

NSS NEWS

August 2013



American Caving Accidents
2011-2012

CALENDAR

USA

August 5-9, 2013—NSS Convention, Shippensburg University, Shippensburg, PA. See NSS2013.com or contact Co-chairs Gordon Birkhimer (birkhimer@cox.net, (703)573-4653)) or Craig Hindman (CraigHindman@verizon.net, (410)792-0742).

August 22-25th, 2013—Rescue Technician: Cave Rescue I & II class taught by Huntsville Cave Rescue Unit. This the only NFPA 1006 Certified course in cave rescue in the nation, and is sanctioned by the Alabama Fire College. The intensive 4-day class covers but is not limited to: operating under an Incident Command structure, Single Rope Technique, communications underground, cave-specific medical considerations, patient packaging and movement within a cave environment, haul and lower systems, vertical rescue, extrication techniques, and logistics. It is an extremely hands-on course with many field exercises including a full-on mock rescue.

Location: Union Grove, AL. Cost: \$50 for the standard course (typical for most cavers), \$295 if taken for certification (requires prerequisites). Both courses are identical and taught simultaneously except for the certification test on Monday for those requiring it. For more information visit www.hcru.org/rescueclass or call (256) 763-0073 or e-mail info@hcru.org

August 24th, 2013—Dogwood City Grotto 50th Anniversary Celebration. The Dogwood City Grotto will be hosting its 50th Anniversary Celebration at the Tellus Science Museum. Come join us for a night of dinner and unrestricted access to all of the amenities of the Tellus Science Museum. Enjoy dinner, drinks, planetarium view, and all exhibits for only \$35. Semi-formal attire is required. Please call or email Joe Abbott at 770-445-4220 or joeabbott@mindspring.com for tickets.

Sept 7-8, 2013—Single Rope Technique, taught by the Huntsville Cave Rescue Unit. Designed to instruct students in the knowledge and skills to safely climb and rappel using SRT with hands-on training in both classroom and field settings. Perfect for beginners, as a refresher course, or to work on your rigging skills! Course is limited to 20 participants so reserve your spot now at <http://www.hcru.org/srt>

September 23-27, 2013—Lnt Camp at Carlsbad Cavern, . Info: contact Pat.Jablonsky@patjabo@hotmail.com or 970-874-8979

September 27-29, 2013—Nittany Grotto is hosting the Fall MAR field meet at Lincoln Caverns Campground near Huntingdon, Pa. Registration form and more information can be found on the MAR website.

October 10-13, 2013—36th Annual TAG Fall Cave-In celebrating the Dogwood City Grotto's 50th Anniversary, and our 10th year on Lookout Mountain. Registration is open online at tagfallcavein.org. Save \$10 by registering before September 1st. For information, contact Patty Springer at 423.619.2041, pitpatty@att.net. Vendors can contact Darien Dopp at 770.301.8228, kvcrawler@yahoo.com. Follow the TAG Fall Cave-In on Facebook for up to the minute planning and events.

October 17-20, 2013—6th Annual Texas Caver's Reunion at Paradise Canyon in Rio Medina, TX. Contact: Don@oztotl.com

November 4-8, 2013—The 2013 National Cave and Karst Management Symposium ("A Changing Climate") will be held in Carlsbad, NM. Registration for the 2013 NCKMS is now open! Visit <http://nckms2013.businesscatalyst.com/> for more information and to register.

FOREIGN

March 15-22, 2014—16th International Symposium on Volcanospeleology, Galápagos Islands. Pre-symposium caving or scuba diving March 10-15, 2014; Post-symposium caving March 22-29, 2014

FROM THE EDITOR

Dear Members,

As many of you may know the NSS has been facing a budget shortfall and it looked like the ACA that Bonny Armstrong had just prepared was going to be relegated to a "digital only" printing. Since I was somewhat short on material for the regular NSS News, I offered to include the material as part of one of our regular issues. So instead of being a "Part 2" issue, this issue of the News includes both our regular columns and the ACA material.

Dave Bunnell

Send items for the calendar to davebunnell@comcast.net at least 6 weeks before desired month of publication (i.e., by March 15 for the May issue).

American Caving Accidents 2011 - 2012

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Below: NCRC students participate in a mock rescue.



Mike Futrell

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Please include "NSS News" in your subject line when e-mailing material to help me sort it from the spam. Thanks!
Questions about submitting features and photos? Please see the style and submission guidelines on the NSS web site:
www.caves.org/pub/nssnews/style.html

ADVERTISING

Complete advertising information, including ad costs, deadlines, and guidelines for preparation, are on the NSS website at: www.caves.org/ad/pubs/nssnews/ads.html. Contact the editor if you wish to place an ad.

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Deadline: Ads, articles and announcements should be sent to the editor by the 15th of the month, six weeks before the month of issue (e.g., material for the March issue needs to be in by January 15).

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**NSS NEWS**

August 2013

Volume 71 Number 8

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ABOUT THE COVER**FRONT COVER:**

Our cover photo was taken by Jansen Cardy during the 2012 NCRC weeklong seminar mock rescue in Pettijohn Cave in Walker County, GA. It shows an elaborate highline system in action. The mock 'patient' wrapped in the brown tarp with red and green webbing restraints is Instructor Qualification (IQ) class student (now NCRC instructor) Thomas Evans from Bozeman, Montana.

"Our passion for learning is our tool for survival." - Carl Sagan

From the ACA Editor

Welcome to another issue of *American Caving Accidents* (ACA), a special publication of the National Speleological Society (NSS). Since 1967, ACA has served as the journal of record for caving accidents in North America. The purpose of collecting and reporting caving accidents and incidents is to help cavers educate themselves on the hazards of caving based on real-life incidents. These incidents, when reported accurately and in detail, should ultimately help readers become safer cavers by learning through others' experiences.

Reports are collected through submissions by cavers involved in the incident or rescue, or who otherwise have some creditable knowledge of the event. Caving incidents brought to the attention of ACA by media reports are verified for accuracy by contacting involved parties directly when possible.

To this end, I cannot emphasize enough the value of cavers submitting incident reports to ACA. We have all shared stories of our caving mishaps around a campfire; let us please share them with the caving community. It may just save someone's life.

Long-time readers of ACA will likely notice in this issue an absence of the term "spelunker" (except when quoting from a report). Over the years, spelunker has come to represent a person who is inexperienced and often ill-equipped for cave exploration. While it is fun to say "cavers rescue spelunkers," it is important to remember that, on occasion, spelunkers have in fact rescued cavers. If we can instead think of people with flashlights and tennis shoes as novice cavers, we might just be more likely to bring them into the fold, invite them to a grotto meeting, and teach them safe and conservation-minded caving techniques. Every so-called spelunker has the potential to be a future NSS member.

As with previous issues, caving reports have been divided into two categories: regular caving and cave diving. These categories are further classified by incident result or outcome, and incident type (causes and contributing factors).

Some reported incidents are placed in a separate category called caving-related. These include incidents where a person needed rescuing from a cave they did not intend to enter, incidents that occur on the way to or from a cave, an animal needing rescue from a cave, or other unusual circumstances. Since these incidents did not occur during normal caving activities, but required caving gear, cave-rescue techniques, or cavers to effect a rescue, they are considered caving-related. Caving-related incidents are not included in the statistics.

Table 1 shows NSS membership numbers versus total number of reported incidents. Not all incidents are reported to ACA, and not all cavers are members of the NSS. These totals, therefore, are not intended to be considered reliable indicators of accident rates and should not be used to draw conclusions about the relative degree of risk or danger involved in caving.

This issue would not have been possible without assistance from many individuals. I am very fortunate to have a review committee made up of cavers with expertise in many areas. Andy Armstrong, Jeff Bartlett, Richard Breisch, George Dasher, and Yvonne Droms meticulously edited the reports and offered invaluable suggestions. Mark Minton researched, translated, and summarized the reports from Mexico. Dr. Stephen Mosberg and Forrest Wilson served as medical and diving consultants respectively. Rene Ohms assisted with researching report locations to create the incident maps, and Kyle Gochenour maintained and updated the ACA website. Out-going editor Ray Keeler was

extremely supportive in my transition to editor, and I am grateful for his assistance.

I'd like to thank everyone who submitted incident reports for this issue and took the time to answer many follow-up questions. In particular, Anmar Mirza and Brad Tipton submitted several detailed reports. Bill Putnam, Buford Pruitt, Kelly Smallwood, and Chuck Porter informed ACA of many incidents that were not otherwise reported. Art Palmer and Jim Coke were very gracious in supplying details of caves and caving areas during the research of many incidents. Thank you to Scott McCrea for contributing the feature article. Finally, I would like to thank Wm Shrewsbury, Bob Vandeventer, and especially Dave Bunnell for assistance in bringing this issue to print.

Bonny Armstrong
NSS 43003RL
Heber City, Utah

NSS Membership and Number of Incidents

Year	Members	Incidents
1986	6741	45
1987	7203	48
1988	7873	49
1989	8514	51
1990	9028	55
1991	9777	54
1992	10492	60
1993	11164	64
1994	11460	57
1995	11836	44
1996	11140	43
1997	11470	43
1998	11685	32
1999	12098	44
2000	11773	40
2001	11967	34
2002	12261	31
2003	12264	35
2004	12020	23
2005	11658	26
2006	11664	36
2007	11552	26
2008	11651	22
2009	11588	20
2010	11044	25
2011	10038	23
2012	9843	24

Only incidents resulting in aid, injury, or fatality are included. Membership figures include all classes of membership.

Table 1. NSS membership vs. incidents.

Description of Incident Results and Types

DESCRIPTION OF INCIDENT RESULTS

Fatalities - Fatalities from caving are relatively uncommon, on average about three per year. Although these tend to be inexperienced, ill-equipped persons, experienced cavers are not exempt.

Injury and Aid - Injury and aid covers incidents where one or more persons were injured who then needed the help of others, besides those in their caving party, to exit the cave.

Aid , No Injury – Reports of an uninjured caver, or cavers, requiring assistance from persons other than those in their caving party to exit the cave, are placed in this category.

Injury, No Aid - These incidents result in injuries ranging from cuts and bruises to broken bones. The injured person was able to exit the cave either unaided, or with assistance from their caving companions. Since no outside assistance was brought in to help, these incidents are also called self-rescues or small-party rescues.

No Consequence - Incidents of no consequence are usually near-misses, involve problems underground that could have led to a different outcome but were resolved by the parties involved, involve animals needing rescue, or do not otherwise fit into the other categories. They are presented here to familiarize readers with the many things that can go wrong while caving, and often offer good examples of successful self-rescues or small-party rescues.

DESCRIPTION OF INCIDENT TYPES

Acetylene-related - Acetylene-related incidents were more common in the 1960s and 1970s than during the last few decades. No acetylene-related incidents have been reported since 1996, probably because relatively inexpensive yet very bright LED lights are now favored among the majority of American cavers.

Bad Air - There were no incidents involving bad air reported for this issue, although rescuers at Wye Cave and the 2012 Glade Cave incidents monitored the cave atmosphere as a precaution. Encountering bad air in caves may be a rare occurrence, but those occurrences can be deadly. In past reports, the presence of bad air in caves has been from biological decomposition, poor air exchange, carbon monoxide from fires, blasting fumes, chemicals being washed into the cave, and kids setting off smoke bombs.

Caver Fall - Caver falls continue to constitute a large proportion of caving accidents. For simplicity, any falls by any person in a cave, regardless of their experience, are considered a caver fall. In this issue, there are fifteen reports of people falling while on a caving trip and three people accidentally fell into a pit or cave that they had not intended to enter. In most cases, the falls could be attributed to inexperience and improper footwear.

Difficulty on Rope or Ladder - The category of difficulty on rope or ladder was added to ACA in 1994 to encompass a variety of problems that may prevent a caver from being unable to ascend or descend a rope or ladder. In this issue are two reports involving three persons who experienced difficulty on rope and one report of a youth who had trouble climbing a cable ladder. Unfortunately, one incident in 2011 resulted in two fatalities.

Drowning - There were no drowning incidents in 2011 or 2012. The

December 2011 incident is technically a “near drowning” since the patient was revived.

Equipment Problem - No incidents in 2011 or 2012 were attributed to equipment problems.

Exhaustion - There are no reports of exhaustion being the key factor leading to a caving incident in this issue. Two brothers, however, found themselves to be too exhausted to go back through Ape Cave after completing a through-trip. They were eventually aided by hikers in the area.

Flooding - Nine people were on a guided, off-trail tour of Hidden River Cave when a significant rainstorm caused the river in the cave to begin rising rapidly. Hidden River Cave staff found the group, and brought them out. In New York, a family needed rescuing when a storm drain they had entered began filling with water in response to a storm. It is important to get a good reliable forecast before entering a cave, especially one to have a known flood potential. Check the forecast of surrounding areas as well and consider the weather from a few days previous; some caves suddenly flood several days after a rain event.

Hypothermia - Hypothermia is often a secondary result in caving incidents following a caver being stuck, injured, or stranded in a cave. It is especially dangerous not only because of the physiological aspects, but because it impairs judgment, which can lead to mistakes and other accidents.

Illness/Medical Issue - There are three incidents of persons becoming seriously ill during caving trips. One caver suffered a stroke as he was exiting Cahuilla Creek Caves. A visitor to Mammoth Cave suffered a fatal heart attack while on a public tour. Another person, this one visiting Southport Saltpeter (Millers) Cave, had a stroke during a guided tour.

After attending a week-long National Cave Rescue Commission training in Puerto Rico, 21 students reported symptoms of fatigue, cough, general malaise (tiredness and weakness), and/or body aches. Five of the students developed severe pulmonary symptoms and/or were diagnosed with histoplasmosis.

Lost - There are three reports in this issue of people becoming lost. Each incident occurred in a large, complex cave and was resolved relatively quickly due to the fact that each party had a reliable surface watch. A surface watch is a person (or persons) who knows where you are going and what time you are expected to return. In the case of a caving party missing their “out time,” the surface watch should also know who to contact.

Lost Control on Rappel - A new incident-type category has been added, beginning with this issue, to cover incidents of persons losing control while on rappel. In previous issues, these incidents were listed under Caver Falls or Difficulty on Rope. While most out-of-control rappels do result in a caver fall, the contributing factor or cause is very different than those typical for caver falls, such as slipping or climbing without a belay. Losing control on rappel does not fit into the Difficulty on Rope category either, as this category was created to encompass “such problems as becoming stuck at the lip of a pit, clothing or hair caught in the rappel device, jammed rappel safety, or simply becoming unable to ascend or descend.”¹

Between the years 1986 and 2010, twenty-five incidents of persons losing control on rappel were reported. These incidents resulted in no injuries to severe injuries and include four fatalities. Rope burns, espe-

cially to the hands, and broken ankles were the most common reported injuries. The causes were varied, and sometimes unknown, but include removing too many bars from a rappel rack, rigging the carabiner brake bar or rack incorrectly, not tying off properly and losing control while passing a knot or adjusting a rope pad, becoming detached from the rope, being struck by a falling rock, not wearing gloves, and other reasons.

This issue presents four incidents of cavers losing control on rappel.

Rock fall - Three incidents from rock fall are reported in this issue with injuries including a broken finger and mild head trauma, a broken toe, and severe contusions. Each incident was the result of cavers coming into contact with unstable rocks in non-virgin passages. These reports should serve as a reminder that loose rocks can exist even in caves that receive high visitation.

Stuck - Six people required aid when they became stuck in tight cave passages, one in 2011, the others in 2012. The incidents at Stay High Cave, Schetromph Cave, and Wye Cave (where two people became stuck) required lengthy and difficult rescues.

Trapped or Stranded - The four reported incidents of persons becoming stranded occurred as a result of those persons descending a pit or falling into a hole and being unable to climb back out.

Other - This catch-all category includes incidents that don't quite fit in other categories. Examples in this issue include cavers that were overdue for unknown reasons in the Bone-Norman Cave System, a reoccurring knee problem also in the Bone-Norman System, a near-drowning in an Illinois cave, two intoxicated persons being helped out of Clarksville Cave, and a finger injury in a Virginia cave.

¹Bill Putnam, *NSS News American Caving Accidents*, Part 2, Volume 55, Number 12, December 1997.

Report accidents and incidents via the internet:

www.caves.org/pub/aca

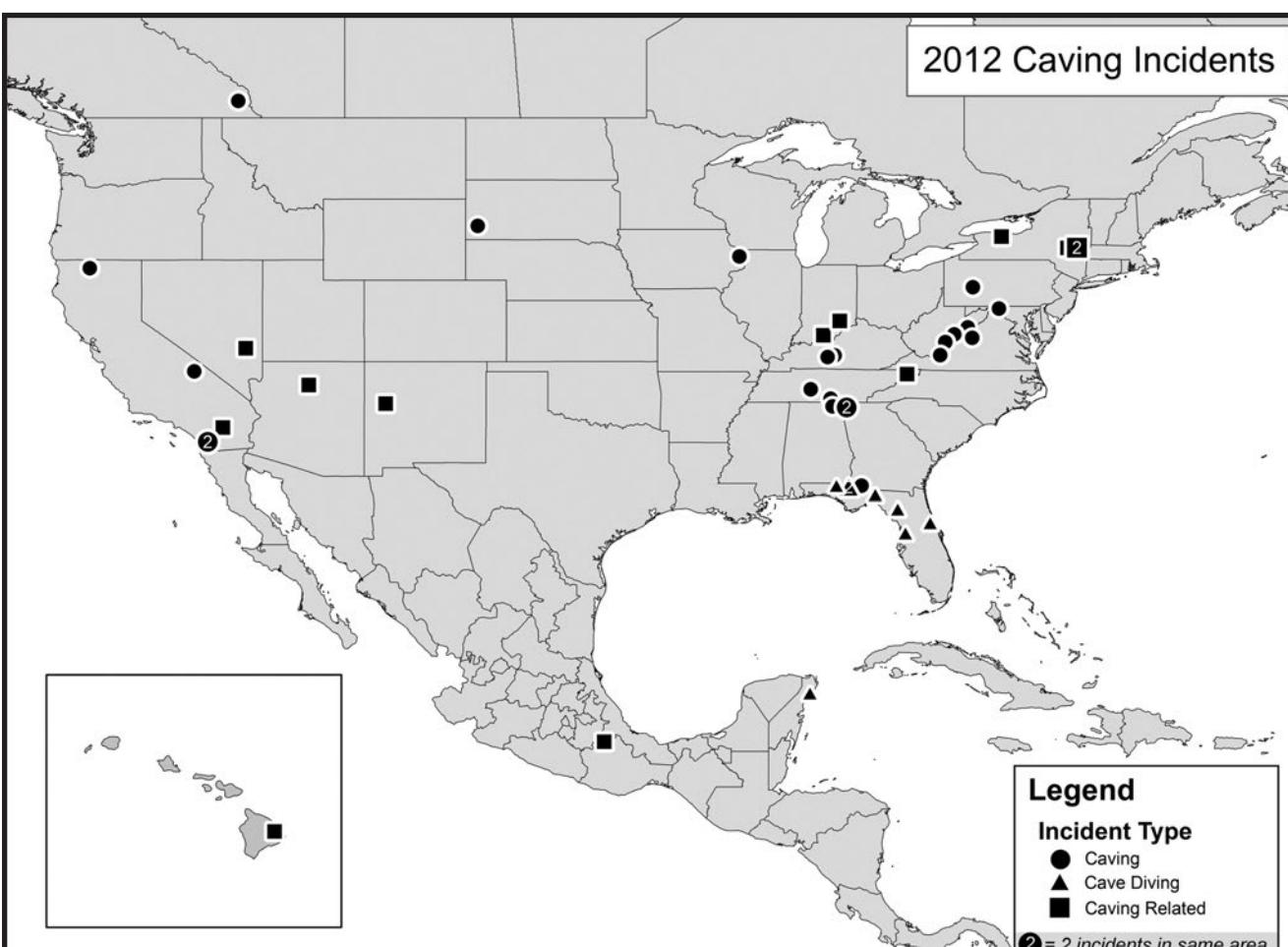
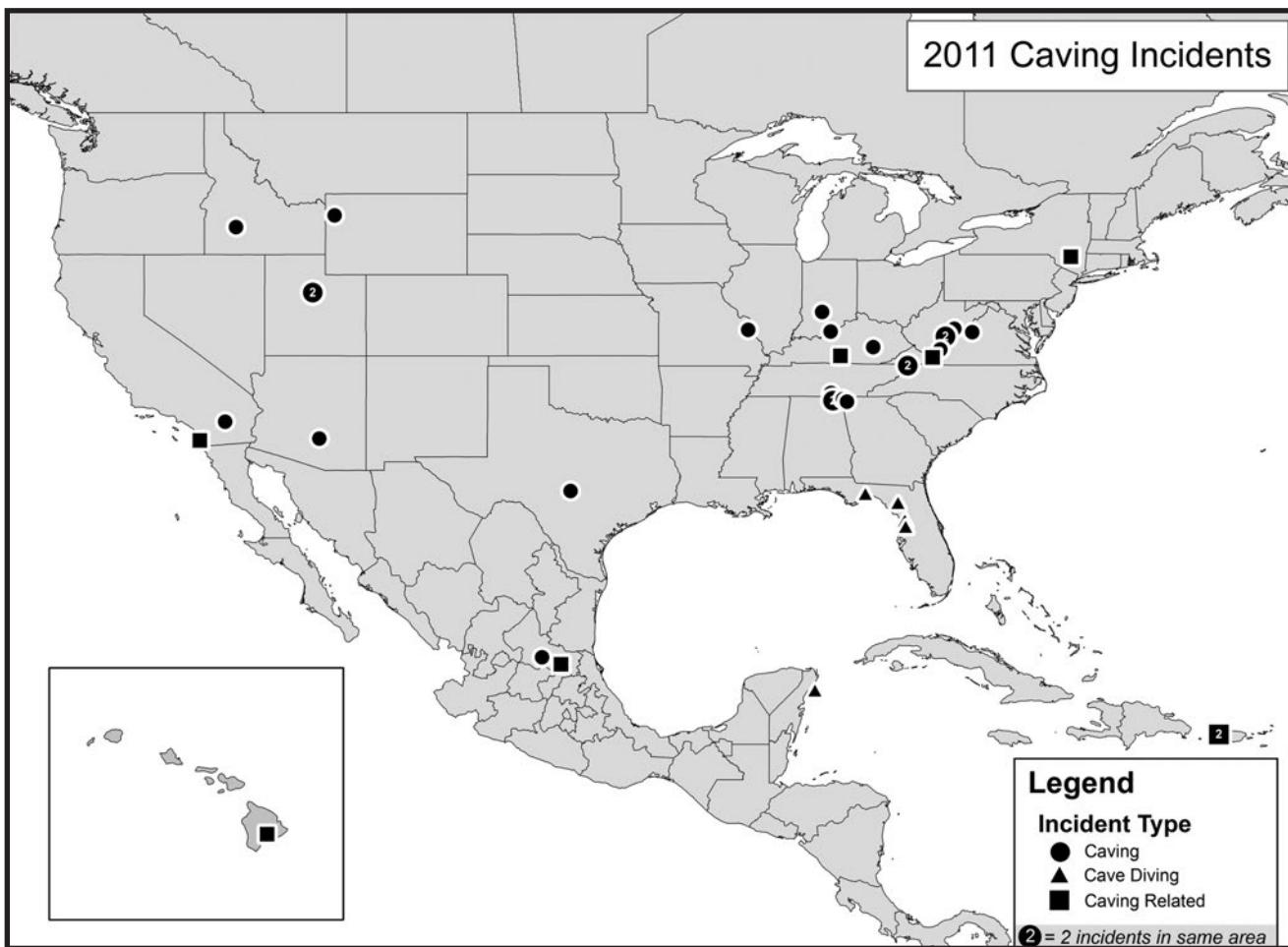
or mail reports and information to:
American Caving Accidents
National Speleological Society
2813 Cave Avenue
Huntsville, Alabama 35810-4431

CAVING ACCIDENT AND INCIDENT STATISTICS 1986 - 2012

Result	Result of Incident																										
	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Fatality	4	3	4	1	4	6	5	5	1	2	1	4	4	4	2	5	2	6	3	0	4	1	4	3	5	2	2
Injury and Aid	10	15	11	16	18	16	17	22	19	17	16	22	14	14	20	11	15	9	7	8	15	9	9	9	8	9	5
Aid, No Injury	21	15	20	20	23	20	28	33	26	17	16	13	13	18	15	13	8	14	12	8	12	9	7	5	7	6	10
Injury, No Aid	10	15	14	14	10	12	10	4	11	8	10	4	2	8	3	5	6	6	0	10	4	7	2	1	7	6	7
No Consequence	19	16	12	21	9	12	16	3	20	12	11	4	8	3	1	2	4	5	1	0	1	1	3	3	2	2	1
Total	64	64	61	72	64	66	76	67	77	56	54	47	41	47	41	36	35	40	23	26	36	27	25	21	29	25	25

Type	Incident Type																										
	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Caver Fall	25	14	20	19	22	22	19	20	15	21	27	15	20	17	13	20	14	5	10	12	11	11	10	13	8	7	
Trapped/Stranded	-	-	-	-	-	-	-	1	13	18	18	13	10	17	4	9	10	15	6	5	7	4	3	3	4	2	3
Difficulty on Rope	-	-	-	-	-	-	-	-	11	4	6	5	1	4	3	1	5	5	1	2	2	2	1	2	3	1	
Rock Fall	12	17	7	11	11	12	16	11	12	10	5	5	2	4	2	3	3	5	3	7	4	4	3	1	1	1	2
Lost	8	5	3	9	4	3	4	5	12	7	4	5	3	3	3	1	1	5	4	2	3	4	2	0	1	2	1
Flooding	1	3	3	4	2	2	1	3	1	4	5	2	1	4	1	1	0	6	1	0	1	0	0	1	0	0	1
Hypothermia	1	2	0	5	0	2	4	0	3	6	6	2	2	2	3	1	1	3	0	1	2	1	2	0	1	0	0
Illness	0	0	2	3	2	1	0	3	3	0	1	1	8	0	2	2	1	2	2	0	0	1	0	1	2	2	
Exhaustion	0	1	1	3	0	2	4	2	4	1	4	1	1	2	3	1	2	1	0	0	2	0	1	0	1	0	0
Drowning	1	2	0	2	2	2	2	0	0	0	1	0	0	1	0	1	0	3	1	0	1	1	1	1	0	0	0
Stuck	3	1	0	1	1	3	5	5	2	1	2	0	1	5	3	5	0	1	6	3	2	0	2	3	1	5	
Bad Air	3	2	1	1	1	2	1	1	2	2	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	
Acetylene-related	3	0	1	1	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment	14	17	20	20	23	21	20	11	11	4	4	2	2	0	0	3	2	0	0	0	4	4	2	1	1	0	0
Other	3	4	8	6	8	4	5	4	6	6	3	2	3	2	3	2	1	1	1	0	3	1	2	3	2		
Lost Control on Rappel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	
Caving-related Incidents	-	-	-	-	-	2	1	0	2	0	1	1	5	2	11	2	9	4	19	9	8	4	6	3	15	9	12

Result	Cave Diving Incidents																										
	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Fatality	7	5	9	4	8	2	5	6	8	6	2	2	0	5	7	9	3	5	6	2	1	5	6	2	1	5	7
Injury and Aid	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	
Aid, no Injury	1	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	4	
Injury, no Aid	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
No Consequence	1	2	1	1	0	5	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	
Total	9	7	10	5	8	8	7	6	9	7	2	2	1	7	8	9	4	5	7	4	2	5	7	3	1	5	11



Variable Friction: How to use the greatest feature of a rappel rack

Scott McCrea NSS 40839RL

Out-of-control rappels, feeding rope, frustration, and exhaustion are possible results of improper rappel rack use. The friction between a rack and a rope varies throughout a rappel and needs to be adjusted in order to control a rappeller's speed. Rope length, diameter, construction, materials, condition, and age are a few of the ways the rope can affect the friction. The angle of the descent and pack weight also require adjustments. Variable friction makes it possible to use a rack on drops of nearly any length.

