Expedition Bjurälven 2026

Compiled by Dmitri Gorski

Cave exploration in the Bjurälven valley in 2026 was performed according to plan and without incidents or accidents. Our focus this year was on two caves – Dolinsjö cave and Övre Bjurälven cave. The expedition had three goals:

1. Collaborate with the Swedish national television SVT on a film project
2. Establish access and dive downstream in Övre Bjurälven cave
3. Perform mapping of the first dry chamber in the Dolinsjö cave using photogrammetry

Bo Lenander, a member of the current expedition crew, discovered the entrance to the Dolinsjö cave located in the Bjurälven valley in 1979. The first winter expedition to explore the caves in the area was launched in 2007, following several unsuccessful attempts to dive in the Dolinsjö cave summertime. These attempts were unsuccessful mainly due to very strong current that rips through the cave system during summertime, measuring up to 20 knots. During winter, the water is much calmer with hardly any current at all. Another factor in favor of conducting the expeditions wintertime is logistics. All the equipment can be transported to the cave using snowmobiles, minimizing the risk of damaging the fragile vegetation in the protected nature reserve.

In 2008, divers of the second Expedition Bjurälven managed to map some 50 meters of passages in the Dolinsjö cave. Thanks to excellent cooperation with the authorities and continuing support of the local population, diving and exploration in Bjurälven continues. Sixteen years since the first expedition, the total mapped length of all caves in the area, which we someday hope to connect, is 3381 meters. Dolinsjö cave (2432 meters), is Sweden´s longest water-filled cave and among the 100 longest underwater caves in the world. Köldhålet is on the second place with its 280 meters.

We have reached all the goals set for this expedition. Collaboration with SVT worked great and we are looking forward to the results. One team established access and performed several dives downstream in the Övre Bjurälven cave. They encountered a tight restriction which had to be dug out. It looks like the passage continues after the restriction and more resources will be diverted to this project next year. Photogrammetry project was aimed at the first dry chamber. It turned out that performing photogrammetry in partially filled passages is challenging, but the team has collected a large number of images that will be processed with the goal of creating a 3D map of the chamber. More images will be collected next year to complete the mapping.

We would like to express our sincere gratitude to our sponsors Ursuit and xDeep for providing safe and efficient equipment that can take on most extreme conditions. We also received great support from Klättermusen, a Swedish manufacturer of outdoor clothes. Of course, our biggest thanks go to the local people and businesses (Tillväxt Frostviken, Mikkes Skoteruthyrning and Ica Blåsjöfjäll) in and around the village of Stora Blåsjön (including Blåsjöns Byamän) – who have been putting up with us for over 15 years. Authorities in Jämtland County and Voernese Sameby are acknowledged for providing their consent and approval to this project.

Figure 1 Morten Dyrstad, Martin Fregelius, Kristian Lyberg, Petter Moge, Mats Fröjdenlund, Anders Thomasson, Fredrik "Gauss" Andersson, Henning Wictorin, Christer, Bosse Lenander, Patrik Rylander, Micke Tilja, Linus Malmgren, Stefan Barth, Anders Etander, Dmitri

Documentation and media

High-quality photo material was collected this year. Robert Staven took photographs inside the cave while Anders Etander, Petter Moge and Martin Fregelius worked on creating a photogrammetry representation of the cave. Micke Tilja took video in the cave for the SVT project.

During the expedition week a presentation was made by Dmitri Gorski, Micke Tilja, Anders Etander and Bosse Lenander at the local community house in Stora Blåsjön, which was filled by more than 50 people.

Figure 2 Micke Tilja demonstrating one of the film cameras used for the SVT project at the local community house in Stora Blåsjön.

