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Expedition team member Fréderic Vandenplas prepares for the dive

# Pushing the Ressel
## —A Cave Diving Expedition in Lot, France

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**Years of preparation finally paid off on 3 August 2013 when the first Belgian cave diving team reached deeper territory in Ressel Cave in Lot, France. This underwater cave—located in the heart of French cave diving paradise—is known to be one of the more engaging, difficult and technical cave dives. The expedition was an exploratory dive of several hours, with all its complications in logistics and difficulties.**

There were intense preparations, including materials testing conducted by a few members of the Flemisch cave exploration group, Science Explorers, and the diving club, Technical Diving Antwerp.In addition to myself, our dive expedition team included Ronny Breeur, Sannie Versweyfelt, Kenny and Angie Vandoorne, and Fréderic Vandenplas.

The cave system is comprised of a series of siphons or sumps with dry parts in between. Only a limited number of people have dived beyond the first siphons.

### Preparations

Before engaging in a challenging dive like this, one needs to be prepared. I have been diving in the trimix zone for years, with and without a scooter.

Several dives have been done in Ressel Cave with open circuit and rebreather. Little by little, the cave has become familiar. Progression has been made step by step; the first dive to the other side of the first sump took six hours. In subsequent dives, the timing could be reduced to three hours for the same dive. A careful but steady pace is important in cave diving, as it will reduce the decompression time. Several dives were undertaken in a

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The entrance to Ressel Cave. It has a wide entrance, good visibility and the temperature is 14°C. The passages are wide, which is the reason why Ressel is internationally reknown. A lot of technical cave divers have been trained here

# Ressel Cave

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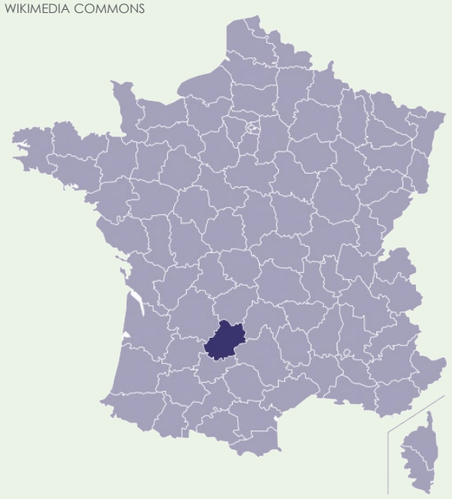
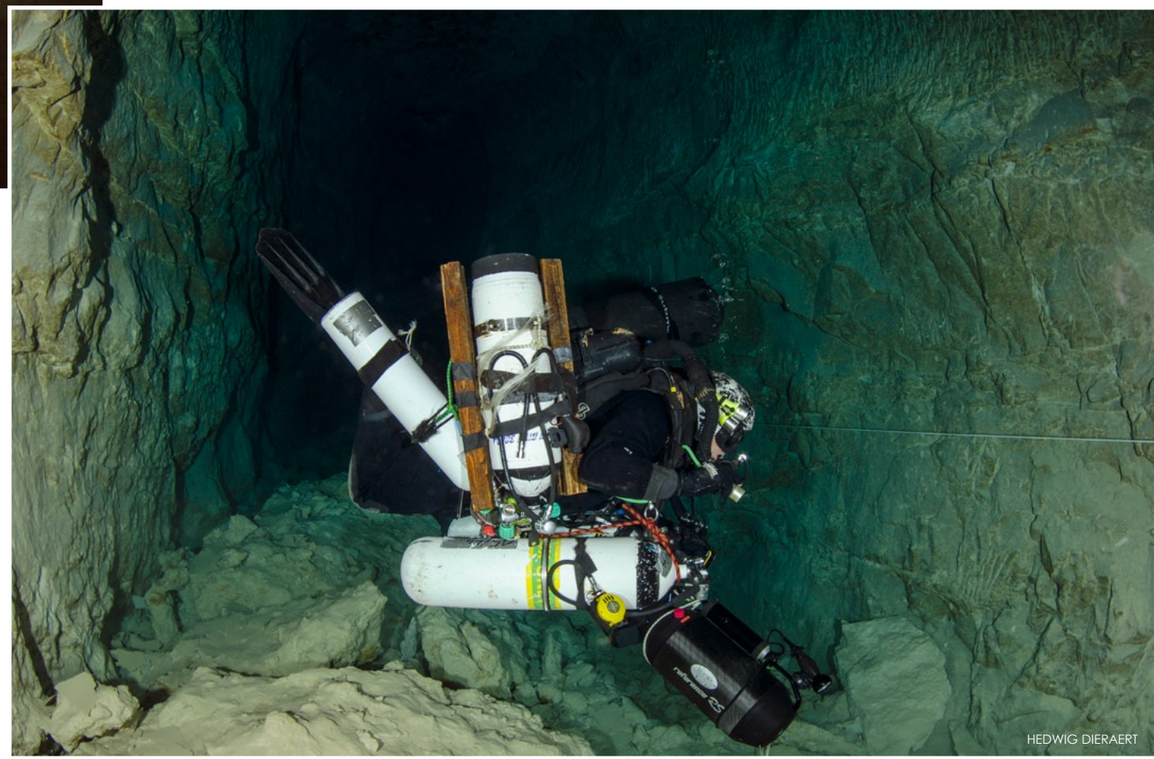


