

The Journal of Global Underwater Explorers

Quest



Vol. 27, No. 2 – May 2026

**PHOTOGRAPHER
PORTFOLIO:
TORBJÖRN
GYLLEUS**

SAMPLE

BLIZZARD-FROZEN SCIENCE

A NextGen trainee's first dive in the frozen lakes of Finnish Lapland

EXPLORERS WHO TEACH

How the spirit of exploration defines GUE's culture of teaching

MASTERING YOUR KICKS

The propulsion techniques every diver needs in their toolbox

WHEN THE DEEP RISES

Blackwater photography brings the midnight ocean to the surface

BRAZIL'S HIDDEN CAVES

Rappelling 80 meters to map an ancient limestone cave system

EDUCATION · CONSERVATION · EXPLORATION · COMMUNITY

GET THE MOST OUT OF YOUR DIVING

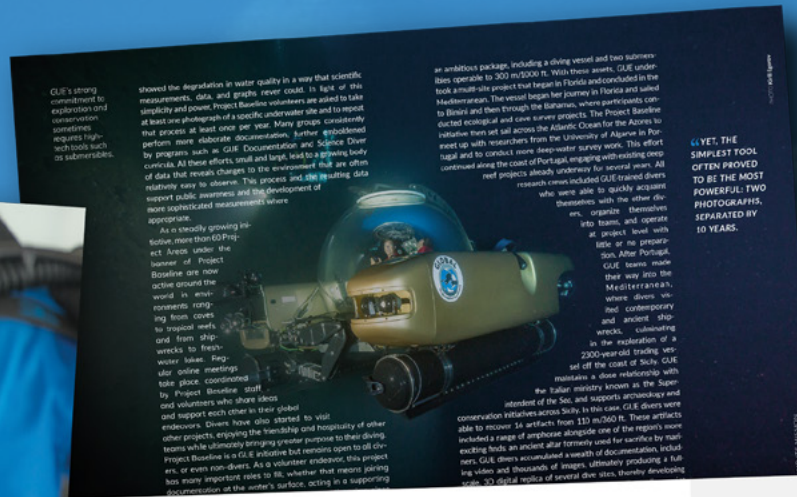


THE FUNDAMENTALS OF BETTER DIVING



Global Underwater Explorers

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GUE's strong commitment to exploration and conservation sometimes requires highly technical tools such as submersibles.

showed the degradation in water quality in a way that scientific measurements, data, and graphs never could. In fact of this project, Project Baseline volunteers are used to take samples at least once per year. Many groups consistently perform more elaborate documentation. Further, Project Baseline by program such as GUE Documentation and Science Diver that reveals changes to the environment that are often relatively easy to observe. This process and the resulting data support public awareness and the development of more sophisticated measurements where appropriate.

As a steadily growing institution, more than 60 Project Baseline Areas under the banner of Project Baseline are now active around the world in environments ranging from caves to tropical reefs and from shipwrecks to freshwater lakes. Frequent outdoor meetings take place coordinated by Project Baseline staff and volunteers who share ideas and support each other in their global endeavors. Divers have also started to visit other projects, enjoying the friendship and hospitality of other teams while ultimately bringing greater purpose to their diving. Project Baseline to GUE's initiative but remains open to all divers, or even non-divers. As a volunteer endeavor, this project has many important roles to fill, whether that means acting in a supporting documentation on the water's surface, acting in a supporting

an ambitious package, including a diving vessel and two submersibles capable to 300 m/1000 ft. With these assets, GUE undertakes a major project that began in Florida and concluded in the Mediterranean. The vessel began her journey in Florida and sailed to the Mediterranean, where she will spend the next several years conducting research and data collection across the Atlantic Ocean for the Azores to continue along the coast of Portugal, engaging with existing ongoing projects already underway for future teams. All researchers involved GUE-trained divers who were able to quickly acclimate themselves into, organize themselves into teams, and operate at project level with little or no preparation. After Portugal, GUE teams made their way into the Mediterranean, where divers visited contemporary and ancient shipwrecks, culminating in the rediscovery of a 2300-year-old trading vessel off the coast of Sicily. GUE maintains a close relationship with the Italian Ministry known as the Superintendent of the Sea, and supports archaeological and conservation initiatives across Sicily. These artifacts allow us to recover 14 wrecks from 110 m/360 ft. These artifacts include a range of amphorae alongside one of the region's most interesting finds, an ancient ball formerly used for warfare by medieval knights. GUE divers accumulated a wealth of documentation, including tens of thousands of images, ultimately producing a full set of digital replicas of several dive sites, thereby developing

YET, THE SIMPLEST TOOL OFTEN PROVED TO BE THE MOST POWERFUL: TWO PHOTOGRAPHS, SEPARATED BY 10 YEARS.

THE CAT FORMULA

CAT = C (consumption) x A (average depth) x T (time to surface)



CAT Formula example

Planning a recreational dive to 30 m/100 ft, while using a 12-liter tank filled to 220 bar. What is the MQ needed for this dive?

Metric

C = 40 L/min/20 L/min x 2 divers

A = 2.5 ATA/30 m/100 ft x 2 x 15 min = 15

T = 15 minutes/30 minutes from 30 m plus one minute at depth

MQ = 40 L/min x 2.5 ATA x 15 minutes = 1500 L in 12 L tank

Two divers sharing gas from the deepest point require at least 1000 L in their 12 L tank to safely reach the surface while sharing from one cylinder

Imperial

Planning a 100 ft dive while using a single aluminum 80 ft tank. What is the MQ?

