knowledge, I am referring to the caver's understanding of the cave environment. This includes the ability to recognize the various cave features and assess their susceptibility to damage. Without knowledge of the environment, the cave diver is essentially unconscious and cannot possibly make the reasonable judgments and decisions which non-destructive diving depends on. For example, when it comes time to set a stage bottle down, where do you put it? On a soft clay bottom, or on a nearby rock ledge where others have already been leaving bottles? It seems like a simple decision, but there are many damaged spots in our caves where stage bottles have been placed on sensitive bottoms, including geothite, when there are perfectly suitable places to stash them.

Susceptibility to damage should be considered before every move you make in a cave. There are two components to susceptibility to damage: 1) fragility (how easily a cave feature is damaged) and 2) heal-ability (does the damaged feature heal, and if so, how long does it take?). Remember, caves are great at preserving things, including damage.

There is a hierarchy of susceptibility to damage for features in Florida caves. A discussion of the hierarchy is involved and, since it is so important, a future article will deal specifically with it. Suffice it to say that we should get into the habit of not touching the cave. In some caves, every touch leaves damage. This business of not touching the cave may sound extreme to the beginner, but it is not. It is the hallmark of the seasoned cave diver. We are so lucky. We can travel through our underwater caves without touching them. Dry cavers are not so fortunate. They have to walk somewhere. Learn to recognize the features in our caves. Treasure them.

SKILLS

The skills that must be mastered to become an accomplished cave diver go well beyond the basic skills expected of the open water diver, and they are not easy. The length of the list of questions in "The Skills Quiz" (see box at right) suggests that cave diving is not an activity that is mastered overnight. In fact, this is one of the attractions of the sport. It is subtle enough that you continue to improve as long as you keep on diving. It should also suggest that it takes a lot of diving and time before advanced dives should be attempted. A common sight at Devil's Eye is the novice diver with two stage bottles and a scooter. When you see these people, you know the cave is about to take a beating. It's a safe bet that they would get further without the extra bottles and probably have more fun doing it. So spend some "time-in-grade" before attempting difficult dives or even simple dives in pristine caves. Diving beyond skill levels is one of the leading causes of cave damage. The wrong time to hone skills is when you are in over your head.

THE SKILLS QUIZ

Have you tried using your lungs as a sensitive buoyancy compensator to "hover" in a precise position without "finning" or "fanning?"

Have you tried tying off a reel without settling to the bottom or hanging onto something?

Can you pick up a stage bottle "on the fly?"

How is your spatial awareness—is it a rare thing to touch the cave, or do you leave a trail of ceiling "crumbs" behind you as you bounce and scrape along?

Can you turn on a dime without stirring silt?

Do you use the most efficient and non-destructive fin stroke for every situation?

Are you in good enough shape to swim your whole dive in style without resorting to destructive "pull & glide" techniques (remember, if the flow is mild enough to "glide," shouldn't you be swimming)?

If you absolutely have to pull to move through high flow caves, do you look for holds that have already been used, in order to minimize damage?

Do you know light and hand signals well enough that you rarely have to use a slate (which often results in bottom-wallowing or ceiling-crunching)?

Can you put your hand on any piece of gear you want without fumbling around?

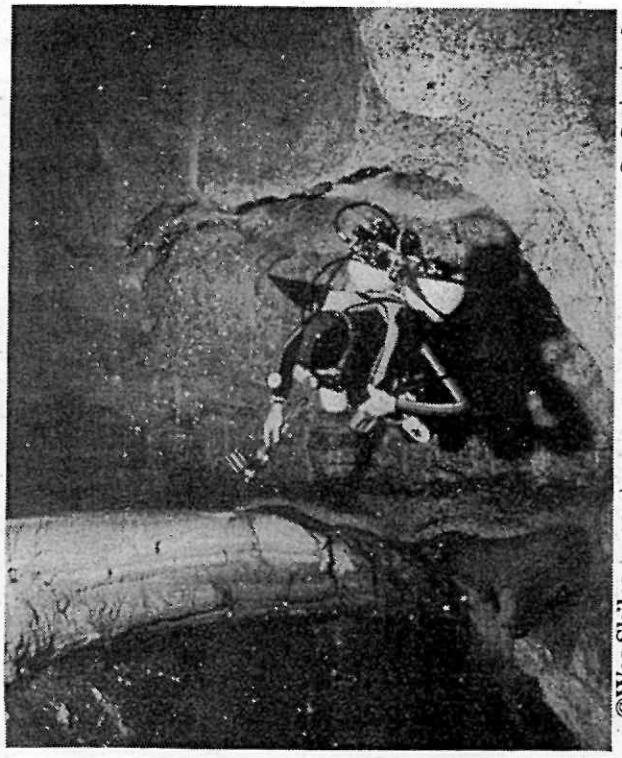
Do you know how to play the current in a high flow cave in order to get through with the least effort and damage?

ATTITUDE

I believe that most divers want to do things right. But the fate of our caves depends on more than that. It depends on the Section, as well as every cave diver, teaching our new divers exactly what is right and wrong behavior in a cave, and always setting a proper example. Attitude is contagious. The basic rule: Minimize cave damage.

Always consider the course of minimum impact. Our caves are not just tubes to go scuba diving in; they are delicate ecosystems. Furthermore, they are not a renewable resource, and every nick counts.

The first example a new cave diver gets is from his/her instructor. Students tend to lionize their instructors and are most receptive to ideas while in training. Because of this, the Section Instructors probably have more potential to help solve our cave damage problem than any of the rest of us. We have excellent instructors, but our organization has not been serious about conservation, giving it only nominal attention. It is safe to say that a mandatory unit of training pertaining to cave conservation is in order. The Section is currently reviewing the content of its training courses, with the goal of shoring up weaknesses in conservation training. But it must be thorough if it is to be effective. Students are evaluated for



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Stratified clay layers. Each layer is a single depositional event.

safe performance. They should also be evaluated for how they treat the cave. It is my personal opinion that the cave diving courses need to be lengthened to better educate our new divers. This will raise the cost of instruction, but the increase will hardly be significant when you consider how much money must be spent just to get into a cavern. Certainly something is currently lacking in our training.

New cave divers tend to measure their progress by how far they get into a cave. I know, I was once a beginner. But grace and style are better indicators of a good diver than distance. The quest for distance results in damage, and probably stunts personal progress more than anything else. So, master the basics in the front parts of the training caves. Work up to the other stuff slowly. It's safer, you'll "see" the cave quicker, and the cave will get a break. Save the pristine caves for later.

Training should not stop with the certification card. If you dive long enough, you'll find yourself taking less experienced divers under your wing. This is as it should be. Emphasize conservation to your protégés. The more the better. Do not tolerate damaging diving. Point out the beauty of our caves. It is amazing how much people miss until it is pointed out to them, even beauty. If we don't shape attitudes in the right direction, who will?

