

# Issues in Sump Rescue

By Michael A. Raymond

Imagine a typical weekend of exploring a river cave. After walking a half mile into your local cave, you and your porters assemble your diving equipment. You and your buddy then rappel down to where the water is, and your team lowers down your tanks. It takes you six hours to get to where exploration begins. You dive through multiple sumps and drag your tanks through small “dry” passages between them. You use ropes to ascend several waterfalls along the way. You can finally unpack your survey kit when one of you slips and breaks an arm or leg. How are you getting out?

Self rescue is almost always better than having rescuers come to get you. The number of cavers in the US, not to mention the world, who can perform a rescue in this type of environment is limited. If one of you leaves to go get help, it might be days before a rescue team is assembled and makes its way back through the sumps to the injured person.

Sumps are flooded cave passages where at least one end of the passage is within a dry cave. The exploration of major “dry” caves often requires the passing of at least one sump. In caves with rivers flowing through them, the lowest end of the cave is typically a sump that connects to a surface river. Explorers dive into the sump and then transition to dry caving once the sump surfaces within the cave.

Sump explorers need to be proficient cave divers and dry cavers. They need to wear or bring clothing and equipment that can operate in both environments. Scuba equipment experiences high degrees of wear and tear once in the mud and jagged limestone. Sump divers also need to be comfortable with long periods of underwater exploration in low to no visibility. Sump entrances and exits are often very muddy, leading to immediate silt outs. Many sumps also have no perceptible flow, which allows silt to linger in suspension.

Imagine, though, that the diving coordinator for the National Cave Rescue Commission (NCRC) has called you up to ask you to assist in the rescue of cavers stuck behind a sump. What should you expect? What equipment will you need? What training do you wish you had taken?

The NCRC is a chartered organization of the National Speleological Society (NSS). It exists to train individuals in cave rescue skills. It maintains regionally distributed caches of cave rescue equipment and lists of rescue-trained cavers. It provides these resources to rescue teams. It is not a rescue team itself. The NCRC’s volunteer instructors conduct several training events each year. These include weekend orientation sessions and weeklong classes. The latter include skills such as getting litters up and down cave walls, first aid, and incident management. NCRC-trained personnel assist with numerous cave rescues of varying severity each year.

Thankfully, rescues of the degree described at the start of this article are rare. It is not rare for cavers to get stuck behind sumps, though. Rain happens. Dry cavers who thought the weather would be clear return from a trip to find their exit barred by a flooded passage. Most of the time, the solution is to wait for the storm to end and for the water to recede. This may take a day or two.

In 2018 a group of six sump explorers was trapped in the Huatla system in central Mexico for sixty-nine hours. A freak storm raised the level of the water in the cave by thirty feet. They were separated from their diving gear. They huddled in place with a total of four candy bars, and eventually the water went down.

Temporary sumps sometimes take a long time to go down. If this is the case, the rescue team may have options to speed things up. If a river is feeding the sump, then the rescuers may be able to divert or dam the flow. They may also be able to use pumps to lower the sump. A critical factor before the trapped party begins its exit is whether they’ll still succeed if the pumps fail after they’ve started out.

Even if a sump is expected to be temporary, a rescue team may still want to send divers. The trapped party is likely to be hungry and very cold. Their lights are probably starting to go out. Sending divers in this situation is still usually the wrong decision. The rising water dislodges a lot of mud, and there is no permanent guideline. Route finding in essentially virgin cave in zero visibility is something that

some of us are unfortunately all too familiar with. It has significant risks and a low chance of success.

In the late 1970s a group went into Anderson Spring cave in Georgia while it was raining and got trapped when the exit passage flooded. A local high school student, who was only open-water trained, talked the incident commander into allowing him to take a look. He brought the group out one at a time on his octopus.

A year later, another group got caught in a cave in Kentucky. Steve Hudson and Forrest Wilson brought them in blankets, food, and water. A local coal mining company tried to pump the cave entrance dry, but only managed to let carbon monoxide into the cave, which was sucking air in at the time. Steve and Forrest got them to shut off the pumps. They then brought in diesel pumps, with less CO, and added a plastic air dam to keep fumes out. This lowered the water level enough for the group to swim out.

In 2004, a group of six British cavers was trapped in Cuetzalán cave in Mexico. They were well supplied and had radio communications with a surface support team. Persistent rainstorms thwarted their exit, and so cave divers were brought in to ferry them out.

The most difficult situation is when injured cavers are trapped behind sumps that will not and cannot go away. All cave rescues have many common elements. The injured need to be found, medically evaluated, and treated. Obstacles in the cave need to be bypassed. Communication between and management of the different task forces in the cave need to be solved. The injured person needs to be escorted or hauled out. And relations with the land owner and media need to be managed. As a specific type of operation, sump rescues do have their specific challenges.