Map of France with location of the Lot region where numerous caves are found

RESSEL CAVE SYSTEM, LOT, FRANCE
The Lot region is a part of the Midi-Pyrénées, located in southwestern France, and is named after the river Lot. The river Lot streams through the limestone plateau and cuts deep valleys, in some places up to 100m deep. The region is littered with cave systems. The Ressel is one of the cave systems and starts in the bed of the river Céle. The entry is relatively wide at 150m and then splits into two arms, which join again about 300m from the entrance. A series of drops follow each other to a depth of 55m, eventually ending at 77m before ascending again to a dry section of the cave about 2km from the entry. The sumps after that have rarely been explored. Rick Stanton and Jason Mallinson reached sump five, 4.6km from the entrance, on 25 August 1998, and left the cave after 49 hours. ■



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The complexity of exploration cave diving, the gas planning and bail out scenarios are a challenge and part of the attraction of this type of diving

time span of several years and was crucial to memorization of the site, reducing the time loss and increasing efficiency and fluidness of the dive.

The target was to get as far as possible into the cave. Physical conditions of the push divers would determine how far one could go beyond sump one. In this exploration dive, we got to siphon five!

## The logistics

Inspiration rebreathers were used to keep the volume of breathing gasses to a limit. The gas mixes for the two push divers was a 10/60 diluent in three-liter bottles and pure oxygen. Open circuit baleout for sump one were placed by support divers Ronny Breeur and Sannie Verswyfelt. The bailout included:

2 x 12L 300 bar oxygen at 6m deep
1 x 20L 240 bar 50/10 at 22m deep
1 x 20L 250 bar 20/40 at 1,100m from the entrance

At 1,100 meters, additional tanks were left behind:
12L 300 bar oxygen (with two wood logs attached to it to make it float)
80 cbf tank with air
40 cbf tank with air
2 scooters for redundancy

The gear left at 1,100 meters in siphon one would be picked up for the actual push through to carry out the crossing of sump one and all further siphons.

The crossing itself started with one CCR for each diver and also one scooter and one 20-liter tank with 15/45. After 1,100 meters, the other materials left behind would be picked up.

Four scooters were used: three Bonex and one Silent Submerge. What we didn't know beforehand was that one scooter would not survive, and the other would be used until it was empty. Redundancy is a must!

## The push dive

The start of siphon one is known to many cave divers; a lot of them have received their training there. Why? It is a relatively easy, wide entrance with good visibility. This first system is dived by most up to a distance of 400m where a well-known deep drop is located.

The primary aim of the expedition

# Ressel Cave

Author, Erik Wouters, prepares for a dive with a scooter

was to push through this sump and reach the end. The maximum dive depth was 75 meters, and the total distance was nearly two kilometers. The majority of that distance was at a depth between 50 and 78 meters. The second aim of the expedition was to reach the next siphons, and potentially, the end of the cave.