THE NEXT GENERATION

We are fortunate in being the first generation ever to have the privilege of seeing some of the most beautiful caves in the world. But, in just a few years, we have seriously degraded some of our best ones. It is typical of people to let a problem get pretty far along before they recognize it and go about solving it. We cave divers are no exception.

It is time for us to pull out all the stops and focus on solving the cave damage problem. Fortunately, we have the organizational structure in place to make a concerted effort, which is what it will take to stop cave degradation. The Section has a good record of problem solving and, hopefully, we can solve this one, too.

This article has laid out the problem and made suggestions for action. Education and example are the keys. But ultimately, it is up to each and every one of us to minimize the marks of our passage. If we don't, we will leave a sad legacy to the cave divers who will follow us.❖

WHAT YOU CAN DO

1) Every one of us should examine our diving habits. If self-examination suggests you can improve your conservation record, then get with it. There are so many divers in the caves these days that we cannot stand for even a small percentage of us to be sloppy. One careless diver can undo all the efforts of many careful divers who have passed before him/her.

2) Do no tolerate destructive diving in your peers. If you witness damaging behavior, gently point it out to the offender. They are often unaware they are doing anything wrong. Peer pressure works.

3) Check your attitude. Look at access restrictions designed to protect cave resources from a conservation point of view. As you build the experience and credentials to gain access to restricted sites, just maybe you will get to see the caves as the original explorers saw them. Aesthetics is a major part of cave diving. Let's keep it in the experience.

4) Carry conservation to the surface. Pick up litter at the dive sites, even if it is not your own. Trash attracts more trash. Limit vehicle impact by not running over vegetation and expanding parking space in an attempt to get tailgates right out over the spring. Telford Spring is a good example of a degraded area, and we cave divers share the blame with the locals.

5) Share your ideas on solving the conservation problem. The beauty of a general membership organization like ours is that everyone can make a difference.

& PROTECT & CONSERVE & PROTECT

WHAT THE SECTION CAN DO

Informal Discussions have been ongoing for some time about what should or can be done to reduce cave damage. This issue of *Underwater Speleology*, the first one dedicated to cave conservation, is a good start. Here are some ideas the Section and individual members have already decided to work on or are considering:

1) The Section is working on a cave conservation flyer that can be sent to each new student along with his or her certification card.

2) The Section will make available to the instructors a slide series showing caves features. This will give students a preview of what features they will see in the cave, and give the instructors a chance to stress their value. This is important. After giving a presentation on conservation at a recent workshop, a fellow from Canada came to me and said: "I'm glad I heard your lecture. I knew the formations in the Yucatan caves were delicate, but I didn't know Florida caves had anything in them to worry about." If we don't teach people the features, they won't see them until it is too late.

3) Our Training Director has defined specific locations in the training caves to which lights-out drills will be confined. We should go further and ban any training in pristine caves.

4) We should consider erecting bulletin boards at Devil's Eye, Peacock Slough and Madison Blue. These will be informative, and will surely be read by the info-hungry beginner. Of course there will be a strong conservation message. Information at these three springs will reach almost all the new divers, and it will be the last thing they read before hitting the water. The owners of Ginnie Springs have expressed interest in this. They are concerned about the condition of their cave, and hope this might reduce damage.

5) I am going to start writing a regular column in *UWS*, which will expand on many of the points touched on in this article. The column will also discuss the natural history of Florida caves to promote a greater understanding and awareness of these unique ecosystems. I plan to showcase "the cave damage of the month," not for black humor, but to raise our awareness of unnecessary damage. So, send me your worst examples.

6) Other members who recognize the problem are planning conservation-oriented articles. We should encourage this. We need to keep this issue constantly in front of the membership. We don't need gaps in our coverage that the new diver can slip through.

7) We should consider the more widespread use of experience-based certificates such as the Abe Davis Award to keep beginners out of pristine or dangerous caves. In some caves, we should probably limit scooters to Abe Davis recipients. This will be controversial, since none of us likes restrictions on our behavior. This does not mean one will never get to dive a particular cave. It simply means you have to gain experience and earn the privilege. Since I instigated the Abe Davis requirement for Thunderhole, the amount of new damage has fallen off significantly, and I suspect this would work in other caves as well.

8) Have a conservation presentation at most workshops. Workshops are heavily attended by beginners, and we shouldn't miss these opportunities for education. It's more important than learning how to side-mount.

9) Add an errata to the Section's *Cave Diving Manual* explaining the conservation problems surrounding the destructive pull & glide and flywalking techniques that made it into our last printing and are therefore currently sanctioned.

10) Produce T-shirts with a conservation message. How about something like "Leave nothing but bubbles." Ideas, anyone?❖

Conserving

by James Coke, NSS# 26442

The multitude of educational and committee projects that are sustained by the NSS and its Cave Diving Section are not unlike any type of music that you might enjoy. Be it symphony or song, the intricate development of a simple melody lends form and meaning to an otherwise odd collection of notes. A similar quality also exists in the framework of progressive caving programs. In this instance, their vitality is cemented through the subtle lyrics of cave conservation. It is a pervading theme, much like our obligation towards caving safety, as it champions our accountability while we investigate and take delight in this alien environment. By its very nature, conservation is an aggregate of worthy human goals that we struggle to consign to shrinking natural resources. Considering the rigorous growth of underwater cave use in the past decade, conservation is swiftly evolving into one of the most lively and perplexing issues that we face today.

As any impromptu discussion among cavers will yield an assured consensus for cave conservation, it will also produce a dozen opinions on precisely how, when and where to apply it. These diverse and often opposing convictions suggest that its image may be cast in stone, but in practice it has its own unique interpretation for every caver. This matures into an identification of environmental limits that is focused only through personal knowledge and familiarity with the environment. Not only do we come to justify our own caving habits and ethics through this interpretation, it also motivates us to influence the behavior of others. Accordingly, it has the extraordinary prospect to unite us as one voice for cave conservation, while maintaining its vigor through individual perceptions of rising environmental sensitivity.

Conservation is often defined as planned management of a renewable or non-renewable natural resource to prevent its exploitation, destruction or neglect. It can only be instituted when a group of people judge a resource to be dwindling due to human influences. In gathering facts about an environment, the group then spreads this information through education. Should it prove necessary, they resort to protecting its environmental values which guarantees future use, yet in a limited fashion. It is common knowledge that underwater caves are non-renewable resources incapable of repairing or rejuvenating themselves. The distinctive habitat features of the caves in Quintana Roo of Mexico have reinforced this fact unconditionally over the past decade.