The following interviews were given during the expedition:

1. SVT: Sverige Live – Tor 19 mar 18:41 (SVT Play, not available online anymore)
2. Strömsunds Gratistidning: https://www.stromsundsgratistidning.se/2026/03/13/sveriges-langsta-undervattensgrotta-finns-i-jamtland
3. Jämtlands Tidning: https://www.jamtlandstidning.se/jt26v13-placed-stroemsund/bjuraelvens-grotta-utforskas-vidare/305356
4. Sveriges Radio P4 Jämtland: Morgon i P4 Jämtland. Friday March 20th, 2026. 06:15 - 06:22 (not available online anymore)

Exploration and mapping

39 person-dives were performed during the expedition in 2026, see Figure 3. This is a significant decrease compared to the year before and can be explained by much longer dives on average and less dive sites.

Total dive time decreased somewhat compared to previous expedition, while the average dive time increased significantly, see Figure 4 and Figure 5. Dives conducted in the Dolinsjö cave were mainly long. In fact, the average dive time during 2026 expedition is the longest registered in history of the expedition. In total 1160 dives have been conducted by Expedition Bjurälven since 2009 (dives in 2007 and 2008 were not counted).

Table 1 Surveyed cave length, Bjurälven Valley

Cave name	**Mapped length [m]**
Bjurälvsgrottan	300 (unchanged in 2026)
Dolinsjögrottan	2432 (unchanged in 2026)
Köldhålet	280 (unchanged in 2026)
Spegelgrottan / Semigrottan/ D3	162 (unchanged in 2026)
Festins cave	157 (unchanged in 2026)
Meander cave	50 (unchanged in 2026)

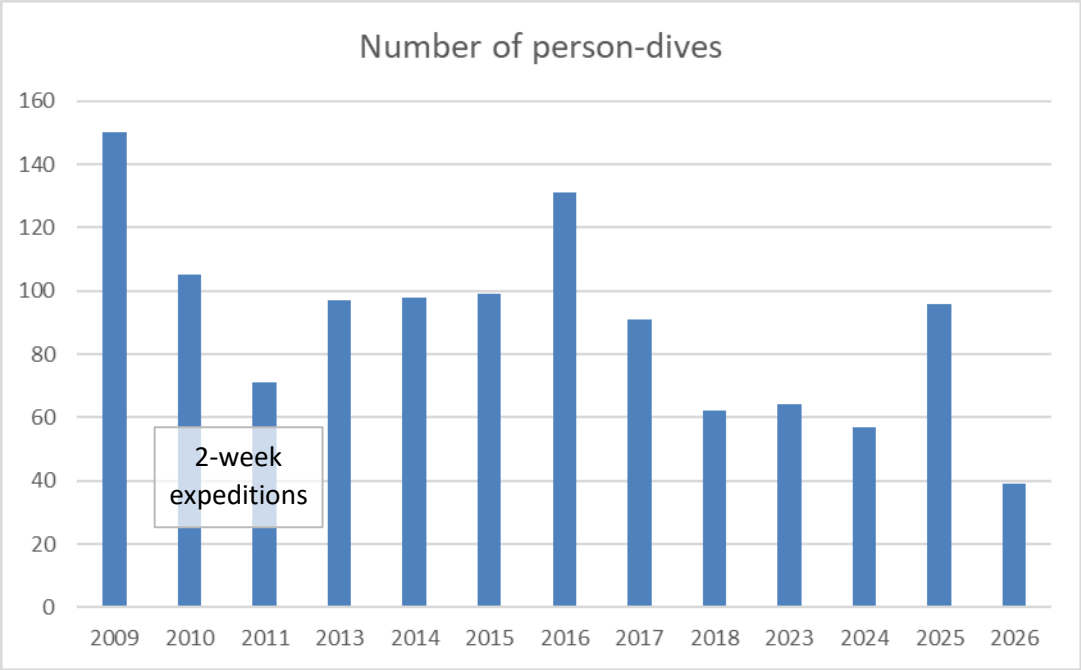

Figure 3 Number of person-dives during all the winter expeditions.