Investigations have shown that improper friction variation and control has contributed to many rappelling accidents. Feeding rope, or pushing rope into the rack, is one improper technique. This will reduce the friction and allow the rack to move, but, it can be difficult and result in exhaustion and frustration which leads to bad decisions. A bar accidentally getting pushed off or dropped is also a dangerous possibility when feeding rope.

For clarity, this article will feature the standard, 14-inch, six-bar, "J"-shaped rappel rack (Figure 1) oriented perpendicularly to the body.

Figure 8s, ATCs, bobbins, micro-racks, "U"-shaped racks, and other rappel devices offer either non-variable (static) friction or limited variable friction. These devices work great in certain situations, but do not have

the versatility and adjustment options of a standard rack.

Rappel racks create friction in two ways. First, with surface contact between the rope and the bars. Second, with the bending of the rope around the bars.

There are three ways to vary the friction with a rack.

1. Increase or decrease bar spacing.
2. Adjust the rope entry angle.
3. Drop or add bars.

Bar spacing refers to the amount of space between the bars. Squeezing the bars together creates less space and more friction, slowing a rappeller's speed. Spreading the bars apart creates more space and less friction, increasing speed. Adjusting the space between the bottom two or three bars is the most effective technique for varying friction (Figure 2). Only the last two bars need to be spread or squeezed. Trying to spread the bars above is difficult and they quickly slide back up to where they were. Always adjust bar spacing before and after making other changes such as the rope entry angle or dropping/adding bars.

Rope entry angle adjustments vary how much of the rope touches the last bar. The angle can be adjusted so the rope only touches a tiny part of the bar or touches/wraps around the full bar. This variation is usually done by moving the rope to the left or right, which will change the entry angle and add or remove a half-bar of friction on the last bar (Figure 3). Placing the rope between the rappeller's legs will also adjust the rope entry angle.

Dropping bars is done by unclipping the last bar and sliding it all the way down the long leg of the rack. Dropping bars should be done so that only a half-bar worth of friction is removed. For example, bars should only be dropped if the rope is only touching the top half of the bar instead of wrapping all the way around the full bar. Dropping full bars can reduce the available friction by not just one bar, but by 1½ bars. For example, if a rack is rigged with six full bars and the sixth bar is removed, the available friction instantly decreases to 4½ bars (Figure 4).

To reduce friction, follow these steps in order, one at a time, until the desired amount of friction is reached.

1. Spread bars.
2. Adjust rope-entry angle by moving rope to other side of the rack.
3. Spread bars.
4. Remove last bar.
5. Start over at 1.

When more friction is needed, adjust the entry angle for more contact with the



Scott McCrea

Nate Waybright at Whiteside Mtn in NC.

last bar, or add a bar.

Ideally, friction should be adjusted so that the last bar needs to be spread and held down to maintain the optimum speed. In addition to a smooth ride, this technique can provide a safety function. If the bar being held down is released, it should automatically get pulled up, squeezing the bars together and slowing the speed.

As a rule of thumb, never rappel with less than four bars. If four bars is too much friction, this is the cave gods telling you

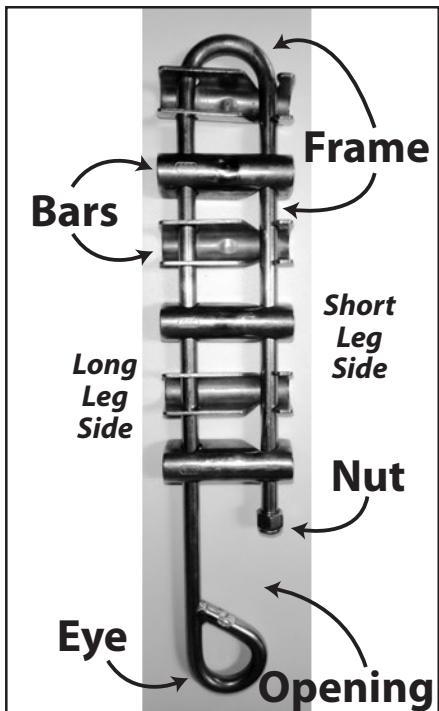


Figure 1. A standard 14-inch, 6-bar, "J"-shaped rack. Note: this rack is oriented parallel to the viewer.

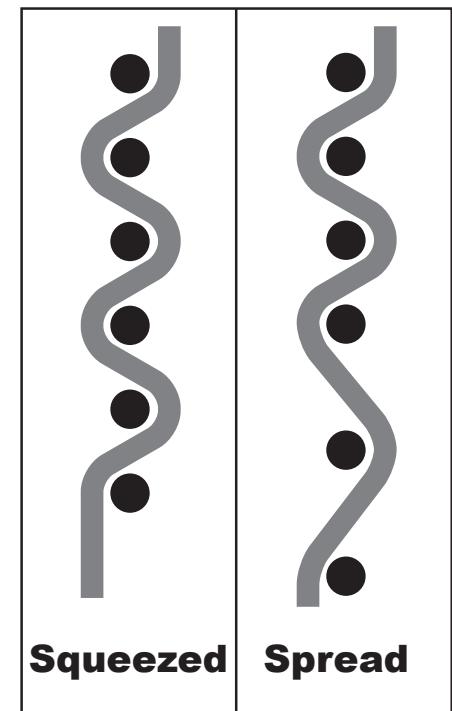


Figure 2. Squeezing the bars together creates more friction, spreading them creates less friction.

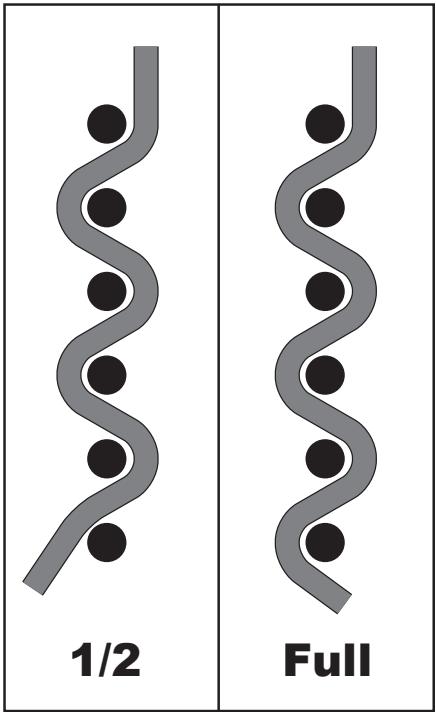


Figure 3. Adjusting the rope entry angle will add or subtract a half-bar's worth of friction. This is much easier to do on a rack oriented perpendicularly to the rappeller, as shown here.

something is wrong. Stop and figure out what it is or go home.

Gripping the rope with the off-rack hand, pulling the rope around the hip, and a bottom belay are a few of the methods that can affect the friction from outside the rack. Using them does not take advantage of the variable friction feature of a rack. These, and similar methods come at the cost of efficiency. And, depending on the situation, they may not always be an available option.

The most efficient way to take advantage of a rack's options is to orient it perpendicularly to the rappeller's body-looking at the ends of the bars with the short leg away. This makes it possible to easily move the rope to adjust rope entry angles and drop or add bars (see Figure 3). "J"- shaped rack frames are available with either a straight or twisted (90°) eye to accommodate different style harnesses (Figure 5). Most caving harnesses are best coupled with a twisted-eye rack.

"U" shaped racks only offer limited variable friction. The bars can be spread and squeezed but dropping bars can be dangerous. Because the rope is trapped in the "U", dropping a bar can result in the loss of 1½ bars of friction. This is a huge jump in the amount of friction available and can easily lead to problems.

Rappel racks are the most versatile descending device ever created. They have been successfully used on drops from 4 to 4000 feet. They are infinitely adjustable when used efficiently and properly.

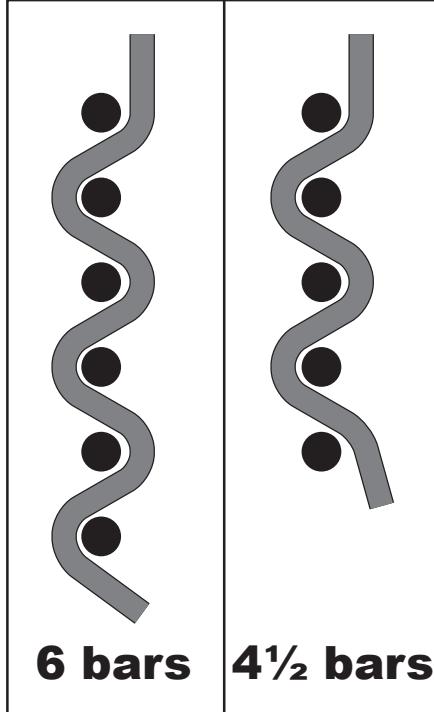


Figure 4. Removing the bottom bar of a 6-bar rack reduces the friction to an equivalent of 4 1/2 bars.



Figure 5. The two types of "J"- shaped rack frames.



Dave Burnell

Starting a rappel into Hoya de la Luz in Mexico. The versatility of a rack is key to descending drops such as this, where the extra friction afforded by the rope weight changes significantly as one descends. The low side drop shown here is 125m and the high side is 188m.

2011 Reported Caving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 01	Letson Plunge	Indiana	injury, no aid	rockfall
January 15	Neversink	Alabama	injury, no aid	lost control on rappel
February 5	Cahuilla Creek Caves	California	aid, no injury	illness
February 11	Stay High Cave	Virginia	injury and aid	stuck
February 12	Ellisons Cave	Georgia	two fatalities	difficulty on rope (2 people)
February 15	Rustys Cave	Georgia	aid, no injury	stranded, inadequate equipment
March 13	Enchanted Rock Cave	Texas	aid, no injury	stranded
March 26	Neffs Cave	Utah	injury, no aid	caver fall
May 29	Sinking Cove Cave	Tennessee	injury and aid	lost control on rappel
June 11	unspecified cave	Alabama	injury and aid	caver fall
July 14	Bone-Norman Cave System	West Virginia	no consequence	other, overdue
July 17	Worleys (Morrill) Cave	Tennessee	injury and aid	caver fall
July 30	Spanish Moss Cave	Utah	no consequence	difficulty on rope
August 1	Glade Cave	Virginia	aid, no injury	illness
August 6	Worleys (Morrill) Cave	Tennessee	injury and aid	caver fall
September 4	Sharps Cave	West Virginia	aid, no injury	lost
September 17	Bone-Norman Cave System	West Virginia	injury, no aid	other, medical issue
October 1	Wind Cave	Kentucky	injury and aid*	caver fall*
October 16	Fossil Mountain Ice Cave	Wyoming	aid, no injury	lost
November 12	Peppersauce Cave	Arizona	injury and aid	caver fall
December 1	Buckner Cave	Indiana	injury and aid	caver fall
December 3	unspecified cave	Illinois	injury, no aid	other - near drowning
December 13	Smiths Crack	Idaho	injury and aid	caver fall
December 31	Sótano de las Guaguas	San Luis Potosí, Mexico	injury, no aid	lost control on rappel

* not included in statistics

2011 Reported Cave Diving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 31	Eagles Nest	Florida	fatality	medical issue, died at hospital
April 17	Chassahowitzka River	Florida	fatality	drowning
June 9	Devils Eye Spring	Florida	fatality	medical
June 11	Whiskey Still Sink	Florida	fatality	drowning
October 16	Sistema Cocodrilo	Quintana Roo, Mexico	fatality	bad gas mixture

2011 Reported Caving-related Accidents and Incidents

Date	Cave	Location	Result	Incident Type
date unknown	unspecified lava tube	Hawaii	injury, no aid	fell into lava tube
January 3	unnamed pit	San Luis Potosí, Mexico	aid, no injury	fell into pit
January 20	Carter Memorial Wayside Caves	Virginia	no consequence	infant found dead
March 5	Ellenville Fault Ice Caves	New York	aid, no injury	2 people fell into cave
March 14	Ape Cave	Washington	injury and aid	exhausted, hypothermic
March 30	unspecified cave	Kentucky	no consequence	dog stranded in cave
April	multiple caves	Puerto Rico	no consequence	illness, histoplasmosis
May 2	unspecified sea cave	California	no consequence	body found in cave
June 5	Sistema del Rio Camuy	Puerto Rico	fatality	drowning, washed into cave

2012 Reported Caving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 2	Poleta Cave	California	aid, no injury	stranded
January 8	Bone-Norman Cave System	West Virginia	aid, no injury	lost
January 14	Clarksville Cave	New York	aid, no injury	other, intoxicated
January 24	Schetromph Cave	Maryland	aid, no injury	stuck
March 1	Hidden River Cave	Kentucky	aid, no injury	flooding
March 24	Crystal Ice Cave	California	injury, no aid	caver fall
March 31	unspecified cave	Virginia	injury, no aid	other, caught finger on rock projection
April 7	Tumbling Rock Cave	Alabama	injury and aid	caver fall

April 8	Hidden Cave	California	fatality	trapped
April 13	Jewel Cave	South Dakota	injury, no aid	caver fall
May 5	Sharps Cave	West Virginia	injury, no aid	rockfall
May 9	Mammoth Cave	Kentucky	fatality	illness
May 18	Wye Cave	Iowa	aid, no injury	stuck (two people)
May 19	unspecified cave	Pennsylvania	aid, no injury	difficulty on rope/ladder
May 28	Thunder Canyon Cave	California	no consequence	stranded
June 9	Shoveleater-Hellhole Cave System	West Virginia	injury, no aid	rockfall
July 14	Sinking Cove Cave	Tennessee	aid, no injury	stuck
July 16	Glade Cave	Virginia	injury and aid	stuck
September 11	Southport Saltpeter (Millers) Cave	Tennessee	aid, no injury	illness
November 8	Kaumana Cave	Hawaii	injury and aid	caver fall
November 11	Pachidream Cave	BC, Canada	injury, no aid	lost control on rappel
November 12	Climax Cave	Georgia	injury and aid	caver fall
November 18	Pettijohns Cave	Georgia	injury and aid	caver fall
December 1	Fricks Cave	Georgia	injury, no aid	caver fall

2012 Reported Cave Diving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
February 15	Merritts Mill Pond	Florida	aid, no injury	stuck (2 people)
March 17	Vortex Spring	Florida	fatality	unknown
March 18	Devil's Eye Spring	Florida	fatality	unknown
March 31	Weeki Wachee Springs	Florida	fatality	medical issue
April 19	Sistema Chac Mool	Quintana Roo, Mexico	3 fatalities	drowning
July 21	Big Blue Spring	Florida	fatality	stuck, drowning
August 7	Twin Caves	Florida	aid, no injury	lost
October 15	Blue Springs	Florida	aid, no injury	lost, out of air, stranded

2012 Reported Caving-related Accidents and Incidents

Date	Cave	Location	Result	Incident Type
February 4	dirt cave	California	fatality	trapped by collapse
February 5	Breathing Hole Cave	Indiana	fatality	suicide
April 19	unspecified cave	Arizona	injury, aid	fell hiking to cave
May 13	sinkhole	Indiana	no consequence	dog fell into sinkhole
May 23	Fools Crawl	New York	no consequence	dog stranded in cave
May 23	sinkhole	New York	no consequence	calf stranded in sinkhole
May 30	unspecified cave	Tennessee	no consequence	dog stranded in cave
June 16	Whipple Cave	Nevada	aid, no injury	cavers assist rock climber
June 24	Secret Caverns	New York	no consequence	fawn stranded in cave
August 14	storm drain	New York	aid, no injury	flooding
August 19	Atlalaquia de Atikpak	Puebla, Mexico	fatality	drowning, body recovery
December 1	Double Sinks	New Mexico	no consequence	murder victim found in cave

Previously Unreported Caving Incidents

Date	Cave	Location	Result	Incident Type
19 May 1985	Schoharie Caverns	New York	injury and aid	caver fall
1998	Cueva del Viento	Puerto Rico	aid, no injury	equipment problem, stranded
10 November 2007	Candlelight Cave	Utah	no consequence	difficulty on rope
30 August 2009	Whipple Cave	Nevada	aid, no injury	difficulty on rope
13 March 2010	Grutas de la Puente	San Luis Potosí, Mexico	injury, no aid	other, falling object
28 March 2010	Sótano del Popoca	Veracruz, Mexico	aid, no injury	stranded
14 July 2010	Burroughs Cave	New York	aid, no injury	lost

Previously Unreported Caving-related Incidents

Date	Cave	Location	Result	Incident Type
23 October 2009	unnamed pit	Veracruz, Mexico	fatality	fell into pit

2011 Caving Accidents and Incidents

1 January

Letson Plunge, Indiana rockfall, injury, no aid

On New Year's Day, Chris Bell (27), Damian Schmeltz, Ryan Cox, and Kirsten Schmeltz arrived at Letson Plunge, the first of several pits the group planned to visit that day. Bell rigged the 60-foot entrance drop and rappelled, followed by Damian. The two found a place out of the presumed rockfall zone and Bell began getting ready to take photographs of the others as they rappelled. The next caver on rope, still near the top of the pit, stood on a ledge that suddenly collapsed. Bell and Damian instinctively took cover along the nearest wall when they heard rocks falling. Bell grabbed his helmet to protect the sides of his face, just before being hit by a basketball-size rock. When the commotion died down, he was left with a badly bruised left hand, a severely broken finger, some cuts, and a mild head trauma. Although the pair had moved into an adjacent dome, rocks falling down the narrow main drop had bounced through a window and into the area where the two were waiting. They yelled for the other two to stay up top and then both climbed out without further incident.

1. Chris Bell, Incident Report, 6 January 2011.

Comments: Bell reports that he is grateful that he and his companions always wear helmets and other appropriate gear when caving, but in retrospect should have paid closer attention to the rockfall zone. This incident illustrates the importance of knowing where the rockfall zone is and staying well clear of it, even if it means not getting the perfect photograph. Remember, even small rocks can become deadly when falling down a pit.

15 January

Neversink, Alabama

lost control on rappel, injury, no aid

Brad Barker (26) and Isaiah Lake arrived at Neversink to find the area blanketed in fresh snow. After double-checking each other's gear, they rigged a safety line down the snowy slope to the pit where Barker rigged the mainline. After clearing snow from the lip and positioning a rope pad, he fully rigged his 6-bar rack to the main line.

The amount of friction made it difficult to move so Barker removed one bar. As he began to negotiate the lip, his feet slipped on the icy rocks and he lost contact with the wall. Barker found himself now rappelling out of control with only three bars engaged. He tried squeezing the bars together, grabbing the rope with both hands below the rack, and a leg wrap. These actions slowed his descent only a bit. With the floor of the pit fast approaching, he prepared for impact by trying to relax so as not to "hit in a tensed stance." He rolled as he hit the ground, striking a log with his back. Barker did a self-assessment and called, "Off rope!" Lake then rappelled down to him.

After much consideration, Barker decided he could climb out under his own power using his Ropewalker system. As he climbed, he made a conscious effort to keep his back as straight as possible. When he reached the top, he encountered three members of the Chattanooga Grotto who were able to offer assistance: Marty Brown, a firefighter and paramedic; Homero Rivas, a physiatrist at a spine center; and Ralph Powers. Brown did a trauma assessment and, although he did not find any obvious injuries, he knew the potential was there. Rivas checked for spinal cord damage by performing a few neurological tests. Barker seemed to check out alright, other than his big toe being numb, but this may have been due to the fact that he was wearing tennis shoes and his feet were wet. Barker was helped down the trail to the parking lot, where the others helped him change into dry clothes. By this point, Barker, who thought

he just needed to go home and take some Advil®, decided to take Brown and Rivas's advice and see a doctor immediately. Lake drove Barker to the hospital in Scottsboro, but he was transferred to Floyd Medical Center in Rome, Georgia. He was diagnosed with an L1 compression fracture and underwent surgery the next morning to have five discs fused. He remained in the hospital for ten days and was back to work in four weeks.

1. Brad Barker, Incident Report, 13 February 2012.
2. Marty Brown, email communication, 23 April 2012.

Comments: The motivation to self-rescue can be strong, but spinal injury and pelvic fractures must be considered in ALL persons who sustain a fall. Ill-considered movement of these patients can result in catastrophic spinal cord injury or, in the case of pelvic fractures, internal bleeding. Obviously, patients in otherwise life-threatening circumstances, such as lying face down in the water, must be moved to a safer position. Careful weighing of the risk versus benefit must take place before a patient is moved.

Barker is extremely lucky to have survived an out-of-control rappel of 160 feet. With a full-size, six-bar rack, it is not uncommon to remove one or two bars to reduce friction. How he ended up on only three bars is still a mystery but may have been due to creating a loop of rope while feeding the rack, allowing the fourth bar to come off; or the rack frame may have squeezed together when it contacted the lip during his slip. Even though he received six rope burns on his hands, Barker credits his survival largely to his heavy-duty PMI rappel gloves with reinforced leather palms: "If I had been wearing cheaper gloves, or wearing non-leather gloves, I would not have been able to maintain my grip on the rope." More appropriate footwear may have prevented him from slipping in the first place.

5 February

Cahuilla Creek Caves, California

illness, aid, no injury

Seven members of the San Diego Grotto planned to spend a day exploring boulder caves known collectively as the Cahuilla Creek Caves. After an hour of exploration, three people left the cave (and the area) while the remaining four decided to exit the cave and have lunch before exploring other caves. Jim Ness (61) was making his way out of the cave when he collapsed in the entrance area. Brent Colvin, Doug Watson, and Rich Breisch went to his aid and found he was having trouble moving his right leg and arm. Since the cave is wet, none of the cavers had brought a cell phone. Colvin climbed out of the rugged canyon and was able to find a house where a woman let him call 911. Firefighters from Riverside County Fire Departments arrived within 45 minutes. A helicopter lifted Ness and a firefighter out of the canyon at 1:30 p.m. Ness was transferred to another helicopter and flown to a local hospital. He spent several months at Sharp Memorial Hospital Rehabilitation Center in San Diego recovering from a major stroke.

1. Tony Perry, "Downed hiker, 61, rescued in Riverside County by helicopter," *Los Angeles Times*, 5 February 2011.
2. Rich Breisch, Incident Report, 25 February 2011.

Comments: Breisch notes, "Had his stroke occurred five minutes earlier or 30 feet deeper into the cave, it would have been much harder to extract him."

11 February

Stay High Cave, Virginia stuck, injury and aid

David Roesler, a 26-year-old undergraduate student, entered Stay High Cave at about 3:00 p.m. The cave is named Stay High because that is exactly what you must do to avoid getting stuck in the entrance where the floor narrows down into a tight V. Roesler was unable to stay high, though, and became stuck. His companion called for help and the Newport Rescue Squad responded. When they were unable to extract him, Blacksburg Rescue Squad's Confined Rescue Team and Virginia Tech's VPI Cave Club were also contacted. Rescuers worked through the night with power tools, enlarging the space and slowly hoisting him up inch by inch. The wind chill dropped into the single digits and hypothermia became a real concern. Numerous heat packs were placed in his clothing and at one point, a hairdryer was used to provide warmth. As upward progress was made, Roesler would periodically become stuck again, requiring the removal of more bedrock. Shortly after 3:00 a.m., with rescuers assisting from above and below, he was freed. He was flown to Montgomery Regional Hospital and treated for hypothermia and a crush injury to his leg.

1. "Cave rescue February 11, 2011, near Clover Hollow," www.cavechat.org, 15 February 2011.
2. Mallory Noe-Payne, "Student trapped in cave overnight," *Collegiate Times*, 21 February 2011.

Comments: Becoming stuck in a cave has led to death on more than one occasion. Always remember that a stuck caver is in a life-or-death situation, and respond with appropriate urgency, as the rescuers did in this incident.

