

# NSS NEWS

December 2019

## American Caving Accidents 2017–2018



# CALENDAR

## USA

**December 28-31, 2019**—Leave No Trace Symposium at the NSS HQ in Huntsville. Contact Fennigan Spencer, NSSLeaveNoTrace2019@caves.org or 929-260-0447 <https://members.caves.org/event/LeaveNoTrace2019>

**December 31, 2019-January 1, 2020**—Bat Ball New Year's Eve party at the NSS HQ in Huntsville. Contact Fennigan Spencer, BatBall@caves.org, (929) 260-0447. <https://members.caves.org/event/BatBall2019>

**May 18-22, 2020**—Conservation of Fragile Karst Resources: A Workshop on Sustainability and Community, informally referred to as UNESCO Karst 2020. On the campus of Western Kentucky University in Bowling Green, KY and hosted by WKU, the George Wright Society, and the Mammoth Cave Area Biosphere Reserve. For additional information please visit our website <https://unescokarst2020.com/>.

**June 12th-20th, 2020—National Cave Rescue Commission Cave Rescue Operations and Management Seminar**: Camp Pinnacle, Voorheesville, NY. Register at: <https://ncrc.regfox.com/ncrc-2020-national-seminar> or <https://bit.ly/2k6hPI3>

**July 27-July 31, 2020—NSS Convention** in Elkins, WV. <https://caves.regfox.com/nss-convention-2020>

Send items for the calendar to davebunnell@comcast.net at least 4 weeks before desired month of publication (e.g., by April 1 for the May issue).

**July 30-August 3, 2020**—Rescue Technician: Cave I/II course, Pro-Board Certified, NFPA 1006

Taught by Huntsville Cave Rescue Unit. Location: Union Grove, AL (near Huntsville). Cost to Cavers: \$90. ProBoard certification: \$320 (in-state) / \$540 (out-of-state)

More information: [www.hcru.org/rescueclass](http://www.hcru.org/rescueclass)

**June 28-July 2, 2021—NSS Convention** in Weed, California! Nestled in a pine forest in extreme northern California, the 14,000-foot Mount Shasta Volcano stands guard over the rugged City of Weed. Named after her founder, Abner Weed, this historic lumber town rests at the intersection of California's mountainous limestone ridges and mysterious lava tubes. Hundreds of caves in the nearby hills can provide challenges for a lifetime of explorers. We hope you can join us for the 2021 NSS Convention in Weed, CA. <http://nss2021.caves.org/>

## American Caving Accidents

2017–2018

## American Caving Accidents

Editor

Bonny Armstrong

110 Timber Lakes Estates

Heber City, Utah

aca@caves.org

## American Caving Accidents

### Review Committee:

Andy Armstrong

Richard Breisch

George Dasher

Yvonne Droms

Mark Minton

Stephen Mosberg

Rene Ohms

Sarah Richards

Christian Stenner

Forrest Wilson

Webmaster: Brian Dickey

# SPELEO PROJECTS

Caving & Mountain Edition

Caving Publications International... serving cavers for over 30 years



Photo: Mark Bulkey

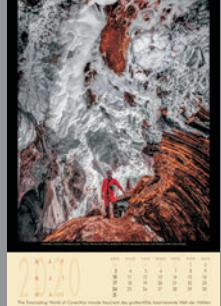


Photo: Alfonso Ruiz Pérez



Photo: Gergely Ambus

### Orders:

National Speleological Society, Inc.

6001 Pulaski Pike

Huntsville, AL 35810 - 1122

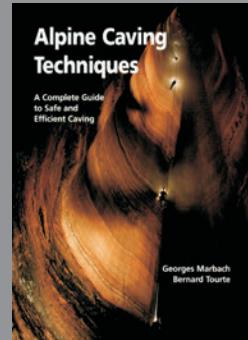
Tel.: (256) 852-1300 Fax: (256) 851-9241

E-mail: [bookstore@caves.org](mailto:bookstore@caves.org)

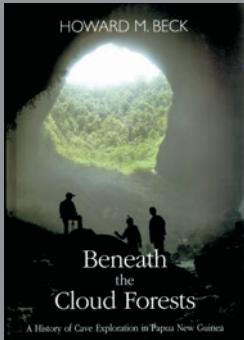
Secure online ordering: <http://nssbookstore.org>

Credit cards accepted: Mastercard, Visa, Discover, American Express

### Speleo Projects Publications:



**Alpine Caving Techniques**  
A Complete Guide to Safe and Efficient Caving. By George Marbach and Bernard Tourte, 2002.  
320 pages, photos and 394 illustrations.  
Format: 8 1/4" x 11 4/5", hardbound.  
ISBN: 978-3-908495-10-9



**Beneath the Cloud Forests**  
A History of Cave Exploration in Papua New Guinea. By Howard M. Beck, 2003.  
352 pages with maps, numerous B&W photos and 64 color pages.  
Format: 8 1/4" x 11 4/5", hardbound.  
ISBN: 978-3-908495-11-6

**POSTMASTERS OR MEMBERS:**  
Send address changes to the National Speleological Society Office, contact information below.

**National Speleological Society Office**

6001 Pulaski Pike NW, Huntsville, AL 35810

Tel: (256) 852-1300

e-mail: nss@caves.org; Web site: <http://caves.org/>

Please contact the office for address changes or back issues.

**NSS EXECUTIVE COMMITTEE**

**President**

Geary Schindel  
Bexar Grotto  
San Antonio, TX  
[president@caves.org](mailto:president@caves.org)  
(210) 326.1576 cell

**Operations VP**

Mark Skove  
Smoky Mountain Grotto  
Clinton, TN  
(865) 640-2323  
[ovp@caves.org](mailto:ovp@caves.org)

**Executive VP**

Scott Engel  
Smoky Mountain Grotto  
Knoxville, TN  
(225) 281-3914  
[evp@caves.org](mailto:evp@caves.org)

**Administrative VP**

Katherine L. Crispin, Ph.D.  
TRA Grotto, GAG, BATS  
State College, Pennsylvania  
(610) 504-0339 cell  
[avp@caves.org](mailto:avp@caves.org)

**Secretary/Treasurer**

Gaylene Speacto  
Colorado Grotto  
Aurora, Colorado  
(303) 880 3168  
[s-1@caves.org](mailto:s-1@caves.org)

**NSS NEWS EDITOR**

Dave Bunnell, Ph.D.  
Box 879  
Angels Camp, CA 95222  
[nssnews@caves.org](mailto:nssnews@caves.org)

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:

<https://caves.org/pub/nssnews/style.shtml>

**ADVERTISING**

Complete advertising information, including rate cards, mechanical specs and deadlines is available online at:

<https://caves.org/pub/nssnews/ads.shtml>

New advertisers should contact Matt Bowers, NSS Director of Business Development at 209-529-9000 or [matt.bowers@caves.org](mailto:matt.bowers@caves.org).

Payments for ads should be sent to the NSS office. New advertisers are expected to pay for ads prior to publication.

**DEPARTMENT EDITORS**

**ASSISTANT COPY EDITOR**

Gary Gibula  
[garygibula@aol.com](mailto:garygibula@aol.com)

**UNDERGROUND ONLINE**

vacant

**CONSERVATION**

Jim & Val Hildreth-Werker  
PO Box 207  
Hillsboro, NM 88042-0207  
(575) 895-5050  
[werks@cunacueva.com](mailto:werks@cunacueva.com)

**NEWSLETTER REVIEW**

Ian Reuter  
5560 Sierra Court  
Rapid City, SD 57702  
[ianreuter@aol.com](mailto:ianreuter@aol.com)

**SPELEAN SPOTLIGHT**

Gary Gibula  
[garygibula@aol.com](mailto:garygibula@aol.com)

**CAVE CHRONICLES**

Philip Rykwalder  
[philip@cavenow.com](mailto:philip@cavenow.com)

**Deadline:** Ads, articles, and announcements should be sent to the editor by the 1st of the month, 1 month before the month of issue (e.g., material for the March issue needs to be in by Feb. 1).

The NSS News (ISSN 0027-7010) is published monthly with the Members Manual and American Caving Accidents published as additional issues by the National Speleological Society, Inc, 6001 Pulaski Pike NW, Huntsville, AL 35810. Periodicals Postage Paid at Huntsville, Al and additional mailing offices. Tel: (256)852-1300, e-mail: [nss@caves.org](mailto:nss@caves.org), web: <http://caves.org/>

Regular membership with electronic copy of NSS News in the NSS is \$40 per year. Members may elect to receive paper copy of NSS NEWS for \$10 per year. Please visit [members.caves.org](http://members.caves.org) for descriptions of other membership categories. Non member Subscriptions to the NSS News are \$36 per year. Individual copies are \$3.00 each or 5 or more copies for \$1.00 each. Contact the Huntsville office for membership applications, subscriptions, orders, or for replacement of issues missing or damaged in the mail. Moving? Address changes can be made from your profile in the Account + Settings tab- Profile tab, for assistance call the office.

Copyright ©2019 by the National Speleological Society



# NSS NEWS

December 2019

Volume 77 Number 12

## FEATURE ARTICLES

### American Caving Accidents 2017–2018

**Editor's Note .....** 4

**Bonny Armstrong**

**Description of Incident Results and Types .....** 5

**2017 & 2018 Incident Maps .....** 6

**Caving Accident and Incident Statistics 1967-2018 .....** 7

**2017-2018 List of Reported Accidents and Incidents .....** 8

**2017 Caving Accidents and Incidents .....** 10

**2017 Cave Diving Accidents and Incidents .....** 23

**2017 Caving-related Accidents and Incidents .....** 24

**Steve Hudson Award .....** 24

**2018 Caving Accidents and Incidents .....** 25

**2018 Cave Diving Accidents and Incidents .....** 35

**2018 Caving-related Accidents and Incidents .....** 38

**Creating a Safe and Educational Environment for Vertical-training Practice .....** 36

**Kurt Waldron and Bonny Armstrong**

## DEPARTMENTS

**Salon Images .....** 22, 38

**President's Message .....** 43

**Society News .....** 40

**News and Notes .....** 43

**Cave Chronicles .....** 41

**Classified Ads .....** 43

**Underground Update .....** 42

## ABOUT THE COVER

*Front cover:*

Two Austin firefighters raising a patient in an NCRC regional training seminar in Texas. Photo by Rhonda Wright.

*Back cover:*

**Right:** Mock rescue patient Rodney Mulder gives a smile as he starts moving in a Ferno-Washington litter towards the cave entrance during an Orientation to Cave Rescue held near Oak City, Utah. Photo by Gretchen Baker.

**Left:** Pulling a "patient" through a low spot in a mock rescue. Photo by Carrey Bull.

**Bottom:** During the mock rescue in Rat's Nest Cave (Canmore, Alberta) for a SPAR, the student had to figure out how to transition patient Becca Stubbs from the traveling haul across the bolts to the next section of rope. Photo by Gretchen Baker.

## Editor's Note

To report, or not to report, that is the question. At least, that's the question cavers ask *me* all the time.

When cavers learn that I am the editor of *American Caving Accidents*, a typical response is, "Oh, you collect accident reports? Did you ever hear about my incident in XYZ Cave?" To which my response is usually, "No. Did you submit a report to ACA?"

As the editor of *American Caving Accidents* (ACA) for the past nine years, I have struggled to understand why so many cavers are happy to tell me their accident stories in person at the NSS Convention or at a cave-rescue seminar, but getting them to submit a report to ACA is more difficult than opening a tweaked D-ring. From the resulting conversations, I believe that the most common reasons why cavers do not submit incident reports are: they aren't sure if their incident would "qualify", they are intimidated to write a report for publication or do not have the time, they are embarrassed or concerned about bad publicity for a caver, cave, or landowner; or they thought somebody else would submit the report. In an effort to encourage more reporting of incidents, I will address those concerns here.

*What qualifies as a caving accident or incident?* If you are wondering if an incident should be reported, it probably should. *American Caving Accidents* is more than just the journal of record for caving accidents in North America. ACA is, first and foremost, a learning tool. Therefore, incidents involving close calls, equipment problems, and self-rescues can provide lessons as valuable as those from major accidents. In other words, if something happened during a caving trip that generated thought or discussion about safety, it is worthy of sharing with the caving community.

There also seems to be confusion regarding whether a report should be submitted based on the location of the incident. ACA reports accidents from anywhere in North America including Canada, Mexico, Central America, and the Caribbean. Territories of the United States, such as Guam, are also included.

*What if I don't have the time to write a detailed incident report or I am just not good at writing reports?* Writing a report for the caving community to read can be intimidating (believe me, I know). The easiest way to submit a report is to use the online incident report form at <http://caves.org/pub/aca>. The form prompts you to fill in the pertinent details needed for an interesting and informative report. From that information, the ACA committee then writes the report that will appear in print. The reporting party is usually contacted to clarify information and fact check the ACA summary.

Does it still sound like too much work? ACA also accepts reports by e-mail or phone interviews. You can contact the editor by email, [aca@caves.org](mailto:aca@caves.org), or find my personal contact information in the NSS *Members Manual*.

*I don't want to be embarrassed or embarrass anyone else.* This is understandable. The good news is, ACA will honor anonymity requests. As you read this issue, you will see numerous reports with no caver names mentioned. Cave names can be withheld as well, which is why some locations are listed as "unspecified cave." It is never the intention of ACA to embarrass anyone. I hope that as you read



ACA Editor Bonny Armstrong. Photo by Andy Armstrong.

through the 2017 and 2018 accident reports, that this effort is apparent.

*I didn't submit a report because I thought someone else would.* If you were involved in an incident, either as a patient, team member, or rescuer, your perspective is valuable. The most interesting reports are those that are written from multiple accounts. Even if you don't have firsthand knowledge of an incident, please notify the ACA committee so that we can contact people who were involved.

Overcoming these misconceptions is the first step to better incident reporting. Thank you everyone who submitted a report, and especially those who submitted multiple reports. Your stories make us think, help us learn, and encourage us to become safer cavers.

**Bonny Armstrong**

NSS 43003

Heber City, UT

# Description of Incident Results and Types

*American Caving Accidents* (ACA) is 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 by those who otherwise have some credible 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.

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 in which a person needed rescuing from a cave that they did not intend to enter, incidents that occur on the way to or from a cave, incidents involving animals needing rescue from a cave, or other unusual circumstances. Because 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.

## Description of Incident Results

**Fatalities**—Fatalities from caving are relatively uncommon and average about three per year. Although fatalities tend to occur with inexperienced, ill-equipped persons, experienced cavers are not exempt.

**Injury vs. No Injury**—An injury is physical damage or harm inflicted on a person, usually by an external force. Examples include wounds, fractures, contusions, burns, smoke inhalation, and frostbite. Heart trouble, allergic reactions, migraines, and other conditions are not considered injuries and are categorized as a medical issue incident type.

**Aid vs. No Aid**—For the purposes of this publication, aid is considered rendered in the following cases: if one or more persons needed the help of others outside of those in their caving party to exit the cave, if outside or additional assistance was requested (even if not used), or if an ambulance or Life Flight was used to transport the patient to a medical facility.

## 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 bright yet relatively inexpensive LED lights are now favored among the majority of American cavers.

**Bad Air**—The presence of bad air in caves can be caused by biological decomposition, poor air exchange, carbon monoxide from fires, blasting fumes, or chemicals being washed into the cave.

**Caver Fall**—Caver falls continue to constitute a large proportion of caving accidents. For simplicity, any fall by any person in a cave, regardless of their experience, is considered a caver fall.

**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 able to ascend or descend a rope or ladder.

**Drowning**—Drowning is often listed as the cause of cave diving fatalities since the triggering event is often difficult to identify. In non-scuba incidents, drowning may occur from attempting to freedive into an underwater cave, swimming in underground lakes or rivers, or being swept away by water.

**Equipment Problem**—This catch-all category includes problems such as rigging, light, and rope failures; and misuse or lack of equipment.

**Exhaustion**—Exhaustion is likely a contributing factor to many caving accidents and is probably underrepresented in caving accident statistics.

**Flooding**—Unexpected, rising water can lead to long-term entrapment underground, hypothermia, and possibly drowning. A good understanding of cave hydrology and the local weather forecast are necessary skills for safe caving.

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

**Medical Issue**—Some incidents that occur underground cannot be contributed directly to the caving activity. Chronic or acute medical conditions may present suddenly such as cardiovascular events, migraines, allergic reactions, etc.

**Lost**—Getting lost underground can happen to experienced and beginning cavers. Strategies to avoid becoming lost include: go with someone who knows the cave, take a cave map (and know how to read it), and pay attention to landmarks. Always let someone know where you are going and when to expect your return. If you are overdue, a rescue can be quickly organized.

**Lost Control on Rappel**—This incident-type category was added in 2011 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 also result in a caver fall, the contributing factor or cause is very different than those typical for caver falls.

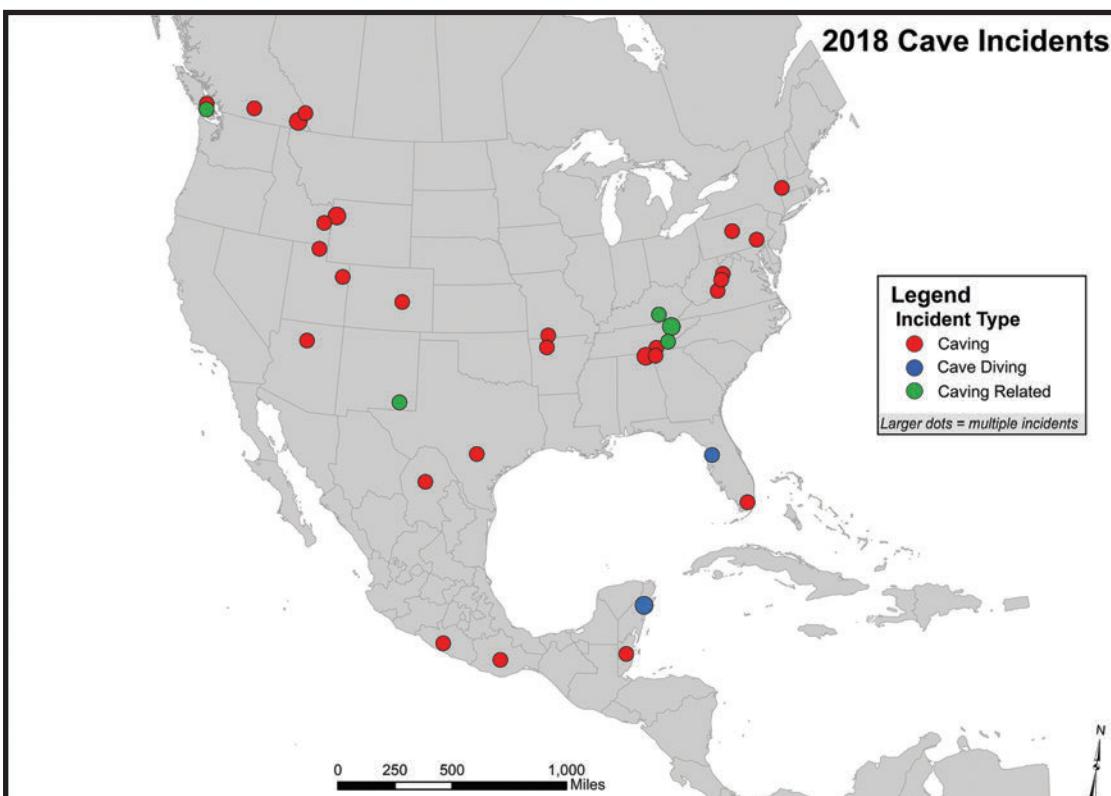
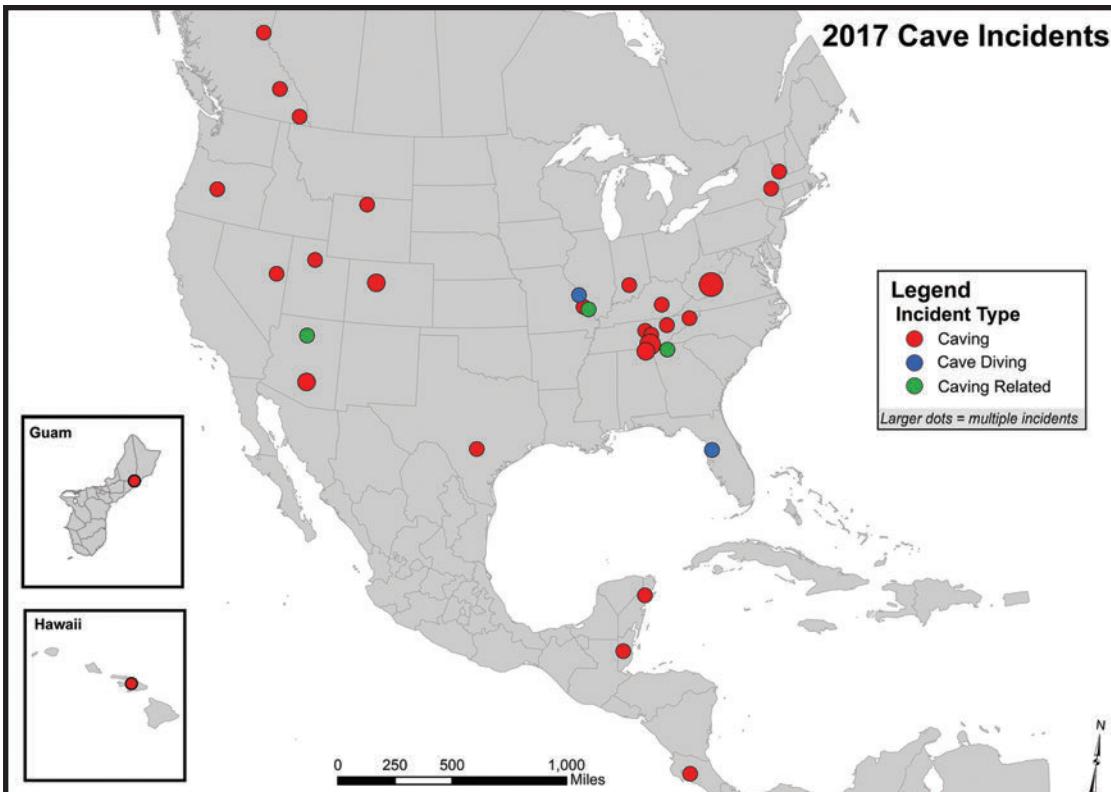
**Rock Fall**—Shifting or falling rocks, either from natural causes or human disturbance, can result in entrapment, injury, or even death. Pay extra attention near the top and

bottom of pits.