The ability to grasp the complexity of underwater cave conservation in Quintana Roo is a mandatory piece of cave equipment to be brought to this region. There are presently very few restraints that safeguard this underwater cave environment. Although there have been some recent turns in access procedures in a few of the cenotes, it does little to limit incidental or intended abuse. This does not imply that Mexico is apathetic towards conservation. On the contrary, local customs and feelings run deep with concern over these matchless natural and historic resources. There is little doubt that logical checks will soon be placed on underwater caving activities, much like other places in the world. At this time, however, the bulk of the responsibility is on our shoulders. How we conduct ourselves today in and out of the caves as guests of Quintana Roo will surely affect the future proportions of any welcome mat.

Tourism & Limited Use

Today most of the underwater cave sites and cenotes are easily accessible to both open water and cave divers. With the rapid growth of tourism in Quintana Roo, a fiscal policy has been proposed to bolster community economics through local administration of natural resources. It has been a successful policy in some ways, but there have been a few secondary results. By inaugurating the long overdue arrival of *ejido* (township) and landowner control over cenotes, this policy has also invited droves of unsupervised open water divers to venture past the cenote pools and into the caverns, or beyond. Deep wounds have been opened and reopened in the delicate basin habitats in many of the cenotes. The toll on cave formations and silt dunes is also increasing. Far too often these groups are guilty in those despicable acts of collecting "magic" cave stones, natural artifacts, or autographing silt formations in English! Those fortunate to have seen the main cavern and the Paso de Lagarto passage in Sac Actun before 1992 can well sympathize with this.

Mexico

There are numerous means to counter these trends. Professional facilities in the area generally refuse "takeout" air services without the proper credentials. They also offer introductory cavern tours with a strong emphasis placed on environmental fragility and the need for specialized training. A key instrument in expediting conservation measures is acquainting landowners and government authorities with the possible consequences of unrestrained access. Those efforts by a few citizens and expatriate cavers have been assisted on occasion by the Section's Spanish translation (1987) of "Consider a Cavern Diving Course," which includes a conservation message. The "Amigos de Sian Ka'an," a Mexican conservation group, has also been amenable in publishing cave conservation articles in their national magazine. Likewise, both the Mexican and American scientific communities have been working together for years in a joint venture to study the ecology of the underwater caves.

As much as these and other ventures have helped, conservation efforts often run a poor race against the concerns over the economic consequences of limited use. There is still a further avenue at our disposal, one that also strikes at the heart of the problem. We must address an apparently renewed bias for open water films and publications to portray cavern and cave diving in melodramatic or sometimes dangerously misleading terms. Many of these merchants are generally responsible and selective in the content of what they publish. However, some of the hype that has appeared recently, if paid by the pound, would cost half the price if the guano was edited from the pages. At any rate, untrained divers translate this scribble into legitimate tutoring and an open invitation to go underground. You know the rest of the story.

Cancerous Tumors

Many people have expended a considerable amount of effort and thought in sensible guideline configurations within these cave systems. On one hand, it respects the moral problems concerning unbridled access to popular cenotes and the reasonable navigation of an interior labyrinth. Some of these mazes are seeded with several entrance points that can create line arrow anxiety for a team stretching prudent exploration. As an example, the seven mainland cave systems with over 15,000 feet of guideline in length contain a total of over 51 separate cenotes. On the other side of the coin, these lines are installed to localize what incidental caving damage might occur to just one portion of a room or tunnel. This is not a novel idea. Dry cavers have used flagging tape for years to confine their path, often to one set of footprints. Cuzan Nah in Sac Actun, the Room of Tears in Carwash and the A and E Lines of Mayan Blue all bear large scars from cave divers swimming far off the line.

This damage is rarely confined to the act of severing an ancient speleothem. By breaking one, it has only two places to go: you may find a few between your tanks, but more often it plunges to the floor. When the two meet, a small puff of silt marks the spot. So what's the problem? The top layer of cave silt is an extremely thin stucco to the bulk of silt below. It is bonded together by minerals that have resisted erosion by water currents for thousands of years. If this glaze is broken, it exposes its edge and the fluffy unconsolidated layer of silt underneath. Both are now readily attacked by the current, and this small blemish grows to enormous proportions, much like a cancerous tumor. Handprints, finprints, stage bottle prints and writing in the silt give birth to the same tumors. The temptations are strong to wander freely in these beautiful tunnels and chambers, but the environment cannot support it *and* still remain unchanged.

"As any impromptu discussion among cavers will yield an assured consensus for cave conservation, it will also produce a dozen opinions on precisely how, when and where to apply it"

Conserving Mexico

"Cave Scapes"

Since 1991, Dive Rite Manufacturing and the Cave Diving Section have provided thousands of feet of a thick yellow kernmantle for the maintenance of popular guidelines in the Carwash, Esqueleto (Temple of Doom), Mayan Blue, and Sac Actun caves. As of this printing, the NACD and the Cave Diving Section have donated another 20,000 feet of this line. Prior to this support, line maintenance was an expensive task for local cavers that was occasionally aided by gracious gifts from visiting cavers. I wish space was available to thank each one.

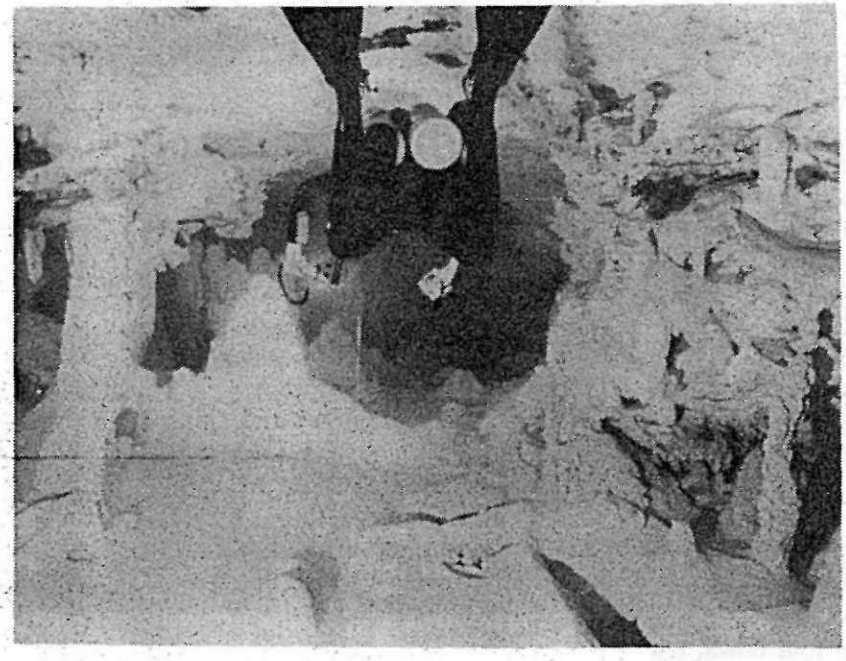
Before any lines or markers are moved, a consensus is always taken for local opinion and proposed instructional use of these trade routes. Once installed, common sense dictates that these guidelines and their markers be used and returned to the same position as they were found. If a question arises concerning the configuration, please ask one of the resident cavers before changing markers or drawing a knife. There are a multitude of obvious and not so obvious explanations for this. Protecting vulnerable areas of a cave is one.