12 February

Ellisons Cave, Georgia difficulty on rope, 2 fatalities

On 12 February, five young men and five young women from University of Florida's Fellowship of Christian Athletes visited Ellisons Cave for a day of exploring and rappelling. The party broke into two groups; one group intended to explore horizontal sections of the cave while the second group set off to rappel a 120-foot-deep pit known as The Warm-up Pit. The first group soon joined the rest of their friends at the top of the pit. Here, they learned that one member of their party, Grant Lockenbach (20), had tried to rappel down to retrieve a dropped backpack. Although they could not hear him clearly, they could tell he was shouting for help. Five members of the party exited the cave to call for help while three women and Michael Pirie (18) stayed at the pit.

Walker County Emergency Services (WCES) received a 911 call reporting the rappelling accident at 2:19 p.m. Personnel, including the cave rescue unit, were dispatched immediately. One hour after the 911 call was placed, the initial response task force (IRTF) was heading up the mountain carrying sufficient equipment to reach Lockenbach, lower him to the bottom of the pit, and raise him back out. This IRTF consisted of Anmar Mirza, Tim White, and Bill Putnam. Within a half hour, the three had hiked the one-mile-long trail with its 850-feet elevation gain and entered the cave. Other teams were assembling and making their way up the mountain including rigging, evacuation, and communication teams.

The IRTF reached the top of the pit and found the three women who were cold and wet. They were dressed in shorts and T-shirts and their only gear was kneepads and headlamps. They reported that Pirie had rigged a second rope in order to rappel down to Lockenbach and try to assist him. The women had not heard from either of the men in a long time. The women then exited the cave and word was sent out that there were now two patients.

Both Lockenbach and Pirie had rigged their ropes directly in a

waterfall instead of the standard, drier, rigging site and the noise of the waterfall made communications difficult. The IRTF rigged a rope out of the waterfall, and Mirza rappelled down to the level of the two men, who were about 40 feet from the bottom. Mirza's rope was too far away and he was unable to pendulum over to them. He shouted to them several times but received no response from either man. As Mirza climbed back to the top of the pit, more help arrived. Teams began rigging and preparing to lower the patients, remove them from the water, examine, treat, and raise them from the pit. White rappelled directly in the waterfall in order to secure the two patients to the lowering line. Once they were lowered, both patients were examined by an EMT (emergency medical technician) and found to be deceased. A 4:1 haul system was used to raise Lockenbach and Pirie out of the pit, one at a time. Both were extricated from the cave by 8:30 p.m.

1. Diane Cousineau, "Recovery at Ellison's Cave," Incident Report, undated.
2. Tyler Jett, "Deadly Depths," *Get Out Chattanooga*, 1 February 2012.

Comments: An inventory of Lockenbach's and Pirie's gear shows they were not experienced enough, properly dressed, or properly equipped to attempt this pit, especially in the full force of a waterfall. Lockenbach was found wearing a hand-tied seat harness, and had no helmet, light, or gloves on his person. He was attached to his rope by an ATC belay device (which he used as a rappel device) and a handled ascender that was clipped to his harness. A second handled ascender with no sling hung from a carabiner attached to his harness. Pirie was wearing a commercially sewn harness and also had an ATC but no ascending devices. His helmet dangled from a string below him with the chinstrap open. He also had no gloves and no light on him. A headlamp was later found lying on a ledge near where the men had become stranded, and a mini Maglite® was found at the bottom of the pit. Both lights were still turned on. One of the first rules of cave rescue is *don't become a patient yourself*. It must have been very difficult for Pirie to sit by and do nothing, but he was not equipped or knowledgeable enough to help his friend. It is very unfortunate that this incident turned into a double fatality.

15 February

Rustys Cave, Georgia stranded, inadequate equipment, aid, no injury

Four young men set out to visit Byers Cave on the Southeastern Cave Conservancy, Inc.'s Fox Mountain Cave Preserve. When they were unable to find the cave, they used Google Earth to locate nearby Rustys Cave. None of the young men had any vertical experience, but decided to descend the 40-foot-deep entrance pit with a dynamic climbing rope. They had only one harness among them. They lowered each other down, and belayed the last person from the bottom.

After some exploring, they returned to their rope and found they were unable to ascend. They had left word of their plans to visit Byers Cave but had not informed anyone when their plans changed. Jerry Wallace reports: "At this point they got really lucky, as they had a cell phone with them, and were able to get reception from the bottom of the pit. They called 911, and the Dade County Mountain Rescue team was dispatched. The team arrived at the pit, rigged a haul system, and soon extracted the four grateful but embarrassed spelunkers."

1. "Cave Resue (sic) in Rusty's Cave," www.cavechat.org, 23 February 2011.
2. Jerry Wallace, Incident Report, 21 February 2012.

Comments: Not only did the foursome have inadequate vertical gear and apparently no plan for ascending, they were also ill-equipped for horizontal caving. Only two of them had helmets, and these were construction helmets with lights worn on their foreheads. At least one had no warm clothing. These young men were indeed lucky; a cell phone call from inside a cave is very rarely going to work out well as a rescue plan.

A more usable rescue mindset would be to call a surface watch with the cell phone before entering a cave that was not originally on the agenda.

13 March Enchanted Rock Cave, Texas stranded, aid, no injury

The Llano County Sheriff's Office received a report from Enchanted Rock State Natural Area of a missing child at 1:00 in the afternoon. The 7-year-old boy had been hiking with his parents on top of Enchanted Rock just twenty minutes earlier. Park rangers and other employees began searching the area and nearby Echo Canyon while more resources were put on standby. The father told a Park Ranger that his son may have entered Enchanted Rock Cave after being told not to do so. The Ranger made contact with hikers at the cave, who informed him that another group had found the boy in the cave and were escorting him out. The child exited the cave at 2:00 p.m. He told authorities he had gone into the cave and fallen into a hole that he couldn't get out of. Other visitors to the cave had lifted him out.

1. Texas Parks and Wildlife, "Lost Child found in Cave," *Safety and Risk Management Newsletter*, page 3, May 2011.

Comments: What was likely a nightmare for the parents may well have been a grand adventure for the young man.

26 March Neffs Cave, Utah caver fall, injury, no aid

Five cavers were descending the 1,163-foot-deep Neffs Cave. After six rope drops and several downclimbs, the group reached the bottom of an area called The Devils Slide, 800 feet below the surface. As one of the cavers was negotiating a steep, non-rope section, he slipped and fell the remaining 5 feet, dislocating one finger and breaking another in the process. The injured caver was able to ascend the ropes unaided to the exit, but needed assistance, provided by belays, on the steeper climbs.

1. Lance Dickey, Incident Report, 27 March 2011.

Comments: Dickey notes the cave was wetter than usual, which may have made for slippery conditions, and that the downclimb could have been rigged.

29 May Sinking Cove Cave, Tennessee lost control on rappel, injury and aid

On Memorial Day Weekend, 2011, eleven cavers entered Sinking Cove Cave with the intent of doing a vertical through-trip from the Boulder Entrance to the lower entrance. Completing a through-trip for this cave requires cavers to descend six pitches, varying in depth from 23 to 53 feet, followed by a tight belly crawl for 30 feet, then a 100-foot-long crawl in 2 feet of water with a 6-inch airspace. The total trip covers about 3,000 feet with a vertical extent of 457 feet.

Dirk Siron (53) was the last caver to descend the last drop. This drop, like the others before it, was rigged using a traditional carabiner block, a method used by cavers and canyoneers to retrieve a rope after one has rappelled. When Siron rigged his figure 8 rappel device, it is believed he rigged into the wrong side of the rope, causing him to fall 23 feet to the bottom of the drop and land in a knee-deep pool of water. Siron's companions quickly and carefully moved him out of the water, and began to try and warm him with a makeshift tent and camp stove. His injuries included a fractured pelvis, broken wrist, and compressed vertebrae. The time of the accident was approximately 1:15 p.m.

The first organized responders arrived at 4:20 p.m. A medical team packaged the patient in a Sked® and full-body splint to keep him completely immobilized. Meanwhile, others worked to enlarge the crawl space with the intention of moving Siron out via the lower entrance. Micro-shaving of the rock eventually proved to be too slow, and it was decided that evacuating the patient back through the upper entrance was the better option. Rigging teams entered the cave shortly after midnight and, three hours later, the patient had been moved up to the top of the 23-foot pitch.

The evacuation proceeded, slowly but steadily, with the next five pitches rigged with 3:1 haul systems, counter balances, and/or traveling redirects. A 400-foot section of tight, sinuous passage took nearly five hours to negotiate, as only two or three rescuers could handle the litter at any one time. Tight spaces were also challenging for the medical team to keep intravenous fluids(IV) flowing to the patient.

After 29 hours underground, Siron finally reached the surface. An hour and a half later he was placed in a waiting helicopter and flown to a nearby hospital. In 2012, on the anniversary of the accident, Siron and his companions returned to Sinking Cove and finally completed their through-trip.

1. Brad Tipton, Incident Report, undated.
2. Dirk Siron, email communication, 10 September 2012.

Comments: Be sure to fully study, be familiar with, and inspect any rigging that you use. Carabiner blocks can be a safe and efficient way to rig pull-down rappels, but several important factors must always be taken into consideration. One of the most critical is to ensure that you rig your rappel device into the rappel (and not the pull) side of the rope. Rigging into the pull side has had predictably disastrous results in caves and canyons. Carabiner blocks can be safety-clipped to the anchor with an additional carabiner for everyone except the last rappeller; that person must still rig into the correct side of the rope.

One way to prevent rigging mishaps such as these is to get in the habit of using the "rappel test." This simply means leaving a cowtail or ascender clipped in to the rope or anchor, until the rappel device has been weighted and tested for integrity.

11 June unspecified cave, Alabama caver fall, injury and aid

Chris Gerstman and his fiancée, Joy Patterson (21), were caving with others in Alabama on a Saturday afternoon. While traveling upwards over breakdown, Patterson stepped over a rock and was about to turn left when her right foot slipped out from under her. Patterson was not aware she was next to a big drop-off and tumbled 35 to 45 feet down it, landing face down in water. Gerstman rushed to her side and gently turned her over, resting her head on a backpack. She told her fiancé that her back and foot hurt badly. The Jackson County Rescue Squad was notified, and they extricated Patterson in about six hours. She was airlifted to a Huntsville hospital where she underwent surgery for a broken back. She had also broken her foot.

1. Chris Gerstman, Incident Report, 20 June 2011.

Comments: Gerstman mentions that Patterson probably did not see the pit because of inadequate lighting, although he did not describe what kind of light system she was using other than to say it was an LED. Brighter lights often equal greater safety, especially when tired or otherwise stressed or compromised.

14 July

Bone-Norman Cave System, West Virginia overdue, no consequence

Four local, young adults were reported overdue from an attempted through-trip in the Bone-Norman Cave System. Some of the explorers' parents, along with fire and EMS units, were assembled near the Bone entrance when local caver John Pearson arrived on scene sometime after 11:00 p.m. Pearson was asked to do a quick sweep of Bone Cave and report back what he found. Over half a dozen firemen in full vertical gear (but not caving gear) waited on standby at the entrance. Pearson entered the cave and briefly checked the small, tight side passages, but they did not appear to have been traversed for some time. He checked all the way to the End Room in less than twenty minutes. Next, he backtracked to the passage leading to the Devils Pinch, a tight spot along the connection route. He sat quietly to see if he could hear anything beyond the pinch. He took a rock and pounded it three times, then listened again, repeating this for several more minutes. Convinced the lost group was not on his side of the Pinch, Pearson headed for the entrance. He met fellow caver Dave Cowan, who had also come to search, on the way out. When they exited the cave, the firemen were no longer at the entrance. Pearson and Cowan then attended a debriefing downhill from the entrance. Just as Pearson was reasoning that inexperienced cavers could not make it back up through the Devils Pinch, the missing group exited the cave and began coming down the hill. When they spotted the would-be-rescuers, they went straight for their vehicles and drove off with their parents.

1. John Pearson, "7.14," *The West Virginia Caver*, volume 29, number 5, page 12, October 2011.
2. John Pearson, email communication, 29 February 2012.

Comments: This was a case of a person who had done the through-trip once before trying to lead other inexperienced cavers. They must have turned around when they could not find their way, but not early enough to meet their out time. This incident also shows the need for establishing and maintaining an entrance control during rescues. Doing so would have prevented the subjects from exiting the scene without a debriefing or medical evaluation.

17 July

Worleys (Morrill) Cave, Tennessee caver fall, injury and aid

At 3:30 p.m., a group of five children and six adults entered Worleys Cave. The group had made it to a slippery, muddy area known as the Skating Rink within an hour. While traversing this section, a 19-year-old female slipped and fell, twisting her ankle. Several members of the group heard her ankle "pop." The trip leader examined her and determined she would need assistance to exit.

Three people stayed with the patient while the trip leader and the rest headed for the surface. The trip leader called fellow Mountain Empire Grotto members and a rescue was initiated. Cavers were the first to respond and packaged the patient in a basket litter. Cavers from Mountain Empire and Flittermouse Grottos moved the patient through the cave by leap-frogging the evacuation teams. One pitch, known as the Devils Staircase, was rigged in order to lower the patient down it. Closer to the entrance, the litter was placed in a rig with a large wheel and wheeled the rest of the way out. The patient reached the surface shortly after midnight and was transported by ambulance to a hospital.

1. Mark Woods, Incident Report, 18 July 2011.

Comments: Note that a fairly simple and common incident one hour into the cave resulted in an evacuation time in excess of seven hours from time of injury to time of exit. Even when executed perfectly, cave rescues can take a long time.

30 July

Spanish Moss Cave, Utah difficulty on rope, no consequence

A novice caver was ascending the 30-foot-deep entrance pit of Spanish Moss Cave when an excess amount of webbing from his chest harness became stuck in his Croll. This was only his second time on rope and he was wearing a climbing-type harness. The harness made it difficult for him to maintain an upright position while trying to remove the webbing from his Croll. Eventually another member of the caving party climbed up to him on another rope that had been pre-rigged as a backup and was able to assist him.

1. Kent Forman, Incident Report, 1 November 2012.

Comments: Photos from the incident show the stuck caver in almost a horizontal position. A vertical caver with a properly adjusted climbing system should be able to maintain a more vertical position, which would require less effort to maintain during a self rescue. The caver stuck on rope was also wearing a large backpack, which probably made staying vertical even more difficult. Tethering a cave pack, so that it hangs below you while on rope, is generally a more efficient practice. New cavers should practice changeovers and situations simulating gear problems extensively before entering vertical caves.

1 August

Glade Cave, Virginia illness, aid, no injury

Sarah Murphy (18) and others from Camp May Flather were exploring Glade Cave for the day. After several hours in the cave, Murphy had a seizure, causing her to fall about 20 feet, landing in water. Rescue workers were notified around 3:15 p.m. that a woman was injured 315 feet inside the cave. Although it is a horizontal cave, a haul system was needed to bring her to the surface. She was treated for hypothermia and transported to the University of Virginia Medical Center for evaluation. The rescue took less than two hours to complete.

1. Ken Slack, "Rescue at Glade Cave," www.nbc29.com, 2 August 2011.
2. Megan Davis, "Crews Use Pulley to Rescue Woman From Cave," *The News Virginian*, 2 August 2011.

Comments: No injuries were reported. It was also not reported if Murphy had experienced seizures before.

6 August

Worleys (Morrill) Cave, Tennessee caver fall, injury and aid

Kristi Anderson (26) and her boyfriend, John, were part of a tour group led by a local adventure company in Tennessee's popular Worleys Cave on the afternoon of 6 August. While traversing an area that was the scene of a rescue less than a month before, Anderson slipped and fell, suffering a trimalleolar (ankle) and fibular fracture. Her ankle was splinted with materials on-hand, and John began carrying her back toward the entrance. Another group in the cave (there were several that day) came across them and suggested they backtrack and exit via the stream passage. This would prevent them from having to climb a steep section known as the Devils Staircase. After changing their course, Anderson's group came across a Scout Troop being led by cavers Gary Powers and Clay Stowers. Powers hurried ahead of the group and exited the cave to call local authorities.

Local EMS and Kingsport Fire and Rescue were quick to respond. The Incident Commander sent three cavers, Powers, Stowers, and Robbie Spiegel, into the cave along with an EMS member named Randy. They were given a Ferno® (a type of rigid stretcher commonly used in cave rescue)

and rescue kit to take to the patient. A short way into the cave, Randy dislocated his finger, but decided he could continue. Anderson's group was encountered about 1,300 feet into the cave. Her splint had already been replaced by yet another group in the cave. Randy replaced this splint with a sturdier one and then tended to his own injury.

The Kingsport rescue crew arrived around 4:00 p.m. and set up an IV to give Anderson morphine. From here, the rescue moved quickly as the Ferno was alternately dragged and carried through the cave. A wheel was attached to the Ferno, as in the rescue the previous month, for a portion of the evacuation. After eight hours in the cave, Anderson was brought to the surface and taken to the hospital for emergency surgery. It was several months before she could walk again.

1. Robbie Spiegel, Incident Report, 30 April 2012.

Comments: The tour group that Anderson was a part of supplied its patrons with helmets and lights, but allowed her to wear tennis shoes. Sturdy boots with good tread are generally a better choice than tennis shoes for providing traction in a cave. Spiegel notes that the original rescue kit sent in to the patient did not contain blankets or other items to prevent hypothermia. Keeping a patient warm should always be a top priority in a cave rescue.

4 September **Sharps Cave, West Virginia** **lost, aid, no injury**

On Sunday evening during the Old Timers' Caving Reunion, usually referred to as OTR, a couple in their sixties were reported overdue from a caving trip to Sharps Cave. A gentleman (who had not been in the cave for many years) and his companion got turned around, and were unable to find their way out. A rescue team was organized at OTR, but when they arrived at the cave, the missing cavers had already been found and escorted out by the Slatyfork cave rescue team.

1. "Sharps Cave," *The West Virginia Caver*, volume 29, number 5, page 10, October 2011.
2. Carl Amundson, email communication, 8 March 2012.

Comments: The importance of a good, reliable surface watch can never be over-emphasized.

17 September **Bone-Norman Cave System, West Virginia** **medical issue, injury, no aid**

Stephanie Petri (25), Dave Socky, Alan Staton, Susan Burr, Jessica Jones, Bill Walker, Brian Williams, and Becky Frederickson visited Norman Cave for a day of exploring. As Petri was making her way through the tight spot in the entrance, her knee "froze up," causing her a great deal of pain. Her knee had done this in the past, and she thought she might be able to continue if she could get her knee to relax. When nothing helped, Staton stabilized her knee and Petri was able to scoot backwards toward the entrance. Once on the surface, she was helped down the trail and back to her vehicle. Petri was not in as much pain at this point, but she was unable to drive her truck which has a manual transmission. Staton drove her back to Roanoke with Jones following in Petri's vehicle.

1. Susan Burr, "Cave Rescue Report," *The West Virginia Caver*, volume 30, number 1, page 1, February 2012. (Reprinted from the *Carbide Dump*, V46v9p56, November 2011.)
2. Alan Staton, phone communication, 12 March 2012.

Comments: Staton notes that it was very fortunate the incident did not occur farther into the cave.

1 October **Wind Cave, Kentucky** **caver fall, injury and aid**

An *American Caving Accidents* incident report was submitted online regarding a rescue at Wind Cave in Kentucky. The incident type was listed as a caver fall, with the result of injury and aid, although no other details were supplied. A follow-up with the person submitting the report only revealed that the incident had been reported in a local newspaper.

1. Nicholas Taylor, Incident Report, 9 October 2011.

Comments: Since this incident could not be verified, it is not included in the statistics. Please contact the ACA editor at aca@caves.org with any information regarding this incident.

16 October **Fossil Mountain Ice Cave, Wyoming** **lost, aid, no injury**

Three amateur cavers, all men in their early twenties, entered Fossil Mountain Ice Cave with plans to do a through-trip to Wind Cave. After entering on a Saturday morning, they worked their way down the multiple drops until they reached the maze area in Wind Cave. Here, they either could not find the route to the Wind Cave entrance, or they were not aware that they needed to do a 20-foot climb to exit. Most parties doing a through trip pre-rig this pitch but this group did not.

At 2:00 the next afternoon, they left a note in the maze area saying they were retreating. A few hours later they left another note near Crotch Lake saying they were heading back to the Fossil Mountain Ice Cave entrance. They ascended several ropes that are permanently rigged in the cave but it was slow going due to their lack of traditional ascending gear.

Meanwhile, the men's families notified the Teton County Sheriff's Department when they had not returned by Sunday morning. Search teams entered the cave system from both entrances and searched as far as the first drop at either end. When the missing trio was not found, another search was initiated, this time with the plan that both search teams would continue until they met in the middle. The team who entered from the Wind Cave side found the note that was left in the maze area about 8:00 p.m. The other search team located the missing men shortly before 10:00 p.m. The trio was tired and hungry but otherwise unhurt. They exited the cave and made the long hike down the mountain, reaching the parking area at 4:00 a.m. Monday morning.

1. "Another FMIC Rescue," www.cavechat.org, 17 October 2011.
2. Brielle Schaeffer, "Team rescues 3 cavers," *Jackson Hole Daily*, 18 October 2011.

Comments: The usual Fossil Mountain Ice Cave-Wind Cave through trip requires pulling down the rope after the first drop in Fossil Mountain Ice Cave. Once this rope is pulled, cavers are committed to completing the trip. Most rescues at this cave occur because groups get lost, they find the cave plugged with ice beyond the first drop, or they are unable to ascend a 20-foot pitch to exit on the Wind Cave side. Because of the committing nature of pull-down caving, any such trip should be well-researched in advance.

12 November **Peppersauce Cave, Arizona** **caver fall, injury and aid**

A teenage boy was exploring Peppersauce Cave with his father and fellow boy scouts when he slipped and injured his knee. Reports vary as to how far he was from the entrance, from 50 to 600 feet, but he was unable to exit on his own. Hikers in the area heard of his predicament and offered to help. They splinted his leg with tree branches and used a plastic picnic table as a stretcher. When the stretcher would not fit through a

constriction in the entrance area, he was wrapped in tarps "like a burrito" and passed through. The rescuers carried him down the hill where they were met by a Pinal County Sheriff who determined the youth was mildly hypothermic and showing signs of shock. He was airlifted to a hospital.

1. Tim Vetscher, "Injured teen pulled from cave in S. Arizona," www.abc15.com, 13 November 2011.
2. "Hikers Rescue Injured Teen From Cave," www.myfoxphoenix.com, 13 November 2011.
3. Associated Press, "Teen rescued after falling in Arizona's Mount Lemmon cave," www.azcentral.com, 14 November 2011.

Comments: Photos of the teen, his father, and others taken in the cave that day show that they were not wearing helmets. Despite only being in the warm, desert cave for a total of about two hours, the patient was already showing signs of shock and hypothermia. These two conditions are often a secondary result from injuries and should be considered as potential problems facing anyone injured in a cave.

1 December

Buckner Cave, Indiana caver fall, injury and aid

A group of five amateur cavers entered the Richard Blenz Nature Preserve's Buckner Cave for a day of exploring. Approximately 1,700 feet into the cave, in an area known as The Volcano Passage, a 26-year-old female fell approximately 8 feet. Three members of her group left to call for help when she reported severe pain in her hip and had difficulty moving on her own.

Anmar Mirza, the property manager, received the call at 7:00 p.m. and rounded up several other rescue-trained cavers. Mirza reports, "Before going in to the cave, Monroe County 911 dispatch was called to inform them of the situation. Anmar and Jessica [Deli], both EMTs, then proceeded into the cave. When they reached the patient, she and her boyfriend had been slowly making their way out of the cave with him essentially putting her on his lap and moving a bit at a time, and had moved about 200 feet. Anmar performed a quick secondary survey and determined that the pelvis was involved and probably fractured. Her vital signs were good and her morale was high, so he then left Jessica in charge medically of the patient with instructions to continue slowly and carefully moving towards the entrance as her pain would allow and to closely monitor her vital signs.

"As more cavers arrived on scene, they were sent into the cave along with a SKED litter and two Oregon Spine Splints. Leanne [Hughes] was assigned to coordinate the litter evacuation. One OSS was applied normally and the other was applied upside down along the outer leg on the affected side. The litter handling team was instructed to be very gentle with the patient but that she needed to be evacuated as quickly as possible as there was essentially no treatment that could be done underground in the timeframe available. The litter began moving at 9:30 p.m.

"By 11:00 p.m. the patient was at the entrance of the cave where Van Buren Township Fire Department volunteers were waiting to help carry her up the hill to the parking lot and by 11:05 p.m. she was in the back of the ambulance and on her way to the hospital. Total evacuation time was approximately an hour and a half and that included several hundred feet of belly crawl where the litter could not just be dragged due to her injuries."

The patient was diagnosed as having broken her pelvis in three places. She required surgery and the placement of pins and screws along with confinement to a wheelchair for three months.

1. "Buckner Cave Rescue 12-1-2011," www.cavechat.org, 2 December 2011.
2. Anmar Mirza, Incident Report, 6 April 2012.

Comments: Mirza concludes his report with these comments: "A pelvic fracture is a very serious injury and one of the most difficult ones for cave rescue. Not only is it very painful, but the possibility of major blood vessels to be damaged and the patient to bleed into the pelvis with little outside sign exists until suddenly the vital signs crash. The ideal litter for this type of evacuation is the rigid litter such as the Ferno-Washington basket, but this litter was not available in the cache at that time . . . and would have necessitated a two-hour wait to obtain. These are difficult decisions to make for the rescue manager but ultimately these situations are better treated outside the cave in the appropriate care facility. This rescue was also facilitated by the fact that everyone involved had had previous NCRC (National Cave Rescue Commission) training and several of the responders were NCRC instructors."