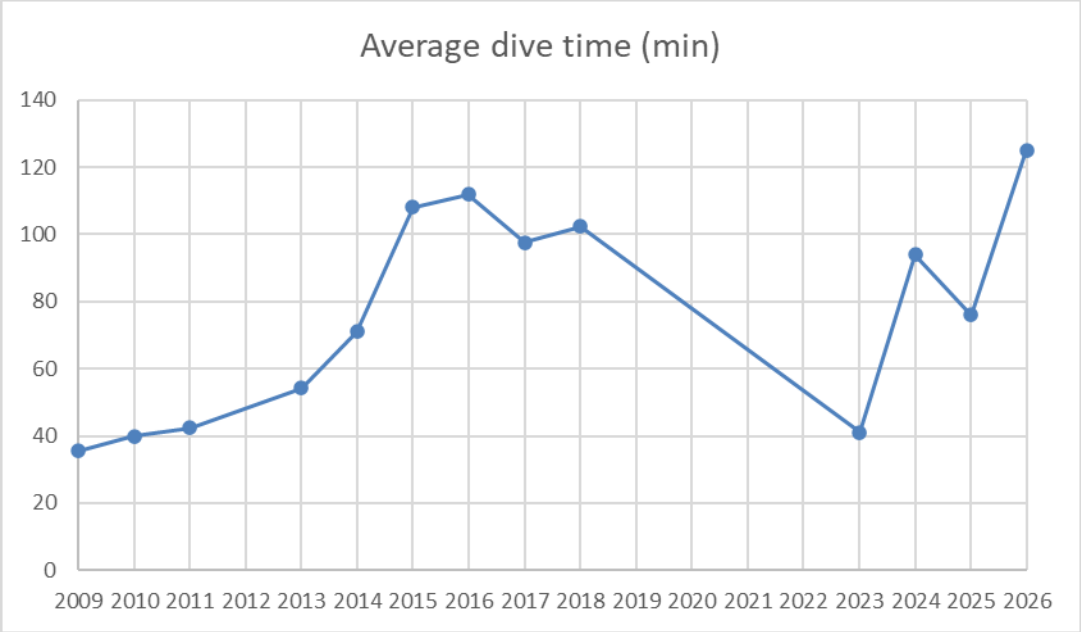

Figure 4 Average dive time during all the winter expeditions.

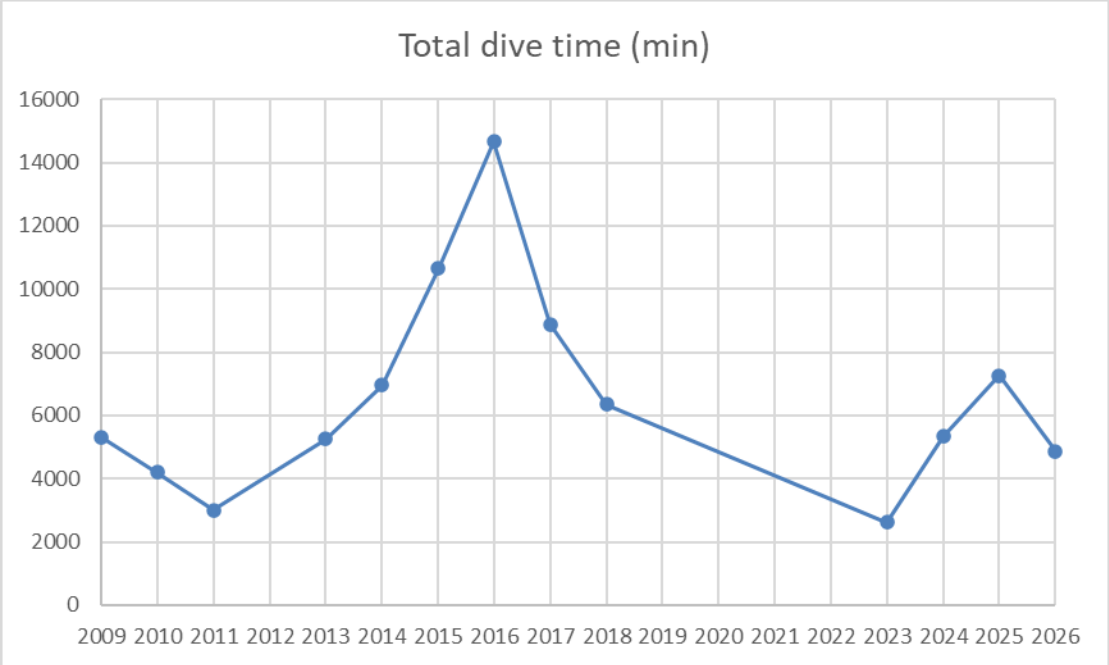

Figure 5 Total dive time during all the winter expeditions.

