

'I'm not afraid of dying': Cave diver's latest obsession is underneath the Ottawa River

Jill Heinerth has charted some of the world's deepest underwater caves in Florida and Mexico. She's now exploring closer to home.

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Underwater explorer Jill Heinerth emerges from the Ottawa River in Lapasse - a couple of hours west of Ottawa - where she and her team have been exploring underwater caves. The Carleton Place resident is Explorer in Residence with the Royal Canadian Geographic Society and is the author of "INTO THE PLANET - My Life as a Cave Diver." JULIE OLIVER/Postmedia
Photo by Julie Oliver /Postmedia

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As a two-year-old, she fell off the dock at a cottage and landed face down in the water. She remembers holding her breath and floating blissfully for a heartbeat or two before her mother plucked her from the lake. Family legend holds that her mother screamed while Jill laughed.

In the decades since, Heinerth has returned to the water again and again: to forge an award-winning career as a cave diver, to explore uncharted depths and passages, and to peer deep into her own mortality.

Cave diving is among the most dangerous sports on Earth, and Heinerth has lost more than a dozen friends and colleagues. She has also survived some harrowing moments during her more than 8,000 career dives, including a career-threatening case of "the bends."

"I'm not afraid of dying, but I am afraid of not living a full life," says Heinerth, 58, explorer-in-residence at the Royal Canadian Geographic Society. "I want to seize every day, I want to make it count. I recognize I'm taking significant risks, but I don't do that for the sake of adrenaline. I do that because I think the work that I'm doing matters."

Heinerth has charted some of the world's biggest underwater caves in Florida and Mexico; dived to the far reaches of desert oases in Egypt and Libya; and explored underwater caves cut into the bottom of the world's largest known iceberg, B-15, which broke from Antarctica's Ross Ice Shelf in March 2000.

Her latest obsession is closer to home.

She's now exploring the underwater caves of the Ottawa River.



LAPASSE. OCTOBER 6, 2023. #139535 Underwater explorer Jill Heinerth emerges from the Ottawa River in Lapasse – a couple of hours west of Ottawa – where she and her team have been exploring underwater caves. Photo by Julie Oliver /Postmedia

Born in Mississauga, Heinerth learned to scuba dive while an art and design student at York University. She fell in love with the sport, and abandoned the design business she built in Toronto to pursue work at a dive shop in the Cayman Islands. There, she met an accomplished cave diver, which set her on an unusual path. Her cave diving career later evolved to include [writing, teaching, photography and filmmaking](#).

After living most of her adult life in Florida and the Cayman Islands, Heinerth moved to Carleton Place six years ago. One of the things that appealed to her about her new hometown is its proximity to the Ottawa River and its vast cave network.

Heinerth has since made hundreds of dives into [the river's cave system, east of Pembroke](#).

The 10.6-kilometre freshwater cave system lies beneath the shoreline, river bed and islands of the Ottawa River. It is the country's largest underwater cave network, straddling Ontario and Quebec.

It was mapped, beginning in 1985, by Canadian Forces physician Dr. David Sawatzky, then posted to CFB Petawawa. Sawatzky and his fellow divers spent 15 years exploring the cave system's subterranean passageways.

When Heinerth learned of the caves from Sawatzky, an old friend, she was keen to see them for herself.

"Sometimes, you're moving in space that's smaller than crawling under your bed," she says of the Ottawa River caves. "But when I first went in there, I was absolutely blown away by the life: There was a greater density of life than I'd ever seen in a freshwater cave anywhere in the world."

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The cave was thick with mussels and sponges, and Heinerth was struck by the complete absence of zebra mussels, which have devastated much of the Great Lakes and its watershed.

“This is a little isolated Eden that I knew was special – and I wanted to work on that,” she says.

About three years ago, Heinerth met André Martel, a research scientist at the Canadian Museum of Nature, and an expert in freshwater mussels. She told him about mussels carpeting the floor of the Ottawa River caves.

Martel was then examining the lifecycle of mussels in the Ottawa River, and was particularly interested in the Hickorynut mussel, an endangered species that thrives in Lac Coulonge. Heinerth volunteered to join his research team to help explore the biology of the caves just upstream.

