FSSG12: Present analysis of fishing vessel acoustic data at PhD conference in Nantes and attend WGFAST meeting

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Purpose: To present key findings of my PhD thesis at the ICES Symposium on Marine Ecosystem Acoustics and to attend the Working Group on Fisheries, Acoustics, Science and Technology (WGFAST) meeting directly after the event at the same venue in Nantes, France (24th – 29th May 2015).

Acoustic classification of mesopelagic communities

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The principal structure of the ocean's meso-pelagic community is formed from ubiquitous biological layers, which can span entire ocean basins, contain millions of tonnes of biomass and are primarily made up of zooplankton and small fish. Biological layers were extracted from 38 kHz echosounder data, obtained from a wide selection of research institutes and online databases, using a recently developed image processing technique. Layer characteristics, such as water-column position and backscatter strength, were used to categorize layer formations into distinct classes. These layer classes provide a means to quantify mid-trophic level communities, which are currently poorly understood. By standardising layer analysis, pelagic ecosystem change can be consistently monitored and assessed.

Keywords: pelagic habitat characterization; animal behaviour

Implications:

The talk, entitled 'Acoustic classification of meso-pelagic communities' summarises my analysis of acoustic data collected by both fishing and research vessels from across the globe. The work focuses on the extraction and characterisation of Sound Scattering Layers (SSLs), which are acoustic representations of the underlying marine communities. SSLs comprise of millions of tonnes of zooplankton and small fish and can span across entire ocean basins. By linking these mid-trophic level marine communities to primary production data, collected remotely by satellites and to the physical properties of the surrounding water masses we will gain better insights into ocean ecosystem function.

The work presented has direct applications to fisheries management. Characterising marine communities using acoustic data – which is routinely collected by fishing vessels – will allow management regimes to monitor the health and stability of pelagic fish stocks in a rapid and non-invasive fashion. This work builds on a methodology developed to standardise and automate the

identification and characterisation of SSLs (Proud et al, 2015). This method serves as a first step towards producing a prey-field/fish stock assessment tool that would allow management to make more informed decisions concerning ecosystem health.

Symposium group photo, image taken from https://someacoustics.sciencesconf.org/

References

Proud R, Cox MJ, Wotherspoon S, Brierley AS. A method for identifying Sound Scattering Layers and extracting key characteristics. Methods Ecol Evol 2015;6:1190–8. doi:10.1111/2041-210X.12396.