**Stuck**—Stuck refers to the physical entrapment of a person which prevents them from moving from their position. Being stuck is a serious situation as it can lead to hypothermia and possibly crush syndrome.

**Trapped or Stranded**—This category describes any incident in which the caver or cavers are prevented from exiting the cave.

**Other**—This catch-all category includes incidents that don't quite fit in other categories. Examples include twisting an ankle or pulling a muscle during normal caving movement, missing a callout time, surface objects falling into a pit, vandalism of rigged entrance ropes, and entrapment of a finger between two objects.



CAVING ACCIDENT AND INCIDENT STATISTICS  
2/12/1986

2/12/1986

Cave Diving Incidents																																																				
Result	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	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	13	14	15	16	17	18
Fatality	4	0	0	2	0	4	1	8	9	2	1	4	2	5	2	0	2	3	7	7	5	9	4	8	2	5	6	8	6	2	0	5	7	2	1	5	7	6	0	5	6	1	4									
Injury and Aid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Aid, no Injury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Injury, no Aid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
No Injury, No Aid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Total	4	0	0	2	0	4	1	8	9	2	1	4	3	5	3	0	2	3	10	9	7	10	5	8	7	6	9	7	2	1	7	8	9	4	5	7	4	2	5	8	4	1	5	11	8	2	5	6	2	5		

## 2017 Reported Caving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 14	Maxwelton Sink Cave	West Virginia	injury, no aid	caver fall
January 14	Maxwelton Sink Cave	West Virginia	no injury, no aid	medical issue
January 15	Indian Grave Point Cave	Tennessee	aid, no injury	stranded
January 29	Waianapanapa Freshwater Cave	Hawai'i	fatality	drowning
February 11	unspecified cave	Utah	no injury, no aid	equipment problem
February 20	unnamed glacier cave	B.C., Canada	fatality	caver fall
March 4	Climax Cave	Kentucky	injury, no aid	other
March 4	Serpiente Dormida	Costa Rica	fatality	caver fall
April 2	Railroad Cave	New York	aid, no injury	stranded
April 9	Raspberry Rising Cave	B.C., Canada	injury, no aid	caver fall
April 21	Berome Moore Cave	Missouri	injury, no aid	caver fall
May 12	Peppersauce Cave	Arizona	aid, no injury	stranded
May 13	Peppersauce Cave	Arizona	injury and aid	caver fall
May 27	Mandys Cave	Tennessee	no injury, no aid	other
June 8	Tumbling Rock Cave	Alabama	injury, no aid	caver fall
July 3	Marbo Cave	Guam	fatality	drowning
July 14	Natural Trap Cave	Wyoming	no injury, no aid	difficulty on rope
July 15	Robber Baron Cave	Texas	injury, no aid	caver fall
July 22	Fulford Cave	Colorado	injury, no aid	caver fall
July 23	Mr. Toad Cave	Vermont	injury and aid	caver fall
July 27	Spring Hill Saltpeter Cave	Tennessee	injury and aid	other
July 29	Fulford Cave	Colorado	aid, no injury	lost
August 1	Gourdneck Cave	Tennessee	injury, no aid	caver fall
August 5	Cenote Lu'um Balam	Quintana Roo, Mexico	fatality	drowning
August 12	Culverson Creek Cave	West Virginia	injury, no aid	caver fall
August 12	Culverson Creek Cave	West Virginia	injury, no aid	other
September 9	Bessie Butte Cave	Oregon	injury and aid	caver fall
September 17	Sullivan Cave	Indiana	aid, no injury	stranded
September 17	Bill Clinton Pot	Tennessee	injury and aid	rockfall
October 6	Solution Rift	Tennessee	aid, no injury	stranded
October 13	Bisaro Anima	B.C., Canada	injury, no aid	other
November 16	Actun Tunichil Muknal	Belize	fatality	medical issue
November 24	Grunge Plunge Cave	Tennessee	aid, no injury	exhaustion
November 28	Crevasse Cave	Nevada	no injury, no aid	difficulty on rope
December 1	Valhalla Cave	Alabama	aid, no injury	equipment problem
December 9	Pentagon Pit	Missouri	no injury, no aid	other

## 2017 Reported Cave Diving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 8	Eagles Nest	Florida	fatality	drowning
September 24	Cannonball Cave	Missouri	no injury, no aid	equipment problem

## 2017 Reported Caving-related Accidents and Incidents

Date	Cave	Location	Result	Incident Type
May 29	unnamed cave	Arizona	fatality	drowning
October 9	unspecified sinkhole	Missouri	injury and aid	fell into sinkhole
December 31	unspecified cave	Georgia	dog fatality	stuck

## 2018 Reported Caving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 1	Bisaro Anima	B.C., Canada	injury, no aid	other
January 7	Little Brush Creek Cave	Utah	injury and aid	caver fall
January 21	Thunder Hole Cave	Alabama	injury and aid	lost control on rappel
February 4	Howards Waterfall Cave	Georgia	no injury, no aid	medical issue
February 12	Arch Cave	B.C., Canada	aid, no injury	other
February 17	Wind Caves	Pennsylvania	aid, no injury	stuck
February 24	17 Mile Cave	Idaho	injury and aid	bad air
March 2	Raccoon Mountain Caverns	Tennessee	injury and aid	other
March 8	Robber Baron Cave	Texas	aid, no injury	stuck
March 8	Pettyjohns Cave	Georgia	injury and aid	caver fall
March 13	Sótano de los Enríquez	Coahuila, Mexico	no injury, no aid	equipment problem
April 1	Island Ford Cave	Virginia	aid, no injury	lost
April 9	Sistema Huautla	Oaxaca, Mexico	no injury, no aid	flooding
May 5	Chontalcoatlán	Guerrero, Mexico	2 fatalities	drowning
June 23	Convention Cave	Massachusetts	injury and aid	stuck
July 10	Lava River Cave	Arizona	injury and aid	caver fall
July 14	Cedar Knob Cave	Virginia	no injury, no aid	equipment problem
July 14	Fossil Mountain Ice Cave	Wyoming	aid, no injury	lost
July 18	Eagles Nest	Florida	fatality	drowning
August 1	Gargantua Cave	B.C., Canada	aid, no injury	other
August 11	Fossil Mountain Ice Cave	Wyoming	aid, no injury	lost
August 11	Gear Cave	B.C., Canada	injury, no aid	other
August 31	Main Drain Cave	Utah	injury, no aid	caver fall
September 3	unnamed talus cave	B.C., Canada	injury and aid	caver fall
October 2	Beaver Creek Cave	Missouri	aid, no injury	difficulty on rope/ladder
October 5	J-4 Cave	Pennsylvania	aid, no injury	other
October 6	Kennamer Cave	Alabama	aid, no injury	lost
November 10	Shoveler-Hellhole System	West Virginia	no injury, no aid	medical issue
November 20	Actun Tunichil Muknal	Belize	aid, no injury	flooding
November 24	Huccacove Cave	Colorado	injury, no aid	caver fall
December 30	unspecified cave	Arkansas	injury and aid	caver fall

## 2018 Reported Cave Diving Accidents and Incidents

Date	Cave	Location	Result	Incident Type
January 20	Eagles Nest	Florida	fatality	drowning
June 16	Sistema Sac Actun, Cenote Manatí	Quintana Roo Mexico	fatality	drowning
August 23	Main Drain Cave	Utah	no injury, no aid	equipment problem
November 14	Sistema Sac Actun, Cenote Calimba	Quintana Roo Mexico	2 fatalities	drowning

## 2018 Reported Caving-related Accidents and Incidents

Date	Cave	Location	Result	Incident Type
February 10	unspecified cave	Tennessee	aid, no injury	dog fell into pit
February 12	Bear Creek Cave	B.C., Canada	injury and aid	caver fall
March 26	Carlsbad Caverns	New Mexico	aid, no injury	stranded in elevator
October 10	Ausmus Well	Tennessee	2 dog fatalities	dogs fell into pit
October 27	Sloans Valley Cave	Kentucky	aid, no injury	dog stranded in cave
November 26	unspecified cave	Tennessee	aid, no injury	dog fell into pit

# 2017 Caving Accidents and Incidents

**14 January**

**Maxwelton Sink Cave, West Virginia**

**caver fall, injury, no aid**

**medical issue, no injury, no aid**

Greg Springer (49) organized a trip to Maxwelton Sink Cave to resurvey 2,800 feet of passages. The group consisted of six cavers who split into two teams of three. Springer led Tom Feeney (31) and Errol Glidden to a narrow canyon with both upper and lower leads. Feeney climbed up to a ledge to look at a high lead. Looking for a way back down, Feeney encountered greasy mud and began to slide out of control. He went over an edge with a 14-foot drop below it. Glidden was near the edge and tried to help, managing to shove Feeney sideways. This interference caused Feeney to land on an outcropping 7 feet below the edge. He landed hard, but at least he had not fallen all the way to the bottom.

Feeney had the wind knocked out of him and felt pain in his back and ribs. He took ibuprofen and thought he felt well enough to continue the survey. Thirty-three stations later, however, his injuries became more problematic and the group decided to call it a day. Traveling out of the cave was slow and painful, but Feeney made it out under his own power with Glidden carrying his pack part of the way.

During their exit, Springer began feeling unwell. His heart was racing and he was unable to keep up with Feeney and Glidden. He had difficulty catching his breath and had to take several rest breaks. Glidden reported being able to hear Springer's heartbeat, even from several feet away.

Springer noted in his report, "[Feeney] later reported he had severely bruised and strained his ribs and muscles. He won't be over the fall for some time. I wish we had left sooner, but I'm not sure any of us realized how badly he was hurt. As for me—well, it is hell getting old!"

1. Greg Springer, "Madness in Maxwelton!" *The West Virginia Caver*, April 2017, Volume 35, Number 2, page 12.

2. Tom Feeney, "1.14: Maxwelton Sink Cave," *The West Virginia Caver*, April 2017, Volume 35, Number 2, page 15.

**Comments:** Both men were later examined by physicians. Feeney had broken one rib. In many cases, the true extent of an injury does not become apparent for several hours. Immediately after an accident, the patient's body often releases adrenaline. This, in conjunction with other psychosomatic responses, serves to dull and mask pain. In time, these masking responses decrease as swelling increases leading to a more painful and possibly debilitating situation. Rib injuries are especially subject to this delayed pain and stiffness. While no one wants to feel responsible for an aborted trip, it is often safest to exit after any accident with the potential for significant after-effects. In some cases, the trip leader must step in and make the decision for the team to exit.

No cause was determined for Springer's symptoms other than possible dehydration.

**15 January**

**Indian Grave Point Cave, Tennessee**

**stranded, aid, no injury**

At approximately 2:30 a.m., the Smithville-DeKalb County Rescue Squad was notified that someone was trapped in Indian Grave Point Cave. An unidentified man was rescued after he had used a rope to lower himself down a "60-foot hole" but was then unable to climb back out.

1. Staff, "Man rescued from Dry Creek Cave," [www.smithvillereview.com](http://www.smithvillereview.com), 17 January 2017.

**Comments:** The man and his group were novice cavers without proper gear or training. Indian Grave Point Cave is a popular cave for locals.

**29 January**

**Waianapanapa Freshwater Cave, Hawai'i  
fatality, drowning**

Gregory Wilhelm (33) of Novato, California, was swimming with friends outside of Waianapanapa Freshwater Cave. He and a male companion swam into the cave using the flashlight feature on a cell phone that was protected in a plastic bag. The friend exited the cave first, and when Wilhelm did not emerge, the friend swam back into the cave to look for him. He found Wilhelm's cell phone, then exited the cave and called for help. Wilhelm's body was recovered later that day.

1. Web staff, "California visitor dies at Waianapanapa Freshwater Caves in Hana," [www.khon2.com](http://www.khon2.com), 31 January 2017.

2. Star-Advertiser staff, "California man pulled from Maui freshwater cave identified," [www.staradvertiser.com](http://www.staradvertiser.com), 31 January 2017.

**Comments:** The reason for Wilhelm's drowning was not determined.

**11 February**  
**unspecified cave, Utah**  
**equipment problem, no injury, no aid**

A caver (21) was rappelling in a multi-drop cave when one side of his harness came out of his D-ring. The caver was able to make it to a ledge, reattach his harness, and secure the D-ring before completing his rappel. The caver was not sure if his D-ring had been open on previous rappels that day or if it was only open on this particular drop.

1. Anonymous, Incident Report, 6 November 2017.

**Comments:** Carabiner gates and screw-link closures should be checked before loading vertical gear after

any period of unloading. Unloading occurs not only when getting off rope, but also at rebelay and ledges. Cavers should use a visual and tactile check of these potential failure points before each instance of trusting them to hold their body weight.

The reporting party submitted this report with the request of anonymity. It is not uncommon for cavers to be embarrassed about making mistakes we know we shouldn't. This is the reason that *American Caving Accidents* exists—to speak honestly about our mistakes and share our experiences so that future accidents can be prevented. Please report all accidents, incidents, and near misses to ACA. While including names and ages can sometimes provide clearer context and relevance for other cavers, ACA maintains the anonymity of cave and caver names when requested.

### **20 February unnamed glacier cave, British Columbia, Canada fatality, caver fall**

Three young adults entered a glacier cave in Kakwa Provincial Park, British Columbia, while two other adults waited outside. The group entering the cave used cell-phones for flashlights. While in the cave, a 21-year-old man slipped and fell into a 150-foot-deep crevasse. The Alberta-British Columbia Cave Rescue group was alerted but then received word that the individual had died. A recovery was conducted the next day by Jasper National Park personnel.

1. Christian Stenner, Incident Report, 28 February 2017.
2. Dave Merrit, personal communication, April 2018.

### **4 March Climax Cave, Kentucky other, injury, no aid**

Debi Pavey (50) broke a bone in the top of her foot while on a recreational trip in Climax Cave. The accident occurred as Pavey was exiting a side passage 2 feet above the floor of the main passage. Because the distance was not significant, she "leapt" out of the passage instead of lowering herself down gently. She rolled her foot upon landing and thought that she had pulled a muscle. After crawling out of the cave, she spent the weekend limping and taking pain medication. A physician diagnosed the broken bone the following Monday.

1. Debi Pavey, Incident Report, 24 May 2017.

**Comments:** Adrenalin and pain killers may mask the extent of certain injuries. With any injury, it is a good idea to be examined by a physician as soon as possible to begin a proper recovery and prevent further injury. This incident highlights the importance of maintaining three points of contact at all times—even in seemingly "easy" sections of a cave. When leaping through the air, a caver has zero points of contact.

### **4 March Cueva de Serpiente Dormida, Costa Rica fatality, caver fall**

José Alfaro (45) and other cavers prepared to enter Serpiente Dormida. The first pit is approximately 180 feet deep and requires two rebelay. Alfaro, being an experienced vertical caver was put in charge of rigging the pit. After rigging the second rebelay, Alfaro was 100 feet above the floor. He had been deploying rope from a rope bag as he rappelled. The bag contained two lengths of rope of the same color. Tragically, the ropes were not tied together and neither was knotted at the end. After passing the second rebelay, Alfaro rappelled approximately 20 feet before he rappelled off the end of the first rope, falling approximately 80 feet to the floor.

His fellow cavers heard him fall and reached him as quickly as possible. Alfaro had suffered compound fractures to his legs, and trauma to his head and face. He died a few minutes later.

1. Erick Mendez, e-mail communication, 4 March 2019.
2. Victor Hugo Carvajal Rivera, Reportes de Accidentes, undated.

**Comments:** When deploying rope from a rope bag tethered just below a rappeler, it is nearly impossible for the rappeler to detect an unknotted end of rope leaving the bag and approaching the descending device before it is too late. A rope should always have a confirmed end knot or a knot connecting it to another rope before deploying it from a bag while rappelling.

José Alfaro was a much-loved and respected caver in the Costa Rican caving community. Cavers speculate that he was most likely unaware that there were two ropes in the rope bag. It is not clear if this rope bag was prepared by Alfaro or by someone else. Caving clubs that use club gear should standardize and follow strict protocols for packing rope bags. Ideally, each rigger will pack and inspect his or her own rope bag before use. When packing someone else's bag, tie the rope ends or connection knots and show them to the rigger. Do not pack the rope bag until after the rigger clearly confirms that he or she has seen the knots.

Some European clubs advise to tie two knots in the free end of the rope—the first one 1 meter (3 feet) from the end and the second 2 meters (6 feet) from the end. This way, the rigger knows that when the first knot is reached, there is still 6 feet of rope to build into a rebelay or other rope connection.

### **2 April Railroad Cave, New York stranded, aid, no injury**

On 2 April, Stephen Berge, Christian Madaras, and Mike Jordan went ridgewalking in Greene County with the additional purpose of cleaning up caves in Austin Glen. When they neared the entrance to Railroad Cave, they noticed a cell phone. As they were discussing who may have left it there, they heard a shout from inside the cave. A man in his late 20s yelled up that he had been unable to climb

out for over an hour and had sent his companion to call the local fire department.

The entrance to the cave is an approximately 25-foot-deep pit and there was an old 20-foot ladder in the pit, requiring about 5 feet of climbing at the top. The young man could not negotiate these last few feet. Berge explains, "Luckily we had a webbing ladder and several strands of webbing to rig up something to help him climb out, saving the firefighters a long walk down to the creek. The guy who was rescued had no helmet or light. Luckily, he wasn't alone and we showed up when we did. After that the ladder was removed to avoid people getting in similar situations." Entering the cave now requires vertical gear or a cable ladder.

1. Stephen Berge, "Railroad Rescue," *Northeastern Caver*, Volume 48, Issue 2, page 35, June 2017.

**Comments:** The novice caver must be commended for calling for help instead of attempting a climb for which he did not possess the necessary skill or equipment. As in the resolution to this incident, it is usually best to remove ladders and other implements meant to supplant vertical gear and technique when they do not fully and safely eliminate the vertical problem.



Cavers assist a man out of Railroad Cave. Photo by Stephen Berge.

## 9 April

### Raspberry Rising Cave, British Columbia, Canada

#### caver fall, injury, no aid

At the end of a caving trip in Raspberry Rising, a group of four cavers was exiting the cave. After diving a sump 250 feet inside the cave from the entrance they changed out of their diving gear near the stream. While changing, Adam Walker (36) had removed his helmet, he then slipped backward while standing on wet rocks, falling and hitting the back of his head on a rock. The remainder of the group had already exited the cave. Walker emerged at the entrance to meet his group with a painful contusion and bleeding from a small but deep cut in his scalp. The scalp laceration was treated with a gauze pad and bandage to hold it in place for the hike down the mountain. Upon his return home, Walker sought medical attention and received two stitches to close the wound.

1. Adam Walker, personal communication, 15 April 2017.
2. Christian Stenner, "Reflections of Raspberry," *Journal of Subterranean Metaphysics*, N. 200, Fall 2018.

**Comments:** This incident highlights the importance of wearing a helmet on any uneven terrain and the safety benefits of keeping the team together. It is also a reminder that the trip is not over until all members have returned home safely.

## 21 April

### Berome Moore Cave, Missouri

#### caver fall, injury, no aid

Laura Belarbi led a team of six cavers into Berome Moore Cave on a stream monitoring trip. As the trip leader, Belarbi had discussed proper gear, including boots, with her group. One woman showed up wearing tennis shoes and insisted that she had caved in tennis shoes before and would be fine.

At one point during the trip, another experienced caver was in the lead. When he reached a spot that required stepping across a gap with the stream 6 feet below, he made the move easily. When the woman in tennis shoes attempted to cross this gap, her foot slid upon landing and she fell across the boulder onto her stomach, injuring her wrist in the process. She told the group she would be fine to continue. Belarbi notes, "She was the note-taker for our stream monitoring for the next 2 1/2 hours and didn't complain at all."

Immediately after the trip, the injured woman went to an urgent care facility and was diagnosed with a broken wrist. She was placed in a cast that she wore for the next six weeks.

1. Laura Belarbi, Incident Report, 24 April 2017.

**Comments:** One of the most difficult aspects of trip leadership can be to stand up for safety or ethical standards when it affects someone's ability to participate in a trip. In

her report, Belarbi explains that she should have been more insistent that her group members wear proper footwear. She also mentions that when leading beginners, experienced cavers should take more care in their movements in a cave. She notes that, especially when some group members have sub-optimal gear, everyone on the trip should take some responsibility for the safety of less-experienced team members and adjust trip goals and expectations accordingly. For instance, Belarbi says she should have led the beginner down to the stream and up the other side rather than letting her follow the other caver across the 3-foot gap.

### 12 May Peppersauce Cave, Arizona stranded, aid, no injury

On 13 May, Sara Avery wrote on Facebook that she and her friend had difficulty exiting through a section of Peppersauce Cave known as the Rabbit Hole. They had slipped down through the muddy hole easily enough but then found it difficult to go back up and through the same hole. Avery made it through after several attempts and a “mini-freakout session.” Her friend had even more trouble and asked that Avery go get help. Avery did not describe the events of the rescue, but went into detail regarding gear she wished she had had (more batteries, a phone with music on it) and gear she was glad that she had—a helmet, long sleeves, and elbow pads.

1. Sara Avery, Facebook, 13 May 2017.

**Comments:** Peppersauce Cave is known for having many underprepared visitors. When climbing down something that may be difficult to climb back up, it is often prudent to rig a handline before descending.

This incident was detailed on the Peppersauce Cave Facebook page by Sara Avery. Because her friend needed the aid of the local Search and Rescue group, Avery said she could leave only a three-star review on the Peppersauce Cave Facebook page.