This simple concept symbolizes a sober attempt to protect a defenseless and unique section of a cave. Discovered by chance or selected by choice, a section of a cave is earmarked due to a special environmental or historical trait. In contemplating the likely repercussions of perpetual access, a guideline is fixed in a manner to limit access depending on the length of the jump. This formula breeds subsequent divers' familiarity with the particular cave environment, as branching tunnels and jumps become unmistakably clear. It is an elegant means to sculpt technique and cave appreciation while awaiting further skill in earning the liberty to see the more removed and less traveled cave-scapes. Sadly, preserving vulnerable areas becomes confused with our "rights" to cave dive. Should a cave be unable to repair itself, unable to defend itself, unable to say "ouch" or unable to escape pimps, looters or rapists, what are our rights as cavers? We have the single privilege to conserve.

Another clarification for existing guideline arrangements revolves around the instructional activities in these caves. Permanent lines are installed with local instructor advisement. Their agenda tests and encourages student line referencing, buoyancy, team and cave awareness. Generally this proves to be slightly injurious to a cave, but is limited to certain defined areas, depending on the skills being tested. Much of this is due to the strong "conservation message" that most instructors reinforce constantly.

Out-of-light drilling is the most tragic and destructive of any underwater caving activity. For years there was an agreement between the few resident instructors to limit this damage to the front portions of a cave that had been trashed by open water divers. Should you be a visiting cave or cavern instructor, ask the local instructors where they perform their instruction dives and drills. Even if the dive is "old hat" to you (I sure hope not!), it is a brand new experience for your students. When they return to Quintana Roo as trained emissaries, you will have given them a gift few can give: preparation and appreciation for the next adventure.

It is high time we wrestle with our caving convictions and confront some indisputable problems at hand. Can we as the Section conserve underwater caves or are they doomed to perpetual human erosion? I know we can. The NSS has been very successful in initiating intelligent management of the drier types of caves. But face the facts: our activities are more inclined towards the commercialization of underwater caves. Is this good or bad? It should not make a difference. Only by admitting to the frail physique of any cave can you resolve to guide your and other's actions in support of our future enjoyment of their natural condition and evolution. It is in your hands.❖



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Esqueleto (Temple of Doom). No-flow cave. Very easily damaged.

Lining for Conservation

by RD Milhollin, NSS# 29962

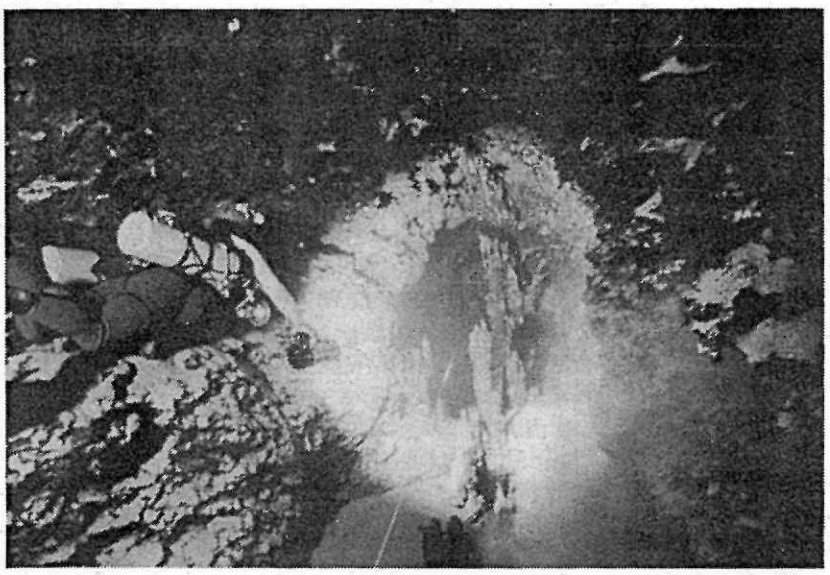
At the time lines are placed in an underwater cave, the primary concern is that of safety, establishing the ability to find one's way out. As the cave passage is explored and consequently mapped, there will arise opportunities to change the location and position of the line in order to facilitate other objectives. One of these is the preservation of natural speleological features, and this cause can be aided by the placement or replacement of permanent lines away from fragile areas that could be easily damaged by constant travel along that passage, or which could be destroyed by a single incident of no-visibility transit.

Lines can be thought of as an extension of a diver's own equipment, specifically, a principal component of the navigational system. Just as in all equipment systems, constant review of placement and appropriateness is called for, as well as periodic maintenance. When lines are occasionally replaced, and sometimes rerouted, this can be to shorten the traverse between two points when new passage is discovered, to make the route easier to swim, or to accomplish any number of other objectives. Like the diver's equipment, the permanent line is most functional when streamlined and easy to use. For a guideline, this implies few necessitated crossings, and simplicity when dealing with junctions: Why have two lines in an area when one will do?

In my own work within Sistema Aerolito del Paraiso, I have had the opportunity to suggest and facilitate changes in the guideline system. Some of these changes were based on factors mentioned above, but I would like to comment on two instances where the changes were called for strictly on conservation grounds. As background, much of the permanent guideline installed in this Cozumel cave was done over a very short amount of time by an extremely skilled team. They did not have the luxury of time, nor the opportunity for repeated dives in the same area to decide where lines should or should not go. Given this constraint, it is amazing that most of the guideline I found when I began to dive this system seven years ago is quite well placed.

The first change involved rerouting a line around an extremely fragile rock ledge, in some places only an inch or so thick. The old line went right over this plate, and divers would use the knobby projections on the upper surface to pull & glide through to avoid kicking, which might have been disastrous. As a result of the trips through this fragile restriction, several clear calcite soda straws were dislodged from the close ceiling, and now lie broken on the scarred floor. By searching in the area for around five minutes, a large, open passage with few decorations was located, in which the guideline was re-laid. On resurvey, the new passage was found to have added only a few feet to the marked passage, but this cut travel time by almost a full minute, since it was no longer necessary to stop and proceed carefully through the fragile area now bypassed. This unique rock formation is now visible to the diver moving along the current guideline, but is no longer in the imminent danger of destruction from poor diver technique.

The second change involved a small, highly decorated room with difficult access at the end of an exploration line. Once it was found that there was no practical way out of the little room, and we got a close look at the fine crystalline structure, a decision was made to consciously preserve this area. The guideline was cut back more than 150 feet and the end was routed into another area of the cave containing fine decoration but larger passage. Our team realizes this will not prevent experienced cave diving teams from finding the room, but that is not the objective of the action. We were more interested in keeping those of less experience and skill from accidentally finding and entering the extremely fragile area, and possibly damaging the structures through lack of technique. This area is not part of the cave diving tours I or other team members routinely give of Aerolito, nor will it be in the future.



