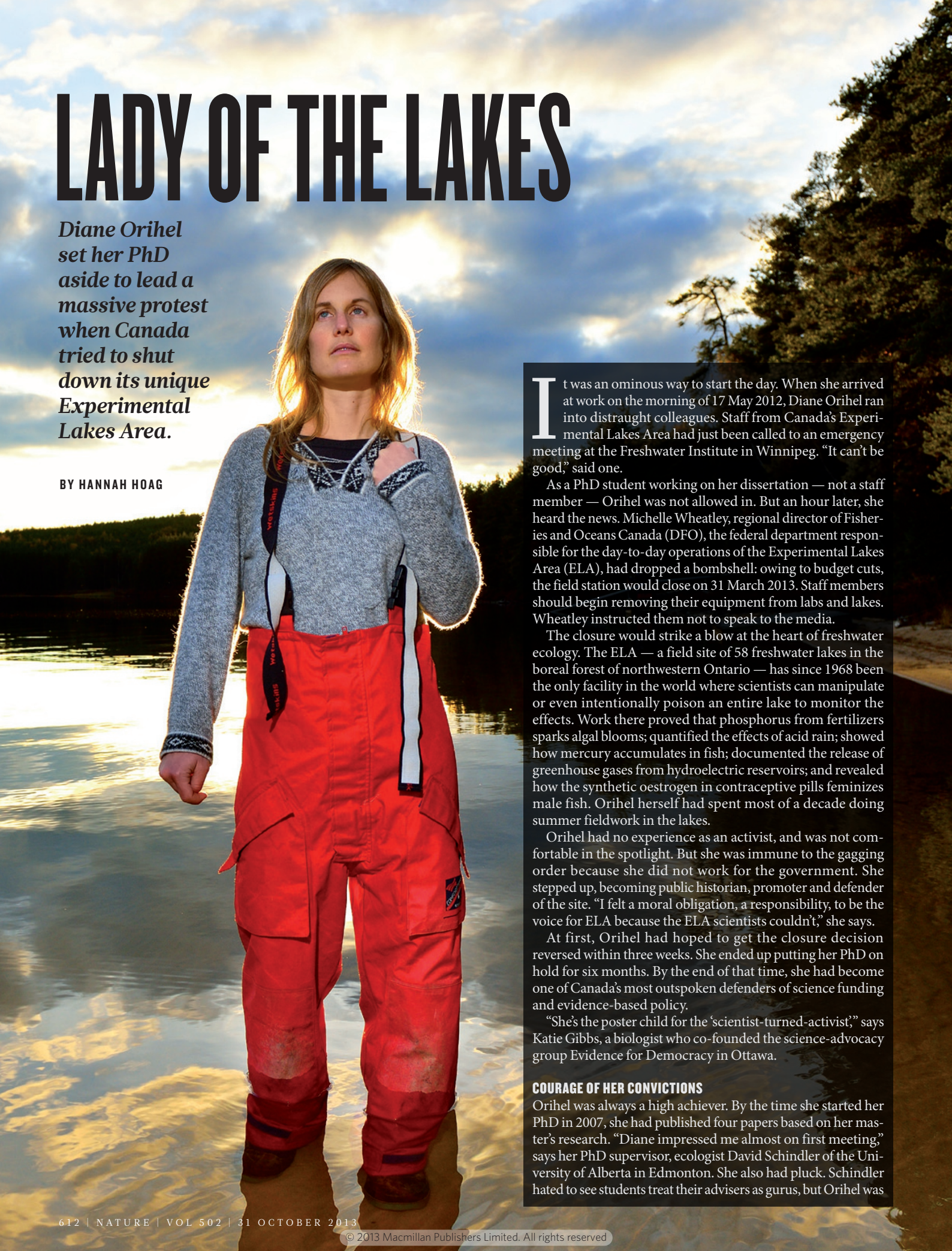
LADY OF THE LAKES

Diane Orihel set her PhD aside to lead a massive protest when Canada tried to shut down its unique Experimental Lakes Area.

BY HANNAH HOAG



It was an ominous way to start the day. When she arrived at work on the morning of 17 May 2012, Diane Orihel ran into distraught colleagues. Staff from Canada's Experimental Lakes Area had just been called to an emergency meeting at the Freshwater Institute in Winnipeg. "It can't be good," said one.