The caves – they’re officially known as the Gervais and Three Island Caves – formed in the sharp bends of the Ottawa River near Westmeath as acidified river water, seeking a more direct path, found its way into joints and cracks in the limestone. Over thousands of years, the water dissolved some of the limestone, forming a series of passageways and sinkholes. The process continues today, and accelerates during flood season.

The caves are highly unusual: They have shallow passageways – known as bedding planes – with a strong flow of water and poor visibility. The passageways and tunnels tend to be about a metre deep and up to 10 metres wide, and “branch out like a tree in many different directions,” Heinerth says.

“It’s basically an underground river underneath the Ottawa River.”



Jill Heinerth, an award-winning cave diver and the explorer-in-residence at the Royal Canadian Geographical Society, has made hundreds of dives into the Ottawa River cave system, the country’s largest. Photo by Photos courtesy of Jill Heinerth /jpg

That environment makes it a challenge even for expert cave divers. To maximize her own safety, Heinerth builds in equipment redundancies – several air supplies, three lights and two dive computers that track a dive’s length, depth, air supply levels and other key values.

“I could be a kilometre inside a cave. I can’t just surface, so I have to have enough equipment to deal with any emergency,” explains Heinerth. “There’s no mission control to call for help. Anything that goes wrong I have to be able to solve on my own.”

With her starting point in the village of La Passe, Heinerth usually enters the Gervais Caves through a “resurgence” on the Ontario shoreline, a place where water gushes up to the surface. The current is so strong she often has to fight her way down into the cave by pulling herself hand over hand.

Inside the cave, a permanent guideline has been installed. It’s a nylon rope that allows divers to navigate a cave, and sometimes, to pull themselves forward against the current.

In places, she says, the silty floor of the caves has more than 100 mussels per square metre. There are also freshwater sponges, crayfish and fish: burbot, perch, sturgeon and bass. Rock fossils are embedded in the floor and ceiling, along with ancient pieces of coral from the Champlain Sea, an incursion of the Atlantic Ocean that once covered much of eastern Ontario.

“It’s going to take me a lifetime to really learn about the biology of those caves, and what’s going on month to month in them,” Heinerth says.

Heinerth and Martel are now trying to understand the precise relationship between fish and mussels in the Ottawa River. [It’s known that freshwater mussels depend on fish](#) during their life cycles: Tiny mussel larvae will attach to the gills of a fish to develop before dropping off weeks or months later.

Some mussels, like the [plain pocketbook, even use “bait”](#) to attract a host fish. The female dangles a piece of its own flesh to create a minnow-like lure – it has dark spots that look like eyes – that dances in the current. When a smallmouth bass comes to investigate, the female will release her larvae into its mouth and gills.

Heinerth and Martel want to discover what fish each mussel species prefers as its host, and why.

Understanding the life cycle of mussels can help ensure they continue to thrive in the Ottawa River, which is home to 21 freshwater mussel species – one-third of all of the native freshwater mussel species in Canada.

According to Martel, a single mussel filters one to two litres of water an hour through its gills, capturing bacteria and plankton. Some mussels can survive more than a century, he says, which means a single mussel can filter more than one million litres of water in a lifetime.

“They really act as the liver or kidneys of the river,” Heinerth says. “They are providing an unbelievable filtration resource.”

During the past year, Heinerth has travelled to Mexico, New Zealand and the Bahamas for dive projects. But increasingly, she likes to stay closer to her home in Carleton Place.

“I have this endless bucket list of places I haven’t been, and things I’d like to do, and people I’d like to dive with. But I do also feel pretty darn satisfied, and I do feel more of a nesting instinct, to be closer to home and be with my husband.

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“But if I could only ever dive in one place for the rest of my life, it would be Canada. I think I’ve put myself in a place where I’d be so happy and content to explore locally.”

Heinerth says the caves of the Ottawa River remain the focus of her fascination.

“I’m pretty obsessed with this right now, I really am,” she says. “I think it’s so unique on the planet, and so important to my own watershed.”



Underwater explorer Jill Heinerth is Explorer in Residence with the Royal Canadian Geographic Society and is the author of INTO THE PLANET – My Life as a Cave Diver. Photo by Julie Oliver /Postmedia