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Sistema Aerolito del Paraiso. Formations in salt water zone.

The use of creative lining technique to direct cave divers away from extremely small, decorated, fragile areas is only one of the tools available in the cause of cave conservation. Education, limited access to systems, and the encouragement for practitioners to remain proficient are also important aspects of this orientation. As cave divers, we all have a responsibility to preserve what we enjoy for those who will follow.❖

SAVE OUR SUWANNEE

"People dedicated to seeing the Suwannee River and

by Anthony "Tony" Zenner PhD & President, Save Our Suwannee

It all began with the landfill. Not just any landfill, however. This landfill was to be located over the Dixie County line, just off State Road 349, and just too close to the Suwannee River. An Ohio company (*why are they always from somewhere else?*) had convinced the Lafayette County Commissioners to rezone an area for them to build a commercial landfill for "unsalvageable automobile parts." Citizens from Dixie and Lafayette Counties began to stir. That stir became a beater, which increased in speed. It spun off an organization they called "*Save Our Suwannee*," also known as SOS.

Save our Suwannee became incorporated, and its members went to work on a course that would eventually defeat the landfill. And they did it with classical tactics–lobbying legislators, getting publicity for their cause, and garnering support from the people, which resulted in petitions, letters, and phone calls to those who could stop the landfill. It worked. Final reading on rezoning the landfill property took place in March of this year.

Members of *Save Our Suwannee, Inc.* had little time to celebrate, however. For while they were defeating a landfill, a dairy was being proposed even closer to the Suwannee River than the landfill! And they didn't realize that an outdated plan to take water from the Suwannee River via a seven-foot diameter pipeline was reactivated by Florida Power in July, 1994. Thanks to activists in the Pasco-Hernando County area, such as *TOOFAR*, the *Withlacoochee Basin Initiative*, and eventually *Save Our Suwannee, Inc.*, Florida Power decided that it would be "politically impossible" to construct the pipeline. It was a victory (for the time being) for citizens, while the politicians were dreaming (some still are) about how much money their counties/districts would reap.

Although several members of SOS had been assured that permits for the dairy would never be issued, county building permits were issued to a person representing a corporation with its attorneys in New York (*why are they always from somewhere else?*). In the meantime, this person applied for an industrial "Waste Water Permit" from the Florida Department of Environmental Protection (DEP) for a 700-cow dairy on 265 acres. The proposed dairy property is located less than a mile from the Suwannee River in the northeast corner of Dixie County, some of which is located in the 100-year floodplain!

The "call to arms" was issued once more, but this time by the membership of SOS. Thanks to the *Suwannee Audubon Society*, along with SOS members, a petition drive elicited more than 2,000 signatures in opposition to the dairy. Very quickly, SOS again became viable, and strategies were developed for the defeat of the dairy. Letters were written, legislators again asked for support, public meetings attended, among other activities. A new petition drive to "...require any facility having a Waste Water Permit to locate at least three miles from the Suwannee River and its tributaries" gathered more than 1,000 signatures in less than one week! These petitions, along with those opposing the dairy, were sent to Governor Lawton Chiles, at his request.

Letter to the Florida Department of Environmental Protection:

June 14, 1995

Dear Representative,

I am alarmed that the Department of "Environmental Protection" has accepted the application for permit for the construction of a dairy "waste" management system in Dixie County, Florida. The proposed site for the dairy is dangerously close to the Suwannee River. Runoff from the dairy appears to be accessible to the Suwannee River through the surrounding karst geology.

My property is due South of the Dairy and I am seriously concerned about groundwater contamination due to potential pollution from dairy waste. Do you have any proof that a rotational dairy is not harmful to the environment? Can you assure me that the proposed dairy site will not flood and wash contaminants into the Suwannee River (since the property appears to be within the 100-year floodplain)? Can you guarantee that the water quality of the Suwannee River will not be effected by the placement of a dairy at the proposed site?

I adamantly object to the placement of a dairy waste management system in Dixie County, Florida, at the proposed location by Mr. Robert Piechocki, R & R Construction, Inc., PO Box 2267, Chiefland, Florida 32626.

Sincerely,

Marianne Gamble

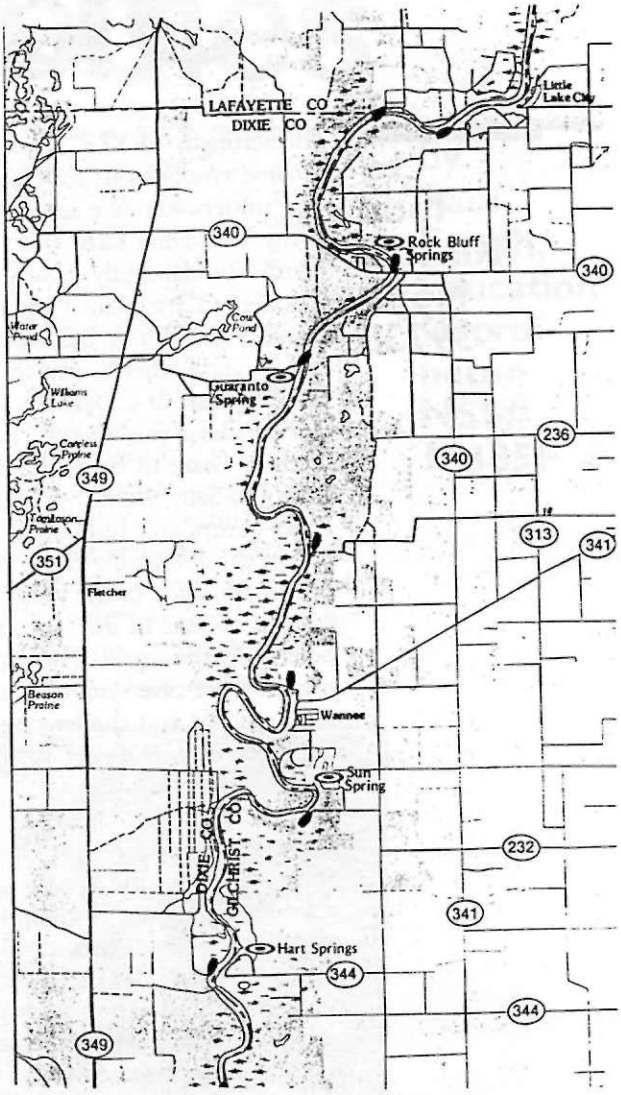
its tributaries continue in their natural pristine state"

SOS has advocated that the proposed rotational-type dairy is "experimental" and should be considered such by DEP. Basically, rotational-type dairies rotate the cows periodically within the facility and put the waste from the milking parlor in a holding facility to be sprayed on the ground at specified intervals on grasses that are capable of "picking up" nitrates and phosphorus. These procedures are all apparently done according to a formula constructed by DEP. Unfortunately, it's another "looks good on paper" situation that will, in our opinion, produce disastrous results if any part of the formula is minutely and/or incidentally violated. This is what the presently proposed dairy is about: a disaster. It will be a disaster to the Suwannee River.