Risked and prepared for this, eventually will likely respond more comfortably. The GUE system focuses on having the diver in a safe rescue. Even if the out-of-gas diver remains calm and feet breath is guaranteed to be an effective one, it is common for the next part of our regulator configuration is the direct feed to the wing inflator. This hose should be an appropriate length to the wing inflator. This hose is fed from the right post first stage, down that valve with their right hand, and since both the corrugated hose and the rear wing dump are on the left, divers can use their left hand to dump gas.

Divers should devote ample time to refining their personal and team skills as well as efficient emergency response procedures. Proficiency in these skills can be critical in managing a problem while underwater. Efficient and capable responses are invariably more likely to be successful. Despite inherent capability, available is determined by gas reserves. Sufficient reserves can insulate divers' responses will take some amount of time, and the time available is determined by gas reserves. Sufficient reserves can insulate divers' responses will take some amount of time, and the time available is determined by gas reserves. Sufficient reserves can insulate divers' responses will take some amount of time, and the time available is determined by gas reserves.

In summary, divers must come to understand that reliance upon arbitrary rules when determining important parameters such as gas planning is a recipe for disaster. Divers must track their consumption over time and such variable conditions and stress levels. They must also learn to account for variables in the dive, such as additional equipment or complex dive plans. These aspects are not meant to be an excuse for complacency, but rather to be part of any competent, advanced training program. If these aspects are absent from divers' experience and/or education, they should seek more comprehensive training in order to ensure their safety.

RELICANCE UPON ARBITRARY RULES WHEN DETERMINING IMPORTANT PARAMETERS SUCH AS GAS PLANNING IS A RECIPE FOR DISASTER.



Gas management is an important part of safe diving and must be included in every training program.

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EDITOR'S LETTER

EVERY DIVER EXPLORES

There is a version of exploration that most of us recognize immediately. It looks like a diver disappearing into a crack in a cave wall, reel in hand, pushing into darkness that no light has ever touched. It looks like the map that doesn't exist yet, the passage that has no name, the moment of discovery that belongs entirely to the people who were there.

This issue has some of that. Sergio Schirato and Jarrod Jablonski rappelled 80 meters into a Brazilian sinkhole, hauled their equipment through tight restrictions in December heat, and descended into a fragile, silty cave system to survey passages that had never been properly mapped. The reward was hard-earned and real. (p.28)

But this issue also has Isabell Hentschel, a GUE NextGen trainee who didn't discover a new cave—she discovered what she was capable of. At -30 °C/-22 °F, with freezing regulators and equipment that refused to cooperate, she found that the most demanding environments have a way of stripping everything back to what matters: the team around you, the limits you didn't know you had, and the person you become when you push through them. (p.14)

It also has Jialing Cai, GUE's 2026 NextGen Scholar, who found a way to reach the deep sea without a submersible. She simply waited for night to fall, dropped into the open ocean, and let billions of years of evolutionary behaviour bring the abyss to her. (p.44)

And it has a quieter kind of exploration too—in the propulsion article's careful examination of how we move through water (p.58), and in Dorota Czerny's reflection on what

GUE's tagline "Explorers Who Teach" really means (p.6). Her answer is that exploration is not a qualification or a category. It is a mindset. A willingness to look more closely, go a little further, and remain genuinely curious about what lies beyond what you already know.

That thread runs through every page of this issue. Whether you are pushing a new cave lead, making your first ice dive, or finally mastering your frog kick—you are exploring.

That is what GUE is for.

Dive safe and have fun!

Jesper Kjøller
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IN THIS ISSUE

6 HQ CORNER // EXPLORERS WHO TEACH

What does it truly mean to be an “Explorer Who Teaches”? Dorota Czerny unpacks GUE’s tagline, revealing three layers of exploration—discovery, guided learning, and the inner journey of self-awareness that shapes every great instructor.

14 DIVING THE FINNISH ARCTIC

Marine scientist Isabell Hentschel joins GUE’s NextGen program for a nine-day polar diving course in Finnish Lapland—her first-ever ice dive, at -30°C/-22 °F, with freezing regulators and a team growing stronger by the day.

26 BLACKWATER // WHEN THE DEEP RISES

Every night, billions of creatures migrate from the deep sea to the surface. Photographer Jialing Cai dives into the darkness to document this hidden world – and finds the abyss closer than anyone imagined.

40 PORTFOLIO // TORBJÖRN GYLLEUS

From Baltic wrecks to Mexican cenotes, Swedish photographer Torbjörn Gylleus illuminates the hidden worlds beneath the surface—where artificial light, patience, and precision reveal stories that darkness alone would keep.

46 EXPLORATION // BRAZIL’S HIDDEN CAVES

Before a single bubble enters the water, the team has already earned it. Sergio Schirato and Jarrold Jablonski rappel 80 meters into Brazil’s Cerrado to survey a remote and fragile underwater cave system.

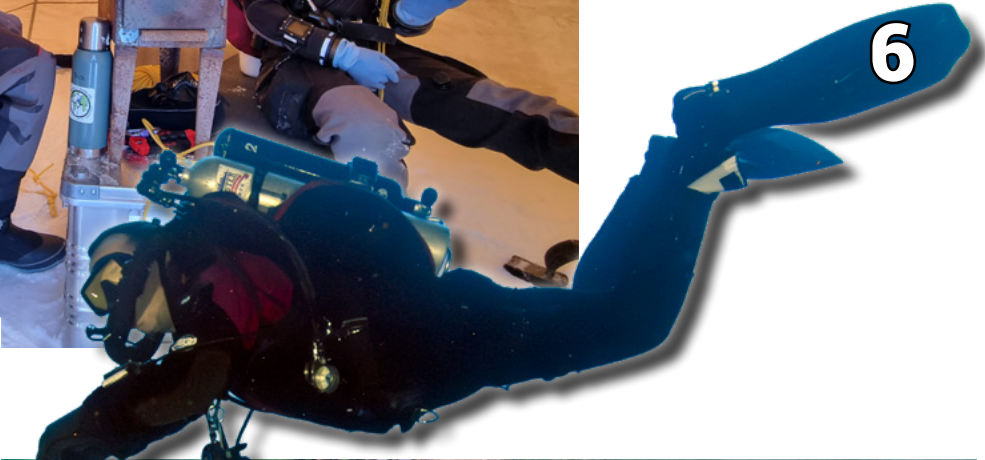
58 PROPULSION // KICKS IN YOUR TOOLBOX

From frog to flutter, and back kick to helicopter turn, mastering the right kick for every environment keeps divers efficient, safe, and leaves fragile reefs and silty caves undisturbed.