3 December

unspecified cave, Illinois near drowning*, injury, no aid

Chad McCain, Todd McCartney (44), Ralph Sawyer, and Jason Kern planned to spend roughly 10 to 16 hours in an Illinois cave pushing a water-filled passage with low airspace. McCain, the only member of the group who had not been in the cave before, led the way upstream, encountering low airspaces of 6 to 10 inches. Moving ahead with helmet in hand, he hesitated when the ceiling came to within only 3 inches of the water.

McCartney was better dressed for the cold water, with a neoprene hoodie in addition to a wetsuit, and decided to push ahead, leaving his pack with the rest of the group. Holding his helmet in front of him, he continued upstream in 3 to 4 feet of water, with his nose pressed against the ceiling. When he reached a point 40 feet beyond McCain's furthest advance, he began kicking and "thrashing" in the water, then disappeared around a bend in the passage.

The others heard periodic bouts of thrashing and silence, and assumed McCartney had found passage with more air. When the thrashing continued, McCain moved upstream a little ways, calling for McCartney. McCartney's light suddenly came into view, but he was obviously in trouble. McCain saw McCartney go underwater, then float up next to the wall, face down and not moving. McCain and Sawyer rushed to their friend. In the very low airspace, Sawyer momentarily panicked and went underwater, only to pop up in a small air bell, losing his helmet and light and cutting his face on the rock wall.

McCain eventually reached McCartney after about 45 seconds, grabbed him, and started dragging him downstream toward Kern. The nearest place to get McCartney completely out of the water was still over 600 feet away, but an area was found that only had 10 inches of water and more than a foot of air. When McCartney was rolled over, his eyes were glassy and caked with mud. McCain began cardiopulmonary resuscitation (CPR). Sawyer and Kern now joined him and helped keep McCartneys's head out of water and administered rescue breaths. After two to three minutes, McCartney regained consciousness. They then moved him another 30 feet downstream to a mudbank where he could sit up.

The cavers now knew they had two real problems: getting McCartney out of the cave as quickly as possible, and doing so with very few remaining light sources. Sawyer and McCartney had both lost their helmets and StenLights®. McCartney only had one extra Maglite®, Sawyer had a couple of small Maglites®, and Kern had one small secondary headlamp. McCain was equipped with an extra Apex and Fenix which he shared with the others.

Working their way back to the entrance, McCartney started off slow and lethargic, and he coughed up a lot of water, but eventually he began picking up speed. It was a long trek out, including a 300-foot-long bathtub crawl with 6 inches of air-space. McCartney was pulled through this section by McCain tethering two Swaygo packs, which are waterproof and buoyant, to his waist and having McCartney rest his head and chest on them. At the entrance, they rigged a short climb with a rope and were able to assist McCartney up it from above and below. They were out of the cave

six hours after entering and 3.5 hours after the accident. McCartney spent four days in the hospital but has made a full recovery.

1. Chad McCain, Incident Report, 28 December 2011.
2. Chad McCain, email communication, 27 February 2012.

Comments: The participants warn others about becoming complacent about low airspace, and that no passage, discovery, or potential connection is worth dying for. This incident also underscores the importance of having extra lights that are not attached to your helmet.

* Drowning is *death* from suffocation caused by immersion. Incidents where a person survives from immersion suffocation are referred to as a “near drowning.”

13 December Smiths Crack, Idaho caver fall, injury and aid

Jordan Jones and a friend decided to visit Smiths Crack, a fissure cave in southern Idaho that is a popular destination for cavers as well as the general public. Jones and his friend were on their lunch break and had no caving gear. They climbed down the narrow fissure and into a small room below. Jones's friend climbed out first. When Jones followed, his tennis shoe slipped on an icy patch of rock and he fell 25 feet to the bottom, breaking his leg just above the ankle.

His friend called for help around 2:00 p.m. Elmore County Search and Rescue, Mountain Home Extrication Team, and paramedics arrived on scene. Rescues at Smiths Crack are not uncommon, says Alan Roberts of the Mountain Home extrication team, occurring on average once a year. This one took a little more effort as Jones is 6-foot, 5-inches tall and weighs 300 pounds. He was placed in a Stokes basket and raised vertically out of the cave. After two hours he was out of the cave and flown to a hospital. Besides his broken leg, he was showing signs of hypothermia.

1. “Victim lost footing, fell into Elmore County cave,” www.nwcn.com, 13 December 2011.
2. Brian S. Orban, “Man rescued after falling into cave,” *Mountain Home News*, 14 December 2011.

Comments: Tennis shoes do not provide enough traction and are inadequate footwear for most caves. Lug-soled boots are usually a better choice. Caves that contain ice sometimes require even more specialized traction devices.

31 December Sótano de las Guaguas, San Luis Potosí, Mexico lost control on rappel, injury, no aid

On New Year's Eve, Sarah Crowder, John Deighan, Alex Booker, Beth Mutchler, and Robert Harris rigged two ropes in Sótano de las Guaguas. After rigging the high side of the pit (~700 feet), Deighan rigged and descended the low side (~470 feet), which the cavers would later use for ascending. Mutchler and Harris both rappelled the high side without incident. When Crowder got on rope, she had difficulty moving down the slope to the lip due to friction. She dropped the sixth and fifth bars of her rack and proceeded on four. As she went over the lip, her fourth bar dropped off and she began rappelling out of control on only three bars.

Deighan was ready with a bottom belay but did not know Crowder was in trouble until she had probably fallen a couple hundred feet. His belay was enough to slow her so that when she landed on him, he was not injured. Crowder's left hand was badly injured, however. When she passed the lip, her left hand had become trapped between the rope and rack body.

The cavers in the pit radioed up to Booker who brought down clean water, disinfectant, and bandages to dress her wounds. Crowder and the rest of the group then exited the pit via the shorter rope. Back in town they were unable to find a medical facility so they drove to Brownsville, Texas, the following day where a physician cleaned and redressed her wounds. Crowder later required surgery to repair tendons and skin but is expected to make a full recovery.

1. John Deighan, Incident Report, 8 February 2012.

Comments: Cavers should be aware that flexing of a rack frame against the lip of a pit can cause bars to drop. Cavers should always cross a lip with more than enough bars engaged rather than “just enough.” Fighting against friction at the lip is a small price to pay in order to remain in control of the rappel.

2011 Cave Diving Accidents and Incidents

31 January Eagles Nest sinkhole, Florida fatality

Bill Bowden, a certified cave diver, was diving the Eagles Nest sinkhole using a rebreather. When he surfaced, witnesses say he was speaking clearly but suffering from decompression sickness. Bowden was taken to a hospital where he later died.

1. “Eagle’s Nest 1-31-11,” www.cavediver.net, 1 February 2011.

Comments: Decompression sickness (DCS) occurs when inert gases, built up in the body's tissues, form bubbles during a diver's ascent. These bubbles can form anywhere in the body but most commonly in the joints (which is why decompression sickness is often referred to as “the bends”). To avoid DCS, divers practice staged decompression. “Staged” means stopping at progressively shallower depths for increasingly longer times to allow inert gasses to exit bodily tissues safely.

Bowden had recently undergone open-heart surgery and had a valve replacement, but was released to dive by his physician. His friends

speculate he may have been having chest pains, which caused him to surface too quickly.

17 April Chassahowitzka River, Florida drowning, fatality

Amy Ryan, a 22-year-old University of South Florida senior, went swimming with friends in the Seven Sisters Springs area in the Chassahowitzka River. The springs are connected by short, shallow, underwater caves which Ryan had free-dived at least once before. When Ryan attempted a dive through a 15-foot-long section, she did not resurface. Her boyfriend swam through several times looking for her while another friend called 911. Rescuers responded within moments and pulled her from a crevice she had mistakenly swum into. She was taken to a hospital in Spring Hill where she was pronounced dead.

Within a week, cave divers installed warning signs at both ends of the swim-through in order to prevent future accidents at this location. The signs were donated by the National Speleological Society's Cave Diving Section and the National Association for Cave Diving.

1. "USF student drowns," www.cavediver.net, 18 April 2011.
2. John Woodrow Cox and Jessica Vander Velde, "USF student drowns in Citrus cave-diving accident," *Tampa Bay Times*, 19 April 2011.
3. Walter Pickel, "Warning Signs at Chassahowitzka Springs," www.caveatlas.com, 25 April 2011.

Comments: Free-diving through these caves is a popular activity among visitors to the springs. Most, like Ryan, have no cave-diving training or equipment. Without a guideline or lights it is easy to become disoriented and a single breath does not allow much time for mistakes.

9 June

Devils Eye Spring, Florida medical issue, fatality

Sixty-eight-year-old Richard DeVan suffered a heart attack while exiting the Devils Ear entrance of Devils Eye Spring in Ginnie Springs Resort. DeVan had been scuba diving since the 1970s and had been cave diving since the early 1990s.

1. "Fatality at Ginnie," www.cavediver.net, 9 June 2011.
2. Mary Lu Strange, "Richard DeVan was an avid diver," www.cincinnati.com, 27 June 2011.

11 June

Whiskey Still Sink, Florida drowning, fatality

Jim Miller and two others were diving in a section of the Woodville Karst Plain known as Whiskey Still Sink on RB80 rebreathers. The planned dive was to traverse the shallow-depth conduit to Innisfree Sink and continue beyond there to a depth of almost 220 feet, followed by staged decompression stops on the way back up to Innisfree. The team carried deco gas (gas mixtures used at various depths for decompression stops) to be used at 120 and 70 feet below the surface and oxygen at 20 feet. Their bottom mix was for a depth of 240 feet.

The team started their dive using their 120 bottles, which were suitable for the conduit's depth. At 70 feet, the team stopped to stage their 70 bottles. Miller, who has been described as a meticulous and safety-conscious diver, mistakenly dropped one of his 240 bottles here, and continued further into the cave.

At the 120-foot stop, the divers were now ready to switch to their 240 gas. Here, Miller made a second error and switched to his 70 bottle. Protocol usually requires not only a diver, but his dive partner(s), to verify that the right bottle is being used. Unfortunately, this was overlooked on this particular dive.

The three continued the dive for a little less than an hour, with Miller using the wrong bottle the whole time, and turned around at the planned time. Shortly after turning around, Miller had a seizure. His buddies were unable to revive him despite their best efforts.

1. "Fatality in the WKP," www.cavediver.net, 14 June 2011.

Comments: The official cause of death was drowning, but what actually caused the fatality is called "oxygen toxicity." Pure (100%) oxygen can only be safely breathed to a depth of about 20 feet underwater. The 70 bottle wasn't pure oxygen, having some nitrogen as well, but was intended for depths of 70 feet and shallower.

Miller's final depth was not reported, but since he had a 240 bottle, the depth was probably deeper than 200 feet. That is over three times the safe level of oxygen for that depth. Breathing this level of oxygen for such a prolonged time can (and did) cause seizures. Once a diver has a seizure, it is very difficult to switch to the appropriate gas mixture, since the jaw usually clamps shut.

16 October

Sistema Cocodrilo, Quintana Roo, Mexico fatality

Brendan Lee Napier and four of his dive buddies began a survey dive in Sistema Cocodrilo on Cozumel Island on the morning of 16 October 2011. Their plan was to travel 4,200 feet into the cave and video map a room known as the Air Dome. At 11:19 a.m., Napier led the team into the cave. Within fifteen minutes, his pace accelerated, and the team became strung out as they tried to keep pace. Moments later, he began convulsing and floated to the ceiling. By the time his buddies reached him, he was unconscious and his regulators were out of his mouth. His bailout regulator was deployed and dangling and his rebreather loop and bailout tank had been closed.

Napier's dive buddies pried his clenched jaws apart and purged a regulator into his mouth. They then began moving him out while continuing to purge the regulator in his mouth. They reached the surface in eighteen minutes, cut away his gear and suit and began CPR. An ambulance arrived twenty minutes later, but unfortunately, Napier could not be revived.

1. Michael Angelo Gagliardi, "Report on accident at Sistem[a] Cocodrilo," www.rebreatherpro.com, undated.

Comments: A review of the events by the dive team showed that Napier did nothing wrong and broke no rules. An autopsy revealed that he died of carbon monoxide poisoning, leading the team to suspect that he had received a bad mixture of gas in his tank. In the future, his team insists they will all be adding a carbon monoxide analyzer to their dive kit and encourage others to do the same.

The National Cave Rescue Commission

www.caves.org/io/ncrc

The National Cave Rescue Commission (NCRC) received its charter from the National Speleological Society in 1979, and serves as the Society's representative on issues of cave rescue training and operations. It is a volunteer group developed primarily to train and track cave rescue resources throughout the United States.

The NCRC does not perform cave rescues. It organizes, develops, and provides training in cave rescue techniques, maintains lists of individuals trained in cave rescue, and can help locate rescue resources in times of need. Most NCRC-trained cavers do participate in rescues, but not as part of the NCRC. They work as members of their local rescue teams, civil defense units, or cave rescue groups.

The NCRC sponsors a week-long Cave Rescue Operations and Management Seminar each year that is held in various locations around the United States. The seminar serves as a "boot camp" of cave rescue and provides three levels of training. Cave rescue is constantly evolving, and the most up-to-date techniques are presented each year. In addition to the annual week-long seminar, the NCRC regions sponsor regional week-long seminars, regional modular seminars (taught over a series of weekends), courses in small-group and self-rescue techniques, and weekend cave rescue orientation courses.

Information on NCRC operation, activities, and training is published each year in the *NSS Members Manual*, and is available on the NCRC website at www.ncrc.info. Upcoming seminars are announced on the website and in the *NSS News*.

2011 Caving-Related Accidents and Incidents

2011, date unknown

unspecified lava tube, Hawaii

fell into lava tube, injury, no aid

CJ Kale (34) was hiking across a lava field to photograph scenes of lava as it contacted ocean waves when he fell about 20 feet down into a lava tube, shattering his ankle. Kale reports, "After climbing out we had to lash my foot to my leg with a tripod, camera strap and belt and hike over the rugged terrain for two miles."

1. "Daredevil photographers brave boiling waters to capture the drama of searing-hot lava crashing into the seas off Hawaii," www.dailymail.co.uk, 5 September 2012.

Comments: This is a nice example of well-improvised first aid.

3 January

unnamed pit, San Luis Potosí, Mexico

fell into pit, aid, no injury

An 85-year-old woman fell into a 45-foot-deep pit in the municipality of Tamasopo. The woman, locally known as Luca, spent 16 hours in the pit before being rescued by local firefighters and the Mexican Red Cross. Reports say she was unhurt.

1. Cave accident in San Luis Potosí, Mex., www.cavechat.org, 5 January 2011.

Comments: No other information was available but we can assume the elderly woman had not intended to enter the pit, making this a caving-related incident.

20 January

Carter Memorial Wayside Caves, Virginia

body found in cave

Acting on a tip, Wythe County Sheriff's deputies discovered the body of an infant hidden under a rock in a roadside cave. In court, Ashley Meadows (21) admitted giving birth to the infant at home. She claimed she gave her daughter to her mother, Twyla Meadows. Twyla testified that she found the infant already dead in Ashley's room and concealed it first in an outbuilding, then in the cave which she passes on her way to work. Ashley has received three years for felony child abuse. Her mother pleaded guilty to a felony charge for concealing a body and faces up to five years in prison.

1. Amy Matzke-Fawcett, "Grandmother testifies that she hid dead baby in Wythe County case," *Roanoke Times*, 2 August 2011.
2. Jeffrey Simmons, "Wythe woman sentenced in cave baby case," *SWVA Today*, 23 February 2012.
3. Jeff Simmons, "Grandmother pleads guilty in Wythe County cave baby case," *The Wytheville Enterprise*, 8 March 2012.

Comments: It is not unusual for caves to be used for crimes and illegal activities. Cavers should report any suspicious activities to authorities immediately.

5 March

Ellenville Fault Ice Caves, New York

fell into cave, aid, no injury

Jennifer Stiles (22) and her sister, Michelle Stiles (19), were spending an afternoon photographing ice formations around the caves. Shortly after 4:00 p.m., one of the sisters slipped on the ice, knocking over the

other sister, and they both slid down into the fault. The sisters were unhurt but unable to climb back out or exit through the bottom due to an iced-over trail along the cliffs. Using a cell phone, the sisters called 911. The Walker Valley Fire Company's technical rescue team was able to get the women into harnesses and haul them back to the surface. After a four-hour rescue, the sisters were wet and cold but otherwise in good condition.

1. Deborah Medenbach, "Sisters escape serious harm in Ice Caves fall," www.recordonline.com, 8 March 2011.

Comments: It is a good idea to always maintain at least a body's length between yourself and the edge of a pit, cliff, or crevasse. More distance may be required if ice is present.

14 March

Ape Cave, Washington

exhausted, hypothermic, injury and aid

John and Robert Okey were on their way to Ape Cave when the road became impassable due to deep snow about one mile from the cave. After eating a light lunch, they continued toward the cave on foot, walking in the footprints of a previous hiker. Robert wore shorts and gaiters, and both had only light outer garments. The only supplies they took with them were three flashlights and one energy drink. They explored the lava tube for about two hours, finally reaching the upper entrance. Here they found the snow to be quite a bit deeper than at the lower entrance. Robert, who is 6-foot, 5-inches tall, weighs close to 400 pounds, and has Type 2 diabetes, decided he was too tired to try and return through the cave. The brothers thought hiking down the hill on the surface would be easier.

The deep snow made for very slow going, however. Robert tried to fashion snowshoes out of broken tree branches; this did not work and he cut his hand badly in the process. Eventually, John decided to try to make it to the parking area and an emergency phone on his own, while Robert followed at a slower pace. Again the snow proved to be too deep, and they were unable to continue.

Both brothers were now extremely cold, their legs and feet numb, and Robert's hand was still bleeding. About the time they decided to retreat to the cave, they heard voices and shouted for help. Four hikers soon arrived, and escorted the brothers back to the cave and down the entrance ladder. One of the hikers was able to call 911 on a cell phone at 4:10 p.m.

Inside the cave, the hikers helped the brothers remove their wet clothing, and gave them dry clothes, socks, chemical heat packs, food, and water. Stephen Schutts, a paramedic and team coordinator of the volunteer Volcano Rescue Team, was the first to arrive with blankets and more heat packs. Sergeant Jay Johnson from Skamania County Sheriff's Office arrived next, with more supplies and body bags. The brothers were wrapped in blankets and placed in the body bags, along with heat packs and hot water bottles to warm them. The brothers eventually recovered their strength and were able to once again climb the ladder out of the cave. On the surface, they were given snowshoes and helped down the trail. The brothers were then placed in a sled and pulled by an all-terrain vehicle to a waiting ambulance. They were examined but showed no signs of frostbite. They were then released to drive themselves home.

1. Bob Albrecht, "Two Camas men rescued near Ape Cave," *The Columbian*, 15 March 2011.
2. John Branton, "Rescue at Ape Cave," *The Columbian*, 20 March 2011.

Comments: The brothers were not dressed properly for the cave or outside elements. Robert Okey later told reporters, "It takes a couple

of bad judgment calls to end up in a very bad situation. It's so easy to underestimate how quickly a situation can go bad." This is true. Plan ahead, and don't skimp on emergency supplies.

30 March **unspecified cave, Kentucky** **dog stranded in cave**

Roger Moore was out hunting with his coon dog, Half Pint, in Metcalfe County when Half Pint chased a raccoon into a cave. Moore waited at the entrance for several hours but Half Pint did not return so he eventually contacted Metcalfe County Emergency Management officials. By the time two firefighters with the skills to reach her could be located, Half Pint had been underground for nine days. The firefighters braved the water and low airspace to find the dog waiting on a ledge just above the water. She was brought to the surface and found to be in reasonably good condition.

1. Josh Breslow, "Dog Rescued After Spending 9 Days Trapped In Cave," Lex 18 News, 30 March 2011.
2. The Associated Press, "Dog that ran into KY cave rescued after 10 days," www.seattlepi.com, 31 March 2011.

Comments: There is no word on what became of the raccoon.

April **San Sebastián, Puerto Rico** **histoplasmosis**

In April 2011, the National Cave Rescue Commission (NCRC) held its annual Operations and Management Seminar in San Sebastián, Puerto Rico. A number of caves were visited, some repeatedly, during the course of the seminar. After the seminar concluded, several attendees began to experience symptoms which ranged from mild fatigue to debilitating pulmonary illness. Since attendees were from all over the U.S., it took some time to realize that many had developed these symptoms. A survey was sent to all seminar participants to try and determine the extent of the illness.

Of the 101 attendees, 16 developed symptoms of fatigue, cough, general malaise (tiredness and weakness), and/or body aches. Another five students developed severe pulmonary symptoms and/or were diagnosed with histoplasmosis. All but two of the 21 attendees who fell ill were from outside the area in which histoplasmosis is generally considered to be endemic (always or usually present in the population) and these two had little previous exposure to caves. The endemic area is roughly defined as east of the Mississippi and south of the Ohio Rivers. Persons living in the endemic area are less likely to develop severe illness due to previous exposure to the agent.

Histoplasmosis is an infection that occurs from the spores of the fungus *Histoplasma capsulatum*. The spores are usually present in the soil and are much more prevalent in soil contaminated by bird or bat droppings. The spores usually enter the body by inhalation. Persons with a weakened immune system are more susceptible to a severe infection, but even very healthy people can become quite ill with a large enough exposure. Flu-like symptoms are the most common if there are any symptoms at all. Some people develop more severe pulmonary symptoms which can mimic pneumonia. A smaller number of people develop symptoms throughout their bodies, which are caused by the body's immune response to the infection. Most people recover from histoplasmosis without treatment, but those with more severe symptoms may require antifungal medications. Antibiotics, which are effective against bacteria, have no effect on fungal infections.

Although the topic of histoplasmosis, or "histo" as it is often referred to, frequently comes up in caving circles, it may not be high on a list of illnesses considered by a health care provider in a patient presenting with fever, cough, and fatigue. Thus, it is very important for cavers who experi-

ence such symptoms to inform their health care provider of their visits to caves and possible exposure to histoplasmosis. It may be necessary to request, or even demand, testing for histoplasmosis.

The fact that the students all returned to their homes after the seminar represents an epidemiologist's nightmare: an infection in a dispersed population. Fortunately, communication between students who had attended the seminar brought the problem to light.

1. Dr. Stephen Mosberg, Incident Report, 14 April 2012.

Comments: For more information about histoplasmosis, visit: www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002073/, www.cdc.gov/fungal/histoplasmosis/, or www.caves.org/section/medical/introfect.htm.

2 May **unspecified sea cave, California** **body found in cave**

Two snorkelers discovered a body in a La Jolla sea cave and reported it to authorities. Lifeguards recovered the body of a Caucasian man in his 50s or 60s. A San Diego Fire-Rescue spokesman said "He was found on a rock inside a cave and had street clothes on and was wearing a backpack that had rocks in the side of the pack. The incident is being investigated by the coroner as a possible suicide."

1. "Man's body found in La Jolla sea cave," *La Jolla Light*, 2 May 2011.
2. Michelle Mowad, "Body Found in Cave Appears to Be a Suicide," www.lajolla.patch.com, 3 May 2011.

Comments: There were no reports if the man died in the cave or if the body washed in from somewhere else.

5 June **Sistema del Río Camuy, Puerto Rico** **drowning**

On Sunday, 5 June 2011, three workers from the company Original Canopy Tours in Guaynabo, Puerto Rico, were installing a Tyrolean traverse across the Río Camuy on private land near the Tres Pueblos entrance to the Río Camuy Cave system. One of the men, 24-year-old Azgad Cardona Martí, fell into the rain-swollen river while rigging a cable and was swept away. Another man, 32-year-old Jorge León Rivera, went to his aid and was also swept away. Cardona was rescued but León was washed into the cave. Cave rescue personnel and other emergency responders were called to the scene.

The cave, which is over 8 miles long, is very dangerous in high water and has been the scene of several deaths in recent years. The safe working level of the river in the cave is considered to be 200 cubic feet per second (cfs) but in this case the level was over 800 cfs. Rescuers decided not to enter the cave until the water receded to a safe level, but more rain was expected. Rescuers monitored areas downstream in the cave via another entrance (Cueva Clara de Empalme), at the resurgence, and by helicopter downstream along the river beyond the resurgence. The search was eventually called off until Monday.

The river was still high on Monday so only minimal searching could be done in the cave. Surface searches continued. On Tuesday, a flotation test with a buoy was conducted to determine the possibility of someone surviving such conditions. A team of cave divers made an attempt to locate the missing man, without success. The water level was still higher (314 cfs) than the safe limit.

Helicopter and all-terrain vehicle searches continued along the river beyond the resurgence in case the body had been flushed out. One team of cavers saw what might have been a body in the downstream section of the cave but could not confirm it. Again bad weather forced an end to

the search. Finally on Wednesday, 8 June, the river was low enough and a team of divers in Empalme found the body beneath 12 feet of water, one-half mile downstream from where it entered the cave. Cavers rigged a haul system and recovered the body, which was brought out of the cave and identified by family members.

1. Efraín Mercado and Roberto Miranda, Accidente en Río Camuy, Comisión Nacional de Rescate en Cuevas, June 2011. (this report contains

several related news items)

Comments: It is important to note that the victim was attempting to rescue his friend, who survived. While it may be a natural instinct to rush to someone's aid, it is important that potential rescuers perform a thorough scene-safety analysis before entering into hazardous conditions. Failure to do so can result in additional casualties and complication of the rescue effort, thereby exposing even more rescuers to danger.

2012 Caving Accidents and Incidents

2 January

Poleta Cave, California stranded, aid, no injury

A 73-year-old man went caving by himself in the Inyo Mountains on New Year's Day. When he did not return home in the evening, his wife reported him missing. She had been to the cave before and provided directions to Inyo County Search and Rescue. After searching unsuccessfully through the night, Inyo SAR called the China Lake Mountain Rescue Group (CLMRG) who joined the search at 8:30 a.m. The rescue group found tracks leading into a canyon, away from the wife's directions. A helicopter was summoned to search the new area. From the air, a black duffel bag was spotted lying next to a cave entrance. Rescue personnel made contact with the man at 11:00 a.m. He had rappelled down the 50-foot vertical entrance but left his ascending gear in the duffel bag above. When he realized his predicament, he attempted to make prusiks out of his boot laces but they broke when he weighted them. CLMRG group leader, David Miles, rappelled down to him and found him unhurt. A 3:1 mechanical advantage haul system was used to raise him to the surface.

