The Marine Biological Association

Established 1884, incorporated by Royal Charter

Press release: 6 Sep 2017

Scientists develop new technology to predict how marine life will fare in warmer seas

Using a novel system to conduct warming experiments in real marine habitats, scientists in Plymouth have demonstrated that seawater warming of the magnitude already experienced during 'marine heatwaves' causes major changes in underwater communities of microbes and animals.

Understanding the responses of populations and communities to climate change is a major focus of contemporary ecology. Most studies on the effects of ocean warming are based on observations in the natural world or on experiments conducted in highly controlled laboratory conditions. A research team, led by scientists at the Marine Biological Association (MBA) in Plymouth, designed and developed a system that allows for precise control of seawater temperature *in situ*, in order to experimentally examine the effects of warming on a diverse range of marine organisms in their natural setting.

Heated panels were suspended in coastal water and were colonized by a range of marine life. The scientists looked in particular at marine microbes (bacteria and protists), and at larger attached invertebrates such as sea squirts and bryozoans. The 'heated settlement panel system' successfully controlled seawater temperature in a marine habitat for 40 days, and the responses of marine microbes and invertebrates was examined. Seawater warming of 3°C and 5°C caused major changes in the diversity and abundance of the marine organisms studied, showing that complex communities are potentially highly sensitive to increased temperature.

Dr Dan Smale, Research Fellow at the MBA said "*the surprising finding of the study was how very different groups of organisms, ranging from bacteria to sea squirts, responded similarly to the warming treatments. This shows how important temperature is in driving the structure of communities and suggests that temperatures experienced during extreme warming events alter biological diversity in coastal habitats*."

Ends

Notes for editors:

Contact for this story: Dr Michael Cunliffe micnli@MBA.ac.uk +44(0)7970 963555

The Laboratory
Citadel Hill
Plymouth
PL1 2PB UK
t: **+44 (0)1752 426493**
e: **sec@mba.ac.uk**
www.mba.ac.uk

The Marine Biological Association (MBA) is a professional body for marine scientists with some 1,400 members world-wide. Since 1884 the MBA has established itself as a leading marine biological research organization contributing to the work of several Nobel Laureates and over 170 Fellows of

the Royal Society. In 2013, the MBA was awarded a Royal Charter in recognition of its long and eminent history and its status within the field of marine biology. The award strengthens the Association's role in promoting marine biology as a discipline and in representing the interests of the marine biological community.

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