14

26



6



26



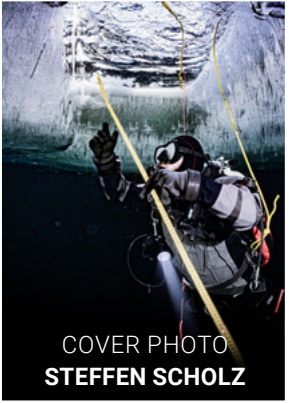
40



46



58



COVER PHOTO
STEFFEN SCHOLZ

HQ CORNER

EXPLORERS WHO TEACH

– *Defining our culture*

PHOTO PETR POLACH

SH

What does it truly mean to be an "Explorer Who Teaches"? In this month's QC Corner, Dorota Czerny deconstructs GUE's evocative tagline, moving beyond the literal image of pushing unexplored cave leads. She explores the three essential layers of exploration: the pure discovery of the unknown, the guided outward journey of a student mastering new skills, and the critical inner exploration of one's own limits and assumptions. By redefining exploration as a mindset of curiosity and humility, this article reveals how every GUE instructor—and student—carries the legacy of those who first ventured into the dark. ▶▶



Beyond the rusted steel lies the profound question of what is possible when we look closer and venture further into the unknown.

“The organization was shaped by people who represent the purest form of exploration: individuals willing to go farther, prepare longer, question more deeply, and venture into places that were unknown, demanding, and often unforgiving.”

GUE was founded by explorers, and that matters. The organization was shaped by people who represent the purest form of exploration: individuals willing to go farther, prepare longer, question more deeply, and venture into places that were unknown, demanding, and often unforgiving. Their work did not simply expand maps or reveal new passages; it built a culture. It established a way of thinking, a standard of preparation, and a belief that exploration is not only about discovering what lies beyond the next corner, but also about developing the discipline, judgment, and character required to go there responsibly. Whether or not each of us becomes an explorer in that most literal sense, we all learn from that legacy and share the responsibility to carry forward what they began. That, in many ways, is what GUE represents.

When we introduced the tagline “Explorers Who Teach,” it sparked a range of reactions. Some people smiled, some laughed, and some immediately questioned whether we should use it at all. After all, not everybody in GUE is an explorer in the literal sense of the word. Not every instructor is actively discovering new caves, surveying unknown systems, or pushing into places no one has seen before. We also have outstanding educators who are not explorers in that literal way, just as we have explorers who are not educators.

Beyond the label

So the question is fair and worth addressing: what do we really mean by “Explorers Who Teach”? For me, this phrase is not about labels, status, or trying to make every instructor fit a heroic image. It is not meant to suggest that every educator in GUE must be engaged in frontier exploration, nor that an instructor’s value can be measured by whether they have discovered something new. Rather, it speaks to a mindset, a culture, and a responsibility. It reflects the belief that teaching in GUE should be informed by the spirit of exploration, because exploration sits at the heart of who we are, how we grow, and what we ultimately hope to inspire in others.

At its core, exploration begins with curiosity. Not necessarily curiosity about a cave no one has entered before, or a wreck no one has surveyed, but curiosity in its broader form: What is possible? What lies beyond what I already know? What happens if I look more closely, go a little farther, or ask a better question? That curiosity can take different forms, and when I think about the meaning of “Explorers Who Teach,” I see at least three layers of exploration within it.

Layer 1: Pure exploration

The first layer is the most visible and perhaps the most admired, because it is the purest form of exploration in the literal sense. These are the divers who go where nobody has gone before, who find new cave passages, place new line, ▶▶



Even on a famous wreck, a student encountering it for the first time still experiences the profound act of personal discovery.

PHOTO JESPER KJØLLER

survey unknown wrecks, and willingly step into uncertainty in pursuit of discovery. They organize resources, invest time, travel long distances, prepare relentlessly, and accept that the process will include discomfort, setbacks, and real risk. They do it because they carry that inner pull toward the unknown, that deeply human urge to ask what lies behind the next restriction, beyond the next corner, and what that unidentified mark on a nautical map might be.

What many people see is the result: the stunning image, the new map, the discovered line, the beautiful end product of success. What they do not always see is everything that came before it—the planning, the repetition, the dead ends, the restraint, the uncertainty, and the many moments in which nothing remarkable was found at all. True exploration requires more than courage. It requires humility, because sometimes you go, and there is nothing there. Sometimes you try, and you fail. Sometimes the lesson is not triumph, but patience. This path is not for everybody, and that is entirely ok, because

it calls for a very specific mix of mindset, tolerance for uncertainty, discomfort, acceptance of risk, discipline, and character.

Layer 2: Guided outward exploration

The second layer of exploration is broader, and in many ways more relevant to the work of an instructor. Not everyone will become a literal explorer, but every diver can be invited to move beyond what is currently familiar, comfortable, and known. In that sense, exploration is not only about whether a place is undiscovered; it is also about whether it is new for the individual standing in front of it.