1. John V. Ciani, "CLMRG rescues cave explorer," *Daily Independent*, 4 January 2012.
2. David Miles, email communication, 5 January 2012.

Comments: Miles reports the stranded man had a headlamp but no helmet or gloves, and was using a climbing harness. This incident highlights the decreased safety margin when caving alone, but at least he had a good surface watch. It is somewhat ironic that what caused his needing rescue – leaving his ascenders in a bag at the entrance – is also what led rescuers to him. Besides this limestone cave, there are thousands of mines in the area.

8 January

Bone-Norman Cave System, West Virginia lost, aid, no injury

Late on the night of 7 January 2012, three college students, Grant Blaisdell (22), Matt Stephens (22), and Jay Buchina (23), entered the Norman entrance of the Bone-Norman Cave System. The group intended to camp underground for the night, then complete the through-trip out the Bone entrance the next day. Although they had been caving a few times before, they were not familiar with Bone-Norman, and had never navigated in a cave of this length or complexity (the system is more than 14 miles in length).

It took the group approximately eight hours to reach their camp site, including a trip to see some additional side passages. The men were prepared to camp underground and were equipped with warm clothing and sleeping bags. They established camp at around 5:00 a.m. on 8 January. After sleeping for four hours, they started toward the Bone entrance but were unable to find it after eleven hours of searching. They assessed their situation, and decided that they did not have enough batteries, food, or energy to make the five to six-hour trip back to the Norman entrance. The group decided that they should return to the camp

site and wait for rescue.

Blaisdell's father knew of their plans, and according to some news reports, was expecting him home by 7:00 p.m. on 8 January. The group knew that a rescue would be initiated when they did not return. While they waited, they left notes for the rescuers in the mud, and used orange flagging tape to mark the route to their location. They also stayed in the main passage so that they could easily be found.

The Renick Volunteer Fire Department, as well as cavers from Morgantown, Charleston, and Virginia Tech responded. A search team from Virginia Tech located the men at approximately 7:00 p.m. on 9 January, and escorted them safely out of the cave via the Bone entrance. In total, the trio was in the cave for more than 48 hours.

Blaisdell was interviewed by several news organizations following the rescue, and stated that he and his friends had learned a lot from this experience. He said that he would like to continue caving, but would like to learn from more experienced cavers first. He was highly appreciative of the efforts of the rescuers involved, and said he is interested in getting involved in cave rescue himself.

1. Jake Carpenter and Greg Seaby, "Rescuers Find 3 Alive in West Virginia Cave," CNN, 9 January 2012.
2. Jeffery Alderton, "A lesson learned: Keyser cave explorer provides account of rescue experience," *Cumberland Times-News*, 10 January 2012.
3. Doug Moore, "Norman Cave Incident," ICS Individual Log, 10 January 2012.

Comments: The group established a surface contact, who knew of their plans and called for rescue when they did not return. They were also prepared with warm clothing and sleeping bags, which likely prevented hypothermia as they awaited rescue. Leaving notes and directional flagging also helped rescuers to locate them quickly. More experience, and additional planning for the trip (obtaining detailed directions and maps), may have prevented the group from getting lost. If the cavers had carried enough extra batteries and food to exit through the Norman entrance, they also may have been able to leave the cave on their own after getting some rest.

14 January

Clarksville Cave, New York intoxicated, aid, no injury

On a cold January day when the wind chill was near 0 °F, J. Heller (29) and M. Lipari (47) decided to make a 23-mile trip on bicycles from Troy, NY, to Clarksville Cave. Equipped with only flashlights and beer, the duo entered the cave around noon. Also in the cave that day, Kay Rising was leading a trip for ten beginners with help from David Rhodin, Bobby Fabiano, and Ian Bunk.

From the Lake Room, Rising led her group to exit the Thook Entrance (one of the cave's three entrances). Fabiano and Rhodin had already exited the cave via the Ward entrance when Rising, Bunk, and the rest of the group reached the tight spot in Thook. One member of the party was uncomfortable with this, so Rising left Bunk in charge of the others while she led the young lady the short distance back through the cave

to the Ward entrance.

Along the way, Rising and her companion encountered Heller near the Lake Room. He was lightly dressed, intoxicated, and carrying a flashlight. She advised him to follow her out but he refused and wandered off. A little further on she encountered Lipari, passed out amidst empty beer cans and a flashlight. When she reached the surface, Rising informed Rhodin and Fabiano of the two men in the cave and placed a call to 911. Rhodin took hand warmers and a blanket in for Lipari while Fabiano planned to search for Heller.

Meanwhile, Bunk and the rest of the group had also decided not to exit via Thook and were making their way back through the cave when they came across both men. Bunk and his companions were able to waken Lipari, who was having difficulty moving and communicating. When questioned, Lipari said he could not remember the way out. The two men were escorted out of the cave by Bunk and the others. After being evaluated by paramedics, the two men were driven home by sheriff's deputies.

1. Thom Engle, Incident Report, 10 February 2012. (submitted by Chuck Porter)
2. Kay Rising, email communication, 8 March 2012.

Comments: Thom Engle comments: "It is hard to tell what would have happened had Kay and her group not been at the cave that day. Considering the temperature of the cave (48 °F), which was only warm relative to the outside, it is not too much of a stretch to surmise that both men might have succumbed to hypothermia. As has been seen many times, alcohol and cold temperatures do not mix."

24 January **Schetromph Cave, Maryland** **stuck, aid, no injury**

Four young adults, all members and leaders of the Johns Hopkins Outdoor Club, were exploring Schetromph Cave to determine its suitability for future club outings. The group of two men and two women entered the cave around 2:30 p.m. On their way out of the cave, one of the young men prepared to negotiate a very tight and difficult section of the cave. To exit required going headfirst down through a tight, hour-glass shaped passage, making a 90-degree turn, and entering a body-sized "wormhole" known as The Corkscrew.

Jerry Bowen explains, "What appears to have happened is approaching the straight-down tube from a hands-and-knees crawl and with knees on the lip, [the young man] lowered himself into the pit headfirst. He missed grabbing his purchase, before he could straighten out a leg. It was his left leg that got folded into his chest as if that knee were in a fetal position." He was stuck at the pinch of the hour glass, completely upside down, with his head on the ground. His female companions were able to get under him but either did not have the strength or a long enough reach to help him. After twenty minutes, they decided to call for help and one of the party exited the cave and called 911.

A local resident heard the rescue being initiated over a scanner and called his friend Jerry Bowen, an active caver. Jerry and his son Stephen decided to make the twenty-minute drive to see if they could be of help. They were stopped at two checkpoints but let through when they displayed caving stickers and decals on their vehicle. They met with the Maugansville Goodwill Volunteer Fire Department's Deputy Fire Chief who quizzed them about their caving experience. Although neither of the cavers had been in the cave, the Fire Chief was convinced they could be of service. Until that point, no one on scene was small enough to reach the trapped caver.

Since Stephen is smaller than Jerry, he was chosen to enter the cave. He was given water, hearing protection for five people, eye protection, an air quality meter, a gallon of chain-saw bar oil (for applying to the patient's leg and back if needed), a compressed-air tank, hose, air chisel, and a cloth bag to carry most of the items in. One of the females in the

group had emerged with a digital camera to show pictures of her friend's predicament. She was now ready to escort Stephen into the cave and help with carrying supplies.

When Stephen reached the trapped man, they were head to head. There was a small void above the patient but Stephen was too tall to get past him. He handed the bag of supplies to the patient's friend who was able to give him water while Stephen went back for the air tank. When the chisel was assembled, Stephen went to work, carefully removing rock while trying not to injure the patient. Worried the chisel would slip, Stephen had one of the friends radio out for a steel plate or some type of shield for protection.

One of the females had already left the cave and surface support eventually called for the second to exit as well. While the other male stayed with the patient, the female and Stephen exited. Stephen retrieved a new tank and the plate and headed back in, only to find the patient had slipped further down, blocking access to the rock Stephen had been working on.

With his friend pulling on his free leg from above, and Stephen pushing up on his shoulders from below, they managed to get him into a position where chiselling could resume. After removing a final projection, and freeing a caught pant leg, they pushed and pulled again, until the leg popped free of the constriction. They radioed this information to the surface which caused a great deal of excitement and relief. The freed caver rested, drank some water, and then the threesome began making their way toward the entrance. The patient was assisted up a 15-foot climb by two confined-space professionals who met them in the cave, and he was on the surface 15 minutes later at 10:00 p.m. He was flown to a hospital but was found to have no sustaining injuries.

1. Dave McMillion, "Man rescued after being trapped in cave near Clear Spring," *Herald Mail*, 24 January 2012.
2. Jerry Bowen, Incident Report, 19 February 2012.
3. Stephen Bowen, Incident Report, 19 February 2012.

Comments: Being stuck in a cave is a very dangerous predicament, especially when the patient is in an inverted position. It was a stroke of luck that the Bowens heard about the accident and responded when they did. Approach tight passages with caution, and do not go in head down if at all possible.

1 March **Hidden River Cave, Kentucky** **flooding, aid, no injury**

On a sunny afternoon, eight teenage students and their teacher entered Hidden River Cave for a three-hour, off-trail guided tour. Soon after the group entered, a thunderstorm developed and dropped a large amount of rain on the area. The tour group by now was far back in the cave, and had no idea the water levels were rising. Hidden River Cave's executive director, David Foster, and guide Joe Forsythe, measured the water to be 3-feet deep and rising quickly. Foster and Forsythe made the decision to enter the cave and try to bring the group out. According to reports, Forsythe found the group 1 ½ miles into the cave. He tied a line to his waist and had the others hold onto it, walking when they could, and swimming when they had to. Everyone made it out safely and the cave's management says they are "re-assessing their tour protocol."

1. Rachel Markin, "Tour Group Rescued From Flooded Hidden River Cave," www.wbko.com, 1 March 2012.

Comments: Flooding in caves is never something to be taken lightly. Before entering any cave with known flooding potential, obtain a reliable, regional weather forecast for the cave's watershed; do not judge the weather only by looking at the sky above you.

If cavers have reached a safe spot above possible flood levels, it is often better to wait for floodwater to recede before attempting to exit.

Having emergency supplies stored in the cave at strategic sites can help a forced bivouac to be safer and more comfortable.

24 March Crystal Ice Cave, California caver fall, injury, no aid

During a guided tour of Crystal Ice Cave in Lava Beds National Monument, a visitor fell approximately 10 to 15 feet off of a ledge he was traversing. The visitor landed on a flat breakdown block then rolled downhill, coming to rest face up among breakdown and ice. Two National Park Service (NPS) guides were present. One of the guides immediately left the cave to call for help. Two other persons on the trip were EMTs who examined him and did a full spinal inspection of each vertebra. In a sitting position, they continued the examination until everyone (including the patient, who was also an EMT) felt that it was safe for him to stand and begin moving. The group exited the cave just as law enforcement rangers and other NPS employees arrived. The man was released after an evaluation by an NPS EMT.

1. Shawn Thomas, Incident Report, 27 September 2012.
2. Shawn Thomas, email communication, 20 November 2012.

Comments: Thomas reports: "The patient was lucky to have sustained only minor injuries, as the fall had the potential to be much more serious. The patient was almost certainly spared from serious trauma or fatality by wearing a properly fitted, UIAA* certified helmet. If evacuation had been necessary, it would likely have been a prolonged rescue complicated by moving a litter through a squeeze and out of a vertical entrance. The cold temperature of the cave would have added a significant challenge to the safety of the patient and rescuers."

*Union Internationale des Associations D'Alpinisme (International Mountaineering and Climbing Federation)

31 March unspecified cave, Virginia caught finger on rock projection, injury, no aid

After obtaining permission from the landowner, Adam Lake led a group of seven cavers to a cave on private property. After exploring for about four hours, the group decided to turn around. Doug Lake (43) was the last to emerge from a narrow, winding passage into a larger room where the rest of the group was waiting. Doug found adequate handholds and began to pull himself up and out of the passage. As he did, his finger caught on a chert nodule. Because of the intense pain, he concluded he had broken his finger. Offers by the trip leader to splint and bandage the injured finger were rejected. Doug rested for a few minutes, expressing his discomfort "through a variation of the use of one four-letter word," which we can assume was not *Ouch*. Doug was able to exit the cave without assistance.

1. Adam Lake, Incident Report, 4 April 2012.

Comments: It is good to know at least one person in the group had a first aid kit.

7 April Tumbling Rock Cave, Alabama caver fall, injury and aid

Despite having a lot to do before Easter the following day, Pam Greiner agreed to accompany her boyfriend and her two sons to Tumbling Rock Cave. By the time the foursome had reached the Totem Gallery, a mile and a half into the cave, the boys were getting tired but having a great time "getting dirty." They decided to continue just a bit further to see one more section of the cave. Greiner explains what happened next:

"As I was going down, attempting a controlled slide that would not take me over the edge, something went wrong - I hit the ground, felt my upper leg buckle, rolled onto the rocks, and felt so much nausea and pain that I wanted to pass out - in fact I was fighting it with everything I had."

Greiner's boyfriend, who is an experienced caver with NCRC training, quickly made her comfortable by giving her a pad to sit on, a garbage bag for warmth, food, water, and extra batteries. Greiner told him "Get my boys out of here safely. And, don't forget where I am." Her three loved ones then headed out to get help while she kept her mind off her situation by playing Angry Birds on her iPhone. It was 3:40 in the afternoon.

Fortunately, Tumbling Rock Cave is a popular cave in the heart of TAG (an area with thousands of caves where Tennessee, Alabama, and Georgia meet), and help was quick to arrive. Other cavers, including one who is a nurse, were also touring the cave and soon happened across Greiner. They splinted her leg and wrapped her in a space blanket since she was feeling quite cold. By 4:30 p.m. more individuals had arrived, and soon there were about forty-five rescuers including members of the Huntsville Cave Rescue Team, Jackson County Rescue Squad, Chattanooga Cliff and Cave Rescue, and two EMTs from the University of Georgia preparing to evacuate her from the cave. The property's manager, Jay Clark, was on scene and reports that the rescue operation was well coordinated and that Pam was out of the cave by 9:00 p.m.

1. Pam Greiner, "There are dark places and a light at the end of the cave . . .," pamgreiner.blogspot.com, 9 April 2012.
2. Jay Clark, Incident Report, 11 April 2012.

Comments: Generally, injured persons in a cave should not be left alone. If it is absolutely necessary, make sure they are as stable, warm, and comfortable as possible, and leave them with plenty of light, food, and water, as was done in this incident.

8 April Hidden Cave, California trapped, fatality

On Sunday, 8 April, Guillermo Pino, Jr. (24), along with his friends and family, visited Arroyo Tapiado in Anza-Borrego Desert State Park, in San Diego County. This arroyo is a well-known pseudokarst area containing over twenty "mud caves." Many of these caves are large enough to walk through, and some have entrances, pits, or skylights that are unstable and cannot be climbed safely.

Pino left his friends and went into Hidden Cave and exited the upper entrance. He called to his companions who were at their campsite to bring him his shoes and join him. He had not been wearing shoes and did not have food, water, lights, or a cell phone. By the time his friends made it to the top of the mesa, Pino had disappeared. When they could not find him in the next several hours, they reported him missing.

The search for Pino began Sunday evening. Eventually the search included sheriff's deputies from San Diego, Los Angeles, Riverside, and San Bernardino Counties, as well as San Diego Mountain Rescue, San Bernardino County Cave Rescue Team, Sierra Madre Search & Rescue, US Border Patrol trackers, American Red Cross, Sycuan Fire Department, and other rescue groups. All known caves were searched over the next eight days.

Eventually, the San Diego Sheriff's Department called off the search, but the Pino family continued to search and encouraged others to help. When those searches failed, they hired a private investigator. Twenty-seven days after Guillermo Pino's disappearance, the private investigator lowered a video camera down a crack in Hidden Cave and found the missing man. In the dark and without lights, Pino had crawled into a tight passage and fallen about 30 feet. When cavers reached the victim, he was wedged in the vertical crack and was buried up to his chest in loose dirt and debris.

It took three days for a Los Angeles mine rescue team and cavers

to remove the body. One group dug from above and two groups from below. An autopsy determined that Pino died of asphyxiation due to the way his body was compressed in the crack. The coroner was not able to determine time of death.

1. Susan Shroder, "Mine rescue team removes body in desert," www.utsandiego.com, 8 May 2012.
2. Marcella Lee, "How mine rescue teams removed hiker's body from mud caves," www.cbs8.com, 10 May 2012.
3. Art Fortini, Incident Report, 15 May 2012.

13 April

Jewel Cave, South Dakota caver fall, injury, no aid

Four cavers participated in a four-day camp trip in April of 2012. For two of the participants, including MaryBeth Wells (24), it would be their first camp trip in Jewel Cave. The second day in the cave was spent exploring and surveying leads about an hour and a half from camp. At about 10:30 p.m., Wells was climbing down a chimney when she slipped and fell about 8 feet. She landed in a sitting position and momentarily lost consciousness.

She was checked by a team member, certified as a Wilderness First Responder, for signs of spinal or head injuries. Although very sore, she was able to return to camp under her own power by taking small breaks along the way. The team was back at camp by 3:00 a.m. and slept until after noon the following day. Still very sore, Wells rested in camp while the others continued surveying. The trip leader carried Wells' pack on the fourth day and the team exited the cave without further incident. Wells was later diagnosed with a sprained lower back.

1. Adam Weaver, Jewel Cave National Monument Trip Report, undated.
2. MaryBeth Wells, email communication, 10 December 2012.

Comments: A short fall is not an uncommon event for even the most experienced of cavers. What is noteworthy about this incident is Wells' momentary loss of consciousness, likely from acute stress reaction that often occurs with trauma. When a caver is involved in an accident, or even a close call, take precautions for acute stress reaction. Have the patient sit down and rest, and when possible, move them to a safe location (away from the edge of a pit, for example).

5 May

Sharps Cave, West Virginia rockfall, injury, no aid

Earl Sutor (54), his wife, Cheryl, and three other experienced cavers led an educational trip to Sharps Cave for three novice cavers on 5 May 2012. The cavers provided the novices with the proper equipment and briefed them on caving safety. A first aid kit and necessary equipment for building a 3:1 haul system were available in the cavers' vehicles should they be needed.

The group made it to Catfish Hall and climbed the breakdown slope for a better look at the room. On the way down, one of the novices (26) climbed over a slab of rock measuring 3 by 4 by 1 foot. As the rock began to slide underneath her, she yelled for others to get out of the way. Earl Sutor was a few feet below her as the rock came toward him. He tried to push it away from him but it hit him on the left thigh, knocking him backwards and causing a very large hematoma to the back and lateral portion of his thigh, and a twisting of his ankle, knee, and hip joints. Sutor pushed the still-moving rock away and it continued down the breakdown slope. The novice had also sustained an injury to her hand but the group decided they could continue with their trip.

A short time later, Sutor's injuries became more painful and the group decided to exit the cave earlier than planned. Ice packs were

applied to the injuries upon exiting and Sutor later went for X-rays which showed no broken bones. It was about five weeks before Sutor could return to caving.

1. Earl Sutor, Incident Report, 22 June 2012.

Comments: Even in a heavily visited cave such as Sharps Cave, unstable breakdown can still exist. A lack of experience by the novice caver may have been a factor, but loose rocks can catch even the most experienced caver off guard. Treat all breakdown with respect because, as Sutor commented in his report, "... once it begins to move, you're not stopping it."

9 May

Mammoth Cave, Kentucky illness, fatality

William Martin (67) of Florida, was taking Mammoth Cave's Historic Tour when he became ill and collapsed in River Hall. The tour guides called the surface for assistance and began CPR. Emergency medical technician rangers arrived twenty-five minutes later and used an external defibrillator on Martin. He was carried out on a stretcher and pronounced dead by the Edmonson County Coroner.

1. Staff, "Mammoth Cave visitor dies on tour," *The Courier-Journal*, 9 May 2012.
2. Deborah Highland, "Florida man dies while touring Mammoth Cave," *The Daily News*, 10 May 2012.

Comments: This was the first death on a Mammoth Cave tour in over twenty years.

18 May

Wye Cave, Iowa

2 people stuck, aid, no injury

Logan Eliassen (20) and Emma Thompson (20) entered Wye Cave in Maquoketa Caves State Park around 7:00 p.m. while their friends remained at a nearby campsite, having dinner. Both Eliassen and Thompson had been in the cave several times before. While maneuvering through a tight passage, Thompson became stuck and started experiencing panic attacks.

Eliassen, who had been leading, was able to turn around, hold her hand for comfort, and give her his shirt for extra warmth. Another couple, who happened to be in the cave, tried to help but eventually left to call 911. Rescue crews arrived and freed her in about thirty minutes. She was taken to a hospital and treated for scrapes and bruises after being stuck for four hours.

Meanwhile, when Eliassen tried to exit the passage he had been in with Thompson, he too became stuck. His extraction did not proceed as quickly, however. Rescue crews rotated personnel to Eliassen, as there was only room for one rescuer at a time. As the hours went by, the stuck man was fed power bars to keep up his energy and given an IV to prevent dehydration. He was also fitted with an oxygen mask as the confined space and use of air chisels were creating a concern for oxygen levels. Eliassen was finally freed, 20 hours after venturing underground, exhausted but unharmed.

1. Sheri Melvold, "Rescuers free two from Maquoketa Caves," *Quad-City Times*, 19 May 2012.
2. Kurt Allemeyer, "Rescued man: 'I just want people to know how grateful I am,'" *Quad-City Times*, 21 May 2012.

Comments: Cavers learn through experience that some cave passages are more difficult to negotiate in one direction than the other. Plan accordingly.

19 May

unspecified cave, Pennsylvania difficulty on cable ladder, aid, no injury

Several caving and conservation organizations gathered for a field meet near Blairsville, Pennsylvania, the weekend of 19 May 2012. Various caving trips were planned, including one to a cave with a 38-foot-deep entrance pit. The trip was not advertised as difficult or advanced and seventeen people signed up for the trip, including at least four people with very little to no experience in vertical or even basic caving techniques. From the beginning, the inexperienced cavers had difficulty just getting to the cave on the steep, one-hour hike uphill to the cave.

At the entrance, several people used a Goldline-rope belay to descend the entrance drop on a cable ladder. After exploring the cave without incident, the large group began to make their way up the cable ladder one by one. Climbing the ladder gave the novices some trouble but most made it out under their own power. One teenage boy was unable to ascend after several attempts.

Despite the number of cavers on the trip, the vertical nature of the entrance, and the fact that novices were on the trip, no rescue gear was available. The Goldline rope was determined to be unsafe to use as a haul line. A call was made using a cell phone and another group of cavers who were working on a cave dig nearby responded. The youth was eventually brought to the surface using a 1:1 haul system.

1. Andrew McKinnon, Incident Report, 7 June 2012.

Comments: Even experienced cavers are often surprised at how difficult climbing a cable ladder can be. Trip leaders should be prepared with the proper equipment to assist someone who has difficulty on rope or a cable ladder.

28 May

Thunder Canyon Cave, California stranded, no consequence

Four off-duty Marines rappelled into Thunder Canyon Cave but were then unable to exit. They managed to get a cell phone signal and call for help. The local Sheriff's Department coordinated an effort to bring warm blankets and other supplies that could be lowered to the Marines to keep them comfortable overnight until a cave rescue team could arrive the next day. When the deputies arrived at the cave, the four Marines had already climbed out on their own.

1. Tony Perry, "4 Marines escape from deep cave in East County," www.fox5sandiego.com, 29 May 2012.
2. Debbi Baker and Aaron Burgin, "Four Marines stuck in cave climb out safely," www.utsandiego.com, 29 May 2012.

Comments: Like the 2011 Rustys Cave incident, this is another odd exception to the rule that cell phones do not work in caves. It is also interesting that people that were unable to exit became able to exit after they had called for rescue.

9 June

Shoveleater-Hellhole Cave System, West Virginia rockfall, injury, no aid

Gayle Harman (24) was participating on a survey trip with other members of the Germany Valley Karst Survey on 9 June 2012. At one point, while crawling, she bumped the cave wall, dislodging a rock. The rock fell onto her back and then rolled off onto her foot, causing her big toe to swell and bruise. After a short break, the team slowly exited the cave with other team members carrying her pack and gear. An X-ray later showed she had fractured the tip of her big toe.

1. Gayle Harman, Incident Report, 15 June 2012.

Comments: Loose and unstable rocks can exist in even the most frequented caves and cave passages. This can be particularly dangerous in a crawlway as dislodging a rock may trap a caver beyond the collapse or worse, the caver can be buried under the collapse.

14 July

Sinking Cove Cave, Tennessee stuck, aid, no injury

The Dogwood City Grotto's annual picnic trip to Sinking Cove Cave took place on 14 July in 2012. The multi-drop cave is usually traversed as a pull-down through-trip, but to accommodate three groups visiting on this day, the cave was pre-rigged with fixed ropes.

Glenn Fell (31) was among six cavers in the first group. After completing the six drops, they entered a tight belly crawl with Fell bringing up the rear. This was his second time in the cave, and on the trip a few years' previous, he had had some difficulty in this section. A short way into the crawl, Fell became wedged between the ceiling and floor. Three members of the group had already exited the cave. When it became apparent he could not free himself, one member stayed with Fell while the other left for help.

