The Journal of Global Underwater Explorers

Quest

Vol 23, No. 3 – August 2022

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EDITOR'S LETTER

The men who taught the world to dive

IN the GUE equipment essentials series, we have reached the subject of regulators. See page 52 in this issue of *Quest*. While editing the text, I found myself reminiscing on the historical evolution of modern scuba. Not many activities can trace their origin as accurately as diving. We can precisely determine the time and place of the first scuba dive in open water. It took place June 6, 1943, in Bandol, a small Mediterranean village between Toulon and Marseille.

Most people probably consider Jacques-Yves Cousteau to be the inventor of the scuba regulator. It is not really true. Cousteau only invented the need for one or the idea of one, if you will.

During WWII, Cousteau's father-in-law was a board member of Air Liquide, one of Europe's largest manufacturers of industrial gases. At their laboratory in Paris, they developed cars that could run on anything other than petrol, which was rationed during the war. The head of this project was the engineer Emile Gagnan. Cousteau told him that he was looking for a piece of technology that could deliver air at ambient pressure to a diver on demand.

Gagnan listened patiently to Cousteau's ideas, made a few notes, then pulled something out of a drawer and said the famous words: "*Quelque chose comme ça, monsieur?*" (Something like this, sir?). The valve Gagnan already developed for cars to run on stove gas was close to what Cousteau was asking for. With some tweaks and modifications, they had the prototype ready three weeks later. *Le Scaphandre Autonome,* or the Aqualung, was born.

One early morning on June 6, 1943, Cousteau was standing at the railway station in Bandol, where he lived. He picked up a wooden box containing the prototype, and, a few hours later, he made the first successful test dive at the beach Plage de Barry in front of his villa. The rest is history.

Emile Gagnan lived a more unnoticed life but significantly influenced the development of new diving technology. The Aqualung was marketed in France in 1946, but Emile Gagnan emigrated with his family to Montreal, where he worked for Air Liquide's Canadian division. Here he continued to develop a long line of technological advances that were put into production by La Spirotechnique and later by the American subsidiary U.S. Divers.

Gagnan was the originator of pretty much all of the regulator designs we use today. He died in relative obscurity in 1979.

No doubt it was Cousteau who inspired us to dive. But it is Emile Gagnan we must thank for his invaluable contribution to the technology we use every time we dive.

Today there is a memorial plaque in the small bay next to the beach where Cousteau made the world's first dive on his and Gagnan's Aqualung.

Dive safe and have fun!

Jesper Kjøller
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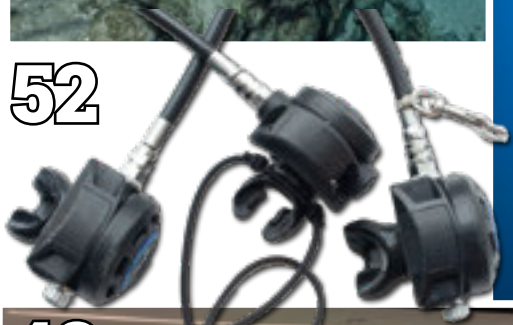

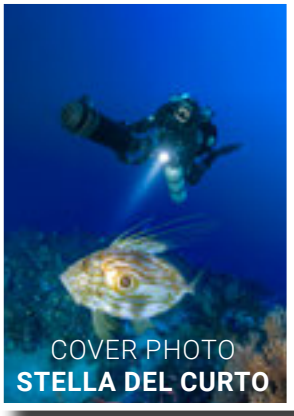
COVER PHOTO
STELLA DEL CURTO

GUE CAVE

TEXT **BRAD BESKIN & LAUREN FANNING**
PHOTOS **KIRILL EGOROV (UNDERWATER) & BORI BENNETT (TOPSIDE)**

GUE's DPV Cave course offers seasoned divers the opportunity to refine skills while building foundational skill sets for more novice DPV cave divers. Brad Beskin and Lauren Fanning had the opportunity to team up to complete a DPV Cave course with Kirill Egorov in High Springs, Florida. The program challenged them with a week of intense instruction, detailed dive planning, and managing the ramifications of using multiple DPVs and stages while performing complex dives. After the course, they agreed that it was an incredibly valuable and formative experience—and by far the most fun they ever had taking a GUE course.

E DPV

—Fundamentals on turbo

PHOTO **KIRILL EGOROV**

GUE Instructor Lauren Fanning geared up and ready to hit the trigger on a DPV dive in one of Florida's caves.