This matters enormously because education is not simply the transfer of knowledge and procedures. Good teaching awakens a willingness to step into something not yet mastered. It creates the conditions in which curiosity can grow into competence, and competence can grow into confidence. An instructor, in this sense, becomes someone who guides exploration rather than merely delivering information. They

Instructors guide exploration beyond information, opening doors to new perspectives and helping students discover their true potential.



PHOTO BORI BENNETT

open the door to a new environment, a different perspective, a more demanding task, or a more refined way of thinking. They help students look more, notice more, and test what they are capable of becoming.

This kind of exploration is outward-facing, but it is also personal. It asks a diver to say, I have not done this before, but I am willing to learn; I am willing to be challenged; I am willing to leave the comfort of what I already know. That willingness is deeply aligned with the values we should want to nurture across the organization.

Layer 3: Inner exploration

The third layer is less visible than the first two, but perhaps even more significant in the long term, because it is the exploration that happens within. This is the exploration of one's habits, assumptions, fears, blind spots, limitations, and possibilities. It is the willingness to ask difficult but necessary questions: Where do I stop myself? What can I improve? How do I respond under pressure? What do I avoid? What kind

of diver, teammate, and educator do I want to become?

This inner dimension of exploration is where growth becomes deeply human rather than merely technical. It requires self-awareness, honesty, and the courage to examine mistakes without becoming defensive. It asks for reflection, adjustment, and the humility to admit that even strong performance does not mean the journey is complete. In many ways, this is what makes the other layers sustainable, because without inner exploration, outward exploration can easily become ego-driven, and technical development can become shallow. To keep growing, we must remain curious not only about the world around us, but also about ourselves.

Exploration and mastery

This is also why the idea of "Explorers Who Teach" connects so naturally to mastery. Mastery is not a fixed state, and it is certainly not a checklist completed once and then left behind. It is a continual process of refinement, reflec-

tion, adjustment, and growth. In that sense, mastery is itself an exploratory path, because it requires us to keep asking more of ourselves, to keep noticing what can be improved, and to keep moving beyond the limits of what is merely adequate.

When viewed through that lens, the progression through the curriculum becomes more than a sequence of certifications; it becomes a structured invitation to explore. At the very beginning, a diver is already exploring simply by entering scuba diving at all. An Open Water course is an introduction to a completely new environment, a new set of demands, a new relationship with one's own body and mind, and a new way of experiencing the world. That first step is already an act of curiosity.

Fundamentals training deepens that process by asking for humility and refinement. It challenges the diver not only to perform, but to examine, to adjust, and to accept that improvement is always possible. The next stages continue this trajectory.

At Level 1, exploration remains guided, but the demands grow. The diver is introduced to a different environment and a different kind of responsibility, and the instructor's task is not merely to supervise, but to help the student see more than they would see alone. Good instruction at this stage does not simply protect students from difficulty; it introduces them to challenges in a way that invites maturity.

By Level 2, the nature of exploration shifts again. At that point, a diver should already have solid foundational skills, knowledge, and discipline, and the task is no longer only about executing procedures correctly. It becomes about thinking, adapting, responding to the unpredictable, and learning how to operate when not everything unfolds according to plan. This is where the instructor's role must also evolve. Teaching at higher levels cannot only be about showing what right looks like in clean, controlled conditions. It must also involve mentoring judgment, sharing context, discussing consequences, and helping divers understand the complexity that comes with real-world uncertainty.

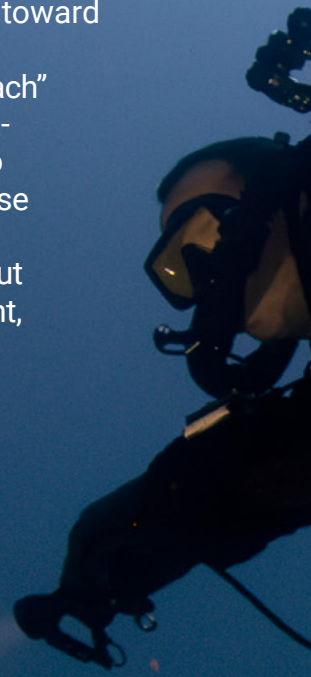
The power of experience

That is why experience matters so deeply in advanced instruction. It is not because every instructor must have made major discoveries of their own, but because higher-level teaching requires lived understanding. It requires exposure to complexity, to near misses, to imperfect decisions, to moments where things were not obvious, and to the kind of ambiguity that cannot be fully taught from theory alone. At that level, an instructor should not be holding a student's hand; they should be mentoring, challenging, and nudging the diver toward increasing independence.

So what does "Explorers Who Teach" mean? It means that, as an organization, we should value educators who do more than deliver content, because teaching in GUE is not simply about transmitting knowledge and skills, but about shaping the mindset, judgment, and character that allow those skills to matter. It means we want our instructors to cultivate curiosity, resilience, humility, and growth, and to understand that diving is not only about doing things correctly but also about learning to think, adapt, reflect, and continue evolving. It means that we recognize exploration as something broader than first discoveries alone.

So no, not everybody in GUE is an explorer in the literal sense. But the spirit of exploration should still run through the entire organization, because without curiosity there is no growth, without growth there is no mastery, and without educators who can spark that process in others, there is no lasting culture of development.

"Explorers Who Teach" is therefore not about claiming that every instructor stands at the edge of the map; it is about affirming that we want to build divers and educators who are willing to move toward the unknown, whether that unknown is found in a cave, on a wreck, in the classroom, in a difficult decision, or within themselves. That is the kind of teaching that carries our legacy forward, and that is why the phrase matters. ■



True growth is more than technical; it's a humble, self-aware journey where inner curiosity makes outward success both meaningful and sustainable.



