ABSTRACT

Schon, P-J, Sauer, W.H.H. and M.J. Roberts (2000)

The relationship between environmental conditions and chokka squid *Loligo vulgaris raynaudii* catches: A simple "black box" approach.

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Erratic and highly variable catches in the South African chokka squid *Loligo vulgaris raynaudii* fishery, causes socio-economic hardships and results in a high degree of uncertainty for resource managers, the industry and fishermen. Catch forecasting can reduce this problem. Both fishermen and scientists believe that catch variability is strongly influenced by environmental factors.

In this study, a simple, direct, 'block box' statistical approach was used to develop a relationship between the environment and the abundance of chokka squid on the inshore spawning grounds and therefore a predictive capability. The best environmental-catch prediction models, based on multiple regression analysis, explained 32% (on a hourly time-scale) and 40% (on a monthly time-scale) of the variability in catch.

Water temperature, turbidity and wind direction proved to be important explanatory variables and thus supported the 'cold water-good catch' and 'high benthic turbidity-poor catch' hypotheses proposed by other authors. Seasonal and diel catch variations induced changes in the relative importance of these variables on catches. *In situ* observations suggest that upwelling and turbidity events act as environmental triggers for the spawning process. The pursuing of a multi-disciplinary approach considering abiotic, biotic and man induced influences can greatly improve predictive capability of chokka squid abundance on the inshore spawning grounds.