'Street-view' comes to the world's coral reefs

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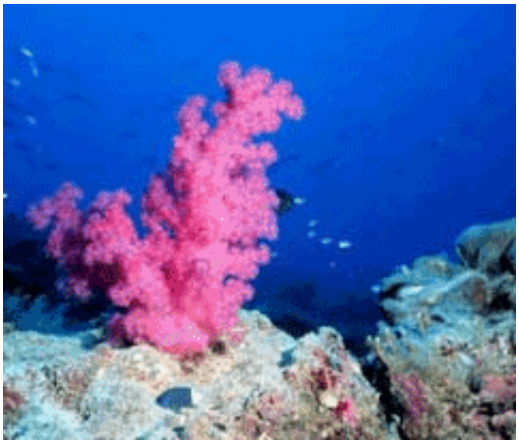

Scientists are taking the public with them to study the world's coral reefs, thanks to 360 degree panoramas from Google's underwater street-view format. Results from this pioneering project – which will allow ecologists to harness people power to discover how coral reefs are responding to climate change – will be presented at INTECOL, the world's largest international ecology meeting, in London this week.

Professor Ove Hoegh-Guldberg of the University of Queensland leads the research associated with the Catlin Seaview Survey. The Survey uses image recognition technology to automatically assess creatures on the seabed; so far it has already taken hundreds of thousands of images on the Great Barrier Reef and in the Caribbean.

"This new technology allows us to rapidly understand the distribution and abundance of key organisms such as corals at large scales. Our expeditions in 2012 to the Great Barrier Reef recorded over 150 km of reef-scape using these methods," he says.

The project is now being expanded by building citizen science into the research, which he hopes will raise awareness and provide more data. "We are planning to involve online citizens to help us count a wide range of organisms that appear in the high-definition images. Anyone with access to a computer will be able to help us log creatures such as stingrays, turtles, fish and Crown of Thorns starfish."

"Only 1% of humanity has ever dived on a coral reef and by making the experience easily accessible the survey will help alert millions of people around the world to the plight of coral reefs," he says.

Professor Hoegh-Guldberg will also report findings from ground-breaking research on the impact of climate change on the Great Barrier Reef. At Queensland's Heron Island research station, he has been running the first-ever long-term climate simulation experiments using computer-controlled systems to manipulate carbon dioxide levels and temperature to simulate past, present and future climate conditions around coral reefs.

"Coral reefs have had a hard time adjusting even to the conditions we find ourselves in today with respect to high carbon dioxide levels and sea temperatures. Our work is showing some interesting observations, such as the lack of adaptation of reef communities to the changes that have occurred up until the present," he explains.

"Worse still, our results show that even under the most moderate climate change projections from the Intergovernmental Panel on Climate Change, most corals will struggle to survive and reefs will rapidly

decalcify."

Exposing coral and their symbiotic microorganisms, known as dinoflagellates, to future ocean conditions is also revealing how these key organisms cope with changes in acidity and temperature.

Professor Hoegh-Guldberg's experiments show that responses involve the whole organism, not only one or two features of its biology. "The idea that evolution is likely to operate rapidly within these systems is largely unfounded. The more complex the response, the greater the number of biological systems involved, and the greater the number of genes that will have to be changed in coordination to enable organisms to survive," he says.

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