“ At that level, an instructor should not be holding a student’s hand; they should be mentoring, challenging, and nudging the diver toward increasing independence.



Dorota Czerny

Dorota Czerny is a highly experienced diver who fell in love with the ocean in 1996. She transitioned from teaching at a university to teaching scuba diving due to her passion for the sport. As Vice President of Global Underwater Explorers, she is highly skilled in technical, cave, and rebreather diving, and is dedicated to developing the organization’s

educational component. Her focus is on creating a new generation of explorers and young scientists with GUE’s NextGen Scholarship program. Dorota’s dedication to diving education extends beyond her work with GUE as she actively explores caves and wrecks around the world.



TEXT ISABELL HENTSCHEL

PHOTOS PATA DEGERMAN, JENN THOMSON, STEFFEN SCHOLZ & ANNI MALINEN

BLIZZARD-F

– SCIEN



PHOTO STEFFEN SCHOLZ

FROZEN

SCIENTIFIC DIVING IN THE FINNISH ARCTIC ▶

Isabell Hentschel is a marine scientist specialising in greenhouse gas cycling in diverse marine systems, including the Arctic, and is one of GUE's 2026 NextGen Legacy Program (NGLP) Trainees. Her traineeship brought her to the Polar Scientific Diving course run by the Finnish Scientific Diving Academy—hands-on experience in an environment she had studied in school, and her first-ever scuba dive under the ice. The NGLP is GUE's initiative for developing future leaders in exploration and diving, with the NextGen Scholarship providing training-focused grants and accelerated support for aspiring explorers. Read on to find out more about her experience.



PHOTO JENN THOMSON,

While the team actually prepares for the dive, one of us has clearly identified a more urgent task— making a snow angel.

“What mattered was to find a solution as a team and to grow together through the process even though we were a very diverse group with different diving experiences and scientific backgrounds.”

I'm used to cold-water diving. I learned scuba diving in Germany's lakes and ponds during my early adolescence and was later introduced to twinset tanks and technical diving during a year abroad at a diving center in Norway. After returning to Germany, I began specializing in marine science and combined my passion for diving and research through scientific diver training. I'm currently based in Kiel, studying greenhouse gases in various marine systems and supporting diving projects ranging from ocean alkalinity enhancement to archaeology.

Having already experienced the harsh Arctic environment the previous year while on Svalbard, Norway, during an ecology and toxicology course abroad, I thought I had a solid understanding of conducting scientific work in extreme conditions. But the nine-day Polar Scientific Diving course at the Biological Station in Kilpisjärvi, northern Finland, run by the Finnish Scientific Diving Academy, was a completely different story. I was able to join thanks to GUE's NextGen Traineeship.

Building the team

Before the course even began, we were introduced to human factors in diving and “just culture”: individuals are not blamed for decisions or mistakes made within the limits of their experience, while willful violations are not tolerated. Over the program, it became clear how essential this mindset is for the team. In stressful and demanding environments, mistakes are inevita-

ble. What mattered was to find a solution as a team and to grow together through the process even though we were a very diverse group with different diving experiences and scientific backgrounds.

The first three days focused on preparation. Our instructors—Edd Stockdale, Erik Wurz, and Pata Degerman—walked us through everything we needed to know about operating in polar conditions: safety procedures, cold-water rigging, communication with base, the proper clothing (at least three layers, inner layer always wool), setting up camp (different options, but food tent at the end in case of a polar bear attack), hydration (at least 3 liters/0.8 gal per day!), drilling and sawing ice holes (by hand), how to operate the snowmobile, tendering lines and what to do in case of a free flow—which was our constant companion during the first dives.

In addition to very long days at the station, we had super strong northern lights over Lake Kilpisjärvi, and I could not help but go skiing with rented equipment from the station while enjoying the breathtaking dancing colors.

Into the hole

Finally on day four we conducted our first check dive. The team was organized into clearly defined roles: supervisor, safety diver, tenders, and divers—with positions rotating between sessions. But with air temperatures around -30 °C/-22 °F came some logistical problems: in each round, the non-divers had to defrost the holes and prep them with a safety line, stage cylinder, ▶▶

and tender lines. The diving gear was brought down at the last possible moment with closed but pressurized tanks and, last but not least, the divers.

It felt almost surreal to sit in the middle of a pristine white landscape and stare down at a small black hole surrounded by 1 m/3.3 ft thick ice that you are willingly jumping into after the final check.

Never breathing through the regulators at the surface was a non-negotiable. Especially piston regulators, as they were free-flowing just by opening the valves. Furthermore, the inflator froze as well, making it impossible to operate the air inlet or outlet.

When everything freezes


The first dive, I struggled with a frozen inflator, then free-flowing primary regulator, and finally a leak in my drysuit slowly flooded my undergarment. We tried our best to defrost equipment at the surface with hot water while divers patiently waited in the hole with submerged regulators. However, during the first check dive only one

person out of 11 managed a proper dive. Luckily, we improved our performance over the duration of the course.

It seemed to me that the greatest challenge was to get underwater at the start of the dive so that the equipment could actually thaw in the water. As a result, I deflated my wing completely, exhaled until I was underneath the ice and just kept holding on to the safety line while slowly breathing through my primary.

If that one froze, I changed to the secondary regulator, closed the right valve, and just waited and hoped that my secondary would not freeze as well. Other divers had the uncomfortable experience of finding that valve manipulation is very hard if there is no air in your drysuit (left valve was closed).

