

# Getting it across

Scientists need a carefully crafted strategy to catch the attention of policy-makers. **David Goldston** explains.

Scientists often think of the US Congress as a kind of impenetrable fortress in a foreign land, nearly impossible to fathom or infiltrate. But a better analogy is something more familiar to researchers — a semi-permeable membrane. The passage of ions through such a membrane depends on concentration, temperature and pressure. The same can be said about the way Congress absorbs ideas.

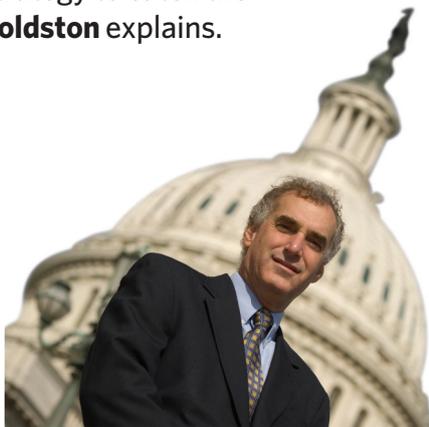
This occurred to me last month when a House of Representatives committee approved a bill to promote and coordinate research on ocean acidification. A Senate committee had already approved a version of the measure, and provisions on ocean acidification were also included in the 2006 rewrite of the primary US fisheries law and in the leading climate-change bill, which the Senate killed last month. How did Congress (or at least elements of it) come to care about an issue that was barely a blip on the scientific radar screen five years ago?

The answer includes concentration (figuring out how to make the issue more potent), temperature (turning up the heat on the issue through the media) and pressure (pushing selected members of Congress and their staffs).

In this case, concentration involved at least two steps: getting the attention of the larger scientific community, and deciding what to call the phenomenon. As of 2004, a number of key papers had been published on how carbon dioxide could alter the ocean (see pages 46 and 96), but many scientists still saw oceans mainly as a carbon sink that dampened impacts on the climate. When a major international conference on the oceans and carbon was being put together for May 2004, the initial focus was on getting the world's seas to sequester more carbon\*.

But scientists working on acidification, such as Ken Caldeira of the Carnegie Institution of Washington in Stanford, California, convinced the organizers to broaden their focus. In the end, 'The Ocean in a High CO<sub>2</sub> World' meeting in Paris, sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), became a turning point in expanding awareness among scientists about 'acidification'. It was also where researchers agreed on using that term, replacing more technical language about saturation, or reduced alkalinity, or levels of aragonite. Acidification

\*The conference history is documented in a paper by Gabrielle Dreyfus, a PhD student at Princeton University.



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was easy to comprehend, sounded alarming, and drove home the idea that carbon dioxide was a pollutant. The renaming was a critical step, Caldeira told me in an interview.

The public, though, remained largely unaware of the problem. There were a few articles in the United States on the UNESCO meeting, but media coverage increased when Britain's Royal Society published a report sounding the alarm on acidification in June 2005. An article in *Scientific American* in March 2006, by Scott Doney of the Woods Hole Oceanographic Institution in Massachusetts, garnered more attention, and the issue entered the limelight when *The New Yorker* ran a lengthy piece by journalist Elizabeth Kolbert in November 2006. These publications reached critical, influential audiences even if they did not make acidification a household word.

Even before the piece in *The New Yorker*, press coverage began to make a difference. Spurred by an article (he doesn't remember which one), Representative Jay Inslee (Democrat, Washington) set up a dinner briefing for a handful of interested colleagues in May 2006. The meeting was arranged through COMPASS (the Communication Partnership for Science and the Sea), a foundation-funded scientific group established in 1999 to link researchers with policy-makers and the media. COMPASS, in effect, helps to ferry scientists across the semi-permeable membrane, makes sure their presentations are properly structured, and ensures that they bind with the right sites within Congress.

The dinner briefing was given by Caldeira and Joanie Kleypas of the National Center for Atmospheric Research, who followed up with

a briefing for congressional staff the next day. (Briefing slides at [www.compassonline.org](http://www.compassonline.org).) COMPASS helped to ensure that the presentation would be understood by policy-makers, Caldeira says. Scientists "don't understand what's scientific jargon", he notes. "Even terms such as 'water column' can be confusing." Since that event, COMPASS has taken the lead in setting up more meetings on ocean acidification between scientists and key congressional members and, especially, staff.

As with most issues, what is needed for action, especially at first, is a small group of devoted players on the relevant congressional committees, rather than broad support. In this instance, the issue was also promoted by staff with scientific training. The bill that moved last month was first drafted by a scientist working for Senator Frank Lautenberg (Democrat, New Jersey) under the Sea Grant Fellowship programme. The programme, run by the National Oceanic and Atmospheric Administration, brings graduate students and recent PhDs in marine and aquatic fields to Washington for one-year placements on Capitol Hill or federal agencies. Science fellows, in effect, increase the permeability of that congressional 'membrane' by offering more sites for binding.

But finding a willing audience and speaking clearly are not enough. Scientists spreading the word on acidification have been careful to maintain their credibility by being open about uncertainties and by drawing a line between science and policy. "The chemistry is highly certain," Caldeira says. "But the biological consequences are highly uncertain." His goal, he says, is to make clear what the risks are.

Even more importantly, COMPASS emphasizes that scientists should clearly distinguish between when they are describing science and when they are advocating what to do about the problem. Caldeira agrees: "I think that, as scientists, we have the ability and the right, if not the obligation, to speak as concerned and informed citizens. But it is useful to keep those roles separate. We have no particular priestly role where we have greater weight than anyone else" when it comes to policy-making.

Although the acidification story provides a model of how to get science on the congressional agenda, the tale is far from having a happy ending. As citizens, Caldeira and his colleagues want action to counter the problem. And that will require a debate engaging the entire Congress on matters far beyond science. Washington is edging ever closer to that, but it will require more than learning by osmosis. ■

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