The second group of cavers was making their way up the hill to the upper entrance when they heard car horns sounding below them. They went back down the hill to investigate and learned of Fell's predicament. Five cavers then entered the cave from the bottom while two went in through the top. When the cavers reached Fell through the crawl, they found that one female caver, Rachel Erdman, was small enough to squeeze past him on the side and get a loop of webbing around his feet. They also put handcuff hitches around his wrists and, using a 4:1 haul system, Tim White and Bil Davis began to pull.

Very little progress was made until Chuck Constable and Sara Kreps arrived from behind. With Constable giving Fell something to push off of, he was able to advance a few inches. It eventually became apparent that assistance from behind was more beneficial so the haul system was disassembled. Constable continued to provide support until Fell was able to wiggle out of the tight spot.

1. Tim White, phone communication, 31 July 2012.
2. Glen Fell, email communication, 20 November 2012.

Comments: It is possible that if one of Fell's companions had been behind him in the crawl, he would have only been stuck for a few minutes instead of over two hours. Unfortunately, half of his team exited the cave without even knowing he was stuck. If a particular member of the party might have trouble in a tight spot, it is a good idea to have others on either side to offer assistance. If the party consists of only two, the smaller caver should stay on the entrance side, in case they need to summon help.

16 July

Glade Cave, Virginia stuck, injury and aid

Various fire and rescue crews responded to assist a 14-year-old boy who was reportedly stuck in Glade Cave. The youth was with a group of about a dozen teenagers on a day trip from a local summer camp, although it was not reported if any adults were present. The rescue operation took over three hours and the boy was taken to the hospital for minor injuries.

1. Megan Williams, "Teen rescued from cave near Mount Solon," www.newsleader.com, 16 July 2012.
2. Litsa Pappas, "Cave Stays Open after Teen Gets Trapped," www.whsv.com, 17 July 2012.

Comments: The youth's name and his injuries were not made public.

11 September

Southport Saltpeter (Millers) Cave, Tennessee illness, aid, no injury

Darrell Smith (48) and three companions were taking a tour of the privately owned Southport Saltpeter Cave when he suddenly became ill. Two of his companions exited the cave and placed a call to 911 while the guide and Smith's girlfriend stayed by his side. The responding emergency crews were guided to Smith's location. After assessing his condition, they carried him 1,000 feet back through the cave and up a 300-foot-high cliff. He was then transported to Vanderbilt University Medical Center where he was treated for a stroke.

1. Heather Graf, "Maury County Cave Rescue Requires Team Effort," www.newschannel5.com, 12 September 2012.

Comments: When interviewed about the rescue, the Maury County Fire Department's assistant chief said, "Once you get into any space that's not made for human occupancy, you start worrying about an oxygen-deficient atmosphere, so we're having to monitor that." This is a great example of rescuers, not specifically trained in cave rescue, confusing caves with a confined space, and treating them as such. Monitoring atmospheric conditions is not a bad idea, unless it slows or otherwise hampers a rescue effort where it is not needed. For this reason, local rescue crews should be invited to cave rescue trainings whenever possible, fostering a good working relationship between cave rescuers and local agencies.

8 November

Kaumana Cave, Hawaii caver fall, injury and aid

Long-time caver Fred Stone (73) and Deborah Ward attempted to enter Kaumana Cave through a 15-foot-deep dry well. The top of the well has an 8-foot-high concrete sleeve to protect the well from run-off. Access down the inside of the sleeve is via metal steps to a metal grid at the bottom. Stone climbed down to the bottom of the sleeve and secured the metal grid open with one end of a 5/16-inch-diameter rope. With the other end of the rope, he tied a cable ladder to a metal step in the concrete sleeve using a (improperly tied) bowline knot. Stone crawled under the grid and put his weight on the cable ladder. The knot immediately came loose, and Stone fell 15 feet to the bottom.

Ward witnessed the fall and said she would call for help. Stone, however, told her "she absolutely should not call for help," and that "he just needed to catch his breath, and that Ward should haul up the ladder, re-tie it and let him climb out." The ladder however had fallen a short ways and caught on something where Ward could not reach it. Stone's foot was also caught in the ladder. He tried to free his foot, but found he was unable to move his legs. He was also bleeding profusely. Both cavers now realized that help was indeed needed. The well, fortunately, is located right next to a road so Ward was able to reach her cell phone within minutes.

The location of the incident was only 2 miles from a medical center so help arrived quickly. Stone was placed in a litter, lifted from the well, and taken by ambulance to the emergency room where he spent several hours with a trauma team before being air lifted to Honolulu for surgery. Stone suffered scrapes and cuts to his elbows, shoulders, and face; broken ribs, a concussion, and two fractured vertebrae in his neck.

1. Fred Stone, Incident Report, 29 December 2012.

Comments: In his report, Stone confesses that not only did he tie a faulty bowline, but he failed to double-check the knot and its integrity. He continues to say the lessons to be learned from this incident include: "Always double-check knots. Always use a belay with cable ladders." This is good advice, even for cavers with many years of experience.

It should also be noted that although Stone and Ward had a lengthy conversation after the incident, Stone has no recollection of it due to his concussion.

11 November

Pachidream Cave, British Columbia, Canada lost control on rappel, injury, no aid

A group of five cavers entered the multi-drop Pachidream Cave for a day of exploring. A short distance into the cave, they encountered a 60-foot-deep pit. The first three cavers rappelled without incident. The fourth caver rigged into the rope with a Verso (ATC-like) belay device. He then used a Bachmann hitch attached to the rope above the descender as a backup. As he started his rappel, his feet slipped and he instinctively reached for the wall, removing his one hand from the belay device. His other hand gripped the Bachmann hitch even more tightly, preventing it from grabbing the rope. He fell the rest of the way but managed to land on his feet. Other than rope burns to his hands, he was unhurt.

1. "Falling during rappel," www.cavechat.org, 13 November 2012.

Comments: The cause of this incident was the caver letting go with his brake hand. The backup device, the Bachmann hitch, failed to catch because the caver then instinctively gripped it tighter. These types of backup devices are often criticized for this very reason. In his report the caver states, "What should have been a backup to my belay device was not functioning in my time of need, because I was holding onto it. Do you know how difficult it is to let go when you are already falling?"

12 November

Climax Cave, Georgia caver fall, injury and aid

At the end of a 6 ½ hour trip in Climax Cave, nine cavers were making their way up a series of three climbs in the entrance. The three pitches are all free-climbable and total about 25 feet. The lowest climb is called the Wet Chimney, due to its taking water during rain events, and had been pre-rigged with a 9mm rope for a handline. As one female caver was making her way up the Wet Chimney, with her husband spotting her from below, she slipped and fell backwards. Her fall was slightly arrested by her husband but she struck her elbow on rock, breaking her arm.

After an initial assessment, the trip leader exited the cave and called Climax Fire and Rescue. Meanwhile, the injured caver was able to make it the rest of the way up the chimney with minimal assistance from others. Once out of the cave, another person in the group retrieved a caving harness from his vehicle and the injured caver was belayed up the 90-foot-deep sinkhole by Climax Fire and Rescue.

1. Tevis Kouts, Incident Report, 14 November 2012.
2. Tevis Kouts, email communication, 14 November 2012.
3. Chris Hudson, email communication, 15 November 2012.

Comments: The trip leader noted that the incident could have been handled as a self rescue. Due to the nature of the injury, and the distance to get to a phone, however, the team decided to initiate a request for assistance, in case the injury turned out to be more debilitating than expected.

The decision of whether or not to self rescue can sometimes be difficult. In this case, the caver was strong enough to continue with minimal assistance from her team. This greatly reduced the amount of time and resources needed for evacuation. Having the extra manpower at the sinkhole further expedited the operation.

18 November
Pettijohns Cave, Georgia
caver fall, injury and aid

A 21-year-old woman needed rescuing from Pettijohns Cave when she "fell and sprained her foot really bad." The woman was part of a group from Woodstock, Georgia, who planned for a day of rock climbing but decided to go caving instead.

At least 35 personnel responded to the incident, including a group of Venture Scouts who were in the area. The woman was assisted up steep areas with a harness and haul system, and assisted by rescuers the rest of the way.

1. Matt Ledger, "Injured woman rescued from cave in Walker County," www.walkermessenger.com, 20 November 2012.
2. Nicholas Persac, "Venture Scouts help rescue woman trapped in Ga. cave," www.theadvertiser.com 22 November 2012.

Comments: A predetermined rescue plan developed for the cave by Walker County Emergency Services aided this quick and efficient four-hour rescue.

1 December
Fricks Cave, Georgia
caver fall, injury, no aid

A group of seven cavers entered Fricks Cave for a day of surveying. Several hours into the trip, Clinton Kahl slipped and fell while attempting to climb up a muddy slope to an upper-level passage. Members of his team heard his ankle make a popping sound when he landed. Despite being in pain, and his ankle swelling, Kahl was able to make it out under his own power.

1. Nancy Aulenbach, "Frick's Cave Survey Trip Report," Tag-Net Digest #6411, 11 December 2012.
2. Buford Pruitt, "Underground Online," NSS News, vol. 71, no. 3, March 2013.

Comments: Experienced cavers, who are more skilled and confident in the underground environment than novices, will often choose to self-rescue rather than call for outside assistance when possible. A discussion on the pros and cons of self-rescue is given in the *National Cave Rescue Commission's Manual of US Cave Rescue Techniques*, Chapter 33: Small Party Rescues.

2012 Cave Diving Accidents and Incidents

15 February
Merritts Mill Pond, Florida
2 people stuck, aid, no injury

Edd Sorenson was teaching a scuba diving class at Merritts Mill Pond when another instructor surfaced, shouting for help. Two student divers were stuck and the instructor could not find them in the zero visibility. Sorenson changed from street clothes into his diving gear in just a few minutes. After searching for fifteen minutes, he heard a sound and was eventually able to locate one of the students. Sorenson took him to a safer spot, calmed him down, and told him to wait. The other student was then found and both were escorted to the surface.

1. Deborah Buckhalter, "Diver recalls Blue Springs rescue," *Jackson County Floridan*, 17 March 2012.

Comments: It was reported that the students were wearing double back-mount tanks instead of single side-mounted tanks, which caused them to get stuck. Very few cave-diving incidents end in a successful rescue. These two students were very lucky that Edd Sorenson was on scene.

17 March
Vortex Spring, Florida
fatality

Larry Higginbotham (43) planned a dive of Vortex Spring on a Saturday morning. When he did not return, his girlfriend notified authorities. Higginbotham's body was recovered the next day.

1. Cecilia Spears, "Mississippi diver dies at Vortex Spring," www.news-herald.com, 20 March 2012.

Comments: No other information was provided.

18 March
Devils Eye Spring, Florida
fatality

An open water diver, with no cave diving training, was found deceased in the Catacombs section of Devils Eye Spring. Open water divers are not allowed to use lights at this site in order to discourage them from leaving the daylight zone. The Catacombs is well out of the daylight zone, and not in the main passage. There is no permanent guide line in that area.

1. "Death at Ginnie 3-18-12," www.cavediver.net, 19 March 2012.

Comments: No other information is available.

31 March
Weeki Wachee Springs, Florida
embolism, fatality

Marson Kay (29), an experienced cave diver, was performing a series of dives with the Karst Underwater Research (KUR) team at Weeki Wachee Springs. As he was exiting the cave, Kay left the dive line and swam up into a narrow crevice where he became stuck.

A post on KUR's Facebook page explains, "Instead of following the ropes as he had done multiple times in the past, Marson rapidly moved into a highly restrictive area of the crevasse (sic). It is believed that this behavior was not a calculated decision but a reaction caused by the affects (sic) of an embolism he incurred while rapidly ascending from depth. According to the coroner's evaluation, Marson developed a cerebral arterial gas embolism prior to his death. Typically, this condition causes profound changes in mental functioning including disorientation, blindness, paralysis, seizures and loss of consciousness within minutes or even seconds of onset. If it occurs after surfacing, it is often fatal or profoundly disabling even with prompt recompression therapy; when it occurs underwater, the incapacity or unconsciousness it causes almost always results in drowning. "Although safety divers were in visual contact and additional safety gas cylinders were in place, he rapidly pushed himself upward into an area where even side-mount divers could not easily access. Several attempts

were made to communicate, by means of light signals as well as touch contact. Although Marson was still moving at this time, he did not directly respond to these communication attempts. After approximately 5 minutes, divers reported Marson was no longer utilizing his regulator. A subsequent review of his equipment indicated that Marson had approximately half of his gas supply remaining in both of his tanks and his regulators appeared to be working properly.

A rescue team was deployed minutes later but by then he was unresponsive. He was brought to the surface shortly before 5:00 p.m.

1. "Diving Fatality at Weeki Wachee Springs," www.cavediver.net, 2 April 2012.
2. Tony Holt, "Diver died from embolism," *Hernando Today*, 5 April 2012.

19 April

Sistema Chac Mool, Quintana Roo, Mexico 3 fatalities, drowning

A Spanish guide led a newly wed Brazilian couple on a cavern dive in the popular Cenote Chac Mool one hour before closing time. Although the trio had not surfaced by closing time, several hours passed before authorities were notified. Shortly before 2:00 a.m. on 20 April, the three bodies were discovered 80 meters from the surface (about an 8-minute swim).

Although this was to be a cavern dive, the bodies were found well into the dark zone which is off limits to cavern divers. The guide and the couple were all found facing into the cave, only a few feet from a dive line. The Brazilian man still had air in his tank but his wife and guide did not.

1. Fernando Del Valle Prieto, Accident Report at Cenote Chac Mool, 19 April 2012.
2. "Divers drown at Playa del Carmen cenote," mexicogulfreporter.blogspot.com, 20 April 2012.
3. "Triple Fatality in Chac Mool yesterday (4/19/12)," www.cavediver.net, 20 April 2012.

Comments: The guide was not certified to lead cave diving trips and his clients were not cave divers either. It has been reported, though, that local cavern dive guides often have to be "chased" out of the cave zone by cave divers at this particular location.

21 July

Big Blue Spring, Florida fatality, stuck, drowning

J. Joshua Cox and a friend planned a day of open water diving in the Big Blue area of Wacissa River. When Cox failed to surface, his dive buddy called for help. Divers reporting to the scene found Cox had entered a small cave at the bottom of the basin. He was beyond one tight constriction, wedged top and bottom in another. What followed was a very dangerous body recovery for three divers.

To reach the body, Edd Sorensen, Chris Wickman, and Mathew Bull first attempted to enlarge the constriction by moving a boulder. The boulder moved, but instead of enlarging the constriction, it made it impassable. An alternative, but even more difficult way to the victim was located and after removing some gear, Sorensen and Bull were able to reach and dislodge the body. By now the body was very negative (wanting to sink). The victim was wearing fins, a wetsuit, mask, and had one light. His tank was floating near the ceiling, still with 500 psi.

On their next dive, Sorensen and Bull went back through the constriction while Wickman waited on the other side. Because rigor mortis had set in, Sorensen and Bull had to strap the victim's arms down in order to get him through the restriction. They also fitted a rope harness around him and passed a tether from this out to Wickman. Bull then joined Wickman

on the outside of the constriction. With the two of them pulling, and Sorensen pushing and manipulating the body from behind, they were eventually able to complete the extrication.

Sorensen was quoted by the press as saying: "I never take anybody with me when I do a body recovery because of the danger and the chance of a zero-visibility situation. I don't want to lose (the other person). Today I had to have the muscle of extra - very experienced - cave divers."

1. "J Joshua Cox perishes in Big Blue Spring on the Wacissa River," www.cavediver.net, 21 July 2012.
2. Jordan Culver, "Body of diver recovered after 'extremely difficult' operation," www.tallahassee.com, 22 July 2012.
3. Mathew Bull, email communication, 25 September 2012.

Comments: Cox was not a certified cave diver and his dive buddy that day says they had explicitly decided not to enter the cave. It appears that Cox removed his tank to push it ahead of him when he decided for unknown reasons to enter the restriction. His gear was not tethered to him and he probably dropped it when he became stuck, causing him to drown.

Rescues and recoveries are dangerous enough in air-filled caves. They are far more dangerous in water-filled caves and should only be attempted by the most qualified divers. Even then, the risks versus benefit should be considered thoroughly.

7 August

Twin Caves, Florida lost, aid, no injury

Andrea Rance, Jamie Rance, and Samer Lawand were completing a dive of Twin Caves and finishing their last safety stop when three divers swam by them into the cave. The first, a young lady (22), was stirring up a lot of silt by flutter kicking. She was followed by her father and a brother (19). The Rances were able to reach their gold line just before the visibility went to zero. Moments later, Andrea felt the brother from the other group brush by her, heading for the surface. The Rances then surfaced, followed by Lawand who exited from a nearby entrance.

The divers asked the young man, who was an open water diver, why they had gone into the cave. The young man replied it was all right because his father was a dive instructor. The father then surfaced but the daughter did not. All of the divers began looking for the cave entrance but could not locate it in the zero visibility. The entrances are in an artificial, 10-foot-deep "pond" made by a dam. Six feet below the bottom of the pond is a small sinkhole. The "twin" entrances are at the bottom of this sinkhole and cannot be seen once silt has been stirred up.

Fortunately, Lawand's wife, Karen Brinkman, was waiting for them on a pontoon boat, with a charged cell phone. She was able to find Edd Sorensen's phone number and call him. He was teaching a dive class nearby and arrived in twenty minutes.

The father told Sorensen where he had last seen his daughter and Sorensen went in to look for her. Ten minutes later, Sorensen surfaced with the daughter who was cold and tired but otherwise unhurt. After she had become separated from her family, she found an air bell where she could breathe to conserve the air in her tanks. Twice she swam away from it, looking for the exit but had to return to it both times. Sorensen found her in the air bell and asked if she was OK. She replied she was, so he had her hold his arm as he led her safely to the surface.

1. "Edd Sorenson saves the day, again!!," www.cavediver.net, 7 August 2012.
2. Andrea Rance, email communication, 15 August 2012.

Comments: The reporting of this incident on CaveDiver.net generated a lot of discussion and speculation as to how a father/open water dive instructor could lead his children into such a situation. One month later, the father wrote a response and emailed it to the CaveDiver forum's

moderator for posting.

In his response, the father assumes full responsibility for the events that transpired that day and analyzes the chain of events that led to the incident. These actions include not getting enough information about their intended dive site, and not properly communicating with his son and daughter about the intended dive plan. When he asked his daughter later why she had entered the cave she responded, "Dad, I'm sorry that I acted like a dare-devil. But all I could think was this was my last dive of the year. So, I just went for it."

The father then makes an interesting analogy between this and the majority of snow skiing accidents taking place on the last run on the last day of the trip or season. He concludes his response with the realization that "...as her father I had *conditioned* a false sense of invincibility when she dived with me." This last comment is something all responsible trip leaders should consider.

15 October Blue Springs, Florida

diver lost, out of air, stranded, aid, no injury

According to many divers, before 2012, only four successful rescues of cave divers have ever occurred. Yet, on 15 October 2012, Edd Sorensen saved a fourth cave diver that year.

A group of four cave divers entered Blue Springs that day, and made a wrong turn from their planned route. Three of the divers were able to

exit, but when the fourth did not surface, they called Cave Adventures. Sorensen, the owner of the dive shop, and his manager Frank Gonzalez, grabbed their rescue gear and headed to the scene. With Sorensen driving (admittedly well above the speed limit), and Gonzalez lying in the bed of the truck putting together gear, they reached the dive location and Sorensen was in the water only eleven minutes after receiving the call.

Sorensen found the lost diver, who had already run out of air but managed to find a very small air pocket. The diver knew with the carbon dioxide building up in the pocket that he would not survive long. When Sorensen found him, he likely had only a few minutes left of air. He was brought safely to the surface a half hour later.

1. "Divers missing in the mill pond," www.cavedivers.net, 15 October 2012.
2. Kelsey Peck, "Another Cave Diving Rescue At Blue Springs," www.wmmb.com, 16 October 2012
3. Bergen Baucom, "Marianna's Own 'Aquaman': One Cave Diver's Miraculous Rescue and the Man Who Saved Him," www.wjhg.com, 16 October 2012.
4. Steve Cushman, email communication, 29 October 2012.

Comments: In January 2013, the Aquatic Science Association presented Sorensen with the Edd Sorensen Award. This award will be given annually to "a person who demonstrates the quality of outstanding achievements."

2012 Caving-Related Accidents and Incidents

4 February dirt cave, California trapped by collapse, fatality

Two 11-year-old boys were enlarging a small dirt cave in a creek bed when it collapsed. One of the boys was able to escape and ran for help. The other remained buried from his legs to his head until two adults dug him out. They performed CPR until further assistance arrived and the boy was taken to a local medical center. He was then flown to the Children's Hospital in San Diego in critical condition. He did not survive.

1. Brian Rokos, "Boy buried in cave-in still critical," *The Press Enterprise*, 6 February 2012.
2. Brian Rokos, email communication, 8 March 2012.

Comments: Whether in a creek bed or a cave, digging can be a very hazardous endeavor. A person buried under even a small amount of dirt can be difficult to rescue as shifting dirt can rebury the victim as fast as he or she is uncovered.

5 February Breathing Hole Cave, Indiana suicide

Indiana caver, Kevin Eve (25), was reported missing on 1 October 2011. His vehicle was found two days later in the Wyandotte Woods State Forest. Eve was familiar with many of the caves in the area and had reportedly been working on a few dig projects before the state closure of caves due to White-nose Syndrome. A search was begun of the woods and nearby caves, although other possibilities for his disappearance were considered. Eve was an Iraq War veteran and may have been suffering from post-traumatic stress disorder (PTSD). Concerns that he may have been suicidal or faked his disappearance in order to start a new life elsewhere were considered.

Hundreds of volunteers assisted authorities, hoping to find him

alive. After a week, the search began to focus on just finding his body. In his incident report, Anmar Mirza explains: "The high probability caves were checked several times, and the fact that all of the caves on the state property had been closed for three years both aided and hindered the search. It aided it in that since there had been so little traffic in many of the caves it was possible to eliminate them readily because they showed clear evidence of not having seen traffic in months to years. It hindered the search because the pool of cavers who were familiar with the caves in that area has dwindled markedly, and now what caving activity there is tends to be highly secretive with information not readily available."

On 5 February 2012, a group of amateur cavers made an illegal trip to Breathing Hole Cave. In a remote section of the cave, they discovered a body. Fearing they would get in trouble for visiting the cave, which is officially closed, they waited until returning home to alert authorities. Indiana Department of Natural Resources Law Enforcement Officers entered the cave that evening and confirmed that a body with a shotgun lying nearby was found. The body and evidence was bagged and cavers with rescue experience were called to help with the evacuation. The cavers arrived on scene around midnight.

Through the night, cavers transported the body through a river passage, up short climbs and steep slopes. One rescuer received minor injuries when she slipped on unstable breakdown but was able to exit the cave under her own power. Constrictions and loose breakdown in the entrance series eventually brought progress to a standstill. By 4:00 a.m., no progress had been made for two hours. The cold, wet, tired cavers exited the cave for some rest and rehabilitation.

Later that morning, cavers experienced in "rock modification" arrived to enlarge the worst of the constrictions. The evacuation resumed and the body was brought to the surface at 6:00 p.m. February 6. Further investigation confirmed that the body was Kevin Eve.

1. Drew Douglas, "Body Found In Cave Identified As Missing Spelunker," www.WLKY.com, 7 February 2012.
2. Anmar Mirza, Incident Report, 2 August 2012.

Comments: Mirza concludes his report with these comments: ". . . any cave rescue event, even a body recovery, places responders at risk and creates emotional stress for everyone involved from the family on to the searchers and the people tasked with recovering the body. Technically speaking this was not a caving accident as the death and location were intentional, but it had significant impact on the caving community as a whole. We are glad the Eve family was able to find some of the answers and what we could do to help was gladly given. We would beg of anyone who is troubled to seek help, the caving community is full of people who care and we take care of our own."

19 April

unspecified cave, Arizona fell hiking to cave, injury and aid

Graham Schindel (24) was hiking to a remote cave when a rock ledge he was traversing broke free. He fell about 20 feet and landed on his side. Schindel suffered a broken wrist and two, very deep puncture wounds to his back and abdomen. One puncture, 6 inches deep, was caused by an agave. The other was caused by a rock and was about 3 inches deep. His companions were able to help him back to their vehicles where Schindel turned on his SPOT personal tracker. He was transported by helicopter to a hospital.

1. Geary Schindel, email communication, 21 April 2012.
2. Graham Schindel, email communication, 22 May 2012.

Comments: Sometimes just getting to or returning from a cave can be the most hazardous part of caving. After this incident, each of Schindel's companions also purchased SPOT locator devices.

13 May

unspecified sinkhole, Indiana dog stranded in sinkhole

An Indiana Conservation Officer rescued a coon dog named MoMo from a 20-foot-deep sinkhole early on a Sunday morning. The dog had gone missing the previous Friday night during a raccoon hunt. The owner and two other hunters heard the dog barking while searching for it on Saturday and called police. An Indiana Conservation Officer carried MoMo up a ladder to the surface. MoMo was unhurt and very excited to be back with his owner.

1. The Associated Press, "Ind. conservation officer rescues hunting dog from sinkhole; dog was trapped more than a day," 13 May 2012.

23 May

Fools Crawl, New York dog stranded in cave

Another dog needed rescuing this month, this time a pit bull named Yale. Yale had been hiking with his people at Thacher Park when the group stopped to look into Fools Crawl. Here, Yale pulled away and ran into the cave, disappearing about noon. Yale's owners contacted park authorities who then called Thom Engle. Engle called Emily Davis and Mike Warner who arrived at the cave shortly before 3:00 p.m. Davis put on a wetsuit and entered the cave carrying dog treats. She encountered Yale about 300 feet in, but when the dog began growling and showing his teeth, she decided to back out.

Since the owner was about the same size as Warner, Davis had him put on Warner's gear and enter the cave with her. They found Yale another 100 feet further into the cave. He was so happy to see his owner he practically dragged him out of the cave. Everyone was out by 4:00 p.m.

