

AN ANALYSIS OF THE DISTRIBUTION AND ABUNDANCE OF SANDEELS IN GREY SEALS' FORAGING HOTSPOTS AROUND THE INNER HEBRIDES, WEST SCOTLAND

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Quantifying the abundance and distribution of sandeels in grey seal foraging areas will provide an improved understanding of habitat use of grey seals on the West Coast of Scotland. The lesser sandeel, *Ammodytes marinus*, is a key food for many seabirds and seals, and is also the target of the largest single-species fishery in the North Sea (Furness, 2002).

Fisheries acoustic data were collected during 2 cruises in May 2004 and July 2004 around the Inner Hebrides, West Scotland. A fully calibrated EK500 echosounder was used, operating at two frequencies (38kHz and 120kHz). The collected data was processed using SonarData Echoview software. Acoustic identification of sandeels was established by using a dB difference algorithm ($\Delta MVBS = MVBS_{38} - MVBS_{120}$; where $\Delta MVBS < -1$ indicated sandeels). The resulting Nautical Area Backscattering Coefficient (NASC) was integrated for each 0.5 nmi interval and converted to a relative estimate of mean sandeel density in seal foraging areas. Information on the spatial distribution and movements of 34 grey seals around the West Coast of Scotland in 2003 and 2004 have been collected by SMRU using Satellite Relay Data Loggers (SDRL) and will be used to compare sandeel densities and distribution in areas of high seal usage.

The results indicated that the distribution of sandeels was extremely patchy along transects and the cruise track. A comparison of the relative abundance of sandeels in foraging areas showed that densities vary extremely between these areas. Highest densities of sandeels were recorded East of Tiree on the 14th of May and in Stanton Banks on the 17th of July.

Future research will involve establishing a correlation between seal usage of foraging areas and sandeel abundance and distribution. In addition, the analysis of other fish species and zooplankton in these areas will contribute to a further understanding of foraging strategies of grey seals.

The capabilities of underwater acoustic research and their implementation in ecosystem-based studies are constantly evolving. Interdisciplinary research should be encouraged in order to provide useful insights in ecosystem dynamics but also to benefit fisheries and conservation management strategies.