If the first stage free-flows, one interesting side effect is that the wing also gets inflated next to the gas coming out of the second stage. In my experience, if only the second stage freezes, you still have plenty of time to close the valve if you stop breathing through the system. For example, the crystals blocking the piston



Snowmobiles proved essential for navigating the vast frozen terrain, keeping our transportation and logistics running smoothly.

in the second stage are only forming if the gas stream increases gradually.

However, if the first stage freezes over, or if the inlet inflator button is stuck open, controlling your buoyancy is very hard because your wing inflates uncontrollably and time is limited before you hit the surface—or in our case, a solid ice ceiling.

Another interesting aspect of working in -30 °C/-22 °F air temperature appeared after the dive. Completely soaked divers have to be fast in removing all their gear while being seated; otherwise the equipment a) freezes solid onto your body, or b) you freeze solid onto the ground. Then the divers were transferred to a sledge and towed up with a snowmobile to the station for defrosting.

Luckily temperatures rose up to a cozy -8 °C/18 °F in the second half of the course, and with that the number of problems decreased drastically. In Antarctica they cover the ice holes with tents and install a heating system to keep air temperatures moderate.

Science and saunas

In total we had five diving days. After getting our heads underwater, we conducted scientific tasks such as sediment core sampling, analyzing the sediment thickness with a transect, and collecting ice samples from underwater. As the days passed by, we grew more comfortable as a team and in our daily routines, and everything started to click.

Since we were a very diverse group with some who never dived with twinset cylinders before, I really learned to appreciate standardized diving equipment. It facilitated the pre-dive preparation and improved work efficiency and emergency handling significantly.

Being exposed to this harsh and unforgiving climate, in addition to cold-water diving and functioning as an effective team, was both physically and mentally exhausting. I was consuming nearly three times my normal daily calories, and the delicious food at the station next to pleasant sauna evenings in the warmth definitely helped keep our spirits up!

“ Since we were a very diverse group with some who never dived with twinset cylinders before, I really learned to appreciate standardized diving equipment. It facilitated the pre-dive preparation and improved work efficiency and emergency handling significantly.



Golden Arctic light sets the scene as the team works the ice hole with the vast frozen landscape behind.

Furthermore, our evenings were enriched by presentations of the instructors' passion projects. Erik captivated us with his cold-water sponge research in Antarctica, where 2 m/6.6 ft leopard seals could surface in your diving hole out of convenience and curiosity. There, surface temperatures were less of a problem due to the use of a tent, but the water in Antarctica is even colder, below 0 °C/32 °F, and the ice sheet can be up to 3 m/9.8 ft thick.

Lessons from the ice

Edd introduced us to his various cave and mine explorations in Finland at depths below 100 m/328 ft, as well as the mind-blowing sensation of finding new passages, installing a deco habitat, and deciding which movies not to watch while sitting through six hours of decompression.

Pata hooked us with stories about his diving and expedition guiding in the polar regions, includ-

ing a plane crash in Antarctica and throwing salami as a distraction for polar bears in Greenland.

It was a truly enriching experience to be surrounded by so many inspiring personalities, including all of the participants. We had all worked on different projects in the past and experienced challenges with international operations and team members, and it was amazing how strong we grew together in less than two weeks.

I also learned that the most important people on the team and for the whole operation are not necessarily the ones that are exceptional at hard skills, but those that care deeply for other individuals. This was probably the most valuable lesson of the course. In such extreme conditions, there is no point in hiding who you are or trying to be somebody different. So the best way to approach an expedition (and life) is to stay true to yourself, acknowledge your own limits and mistakes, and keep an eye on each individual's needs.



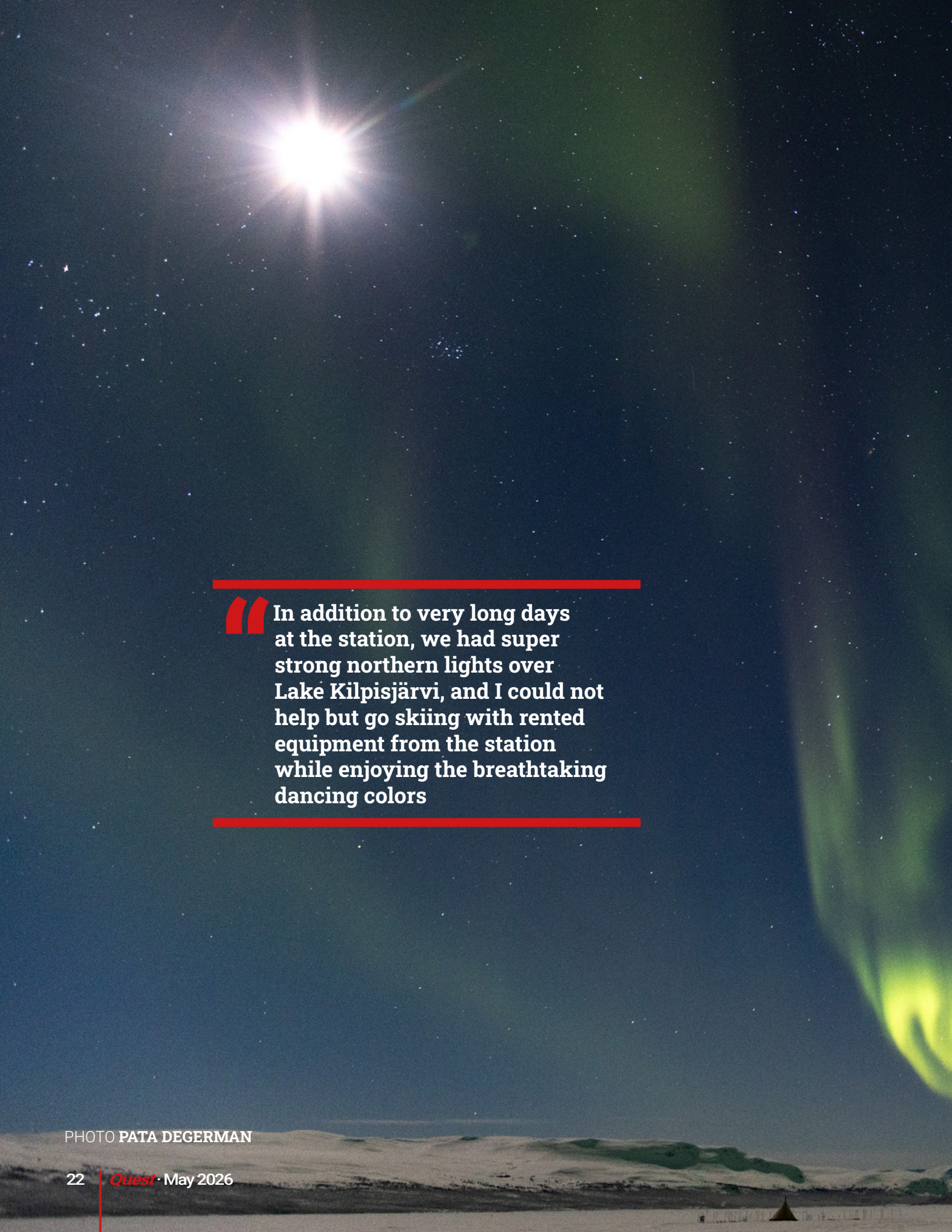
Descending into the eerie green abyss, torch cutting through the darkness – this is what we came for.