There are several aspects of the proposed dairy that appear to be in violation of DEP's formula. These have been communicated to DEP and will be amplified by the licensed geologist hired by SOS (*why do we have to hire someone to protect the environment from an environmental agency?*). Contact with University of Florida's personnel has verified what has been an issue with rotational-type dairies: there is no long-term data available concerning their effects on the environment, especially in Florida. The only significant data available is from a US Geological Survey report showing that nitrates in "...springs near dairies have levels 10 to 30 times higher than usual" [reprinted in the May/June 1995 issue of *UWS*, p. 13]. Rotational dairies should, therefore, be considered **experimental**, and, until long term data is available, all permitting of this type of dairy should be suspended. This position has been communicated to Secretary Wetherall (DEP) as well as elected officials including Governor Chiles. And just when you thought the Suwannee River may be relatively safe....

I got a call the other day from Congressperson Thurmond's office about dredging McGriff Pass at the mouth of the Suwannee....❖

Save Our Suwannee, Inc., can be reached by contacting the SOS office at PO Box 669, Bell, Florida 32619, (904) 542-2622.



Map o Propose Dairy Are

State of Florida
Department of Environmental Protection
Notice of Application

The Department announces receipt of an application for permit from Mr. Robert Piechocki, R & R Construction, Inc., PO Box 2267, Chiefland, Florida 32626, to construct a dairy waste management system for Piechocki Dairy, a proposed 267-acre rotationally-grazed dairy. This proposed project will be located south of the Lafayette County line and approximately 3000 feet east of State Road 349 in Dixie County, Florida. The Department deems this application to be complete.

This application is being processed and is available for public inspection during normal business hours, 8AM to 5PM, Monday through Friday, except legal holidays, at the Northeast District Office, Florida Department of Environmental Protection, 7825 Baymeadows Way, Suite B-200, Jacksonville, Florida 32256-7590. Any comments or objections should be filed in writing with the Department at this address. Comments or objections should be submitted as soon as possible to insure that there is adequate time for them to be considered in the Department's decision on the application.

Science and

by Todd Kincaid, NSS# 39738

The acronym "WKPP" has become synonymous for cutting edge underwater cave exploration in the Woodville Karst Plain of North Florida. Aptly named, the Woodville Karst Plain Project was founded in 1986 by Bill Gavin and Parker Turner to explore the vast labyrinth of underwater caves that surround the Wakulla river drainage basin in North Florida. Wakulla, Sally Ward, the Leon Sinks group, and Indian, all within the Woodville Karst Plain, now mark some of the most famous systems in the state and potentially the world. The exploration of these cave systems is of itself a noble and challenging task, but there is more to the WKPP than exploration.

Beginning with Parker Turner and his relationship with Florida State University, the WKPP has developed a serious commitment to pertinent scientific research in the underwater cave (phreatic aquifer) realm. In the past five years, the WKPP has participated in cooperative research with numerous organizations, including: the University of Florida, Florida State University, University of Georgia, Florida State Museum, Wakulla Springs State Park, the Florida Departments of Natural Resources and Environmental Protection, the Northwest Florida Water Management District, the US Forest Service, Westinghouse Electric Company, and Pfizer Laboratories. The intent of this article is to highlight some of the WKPP's recent contributions.

Devil's Ear

As most of the cave diving community is aware, the water clarity fluctuations in Devil's Ear are due to the influence of river water intrusion from the overlying Santa Fe River. The problem, as anybody who deals with regulatory agencies or academia will attest, is that the rest of the world only begrudgingly admits the existence of our "underwater rivers," much less their significance to the field of groundwater hydrology. With the best intentions but lack of first-hand experience, academicians have taught and regulatory agencies have adopted definitions that depict groundwater and surface water as completely separate entities, which has led to laws that allow higher levels of contaminants in surface waters than would be permitted in a Class-One aquifer such as the Floridan aquifer. Acknowledging the fact that the tannin river water intruding into Devil's Ear carries with it the nitrates, pesticides, fertilizers, and any other contaminants present in the Santa Fe River, the environmental implications of surface water intrusion to the aquifer become painfully clear. Beginning in 1991 as part of a Master's thesis for the University of Florida, Todd Kincaid and Jarrod Jablonski of the WKPP, with the help of several volunteers, cave divers, divers, and concerned individuals alike, began a three year investigation of the mechanisms that drive groundwater-surface water interactions between the Devil's Ear cave system and the overlying Santa Fe River. The results of the project revealed that, even during moderate flow stages in the river, as much as 50% of the discharge from Devil's Ear is recently intruded river water. The amount of river water intrusion is controlled by the distribution of rainfall, where large precipitation events over the Northern Highlands east of High Springs have the most effect. A detailed description of the findings from this project is scheduled to come out in a later issue of *UWS*, and will be presented at two international scientific conferences this year: the first in Turkey and the second in New Orleans.

Manatee

As was described in the January/February 1995 issue of *UWS*, the WKPP conducted extensive exploration in the Manatee Springs Cave System. In addition to the exploration efforts, detailed data on depth fluctuations was collected to record the positions of numerous collapse features in the upstream tunnel. Future research will correlate these collapse features to surface depressions and sinkholes. The goal is to use the correlations to help water resource managers better delineate possible underground drainage systems, and develop effective land use policies. The cave surveys produced by the WKPP were superimposed onto topographical maps and were provided to Manatee Springs State Park. The maps demonstrate the aerial extent of the cave system and have served to increase an awareness of local environmental problems that may threaten the quality of water

the WKPP?

discharging at Manatee Spring. With this new awareness in mind, the Park Service is using the data to guide their land acquisition program.

The Woodville Karst Plain

The fundamental scientific goal surrounding the research and exploration efforts in the Woodville Karst Plain center on understanding the hydrology of the Wakulla river drainage basin. Wakulla Spring is thought to be the primary discharge point for all groundwater entering the basin, either through direct recharge or cross-basin connections. The questions which remain are: 1) where and how extensive are the recharge areas in the basin, 2) are the main cave systems in the basin connected (Wakulla, Sally Ward, Indian, Turner, Sullivan's/Cheryl, and Big Dismal), and 3) are the Leon Sinks group the most upstream recharge points in the Wakulla River Basin. The answers to these questions have significant implications for groundwater and environmental protection in the region. Following suit with the Park Service at Manatee Springs State Park, Wakulla Springs State Park and the US Forest Service are using the WKPP's cave surveys superimposed onto topographical maps to guide land acquisition efforts, and as the basis for new and modified land use regulations. Their overall goal is to protect the sensitive recharge areas most likely to effect groundwater quality in the Woodville Karst Plain. On a broader scale, the WKPP is working with the geology departments at the University of Wyoming and the Florida State University to gain further insight on phreatic conduit formation and localization. With the data and first-hand observations gained through the research and exploration efforts in the Woodville Karst Plain, scientists and water resource managers will be better equipped to model the hydrology of karst aquifers.