### 13 May Peppersauce Cave, Arizona caver fall, injury and aid

The day after rescuing a woman from Peppersauce Cave in the above incident, the Pinal County Sheriff's Office rescued another person from the same area in the cave. A 46-year-old man had fallen and injured his back and knee. The Pinal County Search and Rescue team and Oracle Fire Department performed the rescue.

1. Pinal County Sheriff's Office Facebook page, 15 May 2017.

**Comments:** Peppersauce Cave is visited by literally thousands of underprepared visitors each year and has been the site of much vandalism and many rescues. As an organization dedicated to cave safety and conservation

with local chapters in the area, the NSS would do well to study how to better serve this cave, its visitors, its managers, and local search and rescue organizations.

### 27 May Mandys Cave, Tennessee other, no injury, no aid

Jim Smith, Bill Steele, Hali Steinmann, Lee White, and Kyle Lassiter entered Mandys Cave through the upper vertical entrance, which is inside a deep sinkhole. Fifteen feet of descending, stooping passage then a 90-degree bend leads to a short entrance pit. After completing the survey for the day, Lassiter was ready to ascend the near-entrance pit, but Smith stopped him for a few minutes to take some photos. Just as Lassiter was getting off rope at the top of the pit, he heard a tremendous crash outside the entrance. He couldn't see what had happened outside, because the entrance was around a corner. Everyone else in the cave heard it as well.

Carefully, Lassiter climbed out to discover that a large, rotten log had slid into the sinkhole from above and had hit the ground immediately in front of the entrance. It then broke into several pieces and rolled further down into the sinkhole. In his report, Lassiter notes that the delay to take photos may have saved his life, as he might have been hit by the log if he had come out a few minutes earlier.

1. Bill Steele, Facebook, 30 May 2017.
2. Kyle Lassiter, Incident Report, 13 December 2017.



Lee White standing near the entrance of Mandys Cave. A log rolled down the hill and landed where White is standing a short time later. Photo by Bill Steele.

Comments: Lassiter concluded his report saying, "That log had probably been lying there undisturbed for years, and there was no reason to suspect it was going to fall in that day. Weather was not a factor as it was a warm, sunny day with no wind or rain to help get the log moving. I guess the lesson here is to check for widowmakers above entrances, although even in this case I doubt we would have noticed this log 25 feet above the entrance lying on the ground."

A helpful safety practice for any vertical pitch, be it surface or underground, is to mentally delineate a boundary between the safety zone and the vertical fall zone at both the top and the bottom of the pitch. The safety zone includes everywhere where one can safely not be attached to a rope. The fall (or hazard, or danger) zone can be quite large in relation to the actual pit, defined at the top as within the furthest perimeter where a falling object could enter the pit, defined at the bottom as within the furthest perimeter where falling objects could hit, including due to ricochet. The fall zone should be entered or exited with a vocal call of "on rope," "off rope," or similar; only one caver should occupy the fall zone at a time. In addition, the fall zone should ideally be "groomed" of any objects with the potential to become falling objects. As Lassiter points out in his report, this is an ideal that is often not fully realized, as some pits can have very large areas above them included in the fall zone.

### 8 June

#### Tumbling Rock Cave, Alabama caver fall, injury, no aid

On 8 June, six cavers entered Tumbling Rock Cave at 4:00 p.m. They went as far as the Christmas Tree formation and then turned around. At 6:30 p.m., near the black flowstone formation, Christine Rose (41) slid off a rock and into water. Rose landed with her right foot on a submerged rock. This caused Rose considerable pain and she found she could not put any weight on her foot. Rose used a Sam Splint and extra webbing from her pack to splint her foot. Her fellow cavers helped her to negotiate the 1 mile of cave to the entrance in about two hours. At a medical facility, Rose was diagnosed with a tibia fracture and tendon damage.

1. Christine Rose, Incident Report, 15 June 2017.

Comments: In her report, Rose (herself a trained cave rescuer) says this incident is a good reminder of several things: minor slips or miscalculations can result in major problems; injuries can result from things that are not out of the ordinary or necessarily dangerous or high risk; patient attitude and determination greatly influences the outcome; and self-rescue, when possible, is often preferable to a call-out rescue.

### 3 July

#### Marbo Cave, Guam fatality, drowning

Thomson Puas (15) was visiting Marbo Cave with his older brother, an uncle, and a friend. They spent an hour at the entrance before swimming into the cave. Once inside, the group did not see Puas. His brother eventually located him under water. The group brought Puas out of the cave, began CPR, and called 911. Puas was pronounced dead at the hospital.

1. Jasmine Stole and Masako Watanabe, "Teen who drowned at Marbo Cave was Okkodo High student," [www.guampdn.com](http://www.guampdn.com), 5 July 2017.

Comments: Marbo Cave is a popular destination for both locals and tourists. This incident is the third death by drowning at Marbo Cave since 2014.

### 14 July

#### Natural Trap Cave, Wyoming difficulty on rope, no injury, no aid

For many years, Natural Trap Cave has been the site of paleontological studies. Researchers receive special training from cavers to safely enter the vertical entrance, but they are also belayed, per the required Bureau of Land Management permit.

On 14 July, a male paleontologist got his hair caught in his rack while descending the entrance. According to the report, "Due to his inability to unweight his rack despite eventually getting his ascender on the rope, and in the difficulty of the belayer trying to make communications from approximately 60 feet above, and at least three people just below him also adding to the verbal confusion, the belayer decided to take control."

The belayer, using gear from his own harness, including a small pulley, converted the belay line to a 3:1 haul system. This mechanical advantage allowed the belayer to single-handedly raise the 170-pound man high enough to unweight his rack. After removing his hair from the rack, the paleontologist was able to rappel the final 15 feet.

1. Juan Laden, Incident Report, 26 July 2017.

Comments: Several lessons can be learned from this incident including: that most forms of belay require human skill and attention in order to function properly. These active belays are only as good as the human operating them. In this case, the belayer not only provided a successful belay to the compromised primary system, but he was also able to create and implement a solution to the entire problem. A small amount of extra gear like a pulley, prusik, or sling can make the difference in successful vertical problem-solving. Alternately, with the most rudimentary of Single Rope Technique (SRT) training, practice, and skill, the rappeler should have been able to achieve the same unloading of the descender on his own by performing a simple changeover to ascent. The fact that he was unable to do so highlights the

need for a separate belay in this situation. After 60 years of vertical caving using SRT, cavers are still getting their hair caught in descent devices. Plan accordingly.

### **15 July**

#### **Robber Baron Cave, Texas**

#### **caver fall, injury, no aid**

Lori Harris (54) was part of a Bexar Grotto team leading a group of Boy Scouts in Robber Baron Cave. Approximately 45 minutes into the trip, the group entered the Great Southwest Passage. This passage is a tall, narrow crevice requiring stemming for approximately 60 feet. The walls are scalloped limestone, and on this day, they were slightly damp. Harris had traversed approximately 5 feet into the crevice when the people ahead of her stopped. After five minutes of not moving, one of her feet slipped, causing her to fall approximately 10 feet. She pressed against the cave walls with both hands and feet in an attempt to slow her fall. Harris landed with both legs straight and immediately noticed pain below her left knee.

The Scouts were nearing the end of the passage when they informed the trip leader, Michael Harris, that his wife may have fallen. Michael Harris assigned the role of trip leader to another grotto member and then backtracked to find Michael Gibbons already in the process of assessing the injury. Once they determined that Harris could not bear weight on her left leg, they began a self-rescue. Michael Harris assisted his wife in climbing to the upper part of the passage by helping with foot placement and hand-holds. From there she was further assisted and carried back to the cave entrance and eventually to a vehicle. She was seen by a physician and diagnosed with a tibial plateau fracture.

1. Lori Harris, Incident Report, 4 November 2019.

### **22 July**

#### **Fulford Cave, Colorado**

#### **caver fall, injury, no aid**

Michael Kienker (60) was leading a group of three novice cavers on a tour of Fulford Cave. He was in the lead when they entered an area called the Stovepipe, which leads into the Attic Room. At the end of the Stovepipe is a U-shaped slot that most adults have difficulty fitting through. On the other side of the slot, in the Attic, is a sloping flowstone shelf with a 3- to 4-foot drop to the floor from the edge. The safest approach into the room is to maneuver 4 feet or so onto the shelf beyond the slot with the use of a handline, and then slide down the shelf and over the edge to the floor. Kienker's intent was to get into the room and toss a loop of webbing over a large stalagmite at the top of the sloping shelf to help each of the other cavers into the room.

Kienker tossed his pack into the room and lifted himself up and over the slot. Immediately, his feet went out from under him and he went into an uncontrolled slide down the flowstone shelf. At the edge of the shelf was a broken stalagmite sticking up about 1 inch from the surface of the slope. Kienker hit this stalagmite with his tailbone and

then fell over the edge to the floor below. Other than pain in his tailbone, he was otherwise unhurt.

Kienker was able to stand up, get the hand line thrown over the stalagmite at the top of the slope, and assist the other cavers safely down the shelf into the room. He was in pain but was able to get himself and the others out of the cave with no further incident. X-rays later revealed a fracture of the first segment of the coccyx.

1. Michael Kienker, Incident Report, 30 July 2017.

**Comments:** In his report, Kienker reflects that he should have installed the handline prior to entering the room, and that he should have taken more time maneuvering over the slot.

### **23 July**

#### **Mr. Toad Cave, Vermont**

#### **caver fall, injury and aid**

At approximately 10:45 a.m. on 23 July, eight cavers entered the Mr. Toad Cave System to work on two dig projects. The cave is a 46° F alpine marble cave with many short climbs, several waterfalls, various tight crawlways, and some vertical drops. The group entered through a horizontal entrance and did not bring vertical gear, but their route included a 25-foot climb down an angled wall with sharp edges. The climb is about 150 feet from the surface and requires cavers to negotiate two short vertical fissures, a 30-foot-long belly crawl, and a corkscrew crawl to reach the top of it. This drop can be free-climbed, but is typically rigged with a cable ladder to make it easier to carry gear up and down. Use of SRT here is not standard due to numerous sharp rub points.

Once in the cave, the group split into two four-person teams to work on dig projects a few hundred feet apart. After several hours, two members of the lower dig team decided to leave the cave. Under normal circumstances, they were about 15 minutes from the surface, including the cable-ladder climb. Around 3:00 p.m., one of the cavers (mid 50s) had difficulty climbing the ladder and took a 6-foot fall at the bottom. He seemed uninjured, so after some rest, food, and water, he attempted the climb again. With difficulty, and with aid from the other caver, he made it much of the way up the ladder to a large ledge.

The other caver joined him on the ledge and demonstrated how to complete the climb. After additional rest, food, and water, the first caver attempted to complete the climb. He reports that he had difficulty finding his footing, attempted to lower himself back to the ledge, and lost his hold on the ladder. He then fell backward approximately 14 feet onto breakdown. The other caver assessed him, determined that the patient needed assistance, and called the other two members of the lower dig team, who alerted the upper dig team. One member of the upper team was a firefighter and EMT; he reassessed the patient and found the patient to have shortness of breath as well as crepitus (a grating sound) and pain in his right shoulder. The group decided to call for rescue.

The cavers broke into teams and prepared to evacuate the patient. One team of three stayed with the patient. Another team of two departed for the surface to call the group's on-call backup person and 911; this team also began flagging a trail to the nearest road access. An additional person went to the surface to collect equipment, then returned to the cave to help set up a haul system at the top of the 25-foot drop.

Within an hour of the incident, the group (which included two EMTs and four cavers with cave-rescue training) had called 911, notified their backup person, and activated the Vermont Cave Rescue Network to get additional cavers and the Vermont Cavers Association (VCA) rescue cache en route to the scene. Meanwhile, the in-cave team gave the patient food and water, wrapped him in additional warm layers, and protected him with trash bags to provide a vapor barrier and protection from the spray of nearby waterfalls.

The first major hurdle in the rescue was lifting the patient up the 25-foot climb. The EMTs performed a focused spinal assessment to rule out spinal injury, but the patient's shortness of breath prevented him from climbing on his own. Bolts were in place at the top of the drop, but the cavers were limited by the equipment they had in-cave.



This image shows the accident site in Mr. Toad Cave. The patient fell from the highest visible rung of the ladder to the floor behind the breakdown. Photo by John Dunham.

The rigging team was able to set up a 3:1 haul system with carabiners and webbing, but that system proved ineffective due to friction.

Due to the lack of rescue gear immediately available, the team had to wait an extra two hours for pulleys and rope, which were in their vehicles a mile away. Additional equipment arrived in-cave around 6:15 p.m., at which point the cavers rigged a 2:1 counterweight haul system using pulleys and rescue harnesses from the initial firefighter responders, and an 11mm static rope brought by the group's back-up person. Approximately 3.5 hours after the initial fall, the cavers were able to begin lifting the patient up the drop.

At the top of the drop, the patient had to negotiate a tight corkscrew about 15 feet long. This was especially difficult with shortness of breath and pain on his right side, but he was able to do so with assistance. By this point the VCA rescue cache had arrived. The cavers filled holes in the floor with packs and dragged the patient through the 30-foot-long crawlway on a SKED stretcher. Once through the crawlway, he was able, with assistance, to climb the two fissures and then exit the cave. He exited the cave at 8:45 p.m.

The patient was transferred to EMS care and taken down a newly cut trail opened by the firefighter responders to a waiting ATV. The scene was cleared at 11:15 p.m., a little more than eight hours after the initial injury.

1. John Dunham, Incident Report, 28 July 2017.

Comments: The submitted Incident Report included its own analysis: "...this rescue could have been avoided altogether. It is commonly noted in *American Caving Accidents* that cable ladders should be accompanied with a belay. Certainly, had that been the case here, the patient's injuries would have been less severe or non-existent. This climb will be rigged with a belay line on future trips. The rescue could have been expedited had rope and pulleys been on hand at the cave entrance. This would have allowed rigging of a successful haul system one to two hours sooner. The group involved intends to carry a small haul system in the future."

## 27 July Spring Hill Salt peter Cave, Tennessee other, injury and aid

A 16-year-old boy required rescue after he hurt his ankle while exploring a cave near his home. He was close enough to the entrance to obtain a cell signal and call for help. Reports did not state how he hurt his ankle.

1. Staff, "Anderson County Rescue Squad extricates teen from cave," [www.wate.com](http://www.wate.com), 27 July 2017.
2. Kelly Reinke, "Anderson County Volunteer Rescue Squad warns about cave dangers," [www.wate.com](http://www.wate.com), 28 July 2017

Comments: Although we do not know the extent of his ankle injury, it is interesting to compare reports of experienced cavers self-rescuing versus non-cavers calling for rescue even from the entrance of a cave.

**29 July**  
**Fulford Cave, Colorado**  
**lost, aid, no injury**

On 29 July, four National Cave Rescue Commission (NCRC) instructors entered Fulford Cave for the purpose of scouting the cave as a location for an upcoming cave-rescue training. When they entered the Big Room, they saw two young men high up on a ledge. After a few minutes, the young men called out and asked how to get down into the Big Room. They said they had been lost for an hour and could not retrace their steps. Andy Armstrong and Rich Pumplin helped guide them down off the ledge, showing them the location of the best hand- and footholds. In the 36° F cave, the two men were wearing shorts, tennis shoes, and headlamps without helmets. Bonny Armstrong led them out of the room and back along the main trail until they recognized where they were. The men were very appreciative of the help and thanked their rescuers profusely.

1. Bonny Armstrong, Incident Report, 3 August 2017.

Comments: Fulford Cave, despite requiring a USFS permit to enter, still has many underprepared visitors. In addition to being underequipped with clothing or safety gear, these men had no watch and had been in the cave twice as long as they thought.

**1 August**  
**Gourdneck Cave, Tennessee**  
**caver fall, injury, no aid**

Kyle Lassiter (26), Maureen Handler, and Blaine Grindle were exiting Gourdneck Cave after a four-hour survey trip. As Lassiter began climbing out of a water canyon, he stepped across a 3-foot span to stem across the passage and climb to a higher level. As he transferred his weight to his foot, the foothold broke and he fell 10 feet, landing on his back in shallow water. He suffered a laceration and contusion to his right shin, but fortunately missed hitting any of the numerous solution pendants or projections that are prevalent in that section of the canyon passage. Handler administered first aid and Lassiter was able to drive himself home.

1. Kyle Lassiter, Incident Report, 4 August 2017.

Comments: In his report, Lassiter concludes, "When attempting free climbs, the rule of thumb is to try and maintain three points of contact at all times, in case a hold breaks or you slip. However, many of us, including myself, can get comfortable in well-traveled and familiar caves and not adhere to this ideal. In hindsight, I was basically on only one "good" point when the fall occurred, so a fall was guaranteed when my foothold broke. I have over 20 years of caving experience, and this is by far my most significant incident and fall. On future caving trips I will definitely be more cautious on my climbs and make a conscious effort to try to maintain three points of contact. This is a great lesson in guarding against complacency that I will thankfully recover and learn from."

**5 August**  
**Cenote Lu'um Balam, Quintana Roo, Mexico**  
**fatality, drowning**

Dmitry Chernov, a 32-year-old Russian national and temporary resident of Quintana Roo, attempted to free dive (breath holding) into Cenote Lu'um Balam. He swam from open water into an air bell in the cave. From there he could not retrace his exit and continued farther in the wrong direction. He maneuvered through a very tight constriction and then drowned.

Several attempts to recover his body, from the direction he had entered, were unsuccessful due to zero visibility conditions and the tight restriction. The final recovery solution involved drilling a 36-inch-diameter hole through 26 feet of bedrock to reach the body. This required a precise survey to locate where the drill hole would be placed. A bulldozer was used to clear a path through the jungle and 20 truckloads of gravel were brought in to build a road for the drill rig. Next, a 4-inch test drill and further dives determined that the location was correct. Chernov's body was finally recovered on 11 August.

1. German Rincon, "Man drowns cave diving," [www.riviera-maya-news.com](http://www.riviera-maya-news.com), 9 August 2017.
2. Jim Coke, e-mail communication, 21 October 2017.
3. Bil Phillips, e-mail communication, 24 October 2017.

Comments: Accidents from free diving into a cave without scuba gear are classified as caving accidents and not as cave diving accidents.

**12 August**  
**Culverson Creek Cave, West Virginia**  
**caver fall, injury, no aid**  
**other, injury, no aid**

A trip to Culverson Creek Cave led to two injuries in separate incidents for one caver. After six hours of re-rigging pits and flagging a route through breakdown, the cavers began the trip out. Mark Hodge (54) had gone a short distance when he "took an ill-advised step on muddy breakdown" and lost his balance. He fell to the ground, and in the process, badly bruised his coccyx on a sharp piece of breakdown. The pain was considerable. Hodge took some ibuprofen which helped with the pain, and decided that he would be able to exit the cave without assistance.

On the way out of the cave, the group had to ascend three pits. Two of the ropes are rigged over smoothly sloping bedrock. The rope lies against the rock so that when ascending, cavers must push away from the rock to advance their upper ascender. On one of the climbs, Hodge pinched his pinky finger between the ascender and rock. He quickly pulled his hand away, breaking his little finger in the process. Hodge attributes the second incident to being cold and tired from the long trip and being distracted by the pain from the first incident.

1. Mark Hodge, Incident Report, 25 September 2017.

**Comments:** While it was almost certainly the right call for Hodge to exit and ascend under his own power, this incident reminds us that cavers already compromised by injury or illness are more likely to sustain further injury. Compromised cavers should be monitored and assisted wherever and however possible on the way out of the cave.

Care should always be taken to keep fingers and other body parts from becoming pinched behind loaded rope and hardware.



Mark Hodge displays the permanent damage to his finger after pinching it between a rope and the cave. Photo by Bonny Armstrong.

### 9 September Bessie Butte Cave, Oregon caver fall, injury and aid

Five rock climbers entered Bessie Butte Cave and negotiated a 26-foot-deep pit with a tow strap. While trying to climb out, one of the men fell and was injured. Other members of the group called 911. Bend Fire Department responded and was assisted by a local search and rescue group with cave-rescue training. The man's injuries were not reported but were said to be non-life threatening.

1. KTVC staff, "Bend man injured in Bessie Butte Cave fall, rescued, technical operation involved several agencies," [www.ktvz.com](http://www.ktvz.com), 9 September 2017.
2. Neil Marchington, e-mail communication, 10 September 2017.
3. Eddy Cartaya, e-mail communication, 23 October 2017.

**Comments:** Unfortunately, people often find information about locating caves before finding information about caving safety. This is one of the primary reasons that most cavers do not approve of posting cave locations on the Internet.

### 17 September Sullivan Cave, Indiana stranded, aid, no injury

Twelve members of the Caving Club of Indiana University (CCIU), including the club president and a trip leader, visited Sullivan Cave for a club outing on a Sunday morning. Sullivan Cave is managed by the Indiana Karst Conservancy and is popular with Scout groups and NSS grottos.

The group explored several sections of the cave. When they decided it was time to head out of the cave, the club broke into two groups. The club president led the faster group of students while the trip leader stayed behind with the slower-moving students. At some point, a 19-year-old freshman left the slower group to catch up with the faster group, but he missed a critical turn toward the entrance. Once he realized his mistake, he turned around and headed toward the entrance.

The two groups exited the cave and locked the cave gate behind them. The club president did a head count in the parking area, counting 11 people. Believing this was the number they started with, the group got into three vehicles. Some students rode home in different vehicles than they arrived in. The trip leader later noted that he arrived with four people but left with five.

On the following Tuesday, the caving club received a call inquiring about one student who had been on the cave trip. Lukas Cavar had not been seen by his roommates or family since Sunday. The trip leader alerted authorities and with others rushed back to the cave and found Cavar waiting just inside the locked entrance gate. The rescuers had brought food and a change of clothes for him. The trip leader performed a medical assessment and found Cavar to be hungry and thirsty but otherwise unhurt.

This incident made national news and several articles recount Cavar's ordeal of being locked alone in the cave for nearly 60 hours. He tried reaching his phone as far through the cave gate as possible, but he could not get a cellular signal. Cavar said he was confused and scared and licked moisture from the cave walls.