The vertical wall where the ascent starts of sump one was reached after 47 minutes. From previous experience, I knew this was quick. It was here that the deco in sump one started.

The air and oxygen, transported through siphon one, were used in the subsequent siphons and used to top up the CCR tanks. Kevin Haek was kind enough to lend a dry tube for the spare scrubbers, batteries, fill whip and oxygen cells. Drinks and food were also stored in the dry tube.

The time to start and finish sump one was 122 minutes. On the way back, 120 minutes were spent underwater in siphon one. The other siphons were dived within NDL limits. The total time to cross to siphon five and head back was 12 hours. In total, 5.5 hours were spent underwater, the rest of the time was spent hauling gear between the siphons. Two 15-minute breaks were built in for rest.

Dive wise, this was not too difficult, but transporting the gear between the sumps made this dive difficult. The space between the sumps has a high $CO_2$ concentration. The fitness of the divers was the determining factor in getting through all the sumps.

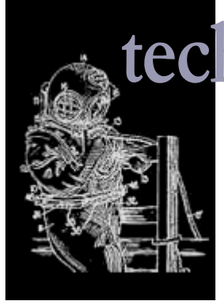
Despite all our preparations, things went wrong. Just past siphon four, one of the Bonex scooters was accidentally dropped and flooded as a result. It kept working until the weight became too great. Another scooter was depleted on the way back in siphon three. One high pressure hose tore apart upon opening the tank. It was a brand new Miflex high pressure hose.

## The challenge

It is a serious challenge to dive the Ressel Cave up to sump five. The sum of the years of training, getting fit, doing deco calculations, filling the tanks, making preparations and figuring out logistics made it all very complex but also highly motivating.

And the psychological challenge was also high—it was far, deep and physically exhausting. What if one of the CCR units failed catastrophically? A high volume lot of bailout gas was prepared just in case.

And still, the end of the cave has not been reached. The Ressel is still a challenge.



Author, Erik Wouters, makes preparations for the dive

## The team

An exploration dive of this complexity was not possible without the support of a team. Half of the pleasure of this dive was in the preparation and sharing the experience with the other team members. My buddy Fréderic is a young lion—eager, motivated and does not give up—an ideal buddy, and a name to remember. The support divers—Ronny, Sannie, Kenny and Angie—did the hard job of staging the tanks and the bailouts.

And the celebration dinner with lamb chops, after 12 hours of diving and carrying heavy gear, was exceptionally tasty. Those were the great moments to share with a team.

Thanks should also go to Greenforce, which supplied the lights for the scooters. Good illumination made the dive more comfortable.

Thanks goes also to Hedwig Dieraert, the photographer of the caving club, Science Explorers. He took incredible pictures thanks to years of experience and a keen sense in capturing the spirit of the moment.

A special thanks goes to Rik Vandeneynde, the blender of Technical Diving Antwerp, offering his years of experience, and despite recent surgery to his knee, he was always there. He provided accurate blends for every tank, from the three-liter CCR tanks up to the 20-liter tanks. They were always correct and filled to the max. It took away some of the worries when diving.

Ressel Cave

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## Epilogue

The end of Ressel Cave has not been reached—yet. No one knows what is behind sump five. There is no information, and clearly it is still a mystery—to be continued. The bailouts are already filled. ■

*An active speleologist and rock climber Erik Wouters began diving in 1985 in the Mediterranean. He is a member of the Belgian caving group, Science Explorers, and the diving team, Technical Diving Antwerpen. An active cave diver since 1998, he is a certified IANTD IT Normoxic Diver, and since 2012, an IANTD CCR Trimix Cave Diving Instructor. Wouters has led or participated in numerous dive expeditions including the diving expedition with Dirk Roelandt of the Socotra Karst Project in Yemen where the team filmed for* Discovery Channel, *the* Leopoldville *where the team filmed for* National Geographic, *the HMS* Victoria *in Lebabon, the* Tollensesee *where the team searched for remains of experimental torpedos of WWII. He has dived numerous cave systems in Belgium, France, Hungary, Florida and Mexico. In 2005, he undertook several expeditions in the Elefante Bianco Cave in Italy.*