Övre Bjurälven cave

By Fredrik "Gauss" Andersson

The Övre Bjurälven cave team consisted of Stefan, Kristian, Henning and Fredrik. The goal was to make a breakthrough in the first sump of the cave. The conditions in the cave change from year to year, so the first task was to make an assessment if we were able to dive at all. Övre Bjurälven cave is where the water enters the system, so diving has to be done downstream. This requires caution as diving downstream with strong current can be a hazard. Difficult logistics inside the cave where equipment has to be transported through dry passages prior to diving and also digging in the sump were other expected challenges.

The scooter road was set up on the second day of the expedition and work on digging out the cave entrance was promptly started by Henning and Fredrik. The entrance was covered by approximately one meter of snow and a thick layer of ice underneath the snow. Entrance itself is a chasm that forks out into two openings. After the second day, the smaller side opening was uncovered and most of the camp equipment had been hauled out to the site. Unlike previous years, there was no waterfall going down the pit, which sparked optimism over the conditions.

On the third day, the team completed establishing the camp setting up the tent and its amenities. Stefan spent much of the day digging out the main opening while Henning and Fredrik rigged the side opening with ropes used to climb down. There was time to make a short excursion of the dry section.

On the fourth day, the team prepared for diving. The goal was to haul down equipment, carry it to the sump and perform two dives. A climbing rope was set up as a guideline and as a stable support, in case the current would be too strong. Troubles with equipment together with the challenging logistics left the team with time for only a short scouting dive. The conditions for diving were found to be very good, however.

On the fifth day, the team could work in shifts because most of the diving equipment was already down at the sump. Henning and Fredrik went on a head start to make a dive each. Henning´s dive stopped short due to freezing regulators, but Fredrik got the chance to explore and push the sump with a 40-minutes long dive.

The restriction in the sump was reached after about two minutes. The sump consists of a smaller phreatic tube, no wider than 2 meters, with a downward slope. After about 30 meters it flattens sharply while it widens to about 5 meters. Following the wall on the right-hand side a blockade of rubble was encountered, see Figure 7. Attempts to dig away at the rubble showed it was not very compacted and likely not stacked very far. The water was silting heavily but the current was leading to and sifting through the rubble clearing up the water quickly. On the left-hand side of this wide section the path ahead was instead blocked by a sand bank, see Figure 6. It was possible to see a bit further beyond the sand bank. The dive concluded after some attempts at digging. The digging has made some progress but nothing visible. It is clear multiple hours of diving will be needed to make progress. On the way out Fredrik and Henning met Stefan and Kristian who stressed that the equipment must be evacuated from the cave due to a shift to warmer weather the following day.

Figure 6 Sand bank on the left side of the passage. Picture: Fredrik Andersson.

Figure 7 blockade of rubble on the right side of the passage. Picture: Fredrik Andersson.

On the sixth day, Fredrik went to Dolinsjö cave because he was new to the expedition and wanted a chance to experience that cave as well. Despite the warmer weather Stefan, Kristian and Henning made an attempt to dive. It was clear already on the surface that the conditions had changed - the water flow had increased sharply. The equipment was hauled down to the sump and Stefan prepared to dive. At the section leading down towards the sump, Stefan ultimately determined the dive had to be cancelled. The flow in this tunnel had increased severely and the water level of the sump likewise.

In conclusion the expedition confirmed that the first sump in Bjurälven remains a promising lead for further exploration. The expedition now has more members with first-hand diving experience in this cave, providing a stronger foundation for planning and executing future attempts.