There is nothing more fun in the diving universe than riding a scooter. DPVs are fast, agile, and really darn cool. Driving a DPV feels like you're flying; you can twist and turn easily and move effortlessly through the water. Modern DPVs appear practically turnkey, require minimal maintenance, and provide an impressive amount of runtime and thrust. Each generation seemingly becomes more manageable on the surface and more practical in the water.

The allure of adding a DPV to the cave diving kit is seductive, especially for Florida's cave diving contingent. After years of getting blasted in the face by relentless flow, the idea of engaging turbo and cutting through it sounds delightful. Pass the Keyhole in Ginnie Springs in minutes with plenty of gas? Sign us up!

Even where flow is less of a concern, a DPV opens new portions of the cave that are unreachable on fins alone. Swimming three (or more) stages in Mexico seems hardly worth the effort, but towing them looks almost effortless.

Team dynamics and experience

DPV Cave students are often a diving duo with a long history of diving together. Most have some trigger time logged—whether in open water or overhead—and while not required, some have taken an overhead DPV course from another agency and accrued some experience therein. Commonly, students are looking for further skill development and/or refinement, as well as controlled exposure to advanced overhead skill sets—namely dive planning and equipment management—necessary to support extended range diving.

Interestingly, while we met at the 2017 GUE Conference and became fast friends, our dynamic duo had never been on a dive together before we took our DPV Cave. But, this is one of the key benefits of GUE's systematic approach, and we had little trouble syncing up as a unified team on our first day of diving together in class.

Brad approached the course as a novice overhead DPV diver.

"I set my sights on completing DPV Cave some time ago. Like many, I took the NSS-CDS DPV Pilot course (which was great) as an intermediary step between Cave 2 and the more robust GUE DPV Cave curriculum. Even after the CDS program, unsurprisingly, my need for continued instruction was obvious. 'Perfect practice' is what's expected, right? So, it made sense for me to seek out additional instruction (as opposed to simply building experience) so that the experience I accrued reflected perfection, and not my novice attempts to emulate it. So, for me, the course predominantly involved skills of first impression. I could manage a DPV, and I could manage stage bottles. But I had no idea how to manage them together. So, Kirill worked with me on building these foundational skill sets for dive planning and equipment management in the same way that I learned basic kicks in Fundamentals or basic line work in Cave 1. We started in the classroom, worked up to the field, and ended up in the cave. In many ways, this gave the course the familiar feel of the other GUE weeklong, intensive courses like Cave 1. Plus, admittedly, I've always had the hankering to train with Kirill, and this seemed like a good starting point."

Disparate skillbase

Lauren came to the course with a fair amount of experience with a DPV in the overhead.

"I have been working on cave diving projects in North Florida for the past few years, most of which require the use of and ability to support divers utilizing up to four DPVs each on a single dive. Getting comfortable managing large amounts of equipment has been an ever-evolving process, and I've been grateful for this experience. I always had the question in the back of my head, 'How is the practical application at this level—what I am doing in real life—different from what is taught in a GUE DPV Cave class?' I recognize drift can occur from a diver's original training, so I pursued this class to refine areas needing improvement to make project diving more efficient and enjoyable. I opted to do this training with Kirill because he's always had an unwavering approach in mentoring me and providing non-stop but usable and actionable feedback to improve my diving."