Turkey

Moving out to the international scene, the WKPP has been invited by the Underwater Research Society and the International Research and Applications Center for Karst Water Resources (both Turkish organizations) to participate in a multi-national cave research project in Turkey. The agenda will include the exploration and mapping of both phreatic and dry caves in the Taurus Mountains of Southern Turkey. The Turkish government hopes to better develop and protect their limited groundwater supplies by mapping the underground conduits controlling groundwater flow. Cave explorers and researchers will be joining the project from Great Britain, Germany, Turkey, and the US, each with specific purposes. The WKPP will provide the cave diving equipment and expertise necessary to map the underwater passages, as well as collecting water samples and recording water velocities. With the help of Arnold Jackson of American Underwater Lighting, the research and exploration efforts in Turkey will be captured on film and used as a valuable instructional media for non-diving researchers and government land managers. The information gained from the mountainous and geologically deformed Turkish karst will be compared to the data collected from the Woodville Karst Plain in Florida to help isolate the most important factors that localize the major phreatic conduits and karst aquifers. The NSS-CDS has donated 12,000 feet of line for the exploration efforts. Members of the Underwater Research Society (SAD) will be cave trained at least to the Apprentice to Cave certification level. SAD hopes to establish an official Turkish branch of the NSS-CDS, and intends to use this project as a beginning.

The WKPP's Scientific Commitment

The overall scientific goal of the WKPP is to glean insight from active phreatic cave systems that will give a better understanding of conduit development and localization. Currently working through the Florida State University and the University of Wyoming Department of Geology and Geophysics, the WKPP will continue to gather data in the forms of maps, video, water samples, and first-hand observations, and work to disseminate new knowledge about phreatic caves to the scientific community and the general public. Through multi-disciplinary collaborative efforts, the myth that "underground rivers" rarely contribute to regional groundwater hydrology may someday be dispelled.❖

THE COCONUT

JIMMY BUFFET ONCE SAID, "A FLIP, A FLY, A SNORT AND A GRUNT: IT WAS SO SIMPLE, IT PLUM EVADED ME."

by Jeff Carson NSS# 34393

I would like to start by thanking those people who helped with the article "*60 Points Of Light*," as well as those providing additional information after publication. Thanks to Roger, George and Arnold.

A Look Back will touch briefly on the previous article on lights [see May/June 1995 *UWS*]. There's Nothing Like a Good Joke is my parody of the You Might be a Redneck series by Jeff Foxworthy. Finally, The Face Of Things To Come will give a look into the future of this column.

RUN ME A LINE

Please send your comments, questions and requests for future "investigative reporter" articles to:

The Reporter
5721 NW 84 Terrace
Gainesville, Fl 32653

As a side note, the name of this column will change as of the next issue to *The Reporter*.

A LOOK BACK

In the article *60 Points Of Light*, an equation for approximate burn time was presented as:

$$\text{Amp Hours}_{BATT}/\text{Lamp Draw} = \text{Burn Time}$$

The above equation does not account for the typical dive time in which primary light batteries are being discharged. If the battery pack is to be discharged over a one hour dive, the above equation needs to be modified to compensate for a discharge time of less than the 20 hour rate printed on the battery. A battery is labeled with the "20 hour rate." For a 12 volt, 7 amp hour battery, this means the cell will provide a total of 7 amp hours of current if discharged over a continuous 20 hour period. If the battery is discharged over less than 20 hours, the total capacity is reduced. Below is a typical discharge chart summarizing some typical discharge rates.

20 hour rate = 100% of the total capacity
10 hour rate = 90% of the total capacity
5 hour rate = 80% of the total capacity
3 hour rate = 70% of the total capacity
2 hour rate = 65% of the total capacity
1 hour rate = 60% of the total capacity

Multiplying the rated 20 hour capacity (7 amp hours) by the 1 hour discharge factor (60%) provides the following:

1 Hour Discharge Factor x 20 Hour Rate =
1 Hour Capacity, or:
60% x 7ah = 4.2ah

With the one hour capacity calculated, we can get a very good estimate of expected burn time for the BRL 12 volt, 50 watt lamp, which draws a current of 4.2 amps as follows:

Amp Hours_{BATT}/Lamp Draw = Burn Time, or:
4.2ah/4.2 amps = 1.0 hours

ANOTHER WAY TO LOOK AT IT

If you are designing a lighting system and you want to know which battery will provide the required burn time, take your discharge requirement (4.2 amps for the BRL lamp) and multiply by your expected bottom time (1.1 hours=66 minutes). This provides the capacity needed (1.1 hours x 4.2 amps=4.62 amp hours). Now divide by the appropriate discharge factor (60% for a one hour discharge) and the result is the 20 hour rate. The equation is shown below:

Discharge Requirement x Burn Time =
Required Capacity, or:
4.2ah x 1.1 hours = 4.62ah

Required Capacity/Discharge Factor =
20 Hour Rate, or:
4.62Ah/.60 = 7.70ah

Therefore, a 12 volt, 8 amp hour battery is appropriate.

TELEGRAPH

THERE'S NOTHING LIKE A GOOD JOKE

(To be read using your best country accent)

If one-third of the cost of your last trip out of the country was for excess baggage weight...you just might be a cave diver.

If you have ever run a line into a bar to find your way out...you might be a cave diver.

If you bought your last vehicle based on how much dive gear it could haul...then, well, you might be a cave diver.

If you can't fit your All Terrain Diving Vehicle (ATDV) in your garage anymore because of all your cave gear...then you are probably a died-in-the-wool cave diver.

If the only time you've ever used AAA was to tow you out of Eagle's Nest...then you may be a cave diver.

If a large portion of your monthly gas bill is spent on oxygen, helium and argon...you just might be a cave diver.

If you pay for America On Line, Compuserve, or some other fancy computer service just to get the scuba forum...You guessed it! You just might be a cave diver.

If you've ever maxed out a Visa card on one piece of cave gear...you might be a cave diver.

If you've ever tried to drive a Honda Accord through three feet of water just to get to Little River...you just might be a cave diver.

If you've ever incorporated just to write off your diving expenses...you might be a cave diver.

If you and only one other person feel cramped in a full-size pickup truck...you just might be a cave diver.

If most of the clothing in your closet has the initials CDS, NSS, or NACD...then you might be a cave diver.

If a fire in your house would cause an explosion that can only be rated in kilotons...then you could be a cave diver.