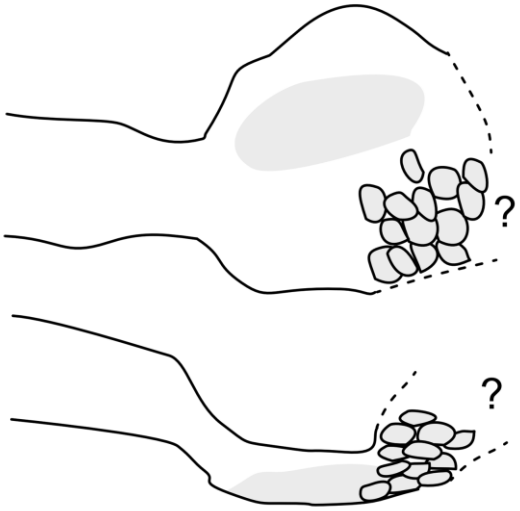

Figure 8 A sketch from the memory of Fredrik's dive. Plan view sketch above and profile sketch below.

Progress was, however, limited by logistical challenges and the need to divide attention across multiple parallel objectives. For future efforts, a more focused approach is recommended, with early entry to assess conditions and a greater concentration of resources on the sump itself. Despite these constraints, the expedition successfully re-established access to the cave and strengthened the case for continued exploration at this location.

Photogrammetry of the cave

By Anders Etander

After the highly successful photogrammetry during the 2025 expedition, during which approximately 80,000 images were collected (material covering the entirety of Sump 1), we had high expectations for the 2026 expedition. We had developed an ambitious plan that included photographing Dry Chamber 1 and 2, as well as Sump 2, and as much of Sump 3 as time would allow. After all, how difficult could it be, given how smoothly the 2025 expedition had gone?

It turned out to be more complex than expected. Partly, the forces of weather were against us, and we got started one day later than planned. Once in the dry chamber, it became clear that it was more challenging than anticipated to manage areas that are only partially filled with water. Above and below water posed no problems — but the boundary in between did. We have photographed all of the Dry Chamber 1, just over 3,500 images, and the entirety of Sump 2, also around 3,500 images. At the time of writing, work is ongoing on masking Dry Chamber 1 to evaluate how far we can progress with 3D model construction.

During this year's expedition, the KISS Sidewinder (sidemount rebreather) was used to extend and improve gas logistics and safety during the dives. The use of the rebreather proved to work excellently under the extreme conditions of the expedition. The experience gained will, among other things, form a basis for future expeditions, particularly to facilitate movement within dry chambers.

In summary, we learned a great deal, even though the data collection did not meet our ambitious plans. These insights will be highly valuable in the planning and execution of the 2027 expedition.

Figure 9 Divers preparing to enter the Dolinsjö cave.

The film project with SVT

By Micke Tilja

In 2028, SVT will present its largest nature production ever, featuring multiple live broadcasts, interactive maps, and stories about Sweden's incredible natural environments. One part of the project consists of six one-hour episodes filmed in some of the country's most spectacular locations.

In the autumn of 2025, Expedition Bjurälven was contacted by the SVT project team after they had discovered the diving expeditions in Bjurälven. They wanted to learn more about the project, the environment, and the experience of being underground in this unique landscape. The meeting eventually led to a potential collaboration where our explorations of Sweden's longest underwater cave would become part of the television series.

Naturally, we were excited by the opportunity, while also realizing what it would require.

Changed Conditions for the Expedition

Our expeditions are planned many months in advance. Transporting diving equipment, tents, compressors, heaters, generators, and the hundreds of other items required for a diving expedition in an arctic mountain environment is a major logistical challenge. Since the plans and goals for the coming years had already been established, the filming meant that large parts of those plans had to be reworked.

One of our main goals has always been to showcase Bjurälven and its unique cave system. We do this through film, photography, and 3D imaging, and the opportunity to let an even wider audience experience this environment was extremely appealing. After gathering the team and discussing the proposal in detail, we decided to accept the collaboration.

Filming in Darkness

As an underwater filmmaker working in caves and mines, I normally focus on capturing the scale of the environment and allowing the viewer to experience every detail. After our first meeting with SVT's film crew, where they explained the atmosphere, they wanted to create, I realized this would be very different from what I was used to.