1. Emily Davis, "Cave rescue report," email communication, 23 May 2012.

Comments: This was the first caving trip for both Yale and his owner, and certainly one to remember. The incident also provided the park an opportunity to meet local cavers and discover that cave rescue resources are available should they need them in the future.

23 May

sinkhole, New York calf stranded in sinkhole

Shortly after returning home from rescuing a dog in a cave, Emily Davis received an email asking for assistance with a 10-day-old calf that had fallen into a sinkhole - what are the odds? Davis and Mike Warner arrived at the scene and were joined by Jay Siemion and Ken Fortuin. Davis worked her way down a 25-foot-deep fissure and found the calf standing at the bottom unharmed. Fortuin joined her and tied the calf's legs with a rope and then hoisted it out. The calf was then carried in a bucket loader to a nearby field where its mother came running to greet it. The little calf was later named Splunk.

1. Emily Davis, "cave rescue redux," email communication, 24 May 2012.

Comments: The calf's owner was very appreciative and rewarded the rescue team with, ironically, grass-fed beef.

30 May

unspecified cave, Tennessee dog stranded in cave

Peanut, a pug and Chihuahua mix, had not been reading the news reports of other dogs recently stranded in caves and ran into a Tennessee cave in pursuit of a small critter. Like the other canines, Peanut refused to come out even after several days of her people calling to her. Curtis Winiger, a Kingsport paramedic, wormed his way through a tight, muddy, belly crawl to reach Peanut four days after she had entered the cave. The pooch and her family were very happy to be reunited.

1. Rain Smith, "Kingsport paramedic rescues dog stranded in cave 4 days," www.johnsoncitypress.com, 30 May 2012.

Comments: Apparently one trick you can't teach an old dog is how to find its way *out* of a cave.

16 June

Whipple Cave, Nevada cavers assist rock climber, aid, no injury

A group of Utah cavers were practicing rescue techniques at the entrance pit of Whipple Cave in Nevada, when a group of Utah boy scouts arrived to practice climbing. The scout leaders were having the scouts rock climb out of the pit instead of using ascenders. Several did not have helmets. The scouts had rigged a top rope but, about 10 feet from the top, climbers had to traverse several feet to a handline to complete the climb out. If a climber failed to complete the traverse, they would pendulum back until the top rope caught them.

One scout leader reached the traverse and could not continue due to exhaustion. The cavers rigged an etrier so that he could stand in it and rest. The rest period did not help and he was still unable to continue climbing, complete the traverse, or down climb. While one caver who was already on rope during a rescue exercise assisted the scout leader from below, another caver anchored himself and was able to assist from above. Together they helped the scout leader finish his climb out of the cave.

1. Jeff Baird, Incident Report sent to Utah National Parks Council (a council of the Boy Scouts of America), undated.

Comments: Baird reports that the climb was poorly set up for the

scouts. The top rope was placed so that it could not be used for the entire climb. The climbers had to traverse to a handline to exit the cave. If a climber fell during the traverse, they would pendulum back, which would be especially dangerous for those not wearing helmets. The handline was redirected at 90 degrees around an unstable rock such that if the rock moved, anyone on the handline would also pendulum. Also, those persons standing at the lip between the pit and the handline would be knocked down the 60-foot-deep pit. Baird and his group remained at the cave until they were satisfied that all of the scouts had exited safely.

24 June

Secret Caverns, New York

fawn stranded in cave

Who knew New York caves could be so enticing to animals? On June 24, a fawn needed rescuing from the Ice Cave entrance of Secret Caverns. Scott Keefer took a rope and duffle bag and found the fawn after crawling 100 feet into the cave. Keefer explains: "I took the rope, full-nelsoned the deer, and looped it up around the back and made a handle so I could carry him. Put the bag over his head and pulled him back out. On the outside some other guys pulled on the rope to get him up and out of the 30-foot drop. No broken bones, and we released him shortly thereafter in some tall grass . . ." Keefer was assisted by the cave's owner, R.J. Mallory, and two guests of the cave, Steve and Mac.

1. Steven Millet, "yet another animal rescue in NY," email communication, 25 June 2012.
2. Scott Keefer, email communication, 23 July 2012.

Comments: Carrying a baby deer out of a cave may sound like an adorable rescue, but remember, wild animals are unpredictable and can be dangerous. This little fawn tried very hard to get away from Keefer, cutting itself on the limestone walls as it jumped about, looking to escape.

14 August

storm drain, New York

flooding, aid, no injury

A husband, wife, and their 24-year-old daughter were hiking in the Genesee Gorge when they entered a storm drain in pursuit of a geocache. While they were underground, a heavy rainstorm passed through the area. Water rose quickly in the storm drain and the family became afraid they would be washed out of the cave and down to the river, 70 feet below. The family was able to get a cell phone call from inside as the water rose to waist level. Members of the Rochester Fire Department's rope rescue team rappelled 40 feet down to the entrance. The family was calm and unhurt and they were hauled up the embankment one by one. The smooth rescue operation was attributed to extensive training in the gorge by the rope rescue team.

1. Mark Gruba, "Cave Rescue in Genesee River Gorge," www.rochesterhomepage.net, 15 August 2012.
2. Lynette Adams, "Firefighters talk about Tuesday cave rescue," www.whec.com, 15 August 2012.
3. Sean Carroll, "Three Hikers Rescued From Cave Were Geocaching," www.13wham.com. 16 August 2012.
4. Joe Giunta, email communication, 16 September 2012.
5. Michael Elio, email communication, 26 September 2012.

Comments: Note that every news report describes this incident as a cave rescue. Local cavers have confirmed that while this feature may have started as a natural drain, it is actually a tunnel built in 1931 during the construction of Route 104's Veteran's Memorial Bridge. Fast-rising water can trap persons in natural caves as well as storm drains. Always check the weather forecast before heading underground.

19 August

Atlalaquia de Atikpak, Puebla, Mexico

drowning

Efraín Martínez Martínez (19) was swept away by the current of a rain-swollen river and washed into Atlalaquia de Atikpak (Sumidero Atlalaquia) in Alcomunga, Ajalpan, Puebla, Mexico. A week later, a recovery team from Espéleo Rescate México (Mexican Cave Rescue) still harbored hopes that he might be found alive, despite unsuccessful recovery attempts by other groups.

Technical rigging was required to enter the cave due to the high water levels. About 600 feet into the cave, they found the lifeless body of Martínez, nine days after he disappeared. The river flowing into the cave continued rising even as the recovery operation took place, requiring additional rigging for safety and to extract the body. Local people helped carry the stretcher with the body away from the cave.

1. Translated and abstracted by Mark Minton from "Reporte Operativo Sumidero Atlalaquia, Sierra Negra, Puebla, 17, 18 y 19 de agosto de 2012," Espéleo Rescate México, http://xa.yimg.com/kq/groups/27864331/1628325727/name/Reporte_Operativo_Atlalaquia.pdf

1 December

Double Sinks, New Mexico

murder victim found in cave

When a University of New Mexico student was reported missing on November 10, police began tracking his credit card activity. Two men were arrested after using the missing student's cards at a Walmart in Grants, New Mexico. The two suspects eventually led police to the missing man's body, which they had thrown into the cave after murdering him.

1. "Body Found in Cave South of Grants," www.abqjournal.com, 4 December 2012.
2. Kim Vallez, "Murdered man in cave may be UNM student: Pair of Cibola County men charged with killing," www.krqe.com, 4 December 2012.

Comments: Double Sinks was popular with visitors to the El Calderon area of El Malpais National Monument until it was closed to visitation due to White-nose Syndrome concerns in December 2010.



A caver begins the 60-foot rappel into Whipple Cave, Nevada. The wide pit entrance is divided by a natural bridge.

Dave Burnell

Previously Unreported Caving Incidents

19 May 1985

Schoharie Caverns, New York caver fall, injury and aid

A 20-year-old Canadian woman and six companions were exploring Schoharie Caverns when she slipped and fell, breaking her leg. One member of the party exited the cave to call for help while another, who was an emergency medical technician, splinted her leg. Five volunteer members of the Scho-Wright Ambulance Service responded and two of them entered the cave. Although the woman was only 15 minutes from the entrance, it took the two rescuers 4 hours to carry her out in a stretcher.

1. Joe Mahoney, "Rescuers carry woman from cave: Spelunking accident leads to four-hour ordeal," *Times Union*, 21 May 1985.
2. "Cave Explorer 'Satisfactory' After Mishap," *Gazette*, 21 May 1985.
3. Chuck Porter, email communication, 9 April 2013.
4. Bob Addis, email communication, 9 April 2013.

Comments: Schoharie Caverns was purchased by NSS member Jim Gage in 1958 for development as a show cave. After his death, the cave and surrounding property were donated to the NSS and became the Schoharie Caverns Nature Preserve.

1998

Cueva del Viento, Puerto Rico equipment problems, stranded, aid, no injury

In the summer of 1998, Samuel Oliveras and Félix Flecha Astacio decided to explore Cueva del Viento in the municipality of Florida, Puerto Rico. This would be their fourth visit to the cave, but their first time to rappel the 80-foot drop leading to an underground river. Before entering the cave, they ate breakfast and bought a box of batteries at a local bakery.

They entered the cave at 8:00 a.m. on a Monday morning. After reaching the bottom of the pit, they discovered a small passage that was too tight for their packs, so they left them behind. The packs contained their spare batteries, food, and water.

After traveling about 60 feet, Oliveras's light (with the newly purchased batteries) went out. A few minutes later, Astacio's light also went out. Stranded in the dark, they were unable to make it back to their packs. Oliveras later reported that the "60 feet was like one mile in the darkness."

The cavers had left a call-out time of midnight. When they did not return, their families waited a few more hours before calling authorities. Although local authorities were notified, a search was not immediately initiated. By Wednesday, friends of Oliveras and Astacio learned they had not returned from their cave trip. Karel Hilversum and Norman Veve arrived at the cave shortly after 3:00 p.m. on Wednesday. While Veve waited at the entrance, Hilversum rappelled the pit and made voice communication with the two cavers. They exited the cave at 7:00 p.m. Wednesday and met a rescue squad, who were just arriving, along the trail. Oliveras and Astacio had spent fifty-five hours in the dark.

1. Samuel A. Oliveras, "atrapados . . . en la Cueva del Viento," *Espeleorevista* no. 7, July-December 2012, p. 40-41.
2. Samuel Oliveras, email communication, 9 April 2013.
3. Karel Hilversum, email communication, 10 April 2013.

Comments: Oliveras provides his own analysis of what they did wrong and offers suggestions for future cave trips: "One could not anticipate that freshly bought batteries would be defective. Never leave your pack behind, even in tight spaces. Do not make your call-out time for rescue too late." This is still good advice over a decade later.

Time spent away from caving packs should be minimized, especially when all backup lights are in the packs. Many cavers wear two lights on their helmets in order to reduce risk of losing light while away from their packs, or when their packs are otherwise not easily accessible (while on rope, for example). Some cavers wear an extra light attached to a lanyard around their neck, in case they lose their helmet down a pit.

10 November 2007

Candlelight Cave, Utah

difficulty on rope, no consequence

A group of cavers were descending a 240-foot-deep mine shaft in order to access Candlelight Cave, located about 90 feet down the shaft. The last caver to rappel was about halfway down when excess webbing from his helmet's chinstrap jammed in his figure 8 rappel device. This happened so fast that, when the chinstrap caught, it jerked his head quickly enough that he momentarily lost consciousness.

He called down to his friends that he could not lock off or perform a changeover, even though he had a Croll chest ascender and hand ascender attached to his harness. He also could not get his chinstrap undone, because it did not feature a quick-release mechanism. While other members on the trip prepared to climb up to him, he called down and asked for a knife.

A small pocket knife was attached to a carabiner using twine and clipped to a prusik knot on the rope. The stuck caver then pulled the rope up, retrieved the knife, and carefully cut his chinstrap. He was then able to complete his descent.

1. Kent Forman, Incident Report, 1 November 2012.

Comments: The abilities to lock off one's rappel device and successfully perform a changeover are considered by many to be minimum prerequisite skills for vertical caving. This caver called for a knife, even though he was wearing two ascenders. Knives should be considered a last resort in vertical situations, not the first tool to be reached for. Finally, quick-release helmet chinstraps have become the standard for multiple safety reasons.

Either the ability to change over or the possession of a quick-release chinstrap would have prevented any need for help from other cavers. Trip leaders would do well to ensure that cavers on their team have the proper equipment and know how to use it.

30 August 2009

Whipple Cave, Nevada

difficulty on rope, aid, no injury

Members of the Southern Nevada Grotto and Lund Volunteer Fire Department spent a day and a half at Whipple Cave practicing cave rescue techniques. As they climbed the 60-foot-deep entrance pit at the end of day two, they passed a group of inexperienced persons ascending another rope. The cavers and Lund volunteers were loading gear into their vehicles when they heard a shout for help coming from the cave.

They returned to find that a 45-year-old male from Las Vegas had ascended a short distance, but was unable to continue or change over to rappel. The man was climbing a dynamic rope with a climbing harness, two handled ascenders, and no chest harness. He soon became exhausted using this inefficient system. Using a 3:1 haul system and belay, the group had him up the pit within 10 minutes.

1. Gretchen Baker, Incident Report, 16 January 2011.

Comments: A 60-foot-deep pit is probably not the best place to learn to ascend. A better practice is to teach novices on a rope that is rigged in such a way that they can be lowered in case they encounter trouble.

13 March 2010

Grutas de la Puente, San Luis Potosí, Mexico falling object, injury, no aid

A group of teenagers were visiting the well-known Grutas de la Puente in the state of San Luis Potosí. They had no helmets and insufficient light. They entered the main entrance at about 8:00 a.m. and toured the front part of the cave. They were leaving via a back entrance called Las Escaleras (The Staircase) when a metal bar used as a step on the steep climb fell and hit 15-year-old Francisco Nava Lomely on the head.

Six of the group continued out and hiked back to their camp, where they called for help. The injured boy and four others turned around and went back out the main entrance, where there was a Jeep waiting to take them to camp. Espeleo Rescate México (Mexican Cave Rescue) and Red Cross personnel arrived after midnight just as the injured boy arrived back at camp. He was examined and treated for a contusion and mild hypothermia. Another boy who had sprained his ankle on the hike back to camp was also treated for pain.

1. Translated and abstracted by Mark Minton from a list of incidents previously posted on an Espeleo Rescate México web site: <http://espeleorescatemexico.org/>. The site has since been taken down.

Comments: Wear a helmet. You never know what will fall and hit you in the head.

28 March 2010

Sótano del Popoca, Veracruz, Mexico stranded, aid, no injury

A group of young tourists were on a commercially guided trip to Sótano del Popoca in the state of Veracruz. They were lowered down a 200-foot-deep pit with a pulley system at about 3:00 p.m. When it was time to leave, the distracted tourists failed to grab a pack being lowered to them, which contained the equipment they would need for the ascent, and it was lost in an underground river, leaving them stranded. One of the guides called for help and Espeleo Rescate México responded along with public safety officers, volunteer firefighters, and the Red Cross.

They waited nearly twelve hours until help arrived. The tourists were cold and hungry but not injured, and it was determined that they could climb out of the pit under their own power. Food and hot drinks were taken down along with vertical gear. The tourists climbed out on their own, with assistance at a belay and at the lip. Everyone was out safely by 6:00 a.m. the following morning.

1. Translated and abstracted by Mark Minton from a list of incidents previously posted on an Espeleo Rescate México web site: <http://espeleorescatemexico.org/>. The site has since been taken down.

Comments: It is preferable to have each caver keep track of their own ascending system, and to wear that gear on the way down the pit. When group gear is being utilized, it is very important to make sure someone is keeping track of it. Sometimes, when gear belongs to everyone, it ends up belonging to no one.

14 July 2010

Burroughs Cave, New York lost, aid, no injury

On the evening of 14 July 2010, a scout group was reported missing when they did not return from exploring caves in Essex County, New York.

Two adult leaders, a man (47) and woman (49), led one 13-year-old and two 14-year-old boys to Burroughs Cave. They negotiated a long, tight passage to access the main part of the cave. After some exploring, they could not find the passage leading out. The group said they could hear rescuers searching for them later that night but could not make themselves heard. They were found the next evening, 24 hours after being reported missing.

1. "Tragedy in the Adirondacks," www.adirondackbasecamp.com, 24 August 2010.

Comments: The referenced article concludes, "In caves use string or other markers to help find your way back. Remove the material on your way out." Despite the added conservation message about removing such material, the use of string in caves is generally a poor idea. Even with the best intentions, string is often left in the cave when it becomes difficult to roll up after it has soaked up water, dirt, or mud. Do not justify leaving string in a cave as being helpful for the next group.

A much better practice is to make sure everybody in the group, not just the leaders, are paying attention to the route. Take the time to observe landmarks and look behind you often to familiarize yourself with what the cave will look like on the way out.

Previously Unreported Caving-related Incidents

23 October 2009

unnamed pit, Veracruz, Mexico fell into pit, fatality

Three children were chasing a rabbit at night in the village of Cimarrontla, Veracruz. While in pursuit, one of them fell into a pit. Espeleo Rescate México (Mexican Cave Rescue), public safety officers, and the Red Cross were called to the scene. The pit was especially dangerous because of the mud and rocks that fell readily from the lip while rescue personnel were inside. This was partially due to local people approaching the edge, trying to watch the rescuers in action.

After the bystanders were kept back, the body of 12-year-old Eloy Panzo was located at a depth of 400 feet. The body was placed in a Sked® stretcher and hauled to the surface with a block and tackle system, assisted by rescue personnel at various belays. The body was turned over to local authorities before being returned to the family for burial.

1. Translated and abstracted by Mark Minton from a list of incidents previously posted on an Espeleo Rescate México web site: <http://espeleorescatemexico.org/>. The site has since been taken down.





Three more images taken by Jansen Cardy during the 2012 NCRC weeklong seminar mock rescue in Pettijohn Cave in Walker County, GA. It shows an elaborate highline system in action. The mock 'patient' wrapped in the brown tarp with red and green webbing restraints is Instructor Qualification (IQ) class student (now NCRC instructor) Thomas Evans from Bozeman, Montana.

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LETTERS

KILLER BEES AT GUAGUASI

In regard to your comments about "killer bees" at Guaguas in the May 2013 issue of the NSS News, they can indeed be quite hazardous when active. Back in March 2000 on a Cullman Grotto trip to Mexico, this was one of the pits we did. Climbing up the high side (660+ feet) some bees started to circle around my face (about the only thing not covered up - I had a rag around my neck). By the time I got perhaps 40 feet from the top, there were two dozen bees orbiting my head inches away (much like flies). Patrick O'Diam, at the pit edge, told me to keep quiet ("The bees are swarming" he said, in a subdued voice). Then one of the bees stung me in the back of my neck, above the rag. I could hear a huge swarm near the rig point and I could see no reason why they couldn't come over and join their friends where I was. By then I was one notch below panic level. I knew I mustn't bother them even if they stung me and I hoped I could do a change over in time (there was no way I was going to continue on up to the top!). With the last ascender off I zoomed down to the bottom, afraid the bees would follow. Normally, I am pretty careful when rappelling but that time I couldn't go fast enough! They thought I was out of control (about a 45 second rappel). I hid in a little grotto down at the other end of the pit and refused to come back up until the bees were gone. After the others had started down the path a local came out of the jungle and, without saying a word, went over to a tree and whacked it with one of those wicked curved machetes then started following me with that thing in his hand (still keeping silent). Patrick later told me he just wanted to earn a little money carrying my stuff. Several years later I read about a vicious bee attack at another Mexican pit and thought, yes, that could have been me.

Gary Phelps
NSS #30170



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PRESIDENT'S MESSAGE

Headquarters Update

As I write this in June our new roof is now in place. Several summer storms have proven the impermeable liner is indeed waterproof. See the photos for details of how this was installed.

One of the first areas will be a remodel of the "serving kitchen" next to the auditorium. Let's go back a few months... OVP Dave Luckins worked with Stephanie Rubio, our Facilities Manager, to host a caterer's open house. While touring our new headquarters they asked them what they looked for when recommending an event venue. Turns out we are set up to handle their basic needs, and with only a few changes we'll be able to provide an optimum facility that they can recommend to their clients—easily a win-win for both the caterers and the NSS.

As part of our upgrade Dave also took on the task of locating refurbished rolling book stacks. Why rolling stacks? Not only would we be able to store more in less space, by closing the stacks up we would add another layer of fire protection to our archival library. Our new library stacks will hold over three times our current volumes, allowing us room to grow for many decades. New they would have cost over \$190,000—well beyond our range. After a year-long search he located exactly what we needed for \$35K, very close to his original estimate and within our proposed budget.

HQ Chairman Dave Haun has been breaking down the tasks for our new interior build-out. That list should be posted by the time you read this. Watch our Facebook page for continual updates. If you're planning on being in the area contact Maureen

Handler (hqvoluteer@caves.org) for opportunities to help. We can use everyone, so please come by and lend a hand.

FUNDRAISING

We are 2/3rds of the way toward our Team 404 goal. Help us top off this thermometer and we'll quickly pay off the mortgage. Any donation of \$300 a year or more automatically adds you to this program. You've read it nearly every month and the math backs it up—if every member would sign up we'd pay this off in 7 months. Together we're already making a big difference. If you're not a Team 404 member yet, please take a moment, visit our home page (caves.org) and download a donation form. You'll receive a nice, monogrammed polo shirt to wear to your next Grotto meeting and recognition on a special plaque at our new Headquarters.

Members have been purchasing a lot of bricks and blocks in our new building. You can inscribe 3 lines of 20 characters on a "Buy-A-Brick," or reserve a block of the current building as "your own." Every donation moves us one step closer to paying off our mortgage.

We started our fundraising in force last summer in West Virginia at Convention. We want to top out the Team 404 thermometer before the end of the year. Coming soon—a mortgage gauge to show our progress...

Thank you for continued support,

Wm Shrewsbury
President

CLASSIFIED ADS

Firefly Slaves for cave photography: FF 2 (\$75) and FF 3 (\$110) for digital. CD "On Three: An intro to digital photography for cavers" (\$15). **New:** Cave Cards! individual (\$3.50) or sets of six cards (\$18) with stunning cave photos, envelopes. See newly updated website: www.pjcaver.com. V/MC/AMEX/Check. SITDCP, 80 Mountain St, Camden, ME 04843. 207-236-6112. pjcaver@gwi.net

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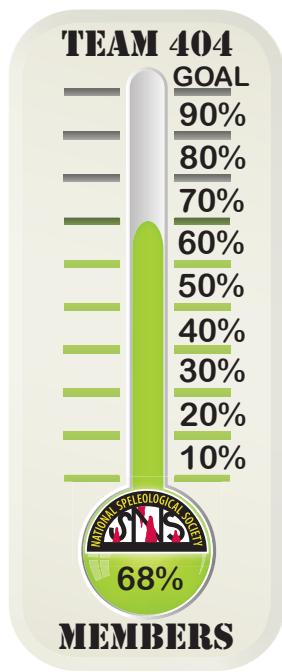
In this photo you can see the layers. First an insulating layer of super dense Styrofoam-like material is laid in the ridges of our metal roof. Next, another insulating layer of fiber board is secured over the first and held in place with fasteners. Finally, a rubber membrane is bonded to the top of the hardboard in wide bands, and the membrane seams are fused with a bonding agent and heat. This effectively gives us a single, impervious layer.



The final rubber membrane as it rolled out can be seen in this photo. This will be bonded to the layer below it before being fused to each row. The added insulation and white rubber surface will also decrease our electrical needs significantly!



Our new sliding bookshelf stacks. Once installed we will have over 3 times the shelf area we had before. When they are rolled together they also add additional fire protection to our valuable archives.



Photos on this page were taken by Liana Boop.



The first few stacks of material are spaced out on our roof – an insulation layer (white in background), the overlaying fiber board (front right) and rolls of rubber membrane (upper left) can be seen.



A close up of the fiber board overlay and how it is secured. Once covered by the rubber membrane our roof is waterproof for many decades.



In the campground we have three pavilions, one of which has an industrial kitchen. Here you can see Ms. Rubio and the renters viewing the facility.



They are moved by turning the crank on the end. This turns very easily, even when loaded. Each unit is double sided with adjustable book ends on each shelf. These were used in a high-end law office for just a couple of years. As a result, they are in excellent condition.

UNDERGROUND UPDATE

Kelly Smallwood

VCA Newsletter

Vol. 22, No. 1,2 & 3

Vermont Cavers Association

Peter Quick writes about his push trips to South Vent Cave in Dorset Mountain, Vermont. He first visited the cave in 1979 and was deterred by a wedged stone that made access to the rest of the cave impassable. He later returned in July of 2012 to see if he could make the passage way bigger. Throughout the summer months, Peter, his Hilti hammer drill, and a few others were able to push and explore the cave to over 140 feet. Accompanying his article is the map of the cave and a scaled profile map of the major caves of the Purgatory Plateau.

Joel Flewelling notes that with the help of VCA members, the Vermont Fish and Wildlife Department were able to conduct winter surveys in 13 hibernacula this winter in Vermont. Vermont has been a confirmed infected state since 2008. A few sites showed a slight increase in bat numbers but the overall statewide numbers continue to decline. They did find banded bats in Aeolus and Skinner Caves. The bat in Aeolus was banded last summer in New Hampshire and the bat in Skinner was banded last summer in Rhode Island. Vermont is home to nine bat species; six species spend winters hibernating in caves and three migrate south.

