

Statistical seafloor bioregions to inform marine spatial planning in the Indian Ocean.

Authors: Skipton Woolley, Scott Foster, Nicholas Bax, Donna Hayes & Piers Dunstan

Abstract

Bioregions are important tools for understanding and managing nature within a geographical region. Bioregions should describe where relatively homogenous assemblages of species occur, enabling managers to better regulate activities that might affect these assemblages. However, many existing regionalisations are not actually based on observed biological data, diminishing their scientific value to scientists and managers. In response to these management needs, we present new a statistical method for bioregionalisation. Our method is an extension of a class of finite mixture models, which have been adapted to handle data requirements of broad scale presence-only data (multiple species inhomogeneous Poisson point process models). We present an applied example of our approach across the seafloor of the Indian Ocean. Using these statistically-derived bioregions we provide a scientifically robust, transparent and repeatable framework for the spatial representation of biodiversity at multiple scales. Resulting in better informed management decisions and biodiversity conservation outcomes for the Indian Ocean seafloor.

Keywords:

Statistical Bioregions, Multiple species models

Contact author:

Skipton Woolley, CSIRO, skip.woolley@csiro.au