As a PhD student working on her dissertation — not a staff member — Orihel was not allowed in. But an hour later, she heard the news. Michelle Wheatley, regional director of Fisheries and Oceans Canada (DFO), the federal department responsible for the day-to-day operations of the Experimental Lakes Area (ELA), had dropped a bombshell: owing to budget cuts, the field station would close on 31 March 2013. Staff members should begin removing their equipment from labs and lakes. Wheatley instructed them not to speak to the media.

The closure would strike a blow at the heart of freshwater ecology. The ELA — a field site of 58 freshwater lakes in the boreal forest of northwestern Ontario — has since 1968 been the only facility in the world where scientists can manipulate or even intentionally poison an entire lake to monitor the effects. Work there proved that phosphorus from fertilizers sparks algal blooms; quantified the effects of acid rain; showed how mercury accumulates in fish; documented the release of greenhouse gases from hydroelectric reservoirs; and revealed how the synthetic oestrogen in contraceptive pills feminizes male fish. Orihel herself had spent most of a decade doing summer fieldwork in the lakes.

Orihel had no experience as an activist, and was not comfortable in the spotlight. But she was immune to the gagging order because she did not work for the government. She stepped up, becoming public historian, promoter and defender of the site. "I felt a moral obligation, a responsibility, to be the voice for ELA because the ELA scientists couldn't," she says.

At first, Orihel had hoped to get the closure decision reversed within three weeks. She ended up putting her PhD on hold for six months. By the end of that time, she had become one of Canada's most outspoken defenders of science funding and evidence-based policy.

"She's the poster child for the 'scientist-turned-activist'," says Katie Gibbs, a biologist who co-founded the science-advocacy group Evidence for Democracy in Ottawa.

COURAGE OF HER CONVICTIONS

Orihel was always a high achiever. By the time she started her PhD in 2007, she had published four papers based on her master's research. "Diane impressed me almost on first meeting," says her PhD supervisor, ecologist David Schindler of the University of Alberta in Edmonton. She also had pluck. Schindler hated to see students treat their advisers as gurus, but Orihel was

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not afraid to defend her point of view.

Schindler — who in 1991 won the prestigious Stockholm Water Prize for his work on nitrification and acidification of lakes — was an ELA founding scientist and its first director. When he met Orihel, he was 66 years old and shrinking his research group as he readied himself for retirement. He gave Orihel a small grant to investigate an unusual type of algal bloom. She occasionally spoke to residents' associations and advocacy groups about her research, but generally kept to her work.

Everything changed on that Thursday morning in May. After hearing the news, Orihel got in touch with a local politician she had worked with on algae before, and got a quick lesson on media relations from his communications staffer. She wrote a press release and began collecting quotes from scientists. She briefed the opposition party so that it would know what was going on. By mid-afternoon, she had blasted her announcement to a list of journalists that she found online.

On Friday evening, Orihel's neighbours, concerned by her non-stop work, ordered her over for dinner. But she was preoccupied. "Do you know how to set up a website?" she asked her hosts. With their help, the campaign got a name, Save ELA, and an online home. Over the weekend, Orihel organized dozens of volunteers by e-mail and Skype, and persuaded two postdocs to join her in forming the Coalition to Save ELA. They doled out tasks: fill the website with details of past and present projects; develop a petition to deliver to parliament; organize scientists to send an open letter to the fisheries and environment ministers; write more press releases.

By Sunday, Orihel realized that she would need to take leave from her studies. Just three weeks, she told her supervisors. They "weren't keen", she says. "All she had left was to write up her thesis. And she gave that up to save ELA," says Schindler, who regretted the interruption to Orihel's career, but was proud of her gumption. "It was a remarkable show of spine."

EXPANDING CAUSE

The three weeks passed quickly. By June 2012, more than 11,500 Canadians had signed the coalition's petition and Orihel flew to Ottawa to deliver it to politicians. She packed her trip with speeches, meetings and press conferences. She got the open letter — signed by eight established Canadian scientists, including John Smol, a limnologist at Queen's University in Kingston, Ontario — published in a national newspaper. She persuaded scientific societies from the United States, Japan and Australia to send letters of protest to the government. Orihel capped her tour off with a speech to students at Queen's University. Her campaign had grown bigger than just the ELA. "I am you," she began. "I am shy, quiet, introverted, and get nervous at public speaking." But in the face of "a government's anti-science, anti-environment agenda", she told the audience, "I need your help".