Bulletin of the Georgia Speleological Survey

2012

Georgia Speleological Survey

The 2012 Bulletin of the Georgia Speleological Survey includes several great articles. Matthew Niemiller, Dante B. Fenolio, and Kirk Zigler include a detailed article on the obligate cave fauna of Georgia and Larry O. Blair writes about prehistoric throw-away tools found in Kingston Saltpeter Cave. There is also an article written by Joel Sneed on the discovery, exploration, and mapping of Byers Cave in Dade County, Georgia. The original map for Byers Cave was never published by Foxy Ferguson. Brent Aulenbach later digitized her map and his version is included in the 2012 bulletin with her permission. Byers cave is currently being re surveyed by the Georgia Speleological Survey and is being led by Marty Abercrombie, who also includes a report on his progress in the bulletin. Also included in this issue is an update on Brent Aulenbach's survey of Frick's Cave. Because of the cave being closed due to WNS, this was the first trip into the cave in over five years. For more information or to join the

Georgia Speleological Society, visit www.caves.org/survey/gss.

Southwestern Cavers

May-June 2013 Vol. 51, No. 3

Southwestern Region of the NSS

Steve Peerman, the Project Director for the Fort Stanton Cave Study Project, provides a very detailed report on the April 27-May 5, 2013 expedition. There were 66 volunteers who gave nearly 5000 hours of volunteer hours for the week-long expedition. This includes hours on the surface, hours underground, travel hours, and even hours preparing for, writing reports, and dealing with equipment. Some of the activities for the week long event include survey instrument calibration, a dig at Cactus Cave, some reconnaissance in the Devils Canyon area, ferromanganese sampling, water level data logger deployment, radio location, bat monitoring, paleoclimate work, and installation of a cell phone booster in the field house. There were also survey trips into the Snowy River Passage and the MJ Passage. The overall length of the cave has increased from 20.59 miles to 23.85. This bumped Fort Stanton Cave up from the 31st longest cave in the US to the 21st longest all in one week!

TAG Caver

Summer 2013 Vol. 4, No. 2

Sewanee Mountain Grotto (Tennessee)

The SERA Karst Task Force (SKTF) has been busy this past winter with two cleanups. Cheryl Pratt includes an update on the second cleanup at Cumberland Gap in Tennessee which took place in March. 21 volunteers showed up to fill a dumpster with over two tons of garbage. Troy Fugua led the second cleanup effort at Devil's Den Cave in Jackson County, Alabama where 13 volunteers showed up on Earth Day weekend and removed over 1,100 pounds of scrap metal that netted over \$100 for the SKTF.

Kelly Smallwood writes about the caver log book at the Liberty Restaurant in Scottsboro, Alabama. One morning, while having breakfast with David Hughes and Marion O. Smith at The Liberty, she inquired about the history of the log book. David originally got the idea to place the log book after seeing log books at The Court Restaurant in Lewisburg, West Virginia. In May of 1976 he placed the first log book at The Liberty. While he was living in Arizona, the log book filled up so Marion O. Smith kindly mailed it back to him. Marion has since replaced and kept up with the log books. Included in her

article are some excerpts from the original log book and some from the present day one. If you are ever in TAG, a visit to The Liberty is a must and make sure to ask your waitress for the Caver Log Book.

IKC Update

June 2013 No. 109

Indiana Karst Conservancy

Keith Dunlap reports that the IKC has surpassed the \$102,600 fundraising goal to cover the initial cost of the 50 acre Shawnee Karst Preserve. All donations for land acquisitions after June 30 will be credited to the next project. Also included in this issue are annual reports for IKC properties such as Buddha Cave, Sullivan Cave, Wayne Cave, Robinson Ladder, Shawnee Karst Preserve, Upper Twin Cave, Suicide Cave, and Orangeville Rise.

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In late April and early May, Mike Schriber posted to CaveChat.org a thread entitled, *Releasable Rigging Using a Petzl Stop*, asking for advice on rigging a redirect using a pulley (forums.caves.org/viewtopic.php?f=5&t=15203). Among other respondents, Scott McCrea offers a link to a neat Web page that calculates the forces involved in redirects and depicts them pictorially. By dragging the pulley around, eight different forces on the anchor and pulley are displayed at lifeonaline.com/toys/deviation.php.

Matt Bowers on May 1 brought to the NSSwest Forum the news from **Jewel Cave** management that background checks and fingerprinting would be done on all caving “trip leaders” to national parks and monuments. This was met with some annoyance by a few forum members. Two days later, Tom Evans, the NSS Government Liaison, clarified things by noting that (1) all groups must comply with the new regulations, not just cavers, and (2) Jewel Cave management had instituted new rules that require the security measures only for trip leaders that access the cave off-hours (when monument staff are not present) (groups.yahoo.com/group/NSSwest/message/4166).

In the 1990s, the Gangsta Mappers tackled major cave mapping projects that included **New River Cave** in Giles County, Virginia, a six-mile-plus cave with traversable passages located on eight levels within a single fissure. Ken Walsh reported on the Tritrog blog on May 1 that the Gangstas thought they had finished mapping the cave in 1997, but through a series of unfortunate events, the final map was never produced. Dave West eventually took up that challenge, but discovered a “good number” of unmapped leads. So, on April 27 – 28, Ava Pope, Martin Groenewegen, Karen Willmes, Bob Hoke, Jessica Chesnakas, and Walsh joined Dave West to survey those leads. Among their discoveries were a formation-filled room with aragonite bushes and a small hole in the floor that “promised certain burial to anyone willing to drop down it,” and added 500+ feet to the survey (tritrogs.blogspot.com/2013/05/gangsta-legacy.html).

Anmar Mirza, National Coordinator for the National Cave Rescue Commission (NCRC), announced a May 22 Webinar introducing the NCRC. The Webinar is 1:34:17 long and is available for downloading from the NSS Web site (caves.org/webinars/).

On May 22, WTSP of the Tampa Bay,

Florida area reported that two homes in Seffner that were in danger of destruction from sinkhole collapse were demolished. These houses were condemned following the previously-reported death of Jeff Bush, who was sleeping in bed when a sinkhole opened up under his bedroom and swallowed him. The sinkhole was said to remain unstable and possibly still growing (tinyurl.com/lvgfo7e). CavingNews .com reports that Seffner, a suburb of Tampa, is within an area known locally as “sinkhole alley,” and accounts for one-third (!) of all sinkhole-related insurance claims in Florida (tinyurl.com/nx55n44).

The BBC News and *Archaeology*, a Web site of the Archaeological Institute of America, carried an article on May 23 mentioning that thousands of cave art paintings had been found in Burgos, Mexico. A presentation at the second meeting of Historic Archaeology in Mexico’s Natural History Museum reported that a total of 4,926 depictions were found in **eleven caves**, one of which contained 1,550 scenes. The images are of humans, insects, and other animals colored in red, yellow, black, and white. Dating the paintings was underway, but delayed by the absence of associated artifacts. The depictions indicated three groups of hunter-gatherers lived in the area. They “escaped the Spanish rule for 200 years because they fled to the Sierra de San Carlos where they had water, plants, and animals to feed themselves,” according to Martha Garcia Sanchez: bbc.co.uk/news/world-latin-america-22632301.

The month of May saw a flurry of articles about a land development threat to **Bracken Bat Cave** in Bexar County, Texas. Famous as holding the largest bat colony in the world, and also the largest concentration of mammals in the world, the cave is home to an estimated 20 million Mexican free-tailed bats, which roost in the cave from March to October. The cave and 697 acres of natural habitats are owned by Bat Conservation International (BCI). The bats fly every year from as far away as a thousand miles from Mexico, and then give birth to their pups in the cave. As many as 500 baby bats have been counted clinging to a single square foot of the cave’s walls. The threat comes from Galo Properties, a land development company, which sought approvals to build the 1545-acre Crescent Hills residential development directly under the bat’s flyway. About 200 people spoke against the development at a May 29 San Antonio City Council meeting. No one spoke for the devel-



Mexican freetails emerging from Bracken Bat Cave

opment. BCI presented a 13-day old petition with 13,300 signatures against the project, and was given the only standing ovation of the evening. Andy Walker, Executive Director of BCI, and Environmental attorney James Cannizzo, who handles legal issues for the Army’s Camp Bullis, spoke to the possibility of acquiring the Crescent Hills property and placing it under protection. In addition to concerns about the bats, citizens also brought up the issue of water conservation. The property is directly over the Edwards Aquifer, and the development will force the San Antonio Water System to extend water and sewer hookups five miles from their current service area. None of the city council members had ever visited the cave (batcon.org/).

With all the sensitive caves and extreme sports in the World today, caves must now contend with a (new) threat at the hands, or wheels, of two happy-go-lucky Welshmen. Reported in CavingNews.com on May 28, they ride unicycles in the larger passages of caves, and fast. One of the two off-handedly remarked that, “people like it for the pretty things underground ... there’s a lot of weird things underground, but for me it’s just an underground playground.” The video shows the fellows cycling through a stream here, under soda straws there, unnecessarily dragging hands across ceiling and walls, and speaking repeatedly about the challenges of their sport’s physical obstacles and danger. One of them stated that if there is an injury such as a broken leg, there’s no way out, although later in the video the other guy mentions not wanting to bother volunteer rescue groups. Right. I wonder if they can see and avoid running over small cave animals that might be in their paths (cavingnews.com/20130528-unicycle-caving-a-unique-combination).

CAVE CHRONICLES

Philip Rykwalder

What is the most ridiculous cave name?

Claude Koch: Skinmites Cave, Washington, which is a renaming of Stalagmite Cave.

Janice Curtis: Skagnasty Cave!

Clinton Elmore: There's lots of crazy cave names in Tennessee. Here's some random ones: Hero Bucket Horror Hole, A Void Pit, The Soul Scraper, Didn't Go Well, Sounded Well, Hoe Ho Hole, Gills Ghyll, Carlsgood Caverns, A Hole, Slut Slot, Gore 2-Crotch Pit..

Bruce Kirchner: One of the entrances to Maxwellton in WV was aptly named Cow Shit Pit.

Don Hunter: How about Afterbirth Cave, in Dade County, GA.

Steve Millett: Perineal Descent

Andy Witt :Twilight of the Chicken Head Cave on Pigeon Mtn, Georgia.

Valerie Haskins: we named one cave the "Chip Won't Fit Pit" since the landowner's son kept getting stuck in it.

Jeff Cody: Buckets of Blood Cave in Tennessee

James Jasek: See My Shovel Cave

Marian McConnell: When we began exploring our property we found and named so many caves and sinkholes that we finally named one, "For Pete's Sake (How Many More Are There?)" Check out the map on page 103 of the new book, "Murder Hole."

Jim Pisarowicz: Larry Fish and I explored and mapped a cave in Colorado we called "Chickens on My Mind".

Jeremy Browning: "Left Tit Pit" and "The Cave Formerly Known As Bob"

Alan Staiman: "Burnsville Sarlacc Mighty Death Pit.. because all caves in Bath County have to have B names. This one was named by Loyahanna Grotto in the 90's"

Conrad Bateman: Smeagol (a cave in the Dales).and another one there called Crackpot, its a nice little cave

Chad McCain: In Perry County, MO we have

a "Carl's Bad Cavern" (at least the guy who named it had a sense of humor.)

Bob Gulden: Rubber Chicken Cave, Greenbrier Co. WVa. Named for the rubber squeeze toy found when digging open the entrance.

Jonny Slumpff: Fixin' to Die in Colorado. Really makes me want to visit...

Hal Love: A few silly names from a quick look at the Tennessee Cave Survey list are Pickled Indian Cave, Beavis & Butthead Cave, Cold As A Witches Pit, and Gollums Crack. I'm sure there are many more.

Philip Rykwalder: Virgil the Turtle's Greathouse Cave, Montana. After a character in a Vonnegut book.

Mike Crockett: Timmy's X Pit Cave where X is a variable. It began as Timmy's Pit Cave then Timmy's 2 Pit and 3 Pit Cave then more pits were discovered then the X was adopted. X increased to 17 but has now gone down due to an invading quarry. We think the entrance to Timmy's X Pit Cave has been rediscovered but the entry drop is blocked by chockstones. An effort to get by them and verify is forthcoming. So we thought it was Timmy's XX Pit Cave (the 2nd X meaning former) but now it may be Timmy's XXX Pit Cave (the 3rd X meaning former former).

Bradley Jones: Alabama has 12 caves with the word chickenhead in them such as Dances with Chickenhead, Rootin Tootin Chickenhead, Teach Your Chickenhead Well, Mad As A Wet Chickenhead, Blow It Out Your Chickenhead, and Soda Top Chickenhead Drop.

Crash Kennedy: In my Mexican project area, we have a Betty Crocker Cave, ¿Donde esta el Baño? Cave, Tarzan Cave, Jane Cave, I-don't-know-if-it-is-Big Cave, Styrofoam Cave, and many more.

Nick Addington: In Rockcastle Co Kentucky there is a cave named Baby Head Voodoo, for a disembodied baby doll head found there

Pam Duncan: Mad as a Wet Hen.....well, the story is priceless. Ask MOS

Al Goodcave: Small Dull Cave in Monroe County Indiana. It is nether small nor dull.

Joel M. Sneed: My entry in this category is Six Chicken Heads over Georgia.

Dave Crusoe: The most ridiculous name I can think of would have to go to Lego Puzzlepiece Rocktopus Cave, a Berkshire-area cave-dig in Massachusetts. The cave formed in wonderfully friable marble that breaks apart in pieces that could (theoretically) be put back together. But man, that would be a puzzle. It also snags just about anything a caver is wearing. The name emerged naturally from the friendly dig-side banter of the day!

Adam McDowell: "Hell if I know" on the MO/AR line

Johanna Kovarik: Stately Beaver Pleasure Palace Cave

Neil Marchington: Coochie Cave, OR. Fecal Cobble Cave, MT. Cactus Crawl, NV.

Lee Florea: O-by-goth Biscuits and Gravy Cave

Stuart Marlatt: Buttress-Buttress-Gully Cave, or Cave of the Cosmic Banana is also pretty groovy (Colorado)

Scott Linn: We were digging in the Marble Mountains, and the digger got excited and started throwing large rocks out of the dig, hitting me, yelling "I can hear the spring stream!". I named it Bruise Spring Stream.

Christina Richards "Bang Bang Blow Hole" since it took a lot of bang to open up this incredible pit.

Evan Gehring: 20 pound Tick Cave, Fix'n to Cry, Torch Ungal, P-Bar, Bad Medicine, Dog Trap, Bobcat Blowhole, Virgel, Little Cabbage Cave aka Lechuguilla, Tongue River Cave, Holy Sheep Cave

Dave Bunnell: We assigned many interesting names to sea caves based on real or perceived dangers: Impalement Cave, Crack of Doom Cave, Slam Dunk Cave, If you Dare Cave, Suicide Crevice, Deathtrap, Thrashed Dinghy. Others were based on shape, my favorite: Two Bedrooms and a Bath Cave.

Our next Cave Chronicles Topic:

If you could share a tip of anything you've learned while caving it would be...

Send your submissions to Philip by September 1 for publication in our November issue: philip@cavenow.com

READING

NSS NEWS APOLOGIZES TO DAVID STEINMANN FOR BOOK REVIEW MISTAKES

The review of my book *Cave Creatures of Glenwood Caverns* in the Reading section of the May 2013 NSS News, by G.O Graening, contains a litany of unjustified attacks on my personal credibility that are corrected below. An e-mailed apology was sent to me from Dave Bunnell, the Editor of the NSS News, regarding the personal attacks in the review. I have been an NSS member for 28 years, contributed thousands of volunteer hours to learn more about cave life in Colorado., and received grant money for my studies from the NSS. For me to be disrespected in a demeaning book review in the NSS News is wrong, and a rebuttal to the book review follows:

1. The reviewer writes "The author's boast of finding '100 new species' is unsupported in the biological literature," suggesting that I am not being truthful about my new species discoveries, while in fact I have found over 100 new invertebrate species in the caves of Colorado. I am a cave biologist and a Research Associate with the Denver Museum of Nature & Science who has worked hard studying cave invertebrates in Colorado for the past 15 years. I was in no way "boasting" about my finds, I was simply quantifying my results.

Ten of the new species I found are named and published, representing a small fraction of the total number of new species I collected to date. New species I found that are published and named consist of 2 new pseudoscorpion species and 8 new Collembola species. The pseudoscorpions were described in the paper "Two new cavernicolous species of the pseudoscorpion genus *Cryptocreagris* (*Pseudoscorpiones: Neobisiidae*) from Colorado" (Harvey and Muchmore, 2009). The 8 new species of Collembola were described in three separate papers: a) Four new genera of North American Hymenaphorurini (Collembola: Onychiuridae) with a description of new species and a key to the world genera of the Tribe (Pomorski and Steinmann, 2004), b) A revision of the genus *Typhlogastrura* in North American caves with description of five new species (Christiansen and Wang, 2006), and c) Review of North American species of the genus *Onychiurus* (Collembola: Onychiuridae), with a description of four new species from caves (Pomorski, Furgol and Christiansen, 2009). A paper I co-authored, "Repeated and time-correlated morphological convergence in cave-dwelling harvestmen (*Opiliones, Laniatores*) from montane western North America (Derkarabetian,

Steinmann and Hedin, 2010) refers to two new Colorado harvestmen species that evolved and diverged from their surface ancestors approximately 10 million years ago.

Most of the new cave invertebrate species I have discovered are not yet described, including at least 10 new Dipluran species. Dr. Lynn Ferguson presented the poster "A Preliminary Report on the Cave Diplura of Colorado" at the 2009 International Congress of Speleology, showing that the 7 new species of *Haplocampa dipluran* I discovered in Colorado represent 27% of all the known *Haplocampa* species from caves in the world (Ferguson, 2009). I have collected approximately 45 new springtail species as determined by Dr. Ken Christiansen, Dr. Jacek Pomorski and others. I collected about 10 new millipede species with two new genera as determined by Dr William Shear. My findings also include several new centipede species with one in a family previously not known from North America, as indicated by Dr. William Shear.

My collections include at least 2 new species of dung beetle as identified by Dr. Frank Krell and 2 new species of Leodiidae beetle as identified by Dr. Stewart Peck and Dr. Steve Ashe. I also collected 2-3 new species of Harvestmen as determined by Dr. Shahar Derkarabetian, plus one new spider species in the genus *Hypochilus*. A minimum of 2 new worm species were discovered by me in Sulphur Cave, as determined by Steve Fend with the USGS, along with one new species of ostracod. The 20 new species of mites I have found are a conservative estimate. Additionally, I found a new species of pseudoscorpion in the family Larcidae which Dr. Mark Harvey has not yet formally described. I've also discovered 2 new fern species, one *Cystopteris* and one *Woodsia*, growing on limestone near caves as determined by Dr. Michael Windham at Duke University, and I am involved with two new moonwort (*Botrychium*) species being worked on by Dr. Donald Farrar at Iowa State University.

2. I am offended by the reviewer writing that "a secondary goal of this book is evident: to focus on the personal achievements of the author," and "The vast majority of the words in this booklet are used to describe the author, his accomplishments, and other aspects of his life." After reading these statements I wondered "How could someone be so absolutely wrong, and why were these incorrect statements published in the NSS News?" My name is mentioned only five times in the entire book if one does not

include the "About the Author" page at the end of the book. How can my name being mentioned five times out of over 2,000 words get mutated into "The vast majority of the words in this booklet are used to describe the author..." I am not an egomaniac as the reviewer implies. In reality, I go about my cave life studies relatively quietly.

3. It is ridiculous for the reviewer to suggest that I "should consult a speleobiologist for assistance" when I am a speleobiologist. The reviewer's statements "With such help, some of the animals.... could at least be identified to the familial taxonomic level," and "more descriptive names than "fly" can be employed," ignores the fact that 14 of the 18 species shown in my book are specifically identified to family, genus or species. My use of the word "fly" is intentional because the book is written for tourists and non-scientists. I am more familiar with the cave invertebrates in Colorado and the Southern Rocky Mountains than anyone else I am aware of.

4. All of the species I collected were properly identified and verified by taxonomists from around the world, contrary to the reviewer's statement "even an avid cave animal collector cannot know he has a new species without consulting a taxonomist."

5. The reviewer mistakenly writes "There is no mention of any of the taxonomists who are doing the majority of the hard work that results in the publication of his new species." I mention several taxonomists including Dr. Mark Harvey, Dr. Jacek Pomorski and Dr. Helen Pigage.

6. I take great offense to the reviewer belittling my work by saying "It is fun and relatively easy to collect a new species of cave invertebrate." Maybe finding a new species is easy where the reviewer comes from, yet in Colorado legally collecting a new cave-adapted species is often quite difficult. First, I need to obtain a Special Use Permit from the US Forest Service as most Colorado caves are on public lands. Just getting to many Colorado caves requires driving across the state, then 4-wheel driving on steep mountain roads, followed by long uphill hikes in difficult terrain at altitudes over 10,000' above sea level. Accessing the cold, wet caves can require rappelling and ascending.

One very dangerous cave I have been studying has lethal levels of hydrogen sulfide and carbon dioxide, requiring special safety measures to enter the cave, and has sulfuric acid drips with a pH of zero coming off the ceiling. Once inside a cave, I must look carefully for hours to find and collect tiny cave invertebrates, sorting and labeling the

specimens into vials, locating taxonomic experts to identify the specimens, and often needing to return to a cave multiple times to collect find specimens of a rare new species. Publications and papers regarding the new species also need to be written to document my results. If finding new species in caves is so easy, why am I the only person in Colorado actively doing so?

7. The reviewer writes "The author appears to be well-rewarded for his discoveries by a taxonomist who named several species after Mr. Steinman (and even his son)." In actuality it was three different taxonomists who named three separate new species in my honor, with a fourth new species being named after our young son. I have no role whatsoever in the naming of the new species I find, and I was pleasantly surprised to hear that new species were being named after me..

8. For the reviewer to write that the "reader is constantly reminded of this honor by such redundant statements as "Springtail, a tiny new species named *Onychiurus steinmanni* that was discovered by the author," and "...named *Cryptocreasris steinmanni* after the author" is inaccurate, given that these two quoted phrases are the only times such statements are made.

9. It is wrong for the reviewer to write that my use of the term "albino" is incor-

rect in the book. I use the term accurately to describe the cave creatures in my book that lack pigment. The definition of albino from Merriam-Webster dictionary is "an organism exhibiting deficient pigmentation." Numerous other cave biologists also use the word albino to describe cave animals without pigmentation.

10. The reviewer improperly writes that "A pseudoscorpion is not a top predator, but just a first-level predator" in reference to my assertion that the pseudoscorpion *Cryptocreasris steinmanni* is at the top of the food chain in Glenwood Caverns. There

are no other animals living in the dark zone of Glenwood Caverns capable of being a predator of this pseudoscorpion. After more than a dozen collecting trips into the cave I am certain this pseudoscorpion is the top predator in the cave.

Cave Creatures of Glenwood Caverns is 32 pages with large color photos of seldom-seen animals from one of the most popular caves in Colorado. It is \$9.95 at Amazon.com and the NSS Bookstore. This book is great for both kids and adults who are interested in caves, insects, and ecology.

David B. Steinmann, NSS#27417

REFERENCES:

- Christiansen and Wang. 2006. A Revision of the Genus *Typhlogastrura* in North American Caves With Description of Five New Species. Journal of Cave and Karst Studies. V. 68, no. 2, p 85-98.
- Derkarabetian, Steinmann and Hedin. 2010. Repeated and Time-Correlated Morphological Convergence in Cave-Dwelling Harvestmen (Opiliones, Laniatores) from Montane Western North America. PloS One 5(5):e10388. Doi:10.1371/journal.pone.0010388.
- Ferguson. 2009. Preliminary Report on the Cave Diplura of Colorado (Hexapoda: Diplura: Campodeidae). Longwood University, Farmville, VA.

Harvey and Muchmore. 2009. Two new cavernicolous species of the pseudoscorpion genus *Cryptocreasris* from Colorado. Subterranean Biology 7:55-64.

Pomorski, Furgol and Christiansen, 2009). Review of North American Species of the Genus *Onychiurus* (Collembola: Onychiuridae), With a Description of Four New Species from Caves. Ann. Entomol. Soc. Am. (102): 1037-1049.

Pomorski and Steinmann. 2004. Four new genera of North American Hymenaphorurini (Collembola: Onychiuridae) with a description of new species and a key to the world genera of the Tribe. Insect Systematics and Evolution. 35:1:16-27.

SOCIETY NEWS

IMPORTANT NOTICE FOR FEDERAL EMPLOYEES

NSS JOINS COMBINED FEDERAL CAMPAIGN

Federal & Military employees: You may now select the NSS to receive your donations as part of the Combined Federal Campaign! When the new Campaign drive begins this fall, please designate the NSS, # **10808**, to receive your contributions. Thank you! For information on the CFC, visit www.cfctoday.org

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We're proud to announce that the NSS has been accepted as a recipient on the 2013/2014 Combined Federal Campaign (CFC) National List. This means that now federal (including Military) employees all over the world may select the NSS, # **10808**, as the recipient of their donations.

Established in 1961, the CFC is the largest workplace charity campaign in the country and the only campaign authorized to solicit and collect contributions from federal employees in the workplace. Through this effort, nearly four million federal employees and military personnel are able to contribute

to the organizations of their choice during the annual charity drive, which runs from September 1 through December 15.

What an easy way to direct your charitable giving to support caves, cavers, and your favorite society! For information on the CFC, visit www.cfctoday.org

NEW NSS DIRECTORS ELECTED IN JUNE

Thank you for voting in the 2013 NSS Board of Directors election! 1,900 ballots

were submitted, electing Bill Putnam, Dean Wiseman, Mike Hood, Bill Jackson, and Nathan Farrar. Nathan will serve a 1-year term (filling a director vacancy), while others will serve 3-year terms. Those elected will join current directors Bill Liebman, Peri Frantz, Randy Paylor, Mike Crockett, Dick Mitchell, Margot Geisler, and Carol Tiderman on the 2014 NSS Board of Directors. More specifics of the election results can be viewed on the NSS web site.

Make sure you're ready for summer fun with logo gear from the NSS Bookstore!





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