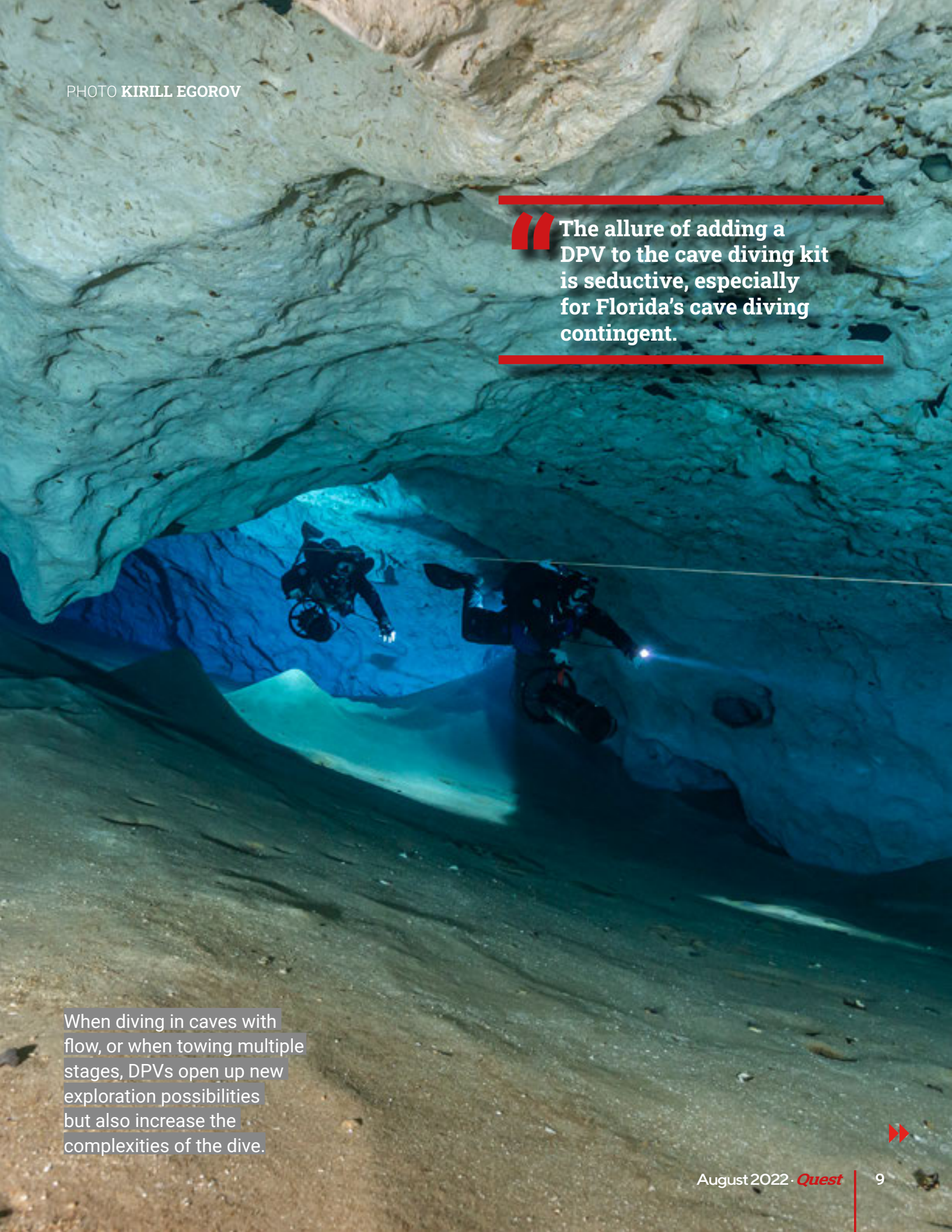

PHOTO **KIRILL EGOROV**

> **The allure of adding a DPV to the cave diving kit is seductive, especially for Florida's cave diving contingent.**

When diving in caves with flow, or when towing multiple stages, DPVs open up new exploration possibilities but also increase the complexities of the dive.

PHOTO **BORI BENNETT**

Kirill and the authors getting ready for yet another long DPV training dive in Ginnie Springs.

Our team's disparate skill base and experience were, at first, somewhat concerning. We had no idea whether the course would accommodate these differences while adding value for both team members. Would one feel overwhelmed? Would the other feel under-engaged?

Looking back, we find our lack of faith disturbing, as Kirill handled this disparity deftly. On one hand, Kirill worked with Lauren to modify her existing skill sets subtly. These micro-refinements—e.g., clipping the tow leash to a different D-ring—adjusted and built upon skills she had been using regularly. On the other hand, and at the same time, Kirill worked with Brad as he practiced these skills (at least practically) for the first time.

All of this proceeded under the watchful and demanding eye of a prototypical GUE instructor. The course was well-tuned to both macro and micro skill adjustment, both of which lead to excellence.

"All of this proceeded under the watchful and demanding eye of a prototypical GUE instructor. The course was well-tuned to both macro and micro skill adjustment, both of which lead to excellence.

In-depth training

The addition of a DPV to overhead diving adds an array of new risks. Comparatively, at a swimming pace, the Cave 2 diver has ample time to take in their surroundings, build a mental map of the cave, check gas, manage the light, and keep track of the team—all while maintaining buoyancy, trim, stability, and control.