PHOTO **STEFFEN SCHOLZ**



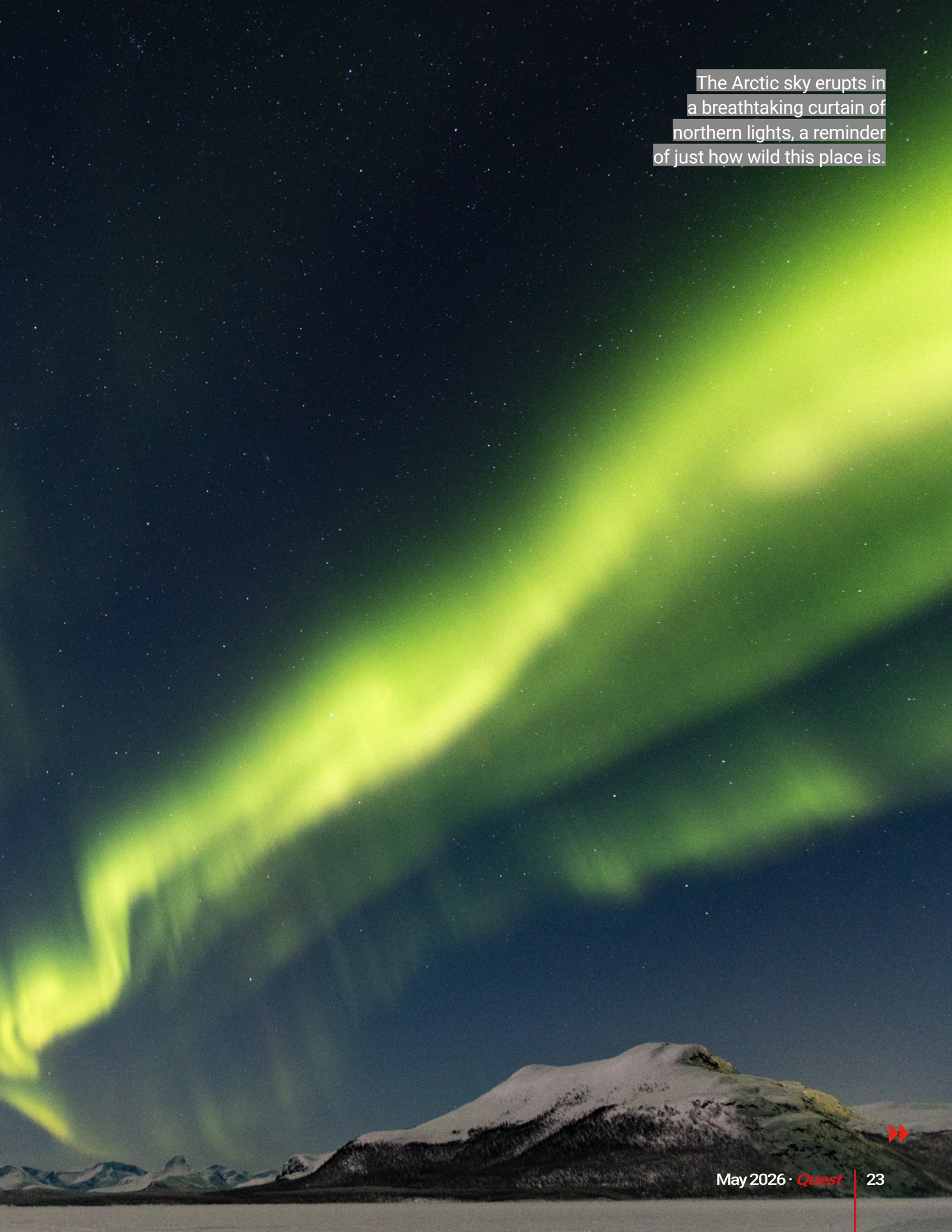
PHOTO **PATA DEGERMAN**

Final kit checks at the ice's edge – once you drop below, there's no room for anything left to chance.