1. Bruce Bowman, Incident Report, 22 September 2017.
2. Katie Cox, "Indiana University student licked moisture off walls while trapped inside cave for three days," [www.theindy-channel.com](http://www.theindy-channel.com), 22 September 2017.
3. Kylee Wierks, "IU student survives 3 days locked in cave after group forgets him, forced to lick moisture from cave walls," [www.fox59.com](http://www.fox59.com), 22 September 2017.

**Comments:** While there were many contributing factors, this incident was triggered by Cavar's decision to leave the supervised group he was with and to try to find the other group on his own. With the benefit of hindsight, it seems easy to question the trip leader's decision to let him do this.

Large groups are difficult to manage underground. Opinions differ on what constitutes a large group. Many cave permits allow for only five participants per trip leader. Groups much larger than six may require additional per-

sonnel-tracking methods. Sign-in/sign-out sheets can be effective. Determining numbers by vehicle is valid only if an expectation is voiced and followed that no one changes vehicles.

Following this incident, Indiana University disbanded its 60-year-old caving club.

## 17 September

### Bill Clinton Pot, Tennessee rockfall, injury and aid

Marion Smith (75), Terry McClanathan, and Shawn Hogbin spent a Sunday exploring pits in Van Buren County including Bill Clinton Pot, a 66-foot-deep pit. Hogbin descended out first, and McClanathan ascended next while Smith waited at the bottom. Although the bottom of the pit is only 15 feet in diameter, the cavers felt there was no concern for rockfall in this particular pit. McClanathan ascended about 40 feet when his foot brushed a small stalagmite on a ledge. The stalagmite was not firmly attached and McClanathan shouted "ROCK!" as it began to fall. Before Smith could react, the stalagmite struck him on the head.

McClanathan descended and found Smith with his helmet still on, but Smith was bleeding from his left ear, he was in great pain, and he felt dizzy. Hogbin left to summon help while Smith and McClanathan waited at the bottom of the pit. After a few hours, Smith was getting cold and decided he may be able to climb out. Most of the excess rope used in rigging the pit was at the bottom of the pit, so McClanathan climbed out and rerigged it so that Smith could be lowered if he had difficulty ascending. Smith climbed out, but negotiating the lip at the top of the pit exhausted him. Other rescuers showed up at this point and carried him off the mountain. Smith was transported to a local hospital and then flown to Chattanooga. He was diagnosed with a lower left temporal skull fracture and he spent several days in the hospital.

1. Terry McClanathan, Incident Report, 6 November 2017.

**Comments:** Even caves with minimal rockfall danger carry the risk of a dropped pack or carabiner. Some pits have no safety zone at the bottom. In these cases, it is sometimes better just to visit the fall zone one at a time, returning to the safety zone at the top before the next caver enters.

In his report, McClanathan says, "What can I say? Marion and I can claim over a century of experience between us in thousands of caves, some of which are among the most challenging caves in the country. Was it just our time? Treat the simplest cave with the same respect that you would a difficult one, and be just as careful on your multi-thousandth cave as you were on your first."

## 6 October

### Solution Rift, Tennessee stranded, aid, no injury

At the annual TAG Fall Cave-In event, Kyle Lassiter (26) asked several cavers for information on doing a pull-down trip through Solution Rift. The next day, Lassiter and

four other cavers prepared for a five- to eight-hour trip involving eight pits and several thousand feet of crawling. No one on the trip had been to the cave before, but they all felt confident with the trip details they received.

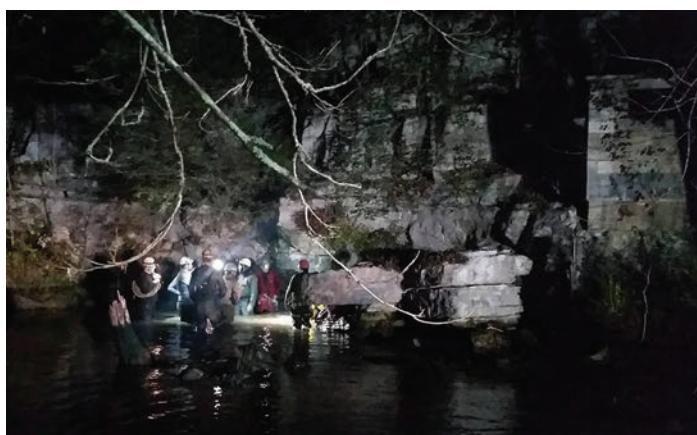
The group received permission from the landowner to enter the cave, and they were underground by 1:00 p.m. Eight hours later, they reached the last room of the cave. They knew this was the final room from the presence of a concrete dam that was said to be only 100 feet from the spring exit. The group could not find a way out of this room, which contained an organic debris-filled sump. Weather in Tennessee had been dry for several weeks, and no one, including the landowner, had given any indication that the spring entrance may be flooded. The group had not checked this entrance themselves before entering the cave.

Lassiter's group decided to wait for help as they could not retrace their steps, having pulled the ropes down behind them. They were all wearing wetsuits, and they had extra food and water, and one emergency blanket.

When cavers at the TAG Fall Cave-In noticed that the group had not returned, they organized a rescue. Local authorities were contacted as well, but cavers arrived on scene first. Jason Hardy led rescuers to the upper entrance to begin hard rigging the cave's pits. Kelly Smallwood led a team to the lower spring entrance. Smallwood's team immediately saw that two large beaver dams had flooded a large portion of the valley, including the cave's lower entrance. The upper entrance rescue team was called to assist and the two teams began working on breaching the beaver dams. At 4:00 a.m., the cavers in the cave noticed water levels receding and were able to make voice contact with those outside. Thirty minutes later, they were able to exit the cave.

1. Kyle Lassiter, Incident Report, 10 October 2017.

**Comments:** Any planned through trip—especially a vertical pull-down through trip—carries an extra degree of stranding or entrapment risk over an out-and-back trip. It is often prudent to examine the lower entrance before entering the upper one. Some through-trip caves require pre-rigging at the exit, or entering it to scout for obstacles like log jams or ice plugs.



Rescuers work to access a caving group stranded by a flooded entrance in Solution Rift. Photo by Kelly Smallwood.

After the event, Lassiter learned that beavers had been known to cause flooding in the area, but there had been no mention of this in the Tennessee Cave Survey's narrative of Solution Rift. There is now.

### 13 October

#### Bisaro Anima, British Columbia, Canada other, injury, no aid

On the first day of a five-day expedition, six cavers descended into Bisaro Anima. One 300-foot pit, called The Black Watch, is rigged with multiple rebelay. After descending this pitch, Christian Stenner (37) noticed pain in his left wrist. The pain got worse and continued for the duration of the expedition, but was managed with ibuprofen. Stenner received medical attention six days after the injury. The diagnosis was a sprain that required physical therapy and a wrist brace for three weeks.

1. Christian Stenner, personal communication, 30 October 2017.

**Comments:** In the course of strenuous activity, body parts can sometimes become strained or malfunction for no apparent reason. Seek medical attention as soon as possible after injury. Anti-inflammatory medication can help with pain management and improved outcomes.

### 16 November

#### Actun Tunichil Muknal, Belize fatality, medical issue

An American tourist died while on a guided trip in Actun Tunichil Muknal. Madhukar Jiggini (68) of California was touring the cave with his wife when he collapsed. He was rushed to a hospital where he was pronounced dead. The cause of death was not reported.

1. Michelle Sutherland, "American doctor collapses and dies while on tourist adventure," [www.reporter.bz](http://www.reporter.bz), 17 November 2017.
2. BBN staff, "American doctor dies while crossing the river at ATM Cave site," [www.breakingbelizenews.com](http://www.breakingbelizenews.com), 17 November 2017.

### 24 November

#### Grunge Plunge Cave, Tennessee exhaustion, aid, no injury

Four cavers entered Grunge Plunge Cave to survey and attempt a dome climb. One caver (22) was advised against wearing a wetsuit but chose to do so anyway, fearing he would get cold while belaying the dome climber. Grunge Plunge is a deep cave with over 40 rope drops. The caver wearing the wetsuit eventually became overheated and in time stopped sweating. After pushing leads at the 15<sup>th</sup> drop, he was noticeably dehydrated and exhausted. He had also forgotten his food in a vehicle and had brought only one quart of water. He and his partner started to exit the cave and found a note along the way that the other two cavers were already heading out.

At 1:00 a.m., they were moving slowly and had

made it only to the seventh drop. Approaching their out time, the stronger caver decided to try to exit on his own, leaving the exhausted caver to slowly keep making his way toward the exit. Unfortunately, the already exhausted caver got lost in the breakdown and stopped to take a nap. When he did not emerge by 5:30 a.m., two of the original four cavers went back in to find him. The exhausted caver was located at 9:15 a.m., but he was too weak to move. After some food and water, though, he was able to continue and emerged at 12:30 p.m.

Local authorities and other cavers had been notified of the situation and put on standby by the morning of 25 November, but the patient emerged from the cave before they were deployed.

1. Scott McCrea, Incident Report, 7 December 2017.

**Comments:** It is usually best to wear whatever the cavers that know the cave tell you to wear. This caver was warned not to wear a wetsuit and did so anyway. Fortunately, he was able to be revived with some food and water and did not require evacuation.

A caver who is already exhausted and having difficulty should not be left to travel alone. His stopping to take a nap may have prevented a serious accident.

### 28 November

#### Crevasse Cave, Nevada difficulty on rope, no injury, no aid

An experienced female caver (mid-30s) was the first in a group of seven to rappel into the 40-foot entrance pit of Crevasse Cave. About 15 feet down, she called to her group that her hair was caught in her rack. She was able to put her upper ascender on the rope and stand in her foot loop, but she was still unable to extricate her hair from her rack.

Another rope had already been rigged at the top as an approach line, and although it didn't reach the bottom of the pit, it was long enough for Gretchen Baker to rappel down to assist. Baker used her cowtail to connect into her friend's maillon and help her friend onto a narrow ledge. With the entangled caver clipped into Baker's cowtail, and with her upper ascender still on rope, it was safe for Baker to help remove her friend's rack and untangle her hair. After putting her rack back on the rope, the caver was able to complete her descent without further incident.

1. Gretchen Baker, Incident Report, 29 November 2017.
2. Gretchen Baker, e-mail communication, 13 December 2017.

**Comments:** Even without a second rope, this incident would have been quickly remedied. The first rope had been rigged with a locked-off Munter hitch with the extra rope length left at the top, so the caver could have been lowered to the ground. At the time, the second rope was determined to be the quicker solution. Rigging a mainline with a Munter hitch is often referred to as contingency rigging. For more information on contingency rigging, see Gretchen Baker's feature article in the last edition (2015-2016) of *American Caving Accidents*.

## 1 December

### Valhalla Cave, Alabama

#### equipment problem, aid, no injury

On 1 December, a group of cavers from Indiana drove to Alabama for three days of camping and caving. After visiting one popular pit, they drove to Valhalla Cave. They had received a permit from the Southeastern Cave Conservancy, Inc. for camping and caving on the property. They arrived at the campsite after dark and found another vehicle already parked there. The vehicle did not show any evidence it belonged to a caver, such as NSS or bat stickers, so the cavers assumed it belonged to a hunter who would be returning at any time.

The next morning the vehicle was still there. The cavers took their time preparing and eating breakfast and organizing their gear. The first cavers arrived at the entrance pit at 11:30 a.m. and were surprised to see two ropes rigged to a tree, going down into the cave. One rope was a black 7-mm dynamic cord, the other was what appeared to be an old, approximately 2-inch-thick, white sailing rope.

Joe Kinder yelled down into the pit, "Is there anyone down there?"

A response, "Yes!"

"Are you Okay?"

"Yes!"

"Are you attached to either of the ropes?"

"No!"

The cavers then told the person below to stand clear of the rockfall zone so that they could lower another rope. Once this rope was rigged, Elliot Stahl rappelled into the cave, taking an extra set of vertical gear with him. The man he found at the bottom, Jonathan Brown (early 20s), appeared to be unhurt, but Stahl requested that Melissa Fitzpatrick join him to confirm that Brown was well. Stahl also requested she bring down a helmet for Brown. While Fitzpatrick got ready to descend, Stahl suggested that the cavers up top pull up the black rope. Once the rope was pulled up, the cavers saw that two Jumars were attached to the rope and one of Brown's shoes was still in a foot loop.



Cavers arrived at Valhalla Cave on 1 December 2017 to find the 227-foot-deep entrance pit rigged with an old sailing rope and a 7-mm accessory cord. Photo by Joe Kinder.



Joe Kinder and Bart Bridge rig access and SRT ropes in order to assist a man stranded in Valhalla Cave. Photo courtesy of Joe Kinder.

Fitzpatrick took the shoe, food, water, and the extra helmet with her into the cave.

While Stahl and Fitzpatrick helped Brown put on vertical gear and instructed him on how to ascend with it, the other cavers rigged a second rope and began to pull up the sailing rope. The sailing rope was "extremely heavy" and required the whole team to assist. Stahl then ascended one of the ropes next to Brown who ascended the other rope. They reached the surface at 12:55 p.m.

Through questioning, the cavers learned that Brown had entered Valhalla Cave on 1 December in order to make a video to audition for the *American Ninja Warrior* television show. He had planned to rappel on the black cord using an ATC belay device, then climb out hand-over-hand on the sailing rope. Brown's first error was that he thought he was entering Neversink, which is about 150 feet deep. His black cord was 300 feet long but the sailing rope was only 150 feet long; Valhalla's entrance pit is 227 feet deep.

In his report, Stahl says, "Once Brown saw the white line was short, he rappelled to the floor and attempted to climb up 'Texas' style on the black line until he reached the white rope. He got some distance off the ground and his knot to his upper ascender slipped or came untied and he went into a heel hang. He managed to get back down to the bottom. He then belayed himself up the black line with the ATC while free climbing to a ledge 50 feet up. There he spent the night, realizing he still could not reach the white rope. The next morning, he rappelled down the black line and drank water from the falls at the bottom slope of the pit. He had no food with him."

1. Joe Kinder and Elliot Stahl, Incident Report, 4 December 2017.
2. Joe Kinder, e-mail communication, 7 December 2017.

Comments: The cavers enlightened Brown on proper caving equipment and techniques, then escorted him off the property.



When cavers removed the 7-mm accessory cord from the Valhalla Cave entrance pit, they found two Jumars and a shoe attached to the cord. Photo courtesy of Joe Kinder.

### 9 December Pentagon Pit, Missouri other, no injury, no aid

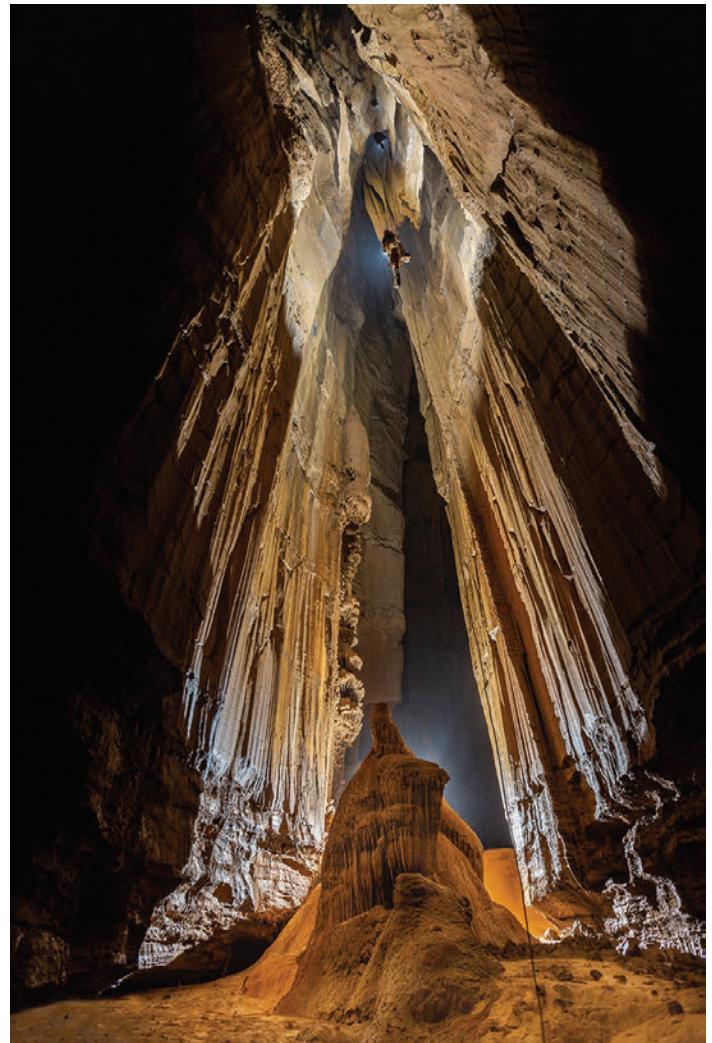
Chad McCain, Alex Litsch, and Cody Brooks planned a day of surveying and bolt climbing in Pentagon Pit. They rigged the entrance pit the way they had on previous trips, by first tying to a large oak tree located 30 feet away from the pit. At the lip of the pit stood an 8-inch-diameter hickory tree. It had died earlier that year but still had its bark and looked solid. They girth-hitched two Spectra slings about 5 feet above the lip of the pit on the hickory tree. A butterfly knot in the mainline was clipped into the slings. This gave them an approach line to the pit with a rig point high enough that they could rappel or ascend right past the lip. Slack remained in the mainline between the two trees to make transitioning from the climbing rope to the traverse line easier.

At the end of the trip, McCain ascended first. Thirty feet up, he heard a loud pop, followed by movement in the rope. He then dropped about 6 feet and portions of a tree top came crashing down the pit. McCain continued to climb slowly. When he was within 20 feet of the top, he could see the hickory tree lying across the pit with the butterfly rig point 6 feet out from the edge. The section of rope between the two trees was now "as tight as a guitar string." He "crossed this new obstacle" and made it out of the pit. He

pulled up enough rope to re-rig a tensionless hitch around the oak tree and Litsch and Brooks ascended out. McCain concludes his report, "We decided the best course of action was to kick the tree into the pit, as it was inevitable that it was going in. A few kicks and the tree fell in and wedged itself into the main part of the pit, giving us a new obstacle to work around on the next trip."

1. Chad McCain, "Pentagon Pit, survey #2," 24 December 2017.

Comments: As tempting as it may be to keep using favored rigging trees after they have died, the reality is that they each come with a unique expiration date that is not marked.



Caver's Cathedral, by Jacob Lieber, received a Merit Award in the 2019 Photo Salon.

# 2017 Cave Diving Accidents and Incidents

## 8 January Eagles Nest, Florida fatality, drowning

Charles Odom (55) died 8 January 2017 while diving with friends at the Eagles Nest cave in Weeki Wachee near Tampa, Florida. Odom indicated he was having trouble while ascending to the first of several decompression stops following a deep dive in the cave. He was using a Hollis Prism rebreather during the dive.

Odom was a relatively new diver at the time of this incident. He started his beginning open-water training with the owner of EZ Scuba Diving in Tampa in 2015. Much (and probably most) of his training was done in Eagles Nest. He was certified as a cavern diver by his instructor in Eagles Nest. He was not successful in a later attempt to get higher cave certification through another instructor.

Odom was one of four divers in Eagles Nest, but one of them had an equipment problem at the start and had to abandon the dive. The remaining divers completed the deep portion of the dive and began their ascent to the first decompression stop, which would have been in the area of the narrow chimney entrance. During the ascent, Odom was heard to make a choking noise while using his rebreather. He signaled a problem and switched to his backup open-circuit regulator. He soon lost consciousness during the first decompression stop, at which point his companions tried to help by holding his regulator in his mouth.

The remaining divers at first tried to bring him up with them, but at their 40-foot decompression stop they sent him to the surface so that first aid could be attempted there while they completed their required decompression stops. At the surface, the diver who had aborted the dive earlier saw Odom float to the surface and attempted first aid. Odom was noted to be cold and frothing at the mouth, with no sign of a pulse. Medical help arrived and pronounced him dead at the scene.

The medical examiner ruled that he had died from drowning, which is typical of most scuba fatalities since the triggering event is often hard to identify. The medical examiner identified atherosclerosis and obesity as contributing factors, but neither condition on their own would lead to the drowning. Odom likely had a medical event that led to his unconsciousness and subsequent drowning, but such an event is difficult to diagnose afterward. An examination of his rebreather showed that it was working properly.

1. Times staff, "Man dies at treacherous Eagles Nest cave diving site in Weeki Wachee," [www.tampabay.com](http://www.tampabay.com), 9 January 2017.
2. Associated Press, "Man dies while cave diving in Florida," [www.orlandosentinel.com](http://www.orlandosentinel.com), 9 January 2017.
3. John Adsit, Report for American Caving Accidents, 29 July 2019.

Comments: Eagles Nest is a deep and complicated cave system. Its upper structure resembles an hourglass: the upper basin has a narrow chimney leading down to a

large room (the Ballroom), with depths well beyond normal recreational scuba. From the Ballroom, passages extend to great distances and depths. Diving in this cave is considered to be appropriate only for highly trained and experienced cave divers. The National Speleological Society-Cave Diving Section (NSS-CDS) published a statement that there is no true cavern zone at Eagles Nest, signifying that training should not take place there and that anyone entering should be cave-dive certified. Odom did most of his training and certification testing at Eagles Nest. Following investigations, his instructor's certifications were stripped for not following protocols in Odom's training.

## 24 September Cannonball Cave, Missouri equipment problem, no injury, no aid

After attending an NSS Cave Diving Section workshop in Missouri, cave diver Forrest Wilson (72) and others planned a trip to dive Cannonball Cave. In a report, Wilson describes a problem he encountered:

"I had stuck my gloves in a pocket, because the lake is warm, so you don't need them until getting into the cave. I couldn't get them out when I got to the cave, so I dove bare-handed. Good thing too! I had a very strange problem. I was swimming along on a Sidekick rebreather with a custom side-mount mouthpiece. I took a breath, but it was just water. I noticed the DSV (dive surface valve) floating away, but I still had the mouthpiece in my mouth. I grabbed a bailout regulator, but I wasn't getting any air. I grabbed the other bailout regulator, still no air. I tried the purge button, and the regulator was working fine. I finally tried breathing while purging, and realized I was getting a little, but very little air. I tried coughing then breathing, and it took several attempts to get my breathing back to normal. I suspect if I had my gloves on, this all would have been a lot harder to do."