However, once you hit the trigger, everything starts happening a lot faster. Brad had a bit of a reckoning with this reality on our team's first dive. "As we passed a very familiar part of the Ginnie mainline, I felt an old, discomforting sensation creep upon me. I immediately recognized it as 'the Eeks,' or that feeling of careening dread that usually ends in one conclusion: 'I don't want to be in this cave right now.' It took a second to realize I had the solution in my hand—and I let go of the trigger. We stopped, I signaled my team, and we held. I spent a minute or two walking through some fundamental checks while asking a few logical questions: Is everything as it should be? Flow check, depth/time, SPG check, situational awareness scan? (yes). Am I having fun? (yes) Do I want to be here? (yes). After a few minutes, we proceeded, and that dread never crept back on any subsequent dive. This course is, literally and metaphorically, on turbo. Don't be afraid to stop, take a beat, and remember the fundamentals of overhead diving."

While the DPV removes the effort of swimming, it adds significant complexity and novel challenges to the dive. Dive planning must account for an exigent exit—towing a diver, sharing gas, or other less-than-ideal scenarios, including swimming out the way you scootered in. Gas switches become more challenging when there's a scooter in your hand (and, perhaps one on your tail, as well), and knowing what to do with each item makes the procedures more streamlined and efficient. Light discipline isn't so easy when you have to switch driving hands and stay on the trigger. Minor differences in pace can lead to large gaps in team formation. And try—just try—to check your SPG while on the trigger without smacking the ceiling, crashing to the floor, or ramming a teammate.

Therefore, proper instruction—land drills, open water drills, a high level of situational awareness, and only then experiential overhead dives—is necessary to prevent significant damage to the cave, as well as a tragic incident to the divers.

While they seem like underwater dirt bikes, a DPV dive requires a lot more than "point, trigger, zoom."

