

New study provides insight into Southern Ocean food web

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Seals are 'higher predators' in the Southern Ocean food chain

One of the most comprehensive studies of animals in the Southern Ocean reveals a region that is under threat from the effects of environmental change.

Reporting in January 2012 in a special volume of the journal [Deep Sea Research II](#), an international team of researchers led by [British Antarctic Survey](#) (BAS), describes how the Scotia Sea [food web](#) interacts in an ocean that is witnessing above average changes in upper [water temperatures](#).

The study, comprising of over 20 papers, provides an important overview of the Southern Ocean food web — how it is structured and

organised from primary producers like phytoplankton and krill up to higher predators like penguins and seals — and provides an important benchmark to monitor how these species will respond to future [environmental change](#).

Krill are at the lower end of the Southern Ocean food chain

The team travelled on three cruises on the RRS James Clark Ross over three years and at different times of the year to account for seasonality. They applied a wide range of techniques to study the food web from net sampling to hydro-acoustics and compared results with records from the Discovery Investigations over 80 years ago.



The three cruises took place on the RRS James Clark Ross

Lead researcher from BAS Dr Geraint Tarling says, “The Scotia Sea has some of the highest levels of productivity in the Southern Ocean. With impacts like ocean temperature change and krill fishing taking place it’s essential we understand exactly who eats who.”

Key findings from the work included recordings around South Georgia of some of the strongest absorption levels of carbon dioxide from the atmosphere into the ocean yet seen in the Southern Ocean. The team also saw that both short and long food chains existed in different regions of the Scotia Sea — the Discovery Investigations mainly recorded an abundance of short food chains.

Tarling continues, “Our research shows there is likely to be regional extinctions of some species and the introduction of others so there will be winners and losers. This will have implications for the management of the [Southern Ocean](#) ecosystem in the face of the joint pressures of environmental change and the commercial harvesting of key species such as Antarctic krill.”

Read [DISCOVERY 2010: Spatial and Temporal Variability in a Dynamic Polar Ecosystem](#)

Provided by British Antarctic Survey

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