Medical doctor, and fellow cave diver Dr. Andy Pitkin, offered an explanation to Wilson for his incident: "It was your glottis, aka laryngeal inlet, aka vocal cords which were shut. The phenomenon is called laryngospasm, and most of us have experienced a mild form of it while eating when we accidentally inhale a piece of food and cough profusely. When that happens, you cannot talk for a few minutes, which is due to the residual spasm in the vocal cords. That is a minor version of what you experienced, and it can be severe enough to completely block the airway for several minutes in certain circumstances. It is triggered by foreign material (water, food, etc.) on the vocal cords and in the upper trachea, and it is the traditional explanation for the phenomenon of dry drowning, where the victim does not have any water in their lungs. When it happens during anesthesia (typically in children during emergence) the first line of treatment is to apply positive airway pressure which is essentially what you did with the purge button."

Comments: Wilson reports that he had failed to properly tighten the zip-tie that holds the mouthpiece to the DSV. When he started to inhale, he inhaled water, triggering the laryngospasm.

## 2017 Caving-Related Accidents and Incidents

### 29 May unnamed cave, Arizona fatality, drowning

A Utah man drowned when he tried swimming under a waterfall in order to enter a cave. A small cave is located behind Beaver Falls on the Havasupai Reservation. Mark Magelby (36) and his friends attempted diving under the waterfall to reach the cave. When he did not make it, Magelby's friend dove into the water to look for him but could not find him. Magelby's body was later recovered by authorities.

1. Associated Press, "Orem man drowns trying to enter cave located behind waterfall," [www.heraldextra.com](http://www.heraldextra.com), 30 May 2017.

Comments: Even the shortest-distance free sump dive must be evaluated with the utmost caution. Cave-diving equipment and technique is needed to safely negotiate any underwater passage besides the shortest duck-unders.

### 9 October unspecified sinkhole, Missouri fell into sinkhole, injury and aid

When an elderly, wheelchair-bound woman went missing from her nursing home, staff began a search of the grounds. They found her in the bottom of a sinkhole behind the facility. The local fire department and ambulance service were able to get her out and take her to a hospital for treatment of undisclosed injuries.

1. Robert Cox, "Nursing home patient rescued from sinkhole," [Republic-Monitor](http://www.republicmonitor.com), Volume 138, Issue 80, Page 1, 12 October 2017.

### 31 December unspecified cave, Georgia dog fatality

A family took their dog hunting on New Year's Eve in the Chattahoochee National Forest. At some point, the dog entered a cave and became stuck. The family tried to retrieve their dog but was unsuccessful. On 2 January, the family requested help from the Gilmer County Fire and Rescue Department. When the agency was unsuccessful, Georgia Department of Natural Resources was asked to help. Unfortunately, the dog died before it could be rescued.

1. Staff, "Dog trapped in cave for days dies despite several rescue attempts," [www.wsbradio.com](http://www.wsbradio.com), 3 January 2018.
2. Kristal Dixon, "Hunting dog dies after getting trapped in cave in north Georgia," [www.patch.com](http://www.patch.com), 4 January 2018.

Comments: Previous issues of American Caving Accidents contain many reports of dogs being rescued days, even weeks, after being stranded in a cave. This is our first report of a dog dying during a rescue attempt.

### Steve Hudson Award for Service to Cave Rescue

Steve Hudson (NSS 11444 RL,FE,OS) was a founder of the National Cave Rescue Commission (NCRC) in the late 1970s and supported it through the next four decades. He served as one of its first instructors, as the Southeastern Region Coordinator, as the National Coordinator, and as the Training Coordinator. Hudson owned and operated Pigeon Mountain Industries (PMI) and was an internationally acknowledged expert on rope and rope rescue. He used his experience to raise standards and practices in industrial rope access as well. He was a founder of the Society of Professional Rope Access Technicians (SPRAT) and an author of *High Angle Rescue Techniques*. Hudson served as Deputy Director of Emergency Services for Walker County, Georgia, and was a recipient of its Distinguished Service Award. He was also the recipient of the International Technical Rescue's Lifetime Achievement Award. Hudson donated countless hours to teaching rescue techniques to make cavers safer. In recognition of his lifetime of service, the National Speleological Society created the Steve Hudson Award for Service to Cave Rescue.

### Steve Hudson Award for Service to Cave Rescue recipients:

- 2016—Diane Cousineau
- 2017—Harold & Nancy Chrimes
- 2018—Don Paquette
- 2019—Rod Dennison

# 2018 Caving Accidents and Incidents

**1 January**

## Bisaro Anima, British Columbia, Canada other, injury, no aid

A team of nine cavers was moving gear deep into Bisaro Anima to support a dive at the terminal sump. On the second day underground, Christian Stenner (37) was shuttling a bag containing a dive cylinder in a crawling passage below Camp 1. While shifting the bag forward using his right hand, a tank valve that was protruding from the top of the bag hit Stenner directly on his left-hand ring finger, causing severe pain. Stenner continued to cave for the expedition, guarding his left hand and carrying lighter bags. The finger bruised and swelled noticeably, but it was kept without a splint in order to maintain some dexterity. First aid was limited to ibuprofen for pain management.

After emerging from the cave three days later, Stenner visited a doctor on the fourth day after the incident. An X-ray confirmed that the finger was broken. The finger was splinted for four weeks.

1. Christian Stenner, personal communication, 12 January 2018.

**Comments:** On remote expeditions, it can be difficult to decide whether to leave because of a minor injury or illness. The benefit of early care must be balanced with the risk of traveling in small groups and reducing the numbers of the overall expedition team. In some cases, there may be no real option to leave early. In general, it is better to seek definitive medical care earlier rather than later. Injuries that seem minor at the time can progress into more serious conditions if not treated promptly.

**7 January**

## Little Brush Creek Cave, Utah caver fall, injury and aid

Four friends from California entered Little Brush Creek Cave after reading about the cave on the Internet. The group had no caving experience, and their only gear was small headlamps. The three men and one woman down-climbed one pit. When they reached a second pit, one of the men (24) was willing to attempt to explore it. At an unknown distance down the 80-foot-deep pit, the man slipped and fell; he sustained multiple severe injuries to his arms, legs, and face.

Hearing their friend fall and shout in pain terrified the other three explorers and they were afraid to attempt climbing down to him or back up the pit they had already descended. Eventually, realizing that no one knew where they were and help would not be coming, one of the men determined that he would get himself out of the cave and call for help. He was successful, and he called 911 shortly after 9:00 p.m.

The agencies that responded had little to no cave-rescue experience, and they requested the assistance of local



After being extricated from Little Brush Creek Cave, the patient was hauled up two snow-covered slopes. Photo by Eric Richards.

cavers through the NCRC Rocky Mountain Region callout system. Cavers with rescue experience began arriving early the next morning, and more were put on standby.

The uninjured man and woman were hauled up the pit while other rescuers attended to the injured man. The patient was hauled up two pits and placed in a Stokes litter. This litter was then hauled through and out of the cave and reached the surface around 10:00 a.m. Once outside the cave, the patient was hauled up two vertical slopes to an ambulance waiting on the road. The ambulance drove a short distance and transferred the patient to a helicopter. Sixteen hours after his fall, the man was flown to a Salt Lake City hospital.



Rescuers carry an injured man through Little Brush Creek Cave. Note the ice stalagmites. Photo by Bonny Armstrong.

1. Bonny Armstrong, Incident Report, 8 January 2018.
2. Simone Francis, "California man rescued after 50-foot fall in cave," [www.good4utah.com](http://www.good4utah.com), 9 January 2018.

Comments: The young adults said they had met in a rehabilitation center. After completing their programs, they decided to go on adventures together to help support each other in recovery. They found out about Little Brush Creek Cave early on in their travels together. The cave is located at 8,000 feet elevation and has a temperature in the high 30s. The group survived the night underground in these conditions wearing only jeans and other cotton clothing.

### **21 January**

#### **Thunder Hole Cave, Alabama**

##### **lost control on rappel, injury and aid**

Six students from the Georgia Institute of Technology were on a recreational trip in Thunder Hole Cave. While rappelling a 30-foot-deep pit, a female student's rack became stuck at the lip. When the rack dislodged, she lost control of her rappel and could not regain control before hitting the ground. Several rescue agencies were alerted, but the woman and her group were able to self-rescue. The woman was transported to the hospital where she was treated for injuries to her lower leg.

1. Associated Press, "Woman rescued from cave in Jackson County, Ala," [www.timesfreepress.com](http://www.timesfreepress.com), 21 January 2018.
2. Anonymous, personal communication, 18 September 2019.

Comments: The American Caving Accidents committee has had difficulty obtaining information about this incident, but a lack of experience may have been a contributing factor.

### **4 February**

#### **Howards Waterfall Cave, Georgia**

##### **medical issue, no injury, no aid**

Seven cavers participated in an easy, horizontal trip to Howards Waterfall Cave. During a rest break, a 40-year-old man began experiencing pressure in his chest along with an irregular heartbeat, general weakness, and profuse sweating. The trip leader, Sam Moore, was notified, and Moore began formulating a plan, fearing these were the symptoms of a heart attack.

The patient had the most medical experience of anyone in the group, so Moore discussed with him what should be done in case his condition worsened, including CPR instructions and what to tell emergency services. Moore determined that the group should begin assisting the patient out of the cave immediately. The two fastest cavers were on alert to exit the cave quickly and call 911 if necessary.

The group made it out of the cave in less than half an hour and drove the patient to a hospital. The emergency room visit did not reveal any specific cause for the patient's symptoms.

1. Sam Moore, Incident Report, 7 February 2018.

Comments: In his report, Moore wrote, "Taking the time to formulate a plan and explaining that plan to the team was key in keeping everyone calm. Originally, the patient insisted that he work with a single other team member to exit the cave. However, the team leader informed the team that this is now a rescue situation, and that everyone will need to help to maximize the chance of success. Keeping a slow, steady pace was key to exiting the cave without adding undue risk to the patient. Keeping the patient's spouse by his side kept both of them calm, while everyone knowing that we could send two fast, capable team members out quickly to call for emergency services allowed everyone to relax and focus on moving the patient forward in a timely, deliberate manner."

### **12 February**

#### **Arch Cave, British Columbia, Canada**

##### **other, aid, no injury**

At 6:30 p.m., Alberta-British Columbia Cave Rescue received a report that a caving party of two was 30 minutes overdue from their check-in time for a trip into Arch Cave, Northern Vancouver Island. Local Royal Canadian Mounted Police were notified and gave the go-ahead for the cave rescue group to organize an initial response team (IRT) to investigate for an overdue caving party. The overdue party checked in at 7:15 p.m., just as the IRT was preparing to leave Port MacNeil, and the operation stood down.

1. Doug Munroe, Incident Report, 14 February 2018.

Comments: The cavers thought their callout time was later and were simply taking their time.

### **17 February**

#### **Wind Cave, Pennsylvania**

##### **stuck, aid, no injury**

Wind Cave in Martic Township, Pennsylvania, is a popular tectonic cave for cavers and the public. It is also known as Cold Cave, so named for the strong breezes blowing between entrances that make it colder than most caves in the state.

On 17 February, a group of 16 Boy Scouts and adults made it about 350 feet into the cave when one teenage boy (15) slipped and fell into a narrow crevice. The group tried for two hours to free him before calling 911 at 5:30 p.m.

The Rawlinsville Fire Department arrived and placed warming pads on the teen to keep him warm. Some rock had to be chiseled away until the teen could be extricated from his position around midnight. The teen was carried in a Stokes litter through the woods to a waiting physician and ambulance. Although he did not appear to have any injuries, he was taken to a hospital for a full evaluation. More than 60 people were involved in the rescue.

1. Tim Stuhldreher, "Teen boy rescued from wind caves in Martic Township late Saturday night," [www.lancasteronline.com](http://www.lancasteronline.com), 17 February 2018.

2. Steve Marroni, "Teen trapped in cave freed," [www.pennlive.com](http://www.pennlive.com), 18 February 2018.

**Comments:** Crack and crevice entrapments are serious situations. Because the entrapped individual is in direct contact with rock and losing heat by conduction, hypothermia becomes a real concern. In this incident, the rescue team warmed the patient and then began to move him after some cave modifications. In most crack and crevice rescues, the general idea is to capture each small bit of progress as you go. This can be accomplished with rope systems, chockstones or cribbing, or by placing rescuers beneath the patient.

### **24 February 17 Mile Cave, Idaho bad air, injury and aid**

A large group of Boy Scouts and their leaders started a campfire in 17 Mile Cave. The fire was reported to the Idaho Falls Fire Department, which responded at 2:40 a.m. Thirteen Boy Scouts and five leaders needed assistance evacuating the cave. Waiting ambulances treated some individuals for smoke inhalation, but no one required hospitalization.

1. Journal staff, "13 Boy Scouts evacuated from East Idaho cave," [www.idahostatejournal.com](http://www.idahostatejournal.com), 24 February 2018.

**Comments:** Building a fire in a cave is generally a bad idea. Fires mar the natural character of the cave and have led to many incidents such as this one. In some cases, fires in caves have consumed the available oxygen or created carbon monoxide and have led to fatalities.

### **2 March Raccoon Mountain Caverns, Tennessee other, injury and aid**

A man touring Raccoon Mountain Caverns twisted his ankle and needed assistance exiting the cave. Chattanooga firefighters carried the man in a Stokes litter until there was enough room for him to walk with assistance. It took nearly three hours to help him out of the cave and once out, he declined transport to a hospital.

1. Staff, "Chattanooga firefighters rescue man from cave," [www.timesfreepress.com](http://www.timesfreepress.com), 2 March 2018.

### **8 March Robber Baron Cave, Texas stuck, aid, no injury**

An 18-year-old female student from Robert E. Lee High School became stuck in Robber Baron Cave during a school field trip. The students were exploring small crawlways and narrow passages when the young woman was encouraged by others to try to squeeze into a crack in the floor. Unfortunately, she soon became wedged. Others in her group tried unsuccessfully to help her out, but they eventually called authorities for assistance. The San Antonio

Fire Department responded along with its Technical Rescue Unit. Rescuers took more than nine hours to free the young woman.

1. Elizabeth Ruiz, "Crews rescue teen trapped in cave near Alamo Heights," [www.ksa.com](http://www.ksa.com), 9 March 2018.
2. Sarah Duran, "High school student resting at home after rescue at Robber Baron Cave," [www.spectrumlocalnews.com](http://www.spectrumlocalnews.com), 9 March 2018.
3. Geary Schindel, e-mail communication, 1 May 2018.

**Comments:** This is yet another incident highlighting the serious nature of crack and crevice entrapment.

### **8 March Pettyjohns Cave, Georgia caver fall, injury and aid**

A group of 19 people entered Pettyjohns Cave to explore the stream passage and Bridge Room. One of the participants, a man in his 20s, slipped and fell, injuring his right knee at the Slippery Slope just past an area called the Pancake Squeeze. The Walker County Cave and Cliff Team was first on the scene. Members of the Georgia DNR NW Region Cave and High Angle Team were conducting training in the area that day and responded as well.

The patient was located and medically assessed. He was 6 feet, 5 inches tall and weighed approximately 235 pounds. He complained of severe pain in his right knee. Rescuers decided to administer pain relief medication and help the patient to move slowly out of the cave with assistance from rescuers. Once the patient reached the bottom of a series of short climbs, he was placed in a SKED litter and vertically hauled out of that section of the cave. Two areas were rigged—both approximately 50 feet in length. The patient was out of the cave approximately three hours from when rescuers arrived on scene and five hours after the injury occurred. The patient was transported to Erlanger Hospital in Chattanooga where he was treated for his injuries. He is reportedly doing well and is back at work.

1. John Maddox, Incident Report, 19 March 2019.

**Comments:** Pettyjohns Cave has been the scene of many rescues and mock rescues. Local rescue teams are well-practiced in evacuating patients from this cave.

### **13 March Sótano de los Enríquez, Coahuila, Mexico equipment problem, no injury, no aid**

Five cavers participated in an expedition to Sótano de los Enríquez in March 2018. Shortly before the expedition, one female caver (25) ordered a new micro rack from SMC that arrived disassembled. She assembled the rack and hand-tightened the nylon lock nuts on the end of the rack.

In the cave, she descended several pitches that included four rebelay and three redirects and ended at a long gentle slope. Switching to a second rope, she descended a 15-foot and then a 150-foot pitch. At the bottom, she noticed an unusual shiny object on the cave floor. As she bent down

to pick it up, the bars slipped off her rack and fell to the floor. The object was a nut from her rack. The second nut was never found among the scree in the pit. The next day she returned and used a Munter hitch to make the same descents.

1. Ken Demarest, Incident Report, 19 March 2018.

**Comments:** This incident could have had a tragic ending. When unsure about new vertical gear or setting up a new device, the manufacturer is the best source of information. SMC recommends tightening the nylon hex nuts with a wrench. At the very least, consult other experienced cavers for their advice and a double check before using the equipment.

### 1 April Island Ford Cave, Virginia lost, aid, no injury

On Easter Sunday 2018, Ed Swepston and Mystik Miller were the only members of the Greenbrier Grotto who showed up for a planned trip to Island Ford Cave, a 1,500-foot-long cave in Alleghany County, Virginia. In the cave, Swepston and Miller heard people shouting for help. They continued on to find a group of five people in a room near the end of the cave. This room is 700 feet from the entrance and near the cave's terminal sump. They had been sitting in the room for three hours unsure of the way out. The group had helmets (some had bike helmets) but two of them were out of light.

Three routes lead from the room they were in to the terminal sump, which had confused the group. In one attempt to find the exit, the group had traveled in the correct direction, but they convinced themselves it was the wrong way and turned around, going back to "their room." Swepston and Miller led them out of the cave.

When they were all out, the group repeatedly thanked Swepston and Miller and offered to buy them supper and beer. Swepston said, "They were really nice people."

1. George Dasher, "A Cave Rescue," *The West Virginia Caver*, Volume 36, Number 3, page 14, June 2018.

**Comments:** You never know when your cave trip might turn into a rescue.

### 9 April Sistema Huautla, Oaxaca, Mexico flooding, no injury, no aid

Five cavers participated in a multi-day survey trip in the La Grieta section of Sistema Huautla. On the second day underground (9 April), Katie Graham and Chase Varner pushed leads in an area known as The Fracture of the Deep. They were returning to camp when they noticed that a creek, which they had rock-hopped across earlier, was now a raging, muddy river. Struggling to keep their footing and not be washed down-stream took considerable ef-

fort, but they eventually made it back to camp, where they joined the rest of their team.

On the third day, the team altered its objectives, as some passages were flooded. In camp, the team was already low on food. They had planned for additional cavers to be resupplying them, but those supplies had not come. By day four, the team was surviving on single power bars for breakfast and dinner.

On day five, Graham and Elliot Guerra-Blackmer attempted to exit the cave as originally planned. As they traveled toward the entrance, they encountered an unexpected sump. At first, they were confused as to how they had gotten turned around. They then realized that they were in the right place, but the passage was flooded.

They returned to camp to find that the rest of the team was still out exploring. Rations were still low, so they ate peanuts for dinner and tried to sleep. The rest of the team returned to camp early in the morning.

On day six, Graham and Guerra-Blackmer made another push for the entrance. The passages were still flooded, but there was just enough airspace that if they held their helmets out in front of them, they could keep their noses above water. Eventually the passage narrowed and they reached another sump. Dreading the thought of going back to camp yet again, Graham decided to dive under the water to see if it would open up just beyond. Her first attempt was unsuccessful. However, when she tried a second time, she surfaced into large passage that she recognized. Graham and Guerra-Blackmer exited the cave on 13 April; the other three cavers exited the next day.

1. Andrew Bisharat, "One of the deepest caves in the world is even bigger than we thought," [www.nationalgeographic.com](http://www.nationalgeographic.com), 7 June 2018.

2. Kathleen Graham, e-mail communication, 9 October 2018.

**Comments:** This incident highlights the importance of having a bit more food on hand than you are planning to need.

### 5 May Chontalcoatlán, Guerrero, Mexico 2 fatalities, drowning

Nineteen visitors wearing life jackets and two guides were touring Chontalcoatlán in Cacahuamilpa National Park. Reports state that two sisters (16 and 19) from the state of Mexico were swept away by the current and drowned. Their bodies were recovered the next day.

1. "Mueren dos hermanas en las Grutas de Cacahuamilpa," [nfl.com.mxwww.zocalo.com.mx](http://nfl.com.mxwww.zocalo.com.mx), 5 May 2018.

**23 June**  
**Convention Cave, Massachusetts**  
**stuck, injury and aid**

An unidentified man and his friend were "checking out" a cave when he slipped while leaning forward in the entrance. He pitched forward and became wedged between boulders in a head-down position. It took about two hours for local firefighters and a technical rescue team to free him. He suffered lacerations to his back and head.

Despite there being numerous caves in the area, the fire chief said that this is the first cave rescue he could remember in his 37 years of being with the department.

1. Andy McKeever, "Man rescued after getting stuck in Lanesborough Cave," [www.iberkshires.com](http://www.iberkshires.com), 25 June 2018.
2. Chuck Porter, e-mail communication, 22 October 2018.

Comments: The 200-foot-long marble cave was originally discovered during the 1979 NSS Convention in Pittsfield. It is described in an article in the Spring 1981 Northeastern Caver.



Rescuers work to free a man stuck in Convention Cave. Photo courtesy of the Lanesborough Fire Department.

**10 July**  
**Lava River Cave, Arizona**  
**caver fall, injury and aid**

A 44-year-old man fell and injured his ankle while exploring near the back of Lava River Cave, a  $\frac{3}{4}$ -mile-long lava tube. Multiple agencies responded, and more than 20 rescuers helped carry the man out of the cave.