Instead of brightly illuminated underwater passages and large chambers, the goal was to emphasize the mystery of the cave — minimal lighting, details instead of scale, and extreme close-ups. I quickly understood that this would be a challenge.

Not used to working in such darkness and using new filming equipment, I brought in a colleague from the film industry to help. Together, we created a test environment in a darkened garage where we experimented with different camera settings, lighting setups, and distances until we achieved the right balance of sharpness and atmosphere.

Two sets of film cameras, six powerful underwater lights, and numerous spare parts were brought along. In such a remote location, any equipment failure had to be handled on site, as replacing or repairing gear would otherwise delay filming for days.

Figure 10 Black Magic 6k camera with Nauticam underwater housing used during the project.

Figure 11 SVT team filming on the surface at the Dolinsjö cave basecamp.

Challenges

It is not only the complete darkness of the cave that creates challenges. Transporting cameras, glass ports, lights, and tripods through an environment of polished limestone, gravel, and rock requires both careful planning and caution.

The production also involved more than underwater scenes. One of the locations of particular interest was the hundred-meter-long dry cave chamber that we reach after more than thirty minutes of swimming through submerged passages.

When filming underwater, cameras are normally mounted inside protective underwater housings. These systems are designed to function perfectly underwater, but filming inside a dry cave chamber requires a completely different approach.

Our solution was to transport the camera and lenses separately in waterproof containers through the flooded passages and then assemble the equipment inside the cave chamber itself. This is far from easy in an environment with high humidity, dripping water, and wearing thick dry gloves.

In this kind of environment, extreme caution is essential. A sprained ankle, a damaged drysuit, or a failed seal can have serious consequences.

Filming

The team — consisting of a model, photographer, and lighting diver — carried out two visits into the dry cave chamber, where slow-motion scenes, waterfalls, and the cave's spectacular limestone formations were filmed.

The underwater scenes were divided between several locations. Some scenes were filmed at the entrance to the cave system, where the divers leave the ice above them and disappear into the narrow opening of the cave. Other scenes were filmed deeper inside the system, in larger sections of the cave where the "sculptures" and formations shaped by water over millions of years become visible in the limestone.

Every scene was carefully planned, and the interaction between photographer, lighting diver, and model was reviewed before each dive together with SVT's film crew. The goal was to capture the right atmosphere and highlight the dark and mysterious world hidden inside the cave.

For me personally, being part of this film project has been incredibly exciting. After 15 years with Expedition Bjurälven, I had been missing new challenges, and this became both a welcome and inspiring experience.

Now we are looking forward to seeing the final result of all the work — and to sharing this extraordinary cave with a much wider audience.

Figure 12 SVT team filming on the surface at the entrance to the Dolinsjö cave.

Communication

By Mats Fröjdenlund

VHF-communication on the surface

The whole expedition area from Bjurälven valley to the parking lot at Leipikvattnet (a distance of around 4 km) had good VHF signal coverage in 2026. Following equipment was utilized to achieve this:

- GP-antenna mounted on a 7m high mast and located in the Dolinsjö base camp and at Bjurälvsgrottan (Bjurälven cave)
- Several handheld hunting radio walkie-talkies (5W and 155 MHz)

Figure 13 Icom IC-F51V radio (5W, 155 MHz, IP67) and the GP antenna for the base station.

Satellite communication to the Internet

This year we had the opportunity to test satellite communication through Starlink for the first time for outside communication via the Internet. A purpose-built transport box contained a Starlink Mini terminal with battery and a built-in WiFi-router (see Figure 14) which turned out to work very well even though we were in a rugged valley in the mountains. It significantly increased our safety because we could communicate with emergency services in real time if the need arose.

