



Media Release

Chiefs of Staff, News Directors

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International management of marine resources needed as ocean warming reshapes marine communities

Ocean warming over the next century will drive rapid change in the stability of current global marine diversity patterns that have existed for thousands of years, according to a global overview of expected marine changes presented this morning at the Species on the Move conference in Hobart.

Scottish scientist Prof Mike Burrows said the latest research highlights the need for international cooperation in managing the ocean's exploited living resources.

Prof Burrows said anticipating the effect of climate change on biodiversity, in particular on changes in community composition, is crucial for managing fisheries and ecosystems but remains a critical knowledge gap.

"In the past, centres of global marine biodiversity have shifted in location over geologic timescales, mainly driven by major tectonic events. Current biodiversity patterns were established well before the Pleistocene period more than 2.5million years ago.

"Our projections, however, suggest strongly that anthropogenic climate change will drive generalised changes in the global distribution of marine species over the course of a century, a timescale that has been unknown in human history.

"The concern is not so much that there will be change but how that change will generate previously unknown communities of marine species.

"The effects of warming changes species interactions, as well as the direct effect of warming, an important cause of documented population declines and extinctions related to climate change."

He and colleagues have been evaluating shifts in the balance between warm-water and cold-water species, essentially how the thermal signature of communities are changing, a process used most recently by scientists at IMAS, demonstrating how vulnerable different communities of reef fish may be to climate change.

Much of the differences in responsiveness to climate can be related to the temperature ranges of the species in the community: narrow ranges lead to highly responsive communities and vice versa.

Prof Burrows said evidence of newly-formed communities of marine species driven by temperature shifts are most likely to be found where temperatures are changing rapidly, such as Tasmania's east coast.

"The fact that several of these rapidly warming areas include some of the world's most vexing maritime territorial disputes (for example, Senkaku, Paracel and Spratly islands, located in the East and South China seas) highlights the complex role that climate change might have for international ocean governance.

"The likely arrival of large numbers of climate marine migrants, and resulting compositional changes in present-day biotic communities, could exacerbate tensions between coastal nations and increase the need for international management of marine living resources," Prof Burrows said.

Changes in composition of present communities are projected to be large by 2100 across the Arctic, the tropics, particularly the Indo-Pacific, and some temperate (for example, North Sea) and Southern Ocean regions.

With 250 delegates from 40 countries, the Species on the Move conference is being held for the first time and hosted by the University of Tasmania and the Institute for Marine and Antarctic Studies (IMAS).

Its purpose is to examine the influence that climate change is having on nature, and document responses in regional and global marine and terrestrial communities.

More information:

<http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate2769.html>

<http://www.speciesonthemove.com/>

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