

British scientist warns AAAS of the threat posed by ocean acidification

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One of the UK's leading voices on ocean acidification has addressed a prestigious conference in Canada with a warning that marine biodiversity is at risk due to the corrosive effects of carbon dioxide.

Dr Jason Hall-Spencer, of Plymouth University, says that the combination of ocean acidification and rising water temperatures kills off corals, shellfish and other valuable marine life – posing a risk to industries such as fishing and tourism.

Dr Hall-Spencer addressed the Annual Meeting of the AAAS (The American Association for the Advancement of Science) in Vancouver and presented his findings from studying biodiversity at naturally occurring underwater CO2 vents.



He said: "Wherever we look along gradients of increasing CO2, the effects are strikingly similar; large falls in biodiversity occur both in the tropics and in colder waters.

"Important groups like sea urchins and coralline algae cannot survive as the CO2 makes the water corrosive. And warming makes many of the organisms even more vulnerable to the corrosive effects of carbon dioxide – so shellfish and tourism industries are right to be concerned about <u>ocean acidification</u>."

The use of these carbon vents as 'natural laboratories' was initiated by Dr Hall-Spencer, after he became "frustrated" by the slow progress being made towards predicting what increasing CO2 levels might do to coastal ecosystems. He began work at Ischia Island in Italy, and has now expanded to sites around volcanoes in Sicily, Greece, Mexico and Papua New Guinea.

He has found that some organisms are able to adapt to the effects of longterm acidification as they calcify faster at high CO2 levels. Organisms with an outer layer of protective tissue, such as Balanophyllia europaea corals and Mytilus galloprovincialis mussels, can tolerate acidified seawater. But organisms that lack protective layers suffer corrosion to their exposed shells and skeletons.

Dr Hall-Spencer said: "Initial observations confirm that although increased CO2 benefits some organisms, including invasive species of algae and stinging jellyfish, it reduces biodiversity across-the-board from simple <u>organisms</u>, such as bacteria, microalgae and foraminiferans, to flora-like seaweeds and seagrasses, and fauna, such as corals, sponges, and molluscs.

"We have also found evidence in Sicily of the rapid growth of slimy diatoms, which is useful to know as these slimy layers influence the



structure of what grows on surfaces – the economic repercussions for the shipping and marine construction industries now need to be investigated."

Dr Hall-Spencer, based in the School of Marine Sciences and Engineering, was the only UK academic to present at the conference.

Provided by University of Plymouth

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