

Nutrient pollution is changing sounds in the sea

September 5 2016, by Robyn Mills

Nutrient pollution emptying into seas from cities, towns and agricultural land is changing the sounds made by marine life – and potentially upsetting navigational cues for fish and other sea creatures, a new University of Adelaide study has found.

Published online in the journal *Landscape Ecology*, the research found that [marine ecosystems](#) degraded by 'eutrophication', caused by run-off from adjacent land, are more silent than healthier comparable ecosystems.

This marine 'soundscape' comes largely from the snapping of shrimps, but also the rasping of sea urchins and fish vocalisations.

The researchers – PhD graduate Tullio Rossi, Associate Professor Ivan Nagelkerken and Professor Sean Connell from the University's Environment Institute – studied kelp forests and [seagrass beds](#) in South Australia's St Vincent's Gulf, many of which have been impacted by excessive nutrients washing into the sea, particularly along the metropolitan coast of Adelaide.

They compared audio recordings of these polluted waters with audio recordings at natural high-CO₂ underwater volcanic vents, which show what water conditions are predicted to be like at the end of the century under global ocean acidification.

Remarkably, they found the same pattern of sound reduction in both

locally degraded ecosystems and those that show what oceans are expected to be like under climate change.

"Kelp forests and seagrass beds are important ecosystems for commercial fishing and maintenance of marine biodiversity," says study leader Associate Professor Ivan Nagelkerken, in the University of Adelaide's Environment Institute.

"They also function as nursery habitats for a range of species. But the decrease in sound we found in these degraded ecosystems due to local eutrophication is of the same large magnitude that we find in ecosystems that will be affected by global ocean acidification.

"We know that sound is very important for some species of fish and invertebrates to find sheltering habitats in reefs and seagrass beds. The demise of biological sounds is likely to have negative impacts on the replenishment of fish populations."

The study also suggests that soundscapes may be a suitable management approach to evaluating the health of [ocean ecosystems](#) — a new cost-effective monitoring tool.

"Because ocean acidification acts at global scales, local reduction of [nutrient pollution](#) as a management intervention will strengthen the health of our marine [ecosystems](#), and set them up for coping better with global climate stressors," says Professor Sean Connell.

More information: Tullio Rossi et al. The sounds of silence: regime shifts impoverish marine soundscapes, *Landscape Ecology* (2016). [DOI: 10.1007/s10980-016-0439-x](https://doi.org/10.1007/s10980-016-0439-x)

Provided by University of Adelaide

Citation: Nutrient pollution is changing sounds in the sea (2016, September 5) retrieved 27 April 2024 from <https://phys.org/news/2016-09-nutrient-pollution-sea.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.