A night sky with a bright star and the aurora borealis over a snowy landscape. The aurora is visible as a green and yellow glow on the right side of the image. The sky is dark blue with many stars. The ground is covered in snow and has some green patches. A small tent is visible in the distance on the right.

“ In addition to very long days at the station, we had super strong northern lights over Lake Kilpisjärvi, and I could not help but go skiing with rented equipment from the station while enjoying the breathtaking dancing colors

PHOTO PATA DEGERMAN



The Arctic sky erupts in
a breathtaking curtain of
northern lights, a reminder
of just how wild this place is.

Carrying it forward

Looking ahead, I hope to take part in more polar scientific diving expeditions. In my opinion, courses such as the FSDA Polar Scientific Diving program are essential for learning the skills required to operate in remote and demanding environments, as well as to test your own limitations and reactions to stress. I would also suggest assigning a confidential contact person for each expedition to give everyone the opportunity to speak up if they feel overwhelmed or unsafe. I also really appreciated the “just culture” approach and will try to implement it in future projects.

In addition to the team skills already mentioned, I also learned many technical skills for diving operations in very low temperatures and what can go wrong with equipment when it is free-flowing. I also became much more confident with my valve drills and in handling challenging situations underwater.

I made connections and friendships for life during this course, and the problems encountered and solved during diving will help me in all my future projects. Beyond these personal achievements, I also really enjoyed the breathtaking location and the beauty of the ice with so many frozen gas bubbles inside, which sparked my scientific interest in greenhouse gas production in freshwater lakes. My personal side quest was to reach the station with the lowest possible emissions, which resulted in one flight, eight buses, and one overnight train from Narvik via Kiruna to Stockholm—the iron transport route. Despite the longer journey, I really enjoyed meeting old and new friends and traveling slowly.

I’m deeply grateful to GUE’s NextGen Program and the Finnish Scientific Diving Academy for this opportunity. I’ll carry these lessons forward, and I’ll never forget that under the right conditions, even 1 °C/34 °F water can feel like a spa. ■



Working beneath the frozen surface, taking precise measurements—science doesn't stop just because it's freezing down here.

PHOTO STEFFEN SCHOLZ

PHOTO **PATA DEGERMAN**



The team gathers around our hard-earned hole in the ice—tired, cold, and utterly proud of what we pulled off.

FACT FILE // MORE INFORMATION

FSDA

www.helsinki.fi/en/research-stations/tvarminne-zoological-station/finnish-scientific-diving-academy/specific-programs-2026/polar-scientific-diving

Polar science diving

halifax.citynews.ca/2026/03/27/scientists-train-to-dive-beneath-polar-ice-as-climate-change-warms-the-arctic-and-antarctica

NextGen Legacy Project

www.gue.com/nextgen-legacy-project



Isabell Hentschel

Isabell Hentschel is a marine scientist focusing on greenhouse gas cycling in diverse marine systems. She is currently based in Kiel, Germany, where she is pursuing a Master of Science in Marine

Geoscience and working at the GEOMAR Helmholtz Centre for Ocean Research Kiel. Alongside her studies, she is a scientific and technical diver enrolled in GUE's NextGen Traineeship in 2026.

GUE PREMIUM DIVE CENTERS

Area 9 Mastery Diving – Kralendijk, Bonaire

➔ www.masterydiving.com



Base1 – Sardinia, Italy

➔ www.baseone.it



Deep Dive Dubai – Dubai, UAE

➔ www.deepdivedubai.com



Dive Centre Bondi – Bondi, NSW, Australia

➔ www.divebondi.com.au



Duikcentrum de Aalscholvers – Tilburg, Netherlands

➔ www.aalscholvers.nl



Eight Diving – Des Moines, WA, USA

➔ www.8diving.com



Exploration Diver – Hangzhou, China

➔ www.facebook.com/qiandaolake

Extreme Exposure – High Springs, FL, USA

➔ www.extreme-exposure.com



Islas Hormigas – Cabo de Palos, Spain

➔ www.islashormigas.com



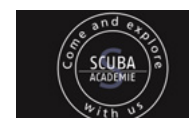
Living Oceans – Singapore

➔ www.livingoceans.com.sg



Scuba Academie – Vinkeveen, Netherlands

➔ www.scuba-academie.nl



Tech Korea – Incheon, South Korea

➔ www.divetechkorea.com



Third Dimension Diving – Tulum, Q. Roo, Mexico

➔ www.thirddimensiondiving.com



Zero Gravity – Quintana Roo, Mexico

➔ www.zerogravity.com.mx



GUE DIVE CENTERS

Buddy Dive Resort – Bonaire

➔ www.buddydive.com



Dive Alaska – Anchorage, AK, USA

➔ www.divealaska.net



Faszination-Tauchsport – Sauerlach, Germany

➔ www.faszination-tauchsport.de



Dive in Essen – Essen, Germany

➔ www.dive-in-essen.de



KrakenDive – Tossa de Mar, Spain

➔ www.krakendive.com



Living Oceans Malaysia – Kuala Lumpur, Malaysia

➔ www.livingoceans.com.my



Moby Tek Dive Center – Pahang, Malaysia

➔ www.moby-tek.com



Paragon Dive Group – Arizona, USA

➔ www.paragondivestore.com



Plongée Nautilus – Quebec City, QC, Canada

➔ www.plongeenautilus.com



Scuba Adventures – Plano, TX, USA

➔ www.scubaadventures.com



Scuba Seekers – Dahab, Egypt

➔ www.scubaseekers.com



Tauchservice Münster – Münster, Germany

➔ www.tauchservice.info



Tech Asia – Puerto Galera, Philippines

➔ www.techasia.ph



Unique Diving Center – Shanghai, China

➔ www.uniquediving.cn



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