

Can demersal survey data provide insights into fish community disturbances?

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Demersal trawl fishing, which takes place on soft sediments, is known to have damaging effects on ecosystems. Fishery-independent survey data may be able to reveal the level of impact that has occurred on trawl grounds through the use of various disturbance indices. The RV Dr Fridtjof Nansen completed 40 surveys in the western Indian Ocean (WIO) since the early 1980s, using standardized gear and sampling protocols, with a total of 1 539 demersal trawls. Based on catches, three indicators were investigated: abundance biomass comparisons (ABC), pelagic/demersal ratios (P/D) and average sizes of specific species. ABC considers shifts in proportions of the various phyla that are found in a community as well as relative distributions of abundance and biomass among species. A rise in the P/D ratio has been shown to indicate that overfishing has occurred while a decrease in the average size of organisms can also indicate that there have been community impacts. This research explores the possibilities of using the data collected by the RV Dr Fridtjof Nansen to determine the state of some of the soft sediment communities in the WIO. ABC showed decreasing disturbance in northern Mozambique while for the southern and central areas the levels varied from slightly disturbed at times to slightly undisturbed at other times. The P/D ratios in slope catches remained fairly constant with pelagic species contributing less than 10% of the catches. However, differences were seen in shelf catches where fishing effort was highest, to which pelagic species contributed between 5% and 55% with changes in space and time. Average sizes of fishes decreased for some species such as *Johnius dussumieri* and *Platycephalus indicus* while increases were seen in *Gymnocranius grandoculis* and *Lutjanus sebae*. Factors such as disparities in sampling effort between countries reduced confidence in the outcomes of the assessments.

The RV Dr Fridtjof Nansen in the Western Indian Ocean: Ocean Productivity

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