

## **Transboundary hake**

Balancing sustainability, stability and maximum yield is the aim of most fish stock managers. Advice on how to do it is therefore requested from fish stock assessment scientists. The assessment scientists are improving the statistical rigor with new tools and the development of new internet based portals facilitates transboundary cooperation during the assessment process. However, even the most advanced statistical models cannot provide quality insight and advice on the state of the stocks, if the input data and model structure does not reflect the truth correctly. This is also a problem for the assessments of the two cape hake species. A deeper quantitative understanding of growth (aging), compatibility between trawl surveys, environmental factors affecting catch rates (catchability), migration and fundamental knowledge about population structure (stock definitions) needs to be gained for the scientists to advance and get the full benefit of applying new assessment models.

Several specific studies under EcoFish WP2 address these topics and their success are fundamental for progressive improvement of the assessment under EcoFish WP1.

In the present study we have applied a state-of-the-art geostatistical model to the bottom trawl survey data collected by Namibia, South Africa and FAO-Nansen over the last decades. The integrated model accounts for the spatial dimensions, while estimating gear selectivity, growth and some aspects of hake migration and distribution. We provide region-wide distribution maps that can be used to infer putative movements through the hake life. High-density structures are to some extent delineated by low-density bands. We suggest that these should be examined as candidates for new stock definitions in the assessments. The integrated approach confirms and adds new knowledge about hake biology, needed for taking the stock assessments to the next level.