When dry cavers ask about a cave passage, they'd like to know whether they can walk along it or whether they'll need to crawl or use ropes. If you are responding as a diver to a sump rescue, there are additional things that you would like to know. Water visibility, temperature, depth, and the presence and quality of a guideline will all affect your strategy. You can give these information requirements to the rescue management team to begin researching while you're getting other things ready. These factors will affect decisions such as whether to wear a wetsuit or drysuit and whether you'll wear the suit into the cave or put it on at the dive site. Crawling through limestone breakdown passage with your drysuit is a good way to tear holes in it, but you'll probably need to do so as you pass between sumps.

If you have a non-trivial distance to travel to the initial dive site, you'll want to use porters. A ratio of three porters per diver is a good start. Two porters will carry the two sidemount tanks. The other porter can then divide up with the diver the carrying of the exposure suit, regulators, lights, weights, etc. Do not forget to bring a wrench for

the DIN plugs in the tanks; the porters will accidentally pressurize them. Each person may end up carrying a bulky package weighing 30 pounds or more. There's no easy way to be gentle in a cave with items this big, so consider how you're going to pad delicate items. Also consider how you're going to clean the mud off the equipment when you start putting tight tolerance parts together.

At the dive site, you'll take over the operation from the dry cavers. In a well-developed rescue you can expect that they have run communication wire and a field phone to the dive site in order to stay in touch with the management team. They should use some type of meter to track the water height to see if it's changing. The banking may be eroding, so you may want a rope or other mechanism to ease getting in and out of the water. There should be someone tracking people who are entering the water and when. For the return trip, getting injured cavers out of the water and medically reassessed will be a priority, so you'll want to have space laid out and ready.

Getting rescue equipment through a sump is always a challenge. The equipment needs to be packaged in waterproof containers. These include dry bags for shallow sumps, and drums, and dry tubes. Getting the buoyancy correct will consume significant time. In one instance when the author did not have enough weight, once he got the package into the overhead he swam along upside down bouncing the package along the sump ceiling. This is another reason to think deeply about and acquire equipment for sump rescue well before one happens.

While you are working beyond a sump, it is important to keep the rescue personnel on the exit side informed. If you have several divers, you can use one as a runner to shuttle updates back and forth. They should have several slates or waterproof paper in order to take written messages. For long-duration rescues, communication wire can be run through the sump and a field phone connected. The management team will benefit from updates about patient status, estimated time of arrival at the sump, and information about needed equipment or personnel.

After finding injured cavers and starting first aid comes the task of getting them out of the cave. Hopefully you started considering whether and how to do this very early in the process. You should have the management team research the injured's in water experience. Are they experienced cave divers or do they not even know how to swim? If they've never scuba dived before, can you give them a thirty minute "discover scuba diving" class and swim them out with you? You should strongly consider not giving them a mask. When helping train new divers the author has found that students' mask clearing skills are the best determinate of whether they will succeed or fail overall. Do not let it even become an issue.

Getting an injured person onto a litter and transporting through a sump is still very much an open issue. In the

case of someone with a broken leg, once they're in the water you can ideally take them off the litter and tow them through. Be aware that splints and other medical packaging will change their buoyancy and trim. If the patient has to stay on the litter, you will need to decide whether to have them face up or down. A full face mask may help some patients and will be needed if the patient is unconscious.

If you are interested in assisting with sump rescue, there are a few next steps you can take. Forrest Wilson is the diving coordinator for the NCRC. Talk to Forrest, give him your contact information, and let him know your caving experience. Seek training and more experience. The NCRC offers high-quality and enjoyable training. Many NSS grottos are seeking sump divers to help push their project caves and offer a good chance to start or increase your experience.

As cavers, we need to increase our capabilities to perform rescues beyond sumps. Sump rescues of varying severity are not uncommon, and the most complex require extreme skill and effort. Good training is available through the NCRC. The easy caves have all been found. Increased proficiency in rescue will only serve the community as we push into tougher caves.

For more information, see <http://ncrc.info>. —Ed.