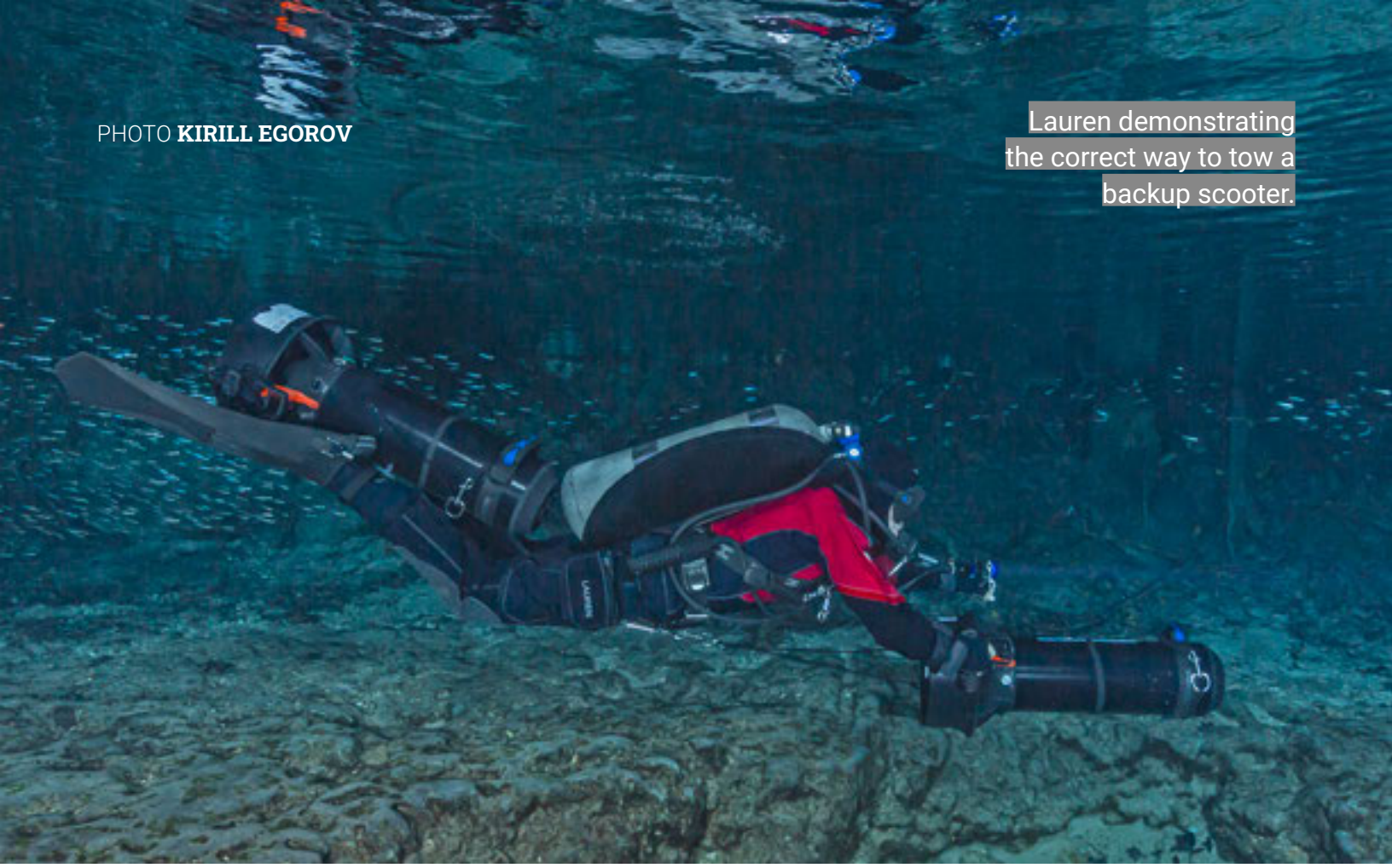

PHOTO **KIRILL EGOROV**

Lauren demonstrating the correct way to tow a backup scooter.

GUE's DPV Cave Course

To that end, GUE's DPV Cave course focuses on three key skill sets: advanced dive planning, DPV management, and stage bottle management.

Advanced Dive Planning

We've all heard the familiar refrain: Nothing can kill you faster than a scooter in a cave. Well, nothing makes this more evident than doing the math on paper. Proper dive planning is an essential part of introducing DPVs into your diving. The team must account for gas time, trigger time, and all the likely failures that may try to ruin the dive. The course focuses nearly an entire academic day on the many factors the DPV Cave diver must consider when planning an extended-range dive. Of course, we applied these planning skills in-depth before each experience dive in the course.

DPV Management

Experienced DPV pilots make the task look simple. But, managing a DPV is a complex task, requiring practice and patience. Complicate this with a fragile overhead environment, and the task becomes one of precision and finesse—or the entire team will be exiting in zero visibility. DPVs sing a siren song of thrust and power, and succumbing to it is a quick way to find yourself out of sorts.

Lauren was reminded of this while entering the eye at Ginnie Springs with multiple stages and two DPVs. "I've been through this section of the cave entrance countless times. But, with a large amount of equipment, maneuvering through a small area in a head-down/feet-up position, I felt an odd sense of pressure to 'get out of the way,' and I didn't feel as smooth as I usually would. I made the mistake of picking power over technique—I hit the turbo and used the scooter to pull me through a small area quickly. I ultimately resembled a bull in a china shop—not the elegant ballerina I was shooting for. When we surfaced three and a half hours later, Kirill had not forgotten my not-so-graceful entrance and provided some feedback on how to improve, including ways to avoid blasting my teammate with prop-wash and sand. Yikes!"

Ultimately, slow down, be smooth, and don't feel rushed to get in the entrance faster with people behind you.

DPV management skills include not only the detailed mechanics of piloting a DPV with finesse through a fragile environment, but also management of the DPV while off the trigger, managing a reel or spool, switching gas, surveying, or addressing a problem—in and out of the flow. Just as the Fundamentals student builds muscle memory with repeated S-drills and valve manipulation, so too does the DPV Cave diver with switching off the scooter, stowing it, and retrieving it.

Stage Bottle Management:

GUE Cave 2 instills a familiarity with the use of stage bottles to extend range. The broad consensus in Florida is that the extra juice from swimming more than two stage bottles—and sometimes even one—in flow simply isn't worth the squeeze. This changes with a DPV, and DPV Cave divers have the ability to bring as much extra gas as they can comfortably carry or fit on a leash. This introduces challenging new skills like switching between stages (using back gas as a transition) while managing the light, scooter, team, and more. The course focuses heavily on bottle placement, rotation, drops, and pickups in coordination with the DPVs.

Messy exit

This skill set also involves the use of a backup or tow scooter. The task of keeping a tow scooter restrained and controlled through the cave is, at best, difficult. This was a particularly novel challenge for Brad. "As we made it back to the Ginnie Gallery, I recognized the tow scooter, which was clipped nose-to-leash to my front crotch D-ring, was towing somewhere behind me but not where it needed to be (which is resting on top of my fin blades). My exit through the lips had been particularly messy. The tow needs to be perfectly positioned, and it wasn't. As promised, the tow promptly floated past me in the flow toward the exit, having 'mysteriously' become untethered on account of my mismanagement. We caught it just before we reached our oxygen bottle drop. More fodder for Kirill's debrief."

PHOTO **BORI BENNETT**

Cave diving is very much a mental game, and being able to visualize the plan and the procedures is an essential part of the preparation.