1. Ponderosa Fire District, Facebook, 11 July 2018.

Comments: Lava River Cave is heavily visited, often by underprepared explorers. A caver with kneepads and gloves would likely be able to crawl out of this lava tube, even with an injured ankle.

**14 July**  
**Cedar Knob Cave, Virginia**  
**equipment problem, no injury, no aid**

While ascending rope in the Cedar Knob Cave entrance pit, Mark Hodge's (55) Singing Rock Digger harness separated where the right leg loop attaches to the harness. He was 20 feet up the tight, 34-foot pit when he suddenly dropped about 4 inches. He checked his upper ascender and Croll and didn't immediately see what the problem was. Using rebar that had been installed in the pit while it was being dug open, Hodge was able to climb out. He checked the rigging and decided to rappel back down the pit. As soon as he weighted the rope again, he realized that there was a problem with his harness.

Hodge reported that he had been using the harness for six years and had worn it on about 3,500 trips in this pit (the cave is on Hodge's property and has been an extensive dig project). Although he inspected the harness regularly,



After thousands of trips in Cedar Knob Cave, Mark Hodge's six-year-old seat harness failed while he was on rope. Photo by Mark Hodge.



Mark Hodge in Cedar Knob Cave at the location where his seat harness failed. He was able to use the rebar rungs to climb to safety. Photo courtesy of Mark Hodge.

the wear point was "partially hidden by those yellow buckle cover thingies."

1. Mark Hodge, Incident Report, 18 July 2018.

Comments: The "yellow buckle cover thingies" on this harness are nylon tabs that fit over the buckled part of the leg strap. Ironically, they are meant to prevent wear on the harness webbing.

### 14 July

#### Fossil Mountain Ice Cave, Wyoming

##### lost, aid, no injury

Three friends set out to do a pulldown through trip from Fossil Mountain Ice Cave to Wind Cave. They had enough information about the cave to know that they needed to rig a rope for ascending at the lower entrance. However, after the last rappel, they became lost and were unable to find the rope they had rigged.

One of the men had left word with his wife to call for help if she hadn't heard from him by 11:00 p.m. A search and rescue operation was initiated the next morning, and rescuers found the men just as they were exiting the cave. After stopping around midnight to rest and eat, the men had continued looking for the way out until they were at last successful.

1. Emily Mieure, "Men spend 24 hours in Darby Canyon caves," [www.jhnewsandguide.com](http://www.jhnewsandguide.com), 18 July 2018.

Comments: Famous in the pages of American Caving Accidents is the Fossil Mountain Ice Cave-Wind Cave through trip. This time, the team knew enough to prepare the exit, but then they got lost and couldn't find it. They at least knew enough to set up a surface watch, and in the end they were resourceful enough to find the exit on their own.

### 18 July

#### Eagles Nest, Florida

##### fatality, drowning

Said Marjane (20), an international student from Morocco, died at the Eagles Nest cave in Weeki Wachee Springs near Tampa, Florida. Eagles Nest is a deep and complicated underwater cave system. Its upper structure resembles an hourglass: the upper basin has a narrow chimney leading down to a large room called the Ballroom, with depths well beyond normal recreational scuba. The bottom of the chimney and the top of the Ballroom is about 70 feet deep. From the Ballroom, passages extend to great distances and even greater depths. Diving in this cave is considered to be appropriate for only highly trained and experienced cave divers.

Marjane and friends went to Eagles Nest for a freediving experience. Freediving is an activity in which divers descend below the water's surface without the use of scuba tanks or any other air source other than their ability to hold their breath. Marjane and friends arrived at Eagles Nest in the afternoon, and after completing several freedives over

the next few hours, Marjane told friends that he was going to attempt a new personal best for depth.

Marjane and another diver, Jacob Fernandez, descended through the chimney and into the Ballroom. Fernandez turned his dive around at 80 feet and returned to the surface through the chimney. The depth Marjane reached is not known. He did not make it back to the surface, and divers recovered his body in the cave the next day.

1. Ryan Gillespie, "Body of missing diver found at Eagles Nest in Hernando County, called 'Mount Everest' of underwater," [www.orlandosentinel.com](http://www.orlandosentinel.com), 19 July 2018.  
2. John Adsit, Report for *American Caving Accidents*, 31 July 2019.

Comments: Since cave-diving equipment was not used, this incident is not considered a cave-diving incident.

### 1 August

#### Gargantua Cave, British Columbia, Canada

##### other, aid, no injury

Two cavers were reported overdue from a trip in Gargantua Cave. Their callout time was 8:00 p.m., but by 7:00 a.m. the next day, they had not been heard from. Their vehicle was located at the trailhead but there was no other sign. An initial response team was dispatched to the cave. The cavers were found outside the cave on the trail with no injury.

The cavers had sent a text message via a SPOT satellite beacon to their callout person, as was the plan, the night prior. However, the message was not received by the callout person. There was no response to the text and the cavers had assumed the message was received.

1. Christian Stenner, Incident Report, 15 August 2018.  
2. Brett Wuth, Incident Report, 5 August 2018.  
3. Brent Arnold, personal communication, 3 August 2018.

Comments: The *American Caving Accidents* committee is aware of at least one other incident of a cave rescue being initiated after a confirmed "send" of a SPOT message without confirmation that it was received.

### 11 August

#### Fossil Mountain Ice Cave, Wyoming

##### lost, aid, no injury

Despite reports nearly every year of people getting lost in Fossil Mountain Ice Cave, an Idaho Falls couple thought that their hiking and rock-climbing experience would be enough for a successful through trip in the cave. Jessica (24) and Spencer (31) Christiansen reported that they had researched the cave online, but apparently they did not know about needing to rig a rope at the lower end of the cave to ascend out.

A video the couple released shows Jessica rappelling the first drop, which is covered in ice. In the video, she is wearing what appears to be rock-climbing footwear and no knee pads. Spencer can be heard saying, "...scoot down on your butt... let your knees get wet." The video shows

poor rappelling technique (including a slack rope at the edge and long, loose hair dangerously close to the rappel device) and suggests that the couple was not properly experienced for this trip. By the time the couple realized they were lost, they were already wet and very cold. They also attempted to climb a waterfall, believing that it may be the way out, but this only made them wetter and colder. They eventually consumed the remainder of their food, started burning their gear for warmth, and sat down to wait for help.

Fortunately, they had a surface watch and they were rescued 30 hours after entering the cave.

1. Lindsey Bever, "How an Idaho couple survived 30 cold and wet hours trapped in an ice cave," [www.washingtonpost.com](http://www.washingtonpost.com), 15 August 2018.
2. Video footage: <https://www.dailymail.co.uk/video/news/video-1745446/Idaho-couple-film-moments-trapped-ice-cave.html>

Comments: If you don't do anything else right, at least have a surface watch.

### **11 August Gear Cave, British Columbia, Canada other, injury, no aid**

A team of three cavers was surveying Gear Cave and attempting to connect it to Bisaro Anima. Vlad Paulik was digging and moving rocks to try to open a tight passage. While tossing a small boulder away from him, Paulik's right ring finger struck a sharp limestone projection on the wall while simultaneously sandwiching his finger between the wall and the boulder he was throwing. The resulting injury crushed the fingertip bone and cut significantly into the finger below the fingernail. Gear-marking tape was used to cover and support the wound while Paulik and team carefully exited the cave. On the surface, gauze was applied, and the finger was splinted against the middle finger for support until medical attention could be sought the next day. X-rays confirmed that the finger bone had been crushed, and six stitches were placed to close the open wound.

1. Vlad Paulik, personal communication, 12 August 2018.

Comments: Rocks are harder than fingers. Be careful out there!

### **31 August Main Drain Cave, Utah caver fall, injury, no aid**

On 31 August 2018, six cavers entered Main Drain Cave in northeastern Utah to support a cave-diving expedition. Their task was to haul more than a dozen cave packs full of cave diving gear from a sump, which had just been pushed, up many pitches to the entrance. Three pairs of cavers entered the cave between 10:30 and 11:30 a.m. Claire Gougeon and Amy Morton (43) were the last pair to enter.

Gougeon and Morton descended into the cave, maintaining a leisurely pace to avoid congestion with the two teams ahead of them. During their first hour of travel, Morton started experiencing a headache. The headache may have been due to Morton not being accustomed to caving at high elevation; Main Drain Cave's entrance is about 9,000 feet above sea level. Fortunately, there were several first-aid packs stationed along the main travel route for the expedition, and Morton took some Tylenol.

Gougeon and Morton continued, completing several rappels. Eventually they reached an 8-foot drop that was rigged for rappelling (although some cavers choose to use the rope as a handline). Gougeon took the rope and wrapped it around her arms and across her back for a double-arm body rappel. After Gougeon rappelled this way successfully, Morton wanted to try it also. Gougeon instructed her in the technique. Unfortunately, Morton slipped during her attempt and swung into the wall, hitting it with some force. She cried out, then slid down the rope to the ground with the rope still wrapped around her arms. Morton reported that she was in a considerable amount of pain and should probably exit the cave. As the two cavers began their ascent, Morton started to have difficulty breathing. For several hours, the two cavers slowly but steadily made their way out of the cave and down the mountain. Morton was driven to the nearest hospital, where she was diagnosed with a broken rib and a punctured and partially collapsed lung.

1. Claire Gougeon, Incident Report, 22 October 2018.

Comments: When wearing vertical gear, there is rarely a good excuse for handlining instead of clipping into a rope. If the pitch is exposed enough to warrant the friction of a body rappel and vertical gear is available, use the friction of the rappel device on your SRT system. Double-arm rappels are appropriate only for some slopes, they are not appropriate for vertical pitches. One-thousand feet below the surface is a significant depth for a self-rescue, and the cavers were successful. The effort to do so is even more impressive considering the patient's collapsed lung.

### **3 September unnamed talus cave, British Columbia, Canada caver fall, injury and aid**

A 50-year-old woman and two others were rock climbing in the Skaha Bluffs area of British Columbia when they entered a nearby talus cave. They had apparently planned to do a through-trip, but they changed their minds when they got to the lower entrance (which reportedly is tight and requires a challenging move to access). The group then turned around and tried to exit the cave via the upper entrance. The group had rigged a handline on a 16-foot pitch in the entrance fissure, but nobody had harnesses or helmets. They opted to ascend out via a route with a 25-foot pitch. The woman fell down this pitch and suffered serious head and upper-body injuries. Another member of the group down-climbed to assist her, and the third member

exited the cave and called 911 just before noon.

Search and rescue teams and the Alberta-British Columbia Cave Rescue Service arrived around 1:00 p.m. The initial first aid assessment was that the woman had upper-body and possible head injuries. Rescuers packaged the patient with heat packs, a vacuum bag, a spine board, and a SKED stretcher that was rigged for vertical lifting. Three short vertical pitches, continuously rigged, were followed by a 15-foot horizontal section where rescuers passed the stretcher across their laps around a 90-degree bend over an uneven rocky slope to the cave entrance at the bottom of a 30-foot-deep fissure. The patient arrived at the bottom of the fissure and was lifted out by helicopter long line (HETS) at 7:00 p.m. She was flown to a waiting ambulance at Skaha Bluffs parking lot, transported by ground to Penticton hospital, and then transferred to Kelowna hospital for treatment. While awaiting the HETS transport of the patient, the patient's uninjured companion was assisted out of the cave, and transported by helicopter offsite. The patient had been in the cave injured for eight hours.

1. Doug Munroe, Incident Report, September 2018.

Comments: Inexperience and improper gear combined to produce this serious incident.

## 2 October

### Beaver Creek Cave, Missouri difficulty on rope/ladder, aid, no injury

Beaver Creek Cave is described as a small, easy cave by local cavers. However, three people still managed to run into difficulty when one person could not climb back up a rope ladder at an 8-foot pitch. The man found climbing the ladder to be physically difficult and started having panic attacks. One of his friends went to call for help while the other stayed with him. Local firefighters were able to lift them both up the pit with a simple haul system.

1. Giacomo Bologna, "Firefighters rescue man out of Taney County cave," [www.news-leader.com](http://www.news-leader.com), 3 October 2018.
2. Jonathan Beard, e-mail communication, 12 March 2019.

Comments: It's all about perspective. A cave that is small and easy for some can be a panic-inducing nightmare for others.

## 5 October

### J-4 Cave, Pennsylvania other, aid, no injury

Authorities were contacted on 6 October regarding a college-age man who had gone to J-4 Cave the day before and had not been seen since. The man had planned to spend two days in the cave meditating. He had his friends drop him off at the cave with a sleeping bag, warm clothes, and food. For some reason, his friends became concerned and contacted the authorities before his planned two-day visit was up.

The Nittany Grotto was contacted for assistance and cavers served as guides for the search teams. The search teams entered the cave with information that the missing man was likely near the back of the cave; the subject was actually down a side passage, just 50 feet from the entrance. He heard the rescuers, but because they were not calling his name, he assumed it was just other people visiting the cave. When the communication team entered the cave, the subject heard them talking about "wires" and became concerned. He approached them and asked what they were doing. Surprised to find that they were there to "rescue" him, he exited the cave under his own power and agreed to be examined by EMS on scene before being released to friends.

1. Lauren Muthler, "Emergency response 'teamwork' leads to the rescue of a man from a Centre County cave," [www.centredaily.com](http://www.centredaily.com), 6 October 2018.
2. Paul Winter, Incident Report, 4 September 2019.

Comments: Having a clear plan with your surface watch can help to prevent unnecessary rescue callouts.

## 6 October

### Kennamer Cave, Alabama lost, aid, no injury

A group of seven Ohio cavers attending the TAG Fall Cave-In received permission from the SCCI to explore Kennamer Cave. The group, led by Joe Marchese (54) planned a through trip, entering through the upper "Dug" entrance and exiting through the lower "Orgy" entrance. Other members of the group included Sean (40s), Stephanie (40), Kara (39), Alexis (20), Anna (16), and Daniel (12). Marchese had explored the cave twice before, but the last time had been more than 10 years earlier.

The cavers originally planned to leave the Fall Cave-In site at 10:00 a.m., but due to issues signing all members of the group in, they did not set out until 3:00 p.m. They studied the map and discussed their plans with other cavers prior to leaving for the cave, but they did not take the map with them.

Once in the cave, the cavers proceeded without incident until they reached a 20-foot drop called the Vertical Crawl. Marchese recalled a short rappel near the end of the cave, but this drop did not look familiar to him, so he and the group spent some time route-finding in this area. Eventually, the cavers rappelled the Vertical Crawl and, thinking that they had descended the expected drop near the end, began looking for their way out. At this point, the cavers should have been looking for another drop, but they were not, because they thought they had already rappelled it.

Around 11:00 p.m., the cavers were growing tired, so they stopped to rest for a few hours. They were prepared with trash bags, emergency space blankets, and candles. At this time, Marchese and Sean decided to climb back up the Vertical Crawl and retrace their steps back to the upper entrance, and then re-enter the cave from the lower entrance to find the rest of the group.

At approximately 1:00 a.m., a call came in to the Huntsville Cave Rescue Unit (HCRU) from the Scottsboro-

Jackson County Rescue Squad for missing cavers in Kenna-mer Cave. The group had missed its callout time, and their vehicles were still in the parking area. The Chattanooga-Hamilton County Rescue Service (CHCRS) cave and cliff team was called in for support under a mutual aid agreement.

HCRU members formed a hasty team (Team 1), which entered the Dug entrance and quickly found Marchese and Sean on their way out. At this time, rescuers learned that the rest of the group was waiting with trash bags, emergency blankets, and candles near the Register Room. Team 1 escorted the two found cavers to the nearest communications team, which then reported back to Incident Command (IC).

Meanwhile, a second hasty team (Team 2), made up of HCRU and CHCRS personnel, entered the Orgy entrance and located the rest of the missing group above the 35-foot climb-down just before the Register Room. The remaining cavers were lowered down the 35-foot drop and escorted out of the cave through the Orgy entrance.

1. Anna Huffstutler, "Chattanooga Hamilton County Rescue Service helped rescue family from cave," [www.wrcbtv.com](http://www.wrcbtv.com), 6 October 2018.
2. Dan Mattle, e-mail communication, 12 May 2019.
3. Brian Krebs, e-mail communication, 9 September 2019.
4. Joe Marchese, personal communication, 11 September 2019.

**Comments:** Memory can be quite unreliable, especially after 10 years. Marchese attributes this incident to a faulty recollection of the cave and to not bringing the map into the cave. This was a group of capable and experienced vertical cavers, and the group was well prepared with food, water, equipment, and emergency supplies to keep them safe until they were found. The group left a callout time, which was honored by cavers back at the event site. The group was wise to stop to rest and not risk further incident by pushing past group members' physical limits.

## 10 November

### Shoveleater-Hellhole System, West Virginia medical issue, no injury, no aid

After a strenuous session of digging and pushing tight passage in the Rolling Thunder section of Shoveleater Cave, Mark Minton and Yvonne Droms started heading for the surface ahead of the rest of their team (Bob Alderson and Kurt Waldron). The area they were working in is 530 feet deep in the cave, down many rope drops, and at the end of a long, tight canyon. The many obstructions and small waterfalls cavers must negotiate are energy-sapping, especially when carrying a large pack. Once out of that canyon, Droms (66) started climbing up Papusha Pit, a 110-foot pit with a rebelay in the middle. The pit was wet due to high water.

Droms arrived at the top of the pit and was struggling to get her pack over the lip when she started feeling faint and her heart started thumping irregularly in her chest. She clipped into the anchor, removed her ascenders from the rope, and yelled "rope free" so that Minton could

start the ascent. She then slumped down, her vision went dark, and her heart continued to beat wildly and irregularly.

Droms and Minton decided at that point to wait for the other two cavers so that they could all travel out together. Droms had to take several rest breaks and required some assistance on the free climbs. At one pitch, the team was worried that Droms might have trouble while on rope. Waldron established an inline-traveling haul, a type of haul system that requires only one rescuer and minimal gear. After being hauled up this pitch, and thereby being doused in the waterfall, Droms began feeling better and was able to continue out with minimal assistance.

The following day, Droms was diagnosed with atrial fibrillation due to dehydration, exertion, and possibly a lack of electrolytes.

### 1. Yvonne Droms, Incident Report, 24 November 2018.

**Comments:** While caving, it is easy to get behind on fluid and nutrient intake. Many ailments seem to be curable with more water and food. It is fortunate that Droms had the clarity of mind to clip into the anchor when she began feeling ill. The inline traveling haul is a core small party assisted rescue (SPAR) technique that is easily built with a pulley and the patient's SRT gear. When strong SRT anchors are used, this system allows a patient to be lifted without the need to rerig anything at the top of the pitch.

## 20 November

### Actun Tunichil Muknal, Belize flooding, aid, no injury

A group of six tourists and their guide spent the night in Actun Tunichil Muknal when flooding prevented them from exiting. The group entered the cave at 2:00 p.m. At 4:30 p.m., the guide informed the group that the underground river had risen 6 feet since they entered. He instructed the group to sit down and conserve their lights. He knew that rescuers would come quickly if his group was not out on time.

Rescuers made contact with the group at 1:30 a.m. They brought the stranded tourists "snacks, water, and Tres Leches cake." The twenty rescuers then helped the group through swift-moving water and out of the cave. More rescuers were ready outside the cave with a fire to warm the group and a mile-long trail cut through the jungle to avoid the usual trail's many river crossings.

1. News staff, "Reports of a rescue at 'Actun Tunichil Muknal' Cave near Teakettle," [www.reporter.bz](http://www.reporter.bz), 21 November 2018.
2. Trip Advisor member, "Rescued after spending the night in the cave due to flash flood," [www.tripadvisor.com](http://www.tripadvisor.com), 30 November 2018.

**Comments:** Reports indicated that more than 5 inches of rain fell in about one hour in the mountains above the cave but it is unclear if the guide was aware of the storm. Once he was aware of the flooding, the guide kept the group safe by having them wait for the floodwaters to recede and for the rescue response that he knew would arrive.

## **24 November**

### **Huccacove Cave, Colorado**

#### **caver fall, injury, no aid**

Nine cavers attended a Thanksgiving weekend expedition to Huccacove Cave. On the first day, just before noon, one of the trip leaders lost his footing on The Ramp and tried to recover from the fall by grabbing a rock projection. This effort was enough to avoid falling down the length of the ramp, but the maneuver resulted in a dislocated left shoulder.

The injured trip leader was assisted down The Ramp to the floor of the Little Grand Canyon, where the dislocated arm was reset. This helped the patient to regain some mobility and the patient was able to assist in his own self-rescue.

1. Max Khaytsus, Incident Report, 26 November 2018.

**Comments:** Huccacove is a joint-controlled cave that has many tall, narrow, interconnecting passages with many drops and climbs and a 125-foot-long belly crawl. In his report, Khaytsus credits the good decision-making and ability to self-rescue to six of the trip's participants having had various levels of cave-rescue training.

## **30 December**

### **unspecified cave, Arkansas**

#### **caver fall, injury and aid**

A group of ten cavers, four from Arkansas and six from Texas, entered a cave in Newton County, anticipating a complete trip of 14 to 15 hours. The cave has a 70-foot vertical entrance pit, followed by difficult movement through various levels of tough passages. All ten were experienced cavers with basic vertical skills. The trip leader was highly experienced and knowledgeable about this cave. After 6.5 hours of travel, the group reached a location near the back of the cave with an overlook. To reach this overlook, they climbed a breakdown pile and crossed a 3.5-foot-wide gap known as the "Texas Step," which has a permanently installed handline.

Returning from the overlook, the cavers stepped across the Texas Step and started down the breakdown pile. At approximately 6:00 p.m., one caver (female, 28), slipped while stepping back across the Texas Step and fell 15 to 20 feet to the floor below.

It was immediately apparent that she had a broken upper left arm, possibly broken ribs, and a possible back injury. Later at the hospital her injuries were diagnosed as a dislocated left rotator cuff, a broken left arm, and a broken left pinky finger. Four cavers stayed with the patient to render first aid while the other cavers "sprinted for the entrance." They emerged at 9:00 p.m. and called local authorities as well as other cavers, who activated a cave-rescue phone tree.

