

Climate change will bring greater biodiversity to world seas

August 31 2015



Dolphins off the Isle of Barra.

Tropical marine animals that currently thrive in warm habitats around the equator will have to spread north and south to avoid extinction as global sea temperatures rise, a study has found.

Scientists at the Scottish Association for Marine Science (SAMS), alongside international partners, modelled data for nearly 13,000 [marine species](#) and found that by the end of this century, countries either side of the Tropics would have a greater variety of marine species, while the Tropics would suffer a net loss.

The study, published in the journal *Nature Climate Change*, is based on [global climate models](#) and is the most comprehensive to date on expected shifts in marine animal populations. It shows that such shifts are likely, even if carbon emissions were reduced over the forthcoming decades.

SAMS marine ecologist Professor Michael Burrows, who devised the study, said the prediction of increased biodiversity away from the Tropics contrasted the general message of climate change causing widespread extinctions.

He said: "While some species may evolve and adapt to cope with increasing temperature, the predictions are that many will find cooler climates away from the equator.

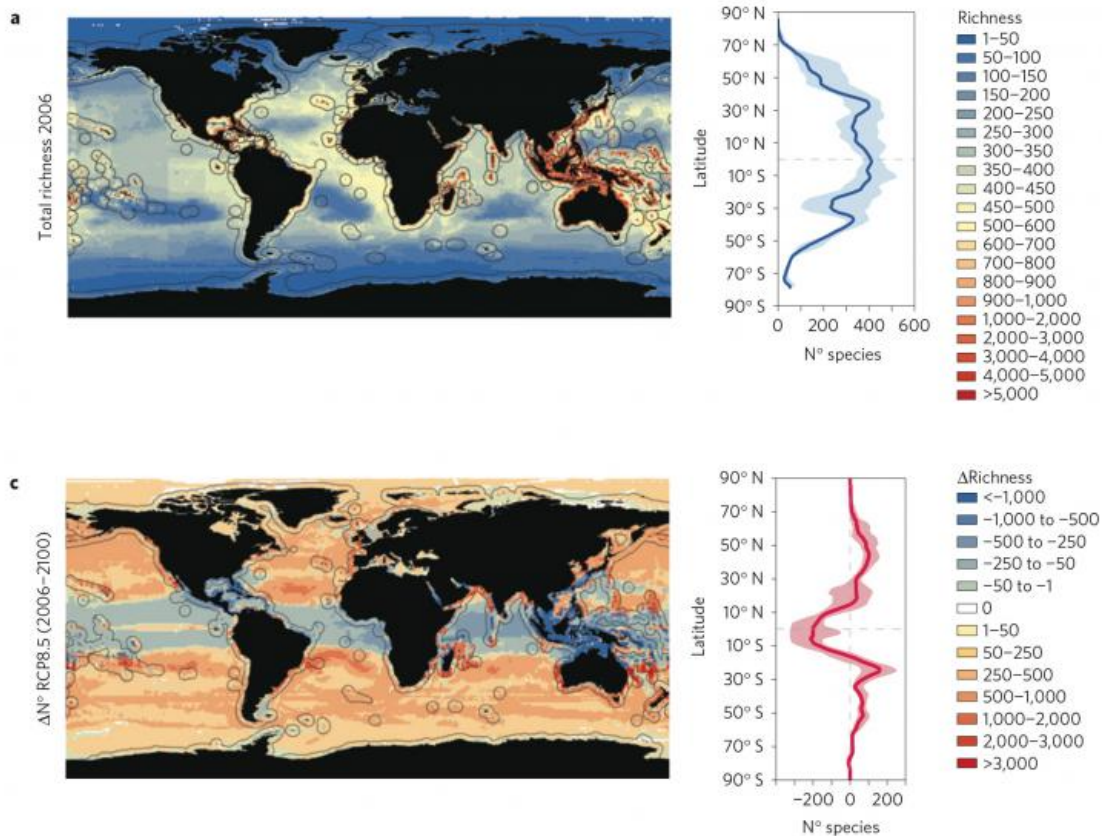
"For example, the fish we currently catch in UK waters could potentially be replaced by a new species from the Mediterranean as our own fish, such as cod, move further north.

"The result of that will be an increase in biodiversity across many oceanic regions as the global marine communities reorganise themselves."

The group of international scientists is now calling for greater cross-country co-operation to accommodate these regional shifts in species distribution.

As species move into new areas, they could potentially thrive in the absence of traditional competitors and predators, crowding out native species. This will, in turn make distinct ecological communities much more similar across the world.

Lead author of the study, Dr Jorge García Molinos, who conducted his research while at SAMS, said: "The projected losses and gains of marine biodiversity represents unprecedented challenges to conservation in terms of interactions between climate-migrants and local biota on one hand, and the anticipated development of novel communities and ecological surprises on the other."



The study used a measurement called future climate velocity, which combines the rate and direction of movement of ocean temperature bands. Barriers to the movement of [species](#), such as land mass boundaries, depth limits and temperature tolerances were also accounted for.

The study, which was funded by the Natural Environment Research Council (NERC), used two [climate change](#) models, one based on the status quo and another based on a more controlled level of [carbon emissions](#).

More information: Climate velocity and the future global redistribution of marine biodiversity, *Nature Climate Change* (2015) doi:10.1038/nclimate2769 , www.nature.com/nclimate/journal/nclimate2769.html

Provided by Scottish Association for Marine Science

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