Tackling global challenges

'We are facing issues that are global and we cannot answer them by taking a backyard point of view' says Prof Pat Glibert

When asked to chair the American Society for Limnology and Oceanography (ASLO) Summer 2006 conference, Prof Pat Glibert thought it was time to pose the question: 'What are the global challenges facing aquatic scientists?'

With a 50-year history of bringing together marine and freshwater scientists, ASLO was the ideal forum to look in detail at the common issues affecting these aquaphilic yet disparate communities. A 'bluewater oceanographer' by training, Glibert brought her marine science skills to chair the conference, while co-chair Dr Peter Leavitt of the University of Regina, Canada, lent his expertise in limnology (the study of freshwater).

Speaking to *The Marine Scientist* at the ASLO conference, held in Victoria, BC, Canada, in June, Glibert says 'we are often asking the same questions, and perhaps even using similar approaches, but we are working in isolation. We are facing issues that are global and we cannot answer them by taking a backyard point of view.'

Uniquely poised

Glibert's perspective is far from parochial, her work having the vantage point of widespread research locations. Following graduate training in oceanography at Harvard, Glibert held a faculty position at Woods Hole Oceanographic Institution before joining the Center for Environmental Science at Horn Point Laboratory in Cambridge, Maryland, US, as professor some twenty years ago.

Her first research cruises took her to the Indian and Pacific Oceans to study how phytoplankton (marine plant life) can grow in an environment with very low nutrients. On moving to Maryland, the focus of her research flipped to understanding how phytoplankton regulate their growth in coastal environments that are saturated with nutrients, such as Chesapeake Bay. Glibert explains that as we increasingly add nutrients to the coastal zone, 'the waters become overloaded and we see the impacts from toxic blooms to fish kills and oxygen depletion.' The work of Glibert and others in furthering understanding of these processes is vital to improving knowledge of aquatic ecosystems and in learning to manage these problems. Her work still spans the globe, with recent projects in Australia, Brazil, Kuwait and Florida.

Professor Pat Glibert of Horn Point Laboratory, Maryland, US

A united effort

The Victoria conference, which hosted over 1100 delegates at ten parallel sessions over 5 days, saw many key issues crossing academic and geographical boundaries. Delegates heard talks on algal blooms from Australian reservoirs to Canadian lakes to the coast of Florida. 'Whether we are dealing with nutrient enrichment or fisheries management in Chesapeake Bay, the Black Sea, the Gulf of Mexico or off the coast of China, increasingly we are experiencing the same issues in aquatic environments worldwide', says Glibert.

Making headway

Many of these issues have yet to find solutions. 'We don't have the global answers yet!' she affirms. 'We have much to learn about how to respond to climate change and how to maintain healthy water, let alone enough water — these are huge challenges we are faced with.'

Glibert is encouraged that marine science has gained tremendously in recent years. 'In the last half decade there has been a huge development of the technology bringing new insights and new understanding to aquatic science. Five or six years ago, few people had instruments *in situ* that were making continuous measurements of ocean properties, whereas now we have tools sophisticated enough to give us an understanding of real ocean dynamics.

'We are also gaining tremendous insights at the level of the genome and can now use molecular techniques to monitor organisms, observe their changes and understand how they are being regulated. The combination of these technologies together with people adopting approaches from other fields has brought about huge advances in our understanding of the ocean.'

Glibert hopes that those who attended the ASLO conference in Victoria will have come away with their fingers on the pulse of where aquatic science is going, with a bigger picture view of the challenges being faced, and importantly, with optimism. 'Although we may not have all of the solutions to these challenges, we have come a long way in terms of understanding them'.