Rescuers began arriving within an hour. A local caver who knew the cave well assumed the role of incident commander and coordinated the initial response. At 2:00 a.m. on 31 December, the Initial Response Team (IRT) of

four cavers went into the cave taking supplies and flagging the route to the accident site. A second team of four cavers entered the cave at 3:30 a.m. bringing more supplies. The IRT and second team joined together in-cave and arrived at the accident site about 7:30 a.m. Though it was 13.5 hours after the fall, the IRT found the patient to be in fairly good condition. She had been able to sleep, was mentally alert, and was able to stand up and walk. She was eager to get out of the cave. Rescuers used an elastic bandage to immobilize her left arm and gave her pain medication. The rescuers ruled out a back injury and determined that the patient could safely travel without the use of a litter. At 9:00 a.m., one caver from the IRT and three of the Texans who had spent the night with the patient began to travel toward the cave entrance. Shortly after 9:00 a.m., the patient began traveling toward the cave entrance with the remaining members of the IRT and one of the original cavers; this group was referred to as the movement team.

Between 10:45 a.m. and 3:25 p.m., two bolting teams, a communications team, a supply team, and a medical team with an EMT entered the cave. Meanwhile, unknown to the incoming rescue teams, the movement team was on its way out. Midway along the route between the entrance and the back of the cave, the cave divides into two extended, parallel routes that eventually rejoin. The movement team used the route that the IRT had flagged on its way in. The bolting teams, communication team, and medical team joined together in-cave and took the other route, believing that it would be better for evacuating a patient in a litter. The incoming and outgoing teams passed each other on the different routes without making contact.

Around 2:30 p.m., the county sheriff arrived on site and assumed the role of incident command. He allowed the ongoing rescue operation to proceed in the hands of the cavers who were conducting it.

Approximately 26.5 hours after her fall the evening before, the patient was raised to the surface in a Ferno litter and transported to the local hospital. The last of the rescuers in the cave emerged around 3:00 a.m. on New Year's Day.

1. Bill Bowden, "26 hours after fall, woman rescued from Arkansas cave," [www.arkansasonline.com](http://www.arkansasonline.com), 6 January 2019.  
2. Terry Mitchell, Incident Report, 30 January 2019.

**Comments:** In his detailed report of this incident Terry Mitchell says, "The mission was accomplished much faster than anyone expected, because the patient did not have any back injury, and she was able to move herself through the cave with assistance. She persevered and carried on despite her pain and immobile left arm." He also noted that communication between surface and subsurface teams was difficult. Communication is one of the most problematic aspects in cave rescue and should always be a major focus in any cave-rescue training event.

# 2018 Cave Diving Accidents and Incidents

## 20 January Eagles Nest, Florida fatality, drowning

Davin Brannon (53) and a friend were diving Eagles Nest with plans to go only as far as the Ballroom. As they entered the Ballroom, Brannon had what was reported as a "medical episode" and lost consciousness. His friend was able to bring him to the surface, but Brannon did not survive.

1. News staff, "Diver found dead at Eagles Nest cave diving site," [www.fox13news.com](http://www.fox13news.com), 20 January 2018.
2. Paul Guzzo, "Hillsborough diver who died in Eagles Nest Cave was adventurous but experienced," [www.tampabay.com](http://www.tampabay.com), 21 January 2018.

Comments: Unlike in dry caving, "medical episodes" that occur in cave diving often lead to death before the patient can be rescued.

## 16 June Sistema Sac Actun (Cenote Manatí), Quintana Roo, Mexico fatality, drowning

On 16 June, a diver died near Tulum, Mexico, during a Discover Scuba program that began in open water but resulted in one diver entering an underwater cave and being unable to exit before running out of air. Discover Scuba is a course designed to give non-divers a scuba diving experience in a safe environment. Under ideal conditions (clear water, no appreciable current), the course is taught by one instructor to no more than four students; two more students may be added if the instructor has an assistant. Throughout the course, students must be under the immediate control of the instructor or assistant. If conditions are less than ideal, then the student-instructor ratio must be reduced or the course canceled. In this incident, a group of 10 young men contracted with a local instructor who provided an instructional team reported to consist of one instructor and two assistants.

The site chosen for this dive was Cenote Manatí, a large sinkhole formed by the collapse of a long section of cave that is the outflow of the extensive Sac Actun underwater cave system in the Yucatan Peninsula. The cenote ends near the sea, with the water flowing underground from the cenote into a bay. This creates a siphon cave, meaning that the water in the cenote flows *into* the cave toward the ocean. Diving a siphon is dangerous because the current can impede or prevent a return to the entrance. Experienced cave divers know to use caution whenever entering a siphon.

On this day, the current was particularly strong due to recent heavy rains. A whirlpool was reportedly visible on the surface of the cenote near the entrance to the cave. The rains also reduced visibility to a reported three feet. These conditions were not suitable for a Discover Scuba class.

Shortly after the dive began, some students surfaced because of the poor conditions and quit the dive. The remainder completed their underwater tour of the area. When the remaining group surfaced, two students were missing. After a search, one of the assistants found the two missing divers struggling in the current by the cave entrance. One of them was able to hold onto the assistant and be pulled to safety, but the other could not hold on and was pulled into the cave by the current. The assistant took the first diver to the surface, but there was no attempt to enter the cave to rescue the second.

A team of experienced cave divers was called, but given the delay in their arrival, there was no hope of a rescue. They were unable to locate the body due to the poor visibility. The next day, a 10-person team of divers found the diver's body wedged in a crack in the rock and brought him to the surface. An analysis of the victim's equipment indicated that it was complete and functioning properly. It would have been possible for the diver to follow the flow of the cave and exit into the bay, but that exit was not visible, and he likely would not have known that it was possible.

The instructional team left early in the process and was not immediately identified. There are reports that the lead instructor did not enter the water and that the group may have been led underwater by only the two assistants. The local legal authorities were not immediately involved in the recovery, and no reports were made in local media. After an investigation, the contracting instructor was expelled by his credentialing agency.

Information for this report was provided by members of the team that recovered the body. They were not able to identify the victim.

1. James Coke, Jeff Clark, Kim Davidsson, Luis Leal, Alessandro Reato, Incident Report, undated.
2. John Adsit, Report for *American Caving Accidents*, 20 March 2019.

## 23 August Main Drain Cave, Utah equipment problem, no injury, no aid

David Moore and Jean Krejca entered Main Drain Cave on 22 August as divers for an expedition whose goals included pushing sumps. After dropping some gear off at an underground camp, the two made their way to the first sump, which they had dived on an earlier expedition. They spent most of the day at the first sump, unpacking and assembling dive gear. The difficult cave and its cold temperatures were hard on their gear and caused several issues including the failure of three high-pressure hoses, leaking tanks, a leaking buoyancy compensator inflator hose, and a malfunctioning tank valve. After their experience in the cave in 2016, Moore and Krejca were prepared for these problems and were able to solve most of the issues.

Entering Sump 1, the divers found that previous

flooding had damaged a dive line that they had installed two years earlier. Reestablishing a continuous line caused them to consume more gas than planned, but because they had their back-up tanks, they determined that they would be fine to continue.

Emerging from Sump 1, the divers carried their gear through dry passage to Sump 2. When they reached Sump 2, they were surprised to find that the pool was gone. Continuing on, they reached a third sump. Transporting their gear from Sump 1 to the third sump required traveling 1,000 feet of dry cave six times. They were ready to push the third sump by 8:00 p.m.

When they could not find a way on from the third sump, the divers decided that it was time to head back to camp. Krejca noted that her fingers were so cold that it felt like they were being slammed in a car door, thus the third sump was named Fingers in a Car Door Sump. The divers made several trips to transport their gear back to Sump 1. By then, Moore's dry suit gloves were leaking, and pieces of their regulators were not functioning properly.

As Krejca suited up to enter Sump 1, the zipper of her dry suit jammed and despite their best efforts, neither Krejca nor Moore could fix it. Her only option was to dive Sump 1 with a leaky dry suit. The sump is approximately 500 feet long and 80 feet deep, and the water is 38°F. Not only was the water dangerously cold, but the malfunctioning dry suit made it difficult for Krejca to maintain the proper amount of buoyancy. Fortunately, Krejca's physical and mental toughness, along with her experience in diving this sump, got her through the ordeal successfully.

1. Jean Krejca, "Main Drain Cave Diving 2018," NSS News, January 2019, Volume 77, Number 1, pages 7–11.

## 14 November

### Sistema Sac Actun (Cenote Calimba), Quintana Roo, Mexico

### 2 fatalities, drowning

On 14 November, two German cave divers died in the Sac Actun cave system near Tulum, Mexico, when they ran out of breathing gas. Diver 1 (47) was an experienced cave diver with extensive experience in the Mexican cave systems, including Sac Actun. Diver 2 (37) was experienced, but not as extensively. He had been in the area on one previous trip. The Sac Actun system is massive and complex, with many branching passages leading to a number of cenotes, or openings to the surface. The divers entered the system at Cenote Calimba and planned to return there for their exit, but for some reason they attempted to exit at Gran Cenote instead.

When they entered at Cenote Calimba, each diver wore two side-mounted 80-cubic-foot aluminum tanks (AL 80s) and carried a third AL 80 as a stage bottle. They also carried a video camera, which provided a clear record of much of their dive. Following common cave-diving practice, they used the stage bottles for the early part of the dive. They then clipped the stage bottles to the guideline when they were half full, and they planned to pick them up on

their return. The divers took 5–8 minutes longer to reach that distance than would be expected, likely because of their video work. This extra time meant that the stage bottles were deposited closer to the cenote opening than usual.

After depositing the stage bottles, the divers continued, following standard cave-diving protocols for making jumps, or temporary connections in the gaps in the permanent line, as they explored an area known as Much's Maze. They continued past Much's Maze until they reached their turnaround point and began the return to Calimba. Their return was routine and unhurried. They took their time to retrieve their jump lines, which they would not have done if they had been stressed. At the 93-minute point in their dive, everything appears to be routine, but at that point the video ends.

Shortly after the video ends, at about the 100-minute point, the divers apparently decided to reverse course and head for the Gran Cenote exit rather than Calimba. Terse comments written on their wetnotes indicate that they realized that they were in trouble with their gas supply and had to exit quickly. They elected to go to Gran Cenote, apparently assuming that it would be quicker to reach that exit than it would be to reach stage bottles they had left at Calimba.

Dive investigators are not clear on why the divers ran out of gas. They may have had made a navigational error, but evidence indicates that not enough time had passed for a serious error to occur. It is more likely that they realized that they did not have enough gas to make the exit as originally planned. This gas shortage could have been caused by an unexpected catastrophic gas loss, but later analysis of their equipment indicated no malfunctions.

Whatever the reason, the divers apparently headed for Gran Cenote with not enough gas to make the exit. The divers would not have had to reach Gran Cenote itself. Along the way is another cenote, Ho-Tul, a small and hard to spot cenote with no line leading to it. Because of a common cave-diving policy of having no permanent lines in view of a cave entrance, the permanent lines near Ho-Tul have large gaps, meaning that there was no permanent guideline along the path to Gran Cenote for a significant distance, and there was no guideline leading to the Ho-Tul Cenote. The divers would have been on their own navigating the last portion to Ho-Tul.

The large gap between the Calimba line and the Gran Cenote mainline at that point is called Paso de Lagarto. Diver 1 was found at the beginning of that gap with his mask and helmet removed; his primary dive light was found before that point. Both his sidemount regulator hoses were deployed, indicating that he had likely shared air with his teammate. Diver 2 was found at the end of the Paso de Lagarto gap, about 20 meters from the surface of Cenote Ho-Tul but past the Ho-Tul exit. His gear was intact. According to their computers, both divers perished at 127 minutes into the dive.

1. Kim Davidsson and Dr. Johan Isaksson, Incident Report, 22 February 2019.

2. John Adsit, *Report for American Caving Accidents*, 30 Sept. 2019.

**Comments:** Cave divers use gas-planning strategies to ensure that they have enough gas to complete their dives. Some of those strategies are discussed here.

**Rule of thirds:** Cave divers frequently use the rule of thirds in determining when to turn a dive around. The rule of thirds states that a diver uses 1/3 of the gas supply going into the cave and 1/3 returning to the exit, leaving 1/3 for emergencies. Because no dive is perfect, this is only a general guideline that is adjusted based on the circumstances. When diving in caves with negligible current, or when entering a cave going into the current, this rule is typically followed precisely. In contrast, when entering a cave going with the current, divers should expect to use more gas while exiting against the current and should turn the dive around before reaching the first third.

**Stage Bottles:** Divers may carry additional tanks, called stage bottles, to provide more gas. The most common usage is to start the dive breathing from the stage bottle until a certain pressure is reached, at which point the divers leave the stage bottles clipped to the line so that they can retrieve them when they are exiting the cave. If divers are using the rule of thirds with their main tanks, they will typically apply this rule to the stage bottles as well, leaving them with 2/3 of the gas for the exit. If divers instead use half of the stage for the entrance, they will turn the dive around at a fourth of their primary tanks to be safe with that lesser amount of gas left in the stage bottles.

In this incident, the current of the water is from Calimba to Gran Cenote, so under the rule of thirds, divers should turn the dive around before reaching the first third, as they will have more difficulty swimming into the current on their return. In this case, the divers had used half of their

stage bottles, so they should have been following the rule of fourths with their primary tanks. Because of the time they spent videoing, the divers were not as far as usual into the cave when their stage bottles reached half pressure. Leaving the stage bottles on the line at that point meant that the stage bottles were closer to the entrance and farther from the turnaround point of the dive than usual. If they had carried the stage bottles farther into the cave before dropping them off, the bottles would have been much closer when the divers realized that they were in trouble.

Whether they were planning to dive to fourths or thirds, the divers should have had enough gas to reach either the exit at Gran Cenote or their stage bottles near Calimba. The fact that they realized they were in trouble at that time indicates they had a serious shortage of gas. As there was no sign of equipment malfunction, the most likely explanation is that one or both of the divers had gone past his planned turnaround pressure, even though they must have been monitoring their gas when turning the dive around, and they were not in a hurry until well after that. Whatever the reason, the divers apparently decided it would be easier to exit with the current at Gran Cenote than go against it to their stage bottles.

Investigators cannot determine when the divers shared air, although the fact that Diver 1's hoses were still deployed suggests that they finished sharing air near where his body was found, as he likely would have stowed the hose while diving to eliminate the regulator dragging. Investigators speculate that they may have recognized that Diver 1 had more gas than Diver 2, that they shared air to make their supplies more equal, and that they separated at the point that the tank they were sharing was empty.

## 2018 Caving-Related Accidents and Incidents

### 10 February unspecified cave, Tennessee dog fell into pit

The Knoxville Volunteer Emergency Rescue Squad received a call about a coon dog named Tanner who had fallen into a pit. Luckily for Tanner, he was wearing a collar with a GPS tracking device, so his owner was able to locate him. The rescue squad's cave and vertical rescue team rappelled into the pit and hauled Tanner to safety.

1. Hayes Hickman, "Lost dog rescued from 30-foot-deep pit," [www.knoxnews.com](http://www.knoxnews.com), 12 February 2018.



The Knoxville Volunteer Emergency Rescue Squad pose with Tanner, a coon dog they rescued from a pit. Photo courtesy of KVERS.

### 12 February Bear Creek Cave, British Columbia, Canada fell into cave, injury and aid

A 23-year-old man and his girlfriend hiked to the Skutz Falls area to look at caves the man was curious about. He was standing on a rock at the edge of a sinkhole, trying to look down a pit, when he fell in. The pit is approximately 100 feet deep with several ledges and he may have fallen about half that distance. His girlfriend witnessed the fall

and reported that he "ricocheted" off the walls of the pit on the way down. She ran down the trail until she could get cell service, and she called 911. Meanwhile, the man, using a tree that had fallen in previously, was able to climb out of the pit and crawl to the trail. Other hikers found him and administered first aid.

A search and rescue (SAR) team arrived shortly thereafter. The SAR team assessed the patient and found

that he had fractures to one leg, a possible spinal-cord injury, and abrasions on his head, indicating a possible head injury. He couldn't feel his left leg from the knee down, and he had lost significant blood volume from a puncture wound at the site of a broken femur. The man was carried out, transferred to an ambulance crew, taken to a hospital in Cowichan, and then transferred to another hospital in Victoria, where he underwent extensive surgery.

1. Doug Munroe, Incident Report, 14 February 2018.

**Comments:** When looking over the edge of a pitch, a good practice is to get down low. Crawling out to the edge to look over is much safer than standing on the edge. Take extra care any time you are within one-body length (about 6 feet) of the fall zone.

### 26 March Carlsbad Caverns, New Mexico stranded in elevator, aid, no injury

A 17-year-old boy and two women (46 and 66) were riding the elevator down into Carlsbad Caverns when it suddenly stopped at a depth of 740 feet. The tourists used the elevator's emergency phone to call for help and were told that Park staff was aware of the situation and that help would arrive soon.

Members of the Carlsbad Fire Department and National Park Service staff rode down in a second elevator. They accessed the stranded tourists through the top of the non-functioning elevator and found them to be uninjured and in good spirits despite waiting nearly three hours for rescue. Using a ladder and safety harnesses, the three were assisted up and out of the disabled elevator car and across to the working elevator.

1. Adrian C. Heddon, "Carlsbad Caverns National Park elevator malfunctions, strands 3 visitors 740 feet underground," [www.currentargus.com](http://www.currentargus.com), 27 March 2018.
2. Adrian C. Heddon, "Stranded: Family rescued from Carlsbad Caverns elevator 740 feet underground," [www.currentargus.com](http://www.currentargus.com), 29 March 2018.

**Comments:** Carlsbad Fire Department and National Park Service staff train together regularly on elevator rescue.

### 10 October Ausmus Well, Tennessee 2 dog fatalities, fell into pit

Two dogs fell into Ausmus Well while on a walk with their owner. The pit is located 100 feet from a road and is 125 feet deep. The Knoxville Volunteer Emergency Rescue Squad responded but neither dog survived the fall.

1. WBIR Staff, "2 hunting dogs die after getting trapped in cave in Union County," [www.wbir.com](http://www.wbir.com), 11 October 2018.
2. Gerald Moni, e-mail communication, 3 March 2019.

### 27 October Sloans Valley Cave, Kentucky dog stranded in cave

On 27 October, a dog named Blossom chased a cat into Sloans Valley Cave. When a rescue team was unable to retrieve the dog, the distraught owner posted on Facebook, asking cavers for help. Two cavers responded to the request and were able to safely retrieve Blossom.

1. Bridgett Howard, "Dog stranded in cave for 10 hours," [www.lex18.com](http://www.lex18.com), 29 October 2018.

**Comments:** Nobody seemed to be concerned for what became of the cat.

### 26 November unspecified cave, Tennessee dog fell into pit

Another dog required rescue after falling into a pit. The dog had been missing for nearly two weeks before the local fire and rescue squad and an Animal Control Officer were able to retrieve the dog. The dog was reportedly muddy and hungry but otherwise in good health.

1. Staff, "Madisonville Fire-Rescue, MPD help dog out of cave on private property," [www.wate.com](http://www.wate.com), 26 November 2018.



An Animal Control officer carries a dog to the surface from an unspecified cave. Photo courtesy of Madisonville Fire and Rescue.



Hope Brooks emerges from a cave entrance in this humor category entry in the 2019 Photo Salon entitled "The Hike is the Worst Part." It earned an Honorable Mention for Ryan Maurer. I thought it a fitting end to our accident reports to note that many of our worst hazards in caving are getting to and from the cave. Happy Caving and Stay Safe!

# Creating a Safe and Educational Environment for Vertical-training Practice

## Kurt Waldron NSS 49042 and Bonny Armstrong NSS 43003

There are reasons new cavers should be trained above ground first in single rope techniques (SRT). Training above ground provides a controlled environment. Instructors are better able to see and communicate with the novice, rigging is more easily configured for lowering or rescue, and the consequences if something goes wrong are usually less severe. But accidents and problems can still occur even in a training session. It is therefore important that we discuss techniques that minimize the risk of incidents and accidents during training. This article will look at a few simple guidelines to help ensure your SRT-training practice is both safe and educational.

**Choosing a location** — The best vertical training seldom occurs in a cave. Training should take place in a controlled environment where you have good visibility and communication around the entire training area. Do not pick sites where the student can get too far away from you and can enter a dangerous situation. Choose a location that will minimize the hazards to movement of people who are not on rope. If the chosen location is at the top of a cliff, make sure that students can be more than a body length from the edge when they are not on rope. At the bottom, make sure there is some way for students to get out of the fall zone.

The environments most likely to provide ideal training include (but are not limited to) gymnasiums, warehouses, trees, and cliffs. Resourceful instructors have set up excellent training opportunities in a variety of other unconventional settings such as pedestrian bridges, a decommissioned elevator shaft,

and hay barns. If your location will have you physically separated from any of your students (such as when on a cliff), make sure that you have experienced people at the top and bottom that can help you with any problems that may develop.

A competent instructor can usually monitor two students simultaneously. The authors do not recommend that an instructor attempt to monitor more than three students on rope.

**Gear** — Assume that beginners do not have their own gear. At best, they may have only a helmet, gloves, and boots. Having a complete set of fully-functioning gear is important for the novice to get the most out of the training. Take the time to assemble a complete vertical kit that will fit the beginner properly. Loaning beginners old, worn-out gear that you no longer use may be inefficient or even dangerous. If you think the gear is no longer worth using, an inexperienced person probably shouldn't use it either.

Start your demonstration with your gear already on. Discuss what each piece is called and what its function is. Assist the beginner in putting on their gear. Take the time to adjust everything properly and be sure to explain how and why you are making those adjustments. Use component names such as Croll, upper ascender, footloop, etc., as opposed to "this thing" and "that thing," to help them become familiar and comfortable with the terminology. By now they are probably anxious to get on rope, but practicing putting on gear more than once is worth the time since beginners often struggle with this if they've only been shown once. Show the student how to perform a safety check of their gear.

