

# Tailored ocean management strategies needed to avoid depletion of fish stocks

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The crew of r/s Arni Friðriksson complete hauling in a redfish catch off the Greenland shelf, and wait for the catch to be unloaded

A more tailored approach to Ocean management is required in the North Atlantic if the permanent loss of an increasingly valuable commercial fish stock is to be avoided, reveals new research led by the University of Salford.

This finding is the result of a three-year joint research [partnership](#) between the Ecosystems & Environment Research Centre at the University of Salford and the Icelandic Marine Research Institute. Led by GTS PhD student Peter Shum and Professor Stefano Mariani, Chair of Conversation Genetics and Head of Research & Innovation at Salford's School of Environment and Life Sciences, the research study investigated the effects of 'depth variation' in marine animals in the North Atlantic Ocean.

The full research paper is published this week in *Molecular Ecology*.

The study focused on the 'Oceanic Redfish' (*Sebastes mentella*), a [fish](#) species which has rapidly increased as a commercial fishing target following the depletion of traditional fish stocks in the North Atlantic. Previous research into redfish stocks has returned conflicting evidence of the impact of differentiation amongst regional fish stocks.

The results of this study support the existence of separated stocks in oceanic redfish, and identify patterns and levels of differentiation in several gene regions which are consistent with isolation by depth i.e. fish dwelling below 500m are more sedentary, whilst fish dwelling at less than 500m are more active and disperse across wider areas of the North Atlantic.

In addition to explaining the evolution of fish species in the North Atlantic, these findings suggest that a more tailored approach to the future assessment and management of Oceanic Redfish stocks is required, if we are to avert the permanent loss of a unique biodiversity

component and an increasingly valuable commercial fish stock in the North Atlantic.

Professor Mariani, said: "These results clearly indicate that fisheries management must step up a gear and embrace fully the new molecular approaches: these fish are virtually undistinguishable to visual inspection, but their genes tell us a completely different story".

"The findings are very exciting – said PhD student Peter Shum – because they allow us to study the very mechanisms that eventually lead to the formation of new species."

The team continues to investigate this study system with two priorities: i) Devising a reliable method to unambiguously identify specimens from the two stocks that can be routinely implemented in monitoring and enforcement, and ii) Looking at much larger portions of the genome, to better understand the evolutionary trajectory of "deep" and "shallow" oceanic redfish. Current research in Prof. Mariani's lab is finding that oceanic redfish is often marketed in the UK under various, inaccurate labels.

**More information:** "Three-dimensional post-glacial expansion and diversification of an exploited oceanic fish," [DOI: 10.1111/mec.13262](https://doi.org/10.1111/mec.13262)

Provided by University of Salford

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