If your garage looks like the new PVC pipe warehouse ...then, you guessed it! You might be a cave diver.❖

"There's nothing like a good joke,
and that was nothing like a good joke."

A LOOK AT THINGS TO COME

Speaking of things to come, Universal Studios is currently looking for cave divers for the new *Miller Lite* beer commercial, where great taste and less filling will try to combine *Scooter Cave Diving* and *The Demolition Derby*. Yee haa!

Some topics for future articles and a little mind tease for each topic are presented below.

BATTERIES

A general discussion of sealed lead acid batteries, wiring battery packs in series and in parallel, charge rates, discharge rates and other neat stuff.

CHARGERS

Where did you get the charger you are using now? Why did you get that one? Chances are you have a little "wall plug-in thing" or you are using a converted car battery charger. Don't miss this one! What voltage does your 12 volt charger actually produce?

A: 12 volts
B: 13.6 to 13.8 volts
C: 14.4 to 14.5 volts
D: all the above
E: none of the above

BACKUP LIGHTS

Aren't those the lights that come on when you put the car in reverse? Hey, pay attention to this!!! Thanks to the input of George Irving (for whom anonymity is now lost forever), I recently learned that many of the popular backup lights are overdriven.

Do you know how many volts your backup lights produce? Do you know what voltage your backup lamp is designed for? If you don't know the answer to these questions, *Simon Says* go find out!

Clue: If a Boeing 747 could use one of your backup lights to land on a foggy night, you could be a cave diver *and* your backup lights are probably overdriven.

New Survey Committee

By Mike Poucher

As the new survey committee chairmen, we would like to introduce ourselves to the membership and explain some of our plans for the committee. We are Michael Poucher and Tony Pate, and our claim to fame is the Peacock Survey Project. Many people have heard of the project, and yes, we are still at it. We have been surveying in Peacock now for about three years and we have completed just over half the passage in the system. We are making a very detailed map of the system and have received many favorable comments from those who have seen the work thus far. However, there is still lots of work to be done, and we are always looking for interested people to help out.

In thinking about our goals for the committee, our first question was: Why should anyone care about maps of underwater caves? Well, the maps generated by surveys are valuable tools for the cave diver in planning dives and charting progress in a particular system. How many times have you tried to verbally explain where a particular jump is and ended up drawing a map in the dirt? How many times have you ended up saying: "I'll just follow you" or "Gee, it would be nice to have a map to help explain this." Other information, such as depths and passage configuration, are invaluable for air planning and decisions on equipment configuration. Many people (myself included) find it enjoyable, after a dive, to be able to identify on a map where they have been, and looking at a map often helps to recall details of the dive and the cave that otherwise would be forgotten.

Maps are also valuable as scientific tools. Researchers have used them to plan projects in a cave, identify collection sites, and to note areas of special interest. Landowners are often interested in how a cave is situated on their property. Maps have been used to sink wells intersecting a passage, and to plan development of the property to be compatible with the cave underneath.

As you can see, there are a great many uses for maps. As an organization dedicated to the study of caves, the NSS-CDS recognizes the value of surveys and wants to promote the activity. This is where the survey committee comes in. We are here to try to encourage others to survey, and to make the information available to the organization and its members.

I have had several people tell me that they would like to survey, but didn't know what caves needed surveying, and they didn't want to waste time and energy surveying something that had already been done. Therefore, our number one goal is to organize a list of what caves have been surveyed and to obtain those maps for the section. Our first step is to find out what information is already in the CDS and NACD files and to begin organizing that data. We hope to be able to distribute any maps that are in the files, but not currently available to members. We will do this either through sale, as other maps are done, or through publication in *Underwater Speleology*. We also need input from members who may have maps and/or survey information that they would like to donate to the Section.

Our second goal is to lend support to surveys and surveyors mainly as a central repository of the data. Surveys, and particularly large ones, are often difficult to start and require an immense amount of dedication. People come and go, and it can be difficult to maintain continuity. If the information was kept in a central database, there would be less likelihood that information would be lost, and the information would be readily available to future surveyors. In addition, any given team of divers may not possess all the skills necessary to collect the data, sketch details, crunch all the numbers and draft a final map. We may be able to provide some of these services or help to find other members who are willing to help on a given project.

The NSS-CDS has also inherited all the information that Sheck Exley collected over his lifetime on many caves here and abroad. The information is mostly written by hand in loose-leaf notebooks. At this time, the Section is having all the files photocopied for safety reasons. The originals will be archived, and we will have a working copy to begin cataloging the information. It appears that there is a lot of survey information, and that we have a good start for the survey files.

If anyone has information that you would like to donate or has any suggestions on what the committee can do to promote surveying, you can call or write to either of us at:

Michael Poucher
4625 N.E. 28th Terrace
Ocala, Florida 34479
Ph. 904-732-3594 Nights
904-351-6627 Days
Compuserve:76512,1177

Tony Pate
5649 Riddle Road
Holiday, Florida 34690
Ph. 813-934-9881
813-844-0845
Fax: 813-847-1789

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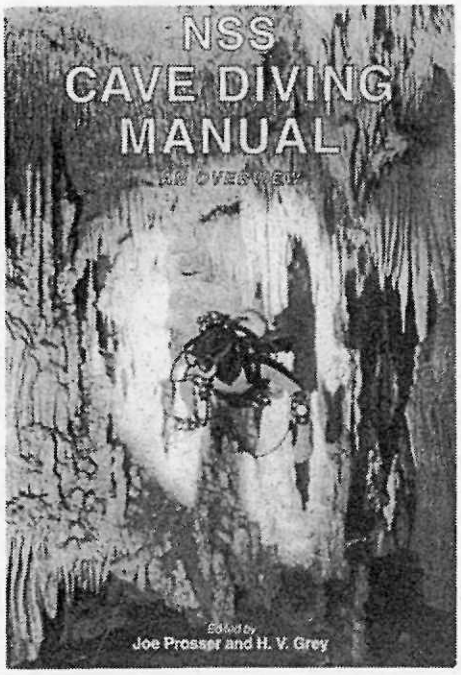

NSS Cave Diving Manual: An Overview

by Joe Prosser and H.V. Grey

19 chapters on all aspects of cave diving, including: dive planning, equipment configuration, decompression, mixed gas use, emergency prevention, sump diving, hydrogeology, biology, photography, surveying, and history. NSS-CDS, 1992. 411 pages, 5 1/2" x 8", softcover.

Item Number 40120
Nonmember $28.00
Member $25.00

For more information on ordering, or to receive the new, updated CDS Bookshop Order Form, please contact Bruce Ryan at the NSS-CDS Main Office, PO Box 950, Branford FL 32008

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Activities Coordinator	Eric Tasso
Biology	Dr. Jill Yager
Calendar Coordinator	Randy Christian
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Cave File Coordinator	Tom Gilleland
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