# DIVE OUTPOST

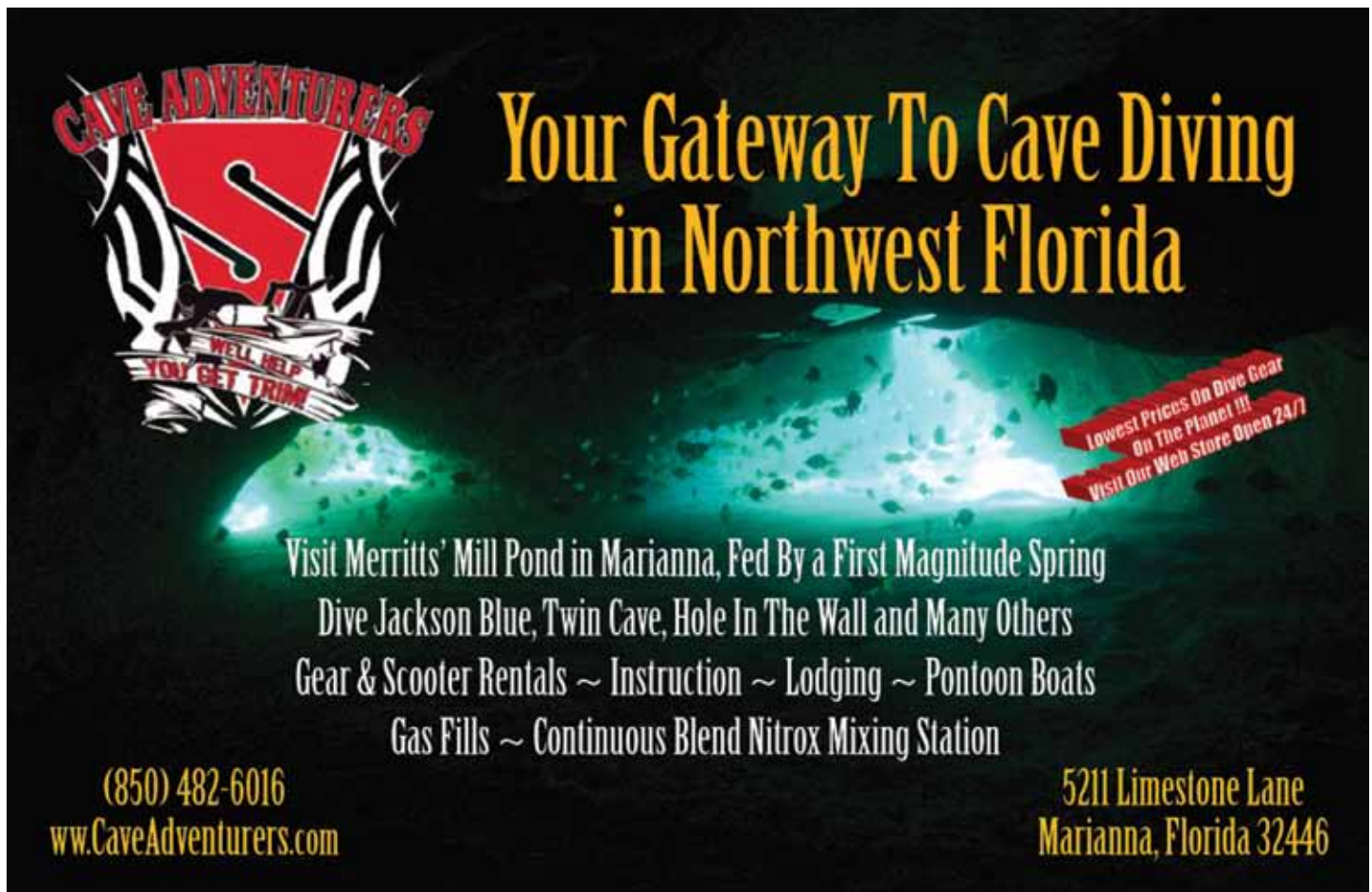
*All your cavern and cave diving needs just minutes from Wes Skiles Peacock Springs Park*

- Full Dive Facility
- Cavern to Full Cave
- 32% Nitrox by the CF
- Cottages and Bunks Available

Open 7 Days A Week  
386-776-1449  
[www.DiveOutpost.com](http://www.DiveOutpost.com)

## Cave Diving At It's Best

21048 180th St., Live Oak, FL 32060



# Your Gateway To Cave Diving in Northwest Florida

**Lowest Prices On Dive Gear On The Planet !!!  
Visit Our Web Store Open 24/7**

Visit Merritts' Mill Pond in Marianna, Fed By a First Magnitude Spring  
Dive Jackson Blue, Twin Cave, Hole In The Wall and Many Others  
Gear & Scooter Rentals ~ Instruction ~ Lodging ~ Pontoon Boats  
Gas Fills ~ Continuous Blend Nitrox Mixing Station

(850) 482-6016  
[www.CaveAdventurers.com](http://www.CaveAdventurers.com)

5211 Limestone Lane  
Marianna, Florida 32446