

A Media Feeding Frenzy on Alien-Like Life in the Arctic

In 1990, to escape some bad weather that was clogging up the head of Hare Fiord on Ellesmere Island, our daring helicopter pilot ventured his machine into a narrow valley that took us straight back to Borup Fiord, a few tens of kilometres to the south. What the pilot called his favourite bad weather “escape route” was also the site of a unique phenomenon. As we were flying over the narrow pass with mountains towering all around us, I could not help noticing a large patch of yellow-stained ice on a glacier tongue right beneath us. The bad weather that day prevented us from having a closer look and I had to wait several weeks before entering again what became known as “Borup Fiord Pass,” but this time we were determined to check out the yellow ice phenomenon. The aircraft had not yet touched the ground when the unmistakable smell of rotten eggs inundated the cabin. While the students at the back of the machine blamed each other for what they thought was an afterthought on a rather spicy meal the night before, it was clear to me that the smell came from the glacier itself and that it was the scent of hydrogen sulphide; as for the yellow stuff staining the ice: no doubt it had to be native sulphur.

Some 10 years later, Dr. Steve Grasby of the Geological Survey of Canada (GSC) set out to study the phenomenon. Armed with crampons, ice axes, and sampling equipment, Steve, a hydrogeologist and geochemist with vast field experience, not only confirmed my initial observation of hydrogen sulphide and native sulphur, but also demonstrated the presence of a complex array of precipitates, including an extremely rare natural occurrence of the mineral vaterite. He also documented a rich biota of cold-loving, sulphur-reducing, and sulphur-oxidizing bacteria, which were thriving at depth both within and beneath the glacier, feeding upon sedimentary sulphates (gypsum and anhydrite) that lay some two kilometres beneath the ice. Steve, with a little help from friends at a number of U.S. laboratories, pieced together a story that, albeit preliminary, was positively received in the rarified world of those who study life in extreme environments, such as beneath glaciers in the most inhospitable climates on Earth, or in some yet unknown environments of our solar system. Accordingly, the story was published in *Astrobiology* in 2003. We never thought our piece would go far. We were wrong, by a long shot...something like 684 million kilometres.

Europa, Jupiter’s second Galilean moon, is a unique object in our solar system. It is covered with ice, and its surface is a mosaic of fractures and ridges crossing each other, indicative of a complex, yet relatively recent, history of horizontal movements reminiscent of plate tectonics on Earth. All kinds of evidence suggest that the engine for this surface activity lies beneath the ice, in the form of an ocean of water, or at least slushy ice, that’s heated by the moon’s elliptical orbit around Jupiter, which causes tidal kneading. Long and narrow bands of sulphur compounds seeping onto the ice from the satellite’s interior provide additional evidence for an active planetary system like no other. Dr. Bob Pappalardo of NASA’s Jet Propulsion Laboratory (JPL) believes that Europa could harbour the very conditions that life needs to flourish outside planet Earth: it has water, energy, and carbon. Sending a probe to Europa to check out whether life, in one form or another, exists beneath its ice cover is a dream that Pappalardo has been pursuing for many years. But before sending a probe with fancy equipment to Europa, a mission that would command a large chunk of NASA’s exploration budget, Pappalardo and his students would like to check right here on Earth how such a mission would fare in an extreme environment. And what better place to test both ideas and equipment than Borup Fiord Pass of Canada’s High Arctic, the Earth’s best-known analogue to Europa.

Last summer, the Arctic Institute of North America (AINA) organized an exploratory expedition to Borup Fiord Pass to do some reconnaissance work. Our plan was to acquire new hydrological and biological information about the spring and its underlying geological plumbing system, as well as to obtain a set of preliminary spectral measurements from the ice surface that could be compared with data collected from satellites orbiting over the site. Grasby and I were accompanied by PhD candidate Damhnait

Gleeson of the University of Colorado and the University of Calgary's Marie-Eve Caron. In addition to funding from AINA and the GSC, resources to carry out the expedition came from the Polar Continental Shelf Project (PCSP), the Canadian Space Agency (CSA), and the Planetary Society. But what really set this expedition apart from earlier ones to Borup Fiord Pass was the media fanfare it generated both before its departure from Calgary and upon its return from the High Arctic. From a couple of pieces published in local Calgary media outlets, the news that a research team was heading north to study "alien-like life in the Arctic" spread like bush fire around the world. By the time we came back home, the story—and its hallmark photograph of Steve hanging on a steep ice face stained an eye-catching bright yellow—had made their way into a large number of media outlets across Canada, the United States, and indeed the world.

Rare are the scientists who do not feel a certain level of pride when their work makes it into the mainstream media. Scientists are human and getting gratification beyond that of immediate peers can boost self-confidence and may even provide that little incentive to go the extra mile. After all, granting agencies, foundations, and councils increasingly demand that scientists make an effort to communicate their science in ways that the general public can understand. But many scientists will confess that they experience a certain degree of embarrassment when they look back at what has been written about their work in magazines or said on television. That's because the popular press thrives on stories that can sell. While the story of scientists studying bacterial life within glaciers does not have much appeal, it becomes a red-hot piece of news if a connection with life on other planets can be made, even if that link is entirely hypothetical. And it does not take long for that hypothetical link to become the story itself, above and beyond the solid science that is behind it. Once they take on a life of their own, media feeding frenzies become unstoppable.

With the International Polar Year (IPY) upon us, a great many scientists will be called upon to comment on issues of popular interest with broad media appeal. Standing high above them all is the issue of climate change and its accelerated pace in the Arctic and Antarctic. Yet through the current widespread interest in climate change, a supremely important issue for all of humanity, a darker side of the media and its relationship with scientists is emerging. This darker side is exemplified by the treatment received in the media by those who know a thing or two about the geological past of our planet and dare to express the view that factors other than anthropogenic greenhouse gas emissions can cause climate change. In the media, to my profound dismay, too many honest, truth-seeking researchers are now being unceremoniously dumped into that group unflatteringly called "climate change deniers," alongside pseudo-scientists with vested interests and opinion makers of questionable motives. Disagreement among scientists is the very combustible that allows science to move forward at a swift pace. As the media interfere with this process, they are doing a great disservice to society, while taking us nowhere closer to addressing, let alone solving, the issue that will define the 21st century. Let scientists among themselves, not journalists or politicians, decide what constitutes good and bad science.

While the media reporting of our own sulphur-spring expedition somehow got out of control, it had no other consequences beyond the overexposure of a few scientists for a couple of weeks last July, while boosting the case for a major expedition back to Borup Fiord Pass, and then (hopefully during our lifetime) to Europa itself. The current media feeding frenzy on climate change is a different beast altogether, and more and more it is not the science that is being fed upon, but the scientists themselves. And that can't be good.

Benoît Beauchamp
Executive Director
The Arctic Institute of North America