Realize that students will probably learn from others who use different gear and techniques. The words "always" and "never" should be used only when appropriate. Explain concepts and techniques using critical thinking instead of rule-based thinking. An example of rule-based thinking is "Never use a carabiner to attach your rack to your D-ring." To encourage critical thinking try instead, "Using a small maillon to attach your rack will help prevent accidental cross loading and breaking of the carabiner."

**Rigging** — Because students sometimes encounter problems that leave them stuck on rope, rig all ropes such that they can lower the climber. The rigging must always be suitable to lower single-person loads. This will require the use of a Munter hitch or a rack. If two-person loads are likely, use a

super Munter or a 6-bar rack. Practice ropes should be long enough to lower a student who is near the top of the climbing rope. If the rigging will not facilitate safely lowering the student, have another plan to get them off rope. For example, a ladder will often allow the rescue of a stuck student.

Anchors should be considered carefully. Use "bomber" anchors that can withstand the stress generated by a student who is not moving smoothly or efficiently on the rope. Never use porch railings, picnic tables, vehicle bumpers, and so on.

The students are always watching, so be sure to always have good rigging habits even if they are not essential. For example, tie knots in both ends of the rope, even if not required. Always wear gloves when operating the rigging. Use simple rigging and keep it as close to picture-perfect as possible. Make sure the bights on your knots are small, the tails on the knots are the appropriate length, and use safety knots only when needed. Double-check all of your work for safety, especially that you lock all of your carabiners.

Never miss a chance to teach your students. Discuss the rigging with them and show them how to evaluate it for safety and efficiency. Encourage students to check rigging every time they get on rope; it is a good safety check as well as learning experience.

Teach students basic knots if they don't already know them. Recommended knots for beginners to learn are figure-eight on a bight, figure-eight follow-through, bowline, butterfly, double-fisherman's, and Prusik hitch.

### On Rope and Off Rope protocol —

Set a good example and create good habits by using these terms even in a gym. On Rope means: I am approaching the fall zone so everyone else should be clear. No other



Joel Flewelling trains the next generation of vertical cavers. Photo courtesy of Joel Flewelling



Vertical training at an NCRC event. Students work one-on-one with an instructor from a releasable rope. Photo by David Angel.



Each year, the NSS's Vertical Section offers a vertical training workshop at the annual NSS convention. This student is practicing rebelay under the watchful eye of Terry Mitchell. Photo by Gene Harrison.

command is needed, although some cavers like to follow with “rappelling” or “climbing” when they start traveling on rope. Off Rope means: I have removed my gear, I am out of the fall zone, the rope is properly placed, rope pads are in place, etc. A reply of “OK” should be given to indicate the on-rope or off-rope call was heard.

**Belay** — Using an extra rope for a belay can cause some problems: ropes can become tangled, a second rope may interfere with ascending gear, and it requires another person who knows how to operate a belay correctly. For rappelling practice, a bottom (fireman’s) belay can be used. The belayer should be attentive, experienced, and out of the rockfall zone. Especially with beginners who are nervous, demonstrate a bottom belay while they are on rope. For ascending practice, use a rope treadmill so the student is never very far off the ground. Placing a climber’s bouldering pad or gymnastics pad under the climber can add an extra level of safety.

**Nurture comprehension** — Encourage the student to verbally state their actions to multi-step procedures like rigging, changeovers, and crossing rebelay, and to state their thoughts when solving problems on rope. When possible, encourage students to explain concepts and techniques to one another. This allows them to internalize concepts and forces them to understand

what they are doing and more importantly, why they are doing it.

Avoid long monologues that contain excessive information. Tell the student what they need to know, when they need to know it. As the student internalizes skills, give them additional information. If the student understands what you asked them to do, let them try to do it. If you see them make a mistake, it is better to ask them questions that will help them realize what they are doing wrong instead of simply telling them what to do. In some cases, it is acceptable to let a student attempt a technique, fail, and then problem solve their way out of the mistake they made. Your decision about speaking up should be based on risk to the student, student frustration level, or time and effort required to fix the problem that will result.

**When is a student ready to do SRT underground?** — Basic skills should be mastered before novice cavers get on rope underground for the first time. These skills include: putting on gear and doing a safety check, ascending, rappelling, performing a change-over in both directions, downclimb-

ing on ascenders, performing a rappel test, understanding on rope/off rope commands, and a knowledge of basic knots. On vertical trips with beginners, bring extra rope or rig for contingencies, and have an appropriate ratio of experienced vertical cavers to novices.

**Some advice for new vertical cavers** — Although this article is written primarily for those teaching SRT, a certain amount of responsibility lies with the student. If anything seems unsafe or doesn’t feel right, stop and ask. A competent instructor will take the time to listen and discuss your concerns. Work with experienced cavers until you are proficient in SRT. Rushing into vertical caving can be dangerous for you and it can put others at risk. Accidents in caves not only harm people, but it can put cave access at risk for everyone.

Vertical-training practice sessions offer experienced cavers a chance to mentor the next generation of the NSS family. Any person interested in taking the time to learn caving techniques should be supported by other cavers in a friendly, encouraging, and most of all, safe environment.

## SOCIETY NEWS

### Cleveland Grotto Offers 2020 Science Grants

The Cleveland Grotto (NSS 005) will make available a total of approximately \$2000 in science grants for cave-related projects in early 2020. The Grotto anticipates making three to six grants of various amounts to bona fide research projects by members of NSS-affiliate grottos or to projects under the aegis of a college or university. Grants are not geographically limited.

The funds are available from the Cleveland Grotto Science Fund, which was endowed by Bob Danielson (NSS-26333L) and his wife Bev. The money is available to support research in geology, streams and water, biota, karst and other cave-related research projects.

Requests for equipment grants will be awarded mainly to institutions (schools, grottos). If an individual capital grant for equipment is made and no supporting institution is available to maintain the equipment after the project is completed, the equipment will become the property of the Cleveland Grotto.

Applicants will be expected to have their project output published in an official publication, preferably the *Journal of Cave and Karst Studies*, NSS News, an academic journal or other similar publication. For all

activities to be undertaken if there is any question regarding legality or access, the necessary permissions must be sought from all appropriate and potentially involved parties (landowners, government organizations, etc.) Fund monies are not permitted to be used for travel or in any way that is illegal, unethical, or objectionably dangerous. Awarding of grants and the amounts of each grant will be made at the discretion of the Cleveland Grotto Board whose decisions are final.

The application is available at [http://www.clevelandgrotto.org/ClevelandGrotto/Science\\_Fund.html](http://www.clevelandgrotto.org/ClevelandGrotto/Science_Fund.html). For questions or clarification contact Rich Kline, Science Fund Chair, at rkliner@gmail.com. Deadline for submission for the 2020 Grants is December 31, 2019. Awards expected to be announced early February 2020.

# CAVE CHRONICLES

Philip  
Rykwalder

## What have you learned from reading *American Caving Accidents (ACA)*?

I have studied ACA for many years and today in part gauge my danger level by a rescue team's ability to assist me. In another country or in a remote place, I use far more caution - a lesson I learned from ACA. It is an important read and a great topic!

James Wells

*American Caving Accidents* is the single most important caving publication anywhere. I'll never be able to directly assess which accidents ACA has helped me to avoid over the last few decades, but it has almost certainly saved a number of lives, maybe mine. Rather than a single lesson (don't do X), I think that reading and rereading ACA promotes an awareness of a wide variety of hazards in caving, and accelerates the learning process so not everyone has to learn about each hazard the hard way.

Sarah Richards

Lots. Honestly, ACA is one of the most valuable resources included with an NSS membership.

Philip Rykwalder

Don't put your head underwater!!

Daryl Greaser

Tie a knot at the end of the rope!! (Between ACA and Accidents in North American Mountaineering, this is \*far\* too common still!)

Allan Cobb

It sucks to have an accident in a cave.

Nicole Ridlen

Don't be a cave diver. Tongue-in-cheek, but I would say that reading ACA over the years has shown that a greater proportion of cave diving accidents are fatalities as opposed to dry cave accidents.

Chris Hudson

That I don't ever want to appear in it...again!

Myrna Attaway

Never go caving with Andy Zellner unless he brought a pizza along.

Martha G Bryant

Even experienced cavers can have accidents.

Jon Mnich  
A lot of incidents go unreported.

Yvonne Droms  
It has taught me that some very serious accidents have happened to cavers, and yet they have come out of it. This is what I will think of if ever anything really bad happens to me: that others have survived similar situations, and so I just need to hang in there, be strong, and survive it too.

Jeff Cody  
I have read everyone since I became a member back in 1983 and I can say I have learned more from caving accident reports than any single publication.

Kara Posso  
Your pack tether should have a locking carabiner.

Janice Tucker  
I learned that I can use it to talk people OUT of doing crazy things. I can make comments such as, "Think how stupid this will look on an accident report."

I learned to have people check my gear before getting on rappel.

Ginger Reddig  
From reading a search and rescue book that references the ACA, experienced cavers will make every attempt possible to self rescue to avoid embarrassment among colleagues. Inexperienced explorers are likely to respond to searchers' attempts to contact them, but experienced cavers may not respond until searchers are very close to avoid looking like they're yelling at nothing.

Linda Palit  
Anybody can have a problem or have an accident. The crucial element is to not make things worse by panic or making poor decisions trying to solve the incident.

Buford Pruitt  
The First Rule of Caving: Know your own limitations.

Scott McCrea  
ACA only works if we send in reports.

Roggie Haley  
...to be careful not to get manparts caught in an ascender!

Scott Linn  
Here's another vote for it being one of the best publications you can read as a caver.

Galen Falgout  
That more people should read them!

John Lyles  
I was in it once. I'm still alive thank you.

Kevin Manley  
That I don't want to be in it!

Galen Hekhuis  
Don't have an accident in a cave.

*The question was posed on the NSS community page on Facebook and respondents were asked for permission to print their answers here.*



**CFC 2019 selection has begun!**

Check 15492 for the National Speleological Foundation.

Federal employees, federal retirees, federal contractors, active, reserve and retired military, are able to participate in the Combined Federal Campaign.

Charity selection is through January 12, 2020.

CFC donations through the National Speleological Foundation go to the NSS Permanent Endowment Fund.

# UNDERGROUND UPDATE

Ian  
Reuter

## Cave Crawlers Gazette

Central Arizona Grotto

September 2019, Vol. 61, Number 9

While surveying **Grand Canyon Caverns**, cavers stumbled upon a hidden passage that, with a little hammer drill encouragement, allowed access to a room inscribed with signatures of early National Speleological Society members dating to 1960. The current survey data shows the cave at just over 4,000 feet long.

## The Carbide Dump

Blue Ridge Grotto

September 2019, Vol. 54, Number 9

Come late August, conditions finally improved enough for a dive of the downstream siphon in **McClungs Cave**. Aided by a large team of sherpas to haul their 250 pounds of gear into the deep recesses of the 18-mile long cave, Zeb Lily and Brian Williams dove the sump on the 31<sup>st</sup> of August. After traversing 160 feet and reaching a depth of 16 feet, the duo surfaced in **Maxwelton Sink Cave**, officially connecting the two major West Virginia caves. The joint cave system, which now stands at over 41-miles long, will be known as **The Great Savannah Cave System**.

The large borehole passage of **Maxwelton Sink** Cave's Echo River has been explored to its terminal sump, ending the direct upstream push in this section of the cave. However, several high leads, yet unexplored, are visible while traversing Echo River.

## IKC Update

Indiana Karst Conservancy

September 2019, Number 134

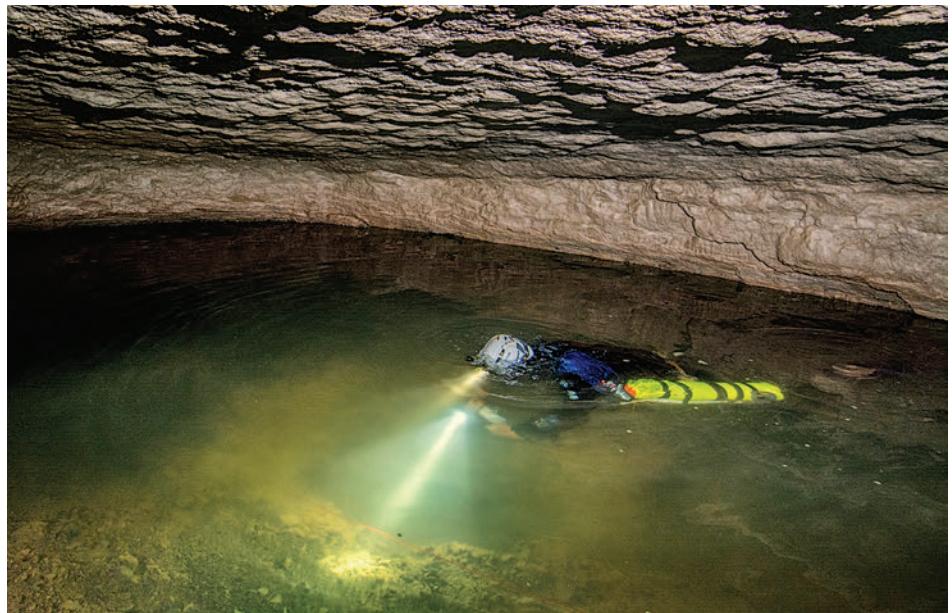
The Lowry Karst Preserve is the newest property to come under the stewardship of the Indiana Karst Conservancy. The 6.66 acre property contains the large scenic entrance to **Lowry Cave**, a mostly walking, 2000-foot long stream cave.

## Passages

Springfield Plateau Grotto

September 2019, Vol. 14, Number 3

Stephanie McCarty stumbled upon **Spargazer Pit** earlier this year, however, the depths of the pit went unexplored until recently. By the time cavers returned, the once narrow sink entrance had enlarged significantly, allowing easy passage to the formation-filled underground chambers. At the bottom of the 82-foot pit, booming 30-foot by 30-foot borehole takes off in either direction. Several large rooms and



Brian Williams in the McClungs sump. Photo by Nikki Fox.

around 700 feet of passage have been explored. The new discovery holds an incredible array of pure white flowstone formations, impressive see-through dog-tooth spar, and dozens of delicate soda straws.

## The Potomac Caver

Potomac Speleological Club

July-August 2019, Vol. 62, Number 3

Edgard Bertuat, Rick Royer and Scott Wahlquist spent an overnight camp trip in **Memorial Day Cave** exploring leads, eliminating one pit lead that dropped into known passage, and doing a 40-foot aid climb to a narrow canyon passage that was left unsurveyed.

Dropping into the 30-foot pit discovered on the last dig trip to Hammer Canyon in **Shoveleater Cave**, Mark Minton, Yvonne Droms and the rest of their excavation team found themselves on the bottom of a blind pit. Initial disappointment was overcome when a higher level lead, taking a significant amount of air, was discovered. While too tight to progress a significant distance, falling water can be heard down this canyon lead, indicating it is likely a way back to the stream passage that the Hammer Canyon dig has been following for several months.

## Sag Rag

Shasta Area Grotto

July-August 2019, Vol. 38, Number 4

Exploring Shasta County lava tube entrances, a group of local grotto members mapped into and documented **Pink Comb Cave** and **Loft Cave**, while also conducting

a biological survey. Both caves measured at over 250 feet long, with Pink Comb being the larger and more decorated of the two.

## The Region Record

Virginia Region of the NSS

Fall 2019, Vol. 32, Number 3

Despite a couple of false starts, Terry McClanahan finally got back to **Friars Hole's** Monster Caverns this past year to tape the room's waterfall drop, an aid climb accomplished by Bill Stone and Bob Jeffreys in 1980. With the rigging still in good condition, Terry ascended the drop and measured it at 103 feet from the lower bolt, effectively adding another 100-foot drop to West Virginia's ever-growing list.

## West Virginia Caver

West Virginia Grottos

October 2019, Vol. 37, Number 5

Probing the tight canyon lead above the floor of the blind pit discovered on the last Hammer Canyon dig in **Shoveleater Cave**, Yvonne and Mark were able to shave away the canyon walls and gain access to a climbable 20-foot pit that terminated on the edge of an approximately 50-foot deep dome-pit. The stream that was lost during the last dig remerged in this new drop, issuing from the pit's far wall. Without rope, the pit and a tall canyon lead, visible across and halfway down the pit, were left unexplored.

Ridgewalking with his friends at dusk amongst a large West Virginia karst field, Shawn Hogbin stumbled upon a set of sink-hole entrance pits. Descending the larger of

the two pits that night, the group discovered **Lost Innocence Cave**, a mile long, nearly 200-foot-deep system. The 6,000 feet of passage in the bottom cave is typically narrow and tall, with numerous switchbacks and interconnections. The Entrance Hall is the cave's largest and most impressive

passage. Over 100 feet long and 70 feet tall, the Entrance Hall holds a powerful waterfall, and can be accessed through either of the two surface pits, which measure 78 and 103 feet deep respectively.

Aid climbing in **Maxwelton Sink** led

to the discovery of Disappointment Pit, a 45-foot, blind pit, as well as several other nearby highly decorated areas that promise further passage. During the process of exploration, the largest free rappel in the cave system was rigged, a 60-foot drop into known passage.

## PRESIDENT'S MESSAGE

As 2019 comes to a close, the NSS has had another challenging year. We had an outstanding convention in Cookeville, Tennessee thanks to Maureen Handler and her outstanding staff. We also saw the production of the NSS Membership Directory. We have continued to experience an overall decline in membership in 2019. Part of this is the demographic trend across the nation. Most social and fraternal organizations are seeing a decline, but I also see a reemergence of student grottos such as the Aggie Speleological Society at Texas A&M. On the science front, we're seeing more and more research being conducted on caves and karst. Most notable are the excellent turnout for the Geological Society of America (GSA) karst sessions and the formation of the Karst Division at GSA.

We have also wrestled with transition of the NSS to the use of YM for our member-

ship software. This has come at a cost as we work out some of the bugs and move our membership database over. The old NSS Track had outlived its useful life and had many issues with ease of use, retention of records, etc. Hopefully, we will have solved some of our autorenewal issues with the software.

We have also transitioned the NSS from an Excel Spreadsheet accounting system to QuickBooks. As you can imagine, the NSS has a very complicated bookkeeping system with many challenges, from management of our members' dues, managing an NSS Convention, and numerous dedicated funds. Specifically, I want to extend a great appreciation to Gaylene Speaect, who has served for many years as the treasurer and under whose direction the transition to QuickBooks took place. Gaylene still serves as the Finance Officer for the National Cave

Rescue Commission. Gaylene stepped down as the NSS Secretary/Treasurer at the Fall BOG meeting. THANK YOU for your many years of service.

I also want to thank Mark Skove for his years of service as the Operations Vice President. This is also a challenging position, being responsible for the NSS's Headquarters building rentals and maintenance, supervising our wonderful staff, bookstore operations, information technology and the face of the Society with our web page.

The Society would not be where it is today without the dedicated hard work of its many volunteers and in particular, its officers. Thank you, Gaylene and Mark, for your years of service and for a job well done.

**Gerry Schindel**  
NSS President

NEWS &amp; NOTES

### The William L. Wilson and Diane C. Wilson Scholarship in Karst Science

**Administered by the Karst Waters Institute**

[www.karstwaters.org](http://www.karstwaters.org)

The **William L. Wilson and Diane C. Wilson Scholarship in Karst Science** recognizes the significant contributions of the late William (Bill) L. Wilson, who tackled some of the most difficult karst science questions in Florida and elsewhere through his consulting company, Subsurface Evaluations, Incorporated. To stimulate the development of new, energetic, motivated, and creative karst scientists and to remember Bill Wilson and his dedication to karst science, the scholarship was established by Diane C. Wilson in his memory. The scholarship includes a **one-time award of \$1,000**. The scholarship is open to any student who is currently enrolled in, or has been accepted into, a **master's degree** program at an institution of higher education in the United States. **This year's deadline for all applica-**

**tion materials is February 15, 2020.** Information on how to apply can be found at the Karst Waters Institute website (<http://>

[karstwaters.org/scholarship/](http://karstwaters.org/scholarship/)). Additional information can be had through email to Dr. Janet S. Herman ([jherman@virginia.edu](mailto:jherman@virginia.edu)).

## CLASSIFIED ADS

**SPELEOBOOKS.COM** 518 295 7978. Cave and bat gifts, books, clothing and jewelry. Prompt personal service since 1973.

**West Virginia Cave Books**  
[www.WVASS.org](http://www.WVASS.org)

If your Grotto or Region is looking for new caves to explore in the Virginia area, RASS can offer your group a place to camp in Bath County, VA. There are more than 100 caves within an hour drive. We support cave conservation and education. Contact Jason Hart at [JHARTCAVESVA@gmail.com](mailto:JHARTCAVESVA@gmail.com)

projects aligned with these goals. To receive a grant request application please email us at [rass-grants-committee@googlegroups.com](mailto:rass-grants-committee@googlegroups.com). Applications reviewed quarterly.

12

**New WV Cave Books:** Bulletin 20 Caves & Karst of the Culverson Creek Basin, WV by Lucas, Balfour, and Dasher. 336 pages, 364 caves, 208 photos, 80 maps. Color copy on USB drive. \$35 postpaid; Bulletin 21 Caves and Karst of Mercer & Summers Counties, WV by Schaer and Dasher. 186 pages, 226 caves, 131 photos, 62 maps. \$25 postpaid. WVASS, PO Box 200, Barrackville, WV 26559 [WVASS@PrehistoricPlanet.com](mailto:WVASS@PrehistoricPlanet.com)

12

The Richmond Area Speleological Society (RASS) supports cave conservation, education and research by offering grants to assist

**AD RATES:** Now based on the number of lines your ad takes up. It is a flat rate of \$3 per line. As a guide, a line holds 43-45 characters + spaces at our font and size. 10% discount for runs of 3 months or more. Payment must precede publication, but copy should be e-mailed to the editor ([nssnews@caves.org](mailto:nssnews@caves.org)), to reserve space. Copy should be received one month prior to publication date (e.g., by May 1 for a June issue). Make checks payable to the National Speleological Society and send to: At: NSS NEWS ADVERTISING, 6001 Pulaski Pike NW, Huntsville, AL35810.

December 2019