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For more on the ELA's reprieve, see:
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Orihel's campaign tapped into a growing sense of unease. Many Canadian scientists felt that the government's cost-cutting measures had unfairly targeted science and environmental programmes: the Polar Environmental Atmospheric Research Laboratory in the Canadian High Arctic, for example, was slated for partial closure (it later reopened with two-thirds of its previous budget). Federal environmental assessments had been overhauled, reducing the number and length of evaluations. And government scientists were fed up with a communications policy, quietly put in place four years earlier, that restricted their relationship with the press: researchers had to get permission to speak to journalists, and interview requests were often denied or responded to with government-controlled quotes. Greg Rickford, Canada's current science minister, declined to be interviewed for this story, e-mailing only a general statement: "Our government is committed to science, technology and innovation and taking ideas to the marketplace."

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In July 2012, more than 2,000 people gathered for a 'Death of Evidence' rally on Parliament Hill, to protest against the way the government was undermining science-informed decision-making. "Diane made the ELA one of the best-known examples of funding cuts in Canada," says Gibbs, who organized that rally.

DFO director Dave Gillis insisted at the time that the government had to make the cut — the ELA closure would save Can$1.5 million (US$1.5 million) a year, less than 2% of the nearly $80 million that the DFO needed to trim by 2015 in austerity measures — and said that the department hoped other organizations, such as universities, could take on the ELA's costs. But some claim that ideology drove the decision: the ELA and other research facilities might produce damning data about the environmental impacts of, for example, extracting oil from Alberta's tar sands or the use of industrially valuable chemicals. "It had nothing to do with money. It was inconvenient data," says Smol. In response, the DFO issued a statement to *Nature* saying in part: "Science is the foundation of the department's business and it will continue to build scientific knowledge about our aquatic environment and fisheries resources to support long-term sustainability and conservation objectives."

By last autumn, things were looking bleak: the idea that the ELA might be run by a consortium of universities had come to nothing. Orihel's dream of getting the original decision reversed was beyond hope: "I knew hell would freeze over before this would ever happen." Exhausted, she stepped down as head of the Coalition to Save ELA, to return to her PhD. But behind the scenes, she knew, ELA scientists had approached the International Institute for Sustainable Development (IISD), a policy think tank based in Winnipeg, to find another way to keep the site going.

LAST-MINUTE REPRIEVE

It came in the nick of time. By mid-March 2013, just weeks before the planned closure, a work crew had started dismantling old cabins at the ELA, and university scientists were contemplating abandoning their experiments. Then, in April, the IISD announced that it had secured a deal with the Ontario provincial government to keep the site open through the summer. Orihel and her coalition deserve substantial credit, says Matt McCandless, the IISD's project manager for the ELA. By keeping the spotlight on the ELA, they "paved the way for the negotiations", he says.

Ontario later promised to provide up to $2 million a year to run the ELA; in September, the neighbouring province of Manitoba promised $900,000 over six years. But the battle is not over. On 1 September, the agreement that allowed scientists to pollute the lakes expired. The site is open, but scientists there cannot legally do their game-changing work. "Even today, the ELA is so far from being saved and functional again," says Orihel. "I don't trust this government to do what's in the best interest of science and the environment and all Canadians. This will drag on and on."

She now has her PhD, but Orihel admits that her actions may have limited her career options: the government, or some universities, might be uncomfortable hiring someone so politically vocal. "She took a risk, but her credibility as a scientist will come from her publications," says Smol. Schindler adds: "If you were to ask me to pick the next leader of the ELA project, I'd pick Diane." Some say that she could have been more effective by working with the government, rather than fighting it aggressively. But Orihel does not regret her approach, despite having had to rewrite her personality to run her campaign: "I made myself act unlike myself."

Now Orihel's life is back to normal: she is looking for a postdoc position and finishing off research papers. But she hopes that her actions will inspire others. "Things are so bad in Canada, right now," she says. "Scientists can see the writing on the wall. They're seeing a need to speak out." Orihel says that she has been encouraged to run for public office. "But I have no political aspirations. I just want to be a scientist." ■

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