Figure 14 Starlink Mini terminal

Communication between base camp and cave (cave radio)

We have always lacked good communication between the divers and the surface at the various dive sites in Bjurälvsdalen. We have made various attempts over the years with different equipment such as HeyPhone from BCRC. The direction-finding equipment that Bo Lenander has developed has in one version the possibility of voice communication between a dry cave and the surface directly above. This is done via modulation of the magnetic field which is also used for Morse coded status transmissions. However, the voice quality in these systems is very poor, which is why we do not use it today. As previously mentioned, we use standard handheld VHF devices for surface communication on 150–160 MHz. We have known for some time that it is possible to establish two-way communication via these devices between the cave and the surface, mainly due to the relatively short vertical distance through the rock, about 20–30 meters, and partly due to fracture systems in the limestone bedrock.

For 2026 we decided to build on this technology and be able to communicate with the cave directly from the base camp via relay traffic.

For this purpose, some expedition members constructed a relay station (see Figure 15) with a duplex filter which was placed on the ground surface directly above the assessed best location in the first dry passage in Dolinsjö cave. The technology works so that the divers carry a waterproof VHF device (see

Figure 16) and with it establish communication with the ground surface via the relay station which forwards the communication to the base camp on an alternative VHF frequency. The technology has proven to work relatively well, and we will develop this equipment further for the next expedition.

Figure 15 Relay Station VHF

Figure 16 VHF-radio

GNSS positioning

Starting in 2011 we have been performing electromagnetic direction finding of the cave divers and surveying fixed points in the cave system. From 2014 these fixed points have been marked out in the cave using stainless steel trays (markers) labelled FP01 (Fix Point 01), FP02, and so on. Using the electromagnetic direction-finding equipment, we have been able to obtain relatively accurate points on the ground surface directly above the fixed points. Also, the depth from the surface (or the snow surface) down to the fixed point has been obtained. To make a 3D and georeferenced cave map the ground surface elevation, the depth of the cave and its X and Y coordinates are required. For this purpose, the Swedish National Land Survey/SWEPOS (https://swepos.lantmateriet.se) kindly lend us a GNSS equipment (Global Navigation System Satellite = GPS, GALILEO and GLONASS)

In 2026 our equipment again consisted of a Leica Viva GS15 rover on a 2.0-meter-high carbon fibre pole and a Leica CS10 field computer. Since we didn´t find any new places to put new fix points there was no need to use the GNSS equipment this year.

Expedition through the eyes of a new member

By Christer

Expedition Bjurälven is a logistics monster of enormous proportions. Every morning, a large number of snowmobiles with trailers transport support crew, divers, and heavy equipment along self-made temporary trails. Just this is impressive in itself.

Figure 17 Building the scooter tracks.

The fact that the trails run through a nature reserve where no trail normally exists means we have to build the snowmobile trails ourselves, which doesn't make things any easier.

This year I got the opportunity to join for the first time as a diver, and there is now one item fewer on my bucket list.

I'm really happy to now be able to say that I am part of the Expedition Bjurälven and to have the opportunity to spend time with like-minded, amazing people who love to explore, and who clearly don't back down when it comes to tackle something that is far from easy.

Despite long days for over a week, there were never any sour faces.

Figure 18 Christer in the Gold Passage. Photo by Robert Staven.

Before this trip, I tried to picture what the cave would be like. I can easily say it exceeded my expectations by a wide margin. I have a strong memory of the first dive, I had a moment of uncontrollable happiness, screaming and shouting, my buddy at the time surely thought that I had gone completely crazy,

As a diver, being able to dive somewhere where no one—or at least very few —have dived before is what appeals to me most of all. Swimming around in this hard-to-reach environment, shaped over millions of years, is enchanting. Squeezing through a restriction with the ceiling pressing against your back and your chest against the bottom, using your fins and arms to push yourself through, is a unique experience. Exploration is an addiction that I have absolutely no plans to give up.

The fact that the water of Bjurälven has, over millions and millions of years, rushed through this cave, eroding and chiseling out all these formations, is a little hard to take in.

The grey limestone is so beautiful and, in some places, also truly dangerous. Sometimes the rock is as sharp as a knife and can easily cut through your drysuit — and before you know it, your suit is filled with near-freezing water.

So, it is not entirely without risk, but I love it. I'm already looking forward to next year's expedition.

Figure 19 Christer in the Altar passage. Photo by Robert Staven.