PHOTO **KIRILL EGOROV**

> **Multiple individual skills appear simple on their own, become overwhelming when first combined, and finally collide into an intricate, smooth progression in the final course dives.**

The GUE DPV cave course develops the skill set necessary to handle multiple stages and scooters with finesse and attention to detail.

Fundamentals on turbo

The course rests on top of GUE's robust Cave 1 and 2 courses and continues with the week-long, intensive format and late-week crescendo that make those prerequisites so successful and rewarding. Typically, the course requires early mornings and long, exhaustive days with total in-water exposures at the minimum of six hours and maximum around nine hours. Multiple individual skills appear simple on their own, become overwhelming when first combined, and finally collide into an intricate but smooth progression in the final course dives. To say we were tired at the end of class would be an understatement, but we were left with just enough energy to complete the course-required swim test and breath-hold swim.

The course progression is familiar to GUE divers. Fundamentals students begin their journey awkwardly practicing fin kicks on land; similarly, DPV Cave students begin in open water practicing the most basic skills—switching drive and light hands, adjusting DPV position and ride position, maintaining light discipline, and fine-tuning line-laying and retrieval techniques while on the trigger. Sounds easy? Well, it's not, and Kirill rightfully spent many hours with us running up and down "the Run" at Ginnie to get it right and dial in all of the details.

To that end, the course resembles Fundamentals, but on turbo. Students quickly find themselves advancing from simple steering drills to laying line while scootering, managing multiple scooters, and managing multiple stages. The course escalates quickly but intuitively with continuous refinement in the details.

Oh no!

Lauren recalls one of the things that made this continuous stream of feedback manageable, and even enjoyable at times. "Going into this course with the pure intent of becoming a better diver for specific applications on projects and looking for actionable items to improve, without having the added pressure of performing to a specific level or receiving

Left to right: Lauren Fanning, Kirill Egorov, and Brad Beskin.

a pass in the end, ultimately made this course the most fun training experience I've ever had in diving. I one hundred percent recognize that this is easier to say than to feel, but I would highly encourage participants in a class to look at constructive critiques as little boosts to help you meet your goals."

And, not surprisingly, there are failures. Just as a Cave 1 diver becomes intimately comfortable in zero visibility, so too does the DPV Cave diver become intimately comfortable tucked under the tail of their teammate for a seemingly endless tow out of the cave. Any time we heard blasts fire from the wretched air gun, the song "Oh No" by Capone would play in our minds as we managed the endless amount of simulated failure scenarios. The song may as well have been played on repeat for the majority of the exits during our class.

Of course, the instruction is somewhat forgiving on newer advanced procedures but relentless vis-a-vis safety and basic skills. Forget to turn on a backup light before you deploy it and it will (as always) promptly go missing. Forget to position the tow scooter properly and it will inevitably detach—ironically, just before you need it.

PHOTOS **BORI BENNETT**

Success means practice

Proudly, after a long week, our final dive was smooth. We returned to the Gallery after a nearly four-hour runtime with no simulated failures, indicating that—at least in Kirill's eyes—the dive was executed according to plan. Our final debrief was as expected: "This was good…, that was not so good…, and don't forget to…" Like any GUE student, neither of us emerged with a flawless record. Kirill identified many aspects of our diving—both specific to DPV piloting and to cave diving generally—that could use improvement.

We passed, notwithstanding some areas for improvement and continued refinement. Of course, the outcomes are slightly different: Brad is looking forward to building more experience, practicing the skills he learned, and venturing farther from the door in a controlled and sensible progression. Lauren is excited to use her new skills and experience as she continues to grow as a diver and WKPP team member.■

Lauren Fanning

Lauren Fanning is a GUE instructor residing in High Springs, Florida. She spends most of her free time diving in the North Florida caves and particularly enjoys working on exploration projects. She has a wide range of experience working in the dive industry, from training development to equipment manufacturing and marketing. Today she assists GUE with training administration, teaches approximately once a month, and enjoys country living with her husband, Blake Wilson, and their two rescue dogs, Parker and Pepper.

Brad Beskin

Brad Beskin has been diving actively for approximately twenty-eight years. He first became involved with GUE by taking Fundamentals in 2002, and then Cave 1 with Tamara Kendal in 2003. He is now a proud GUE DPV Cave diver and is looking forward to undertaking the GUE Technical curriculum in 2023. He assists GUE with risk management and quality control. Brad lives in Austin, Texas, with his husband, Garrett, and two crazy German Shorthaired Pointers, Duke and Daisy.

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