

ABSTRACT

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The Environment: the key to understanding the South African Chokka Squid (*Loligo vulgaris raynaudii*) fisheries

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The South African squid fishery is based on *Loligo vulgaris raynaudii*, locally referred to as chokka. It is caught from small boats using hand held jigs, a method which limits the fishery to the shallow inshore regions of the coast. As is common with many other squid fisheries around the world, total catches and catch rates show large fluctuations, an effect which is usually blamed on the environment by both resource managers, the industry and fisheries scientists.

Conventional understanding of the chokka squid life cycle incorporates little environmental knowledge but assumes implicitly that the cycle is environmentally driven. Essentially, it suggests that the western and southern continental shelf regions of South Africa are used by both juveniles and adults as a feeding grounds, while mature adults, being benthic spawners, migrate to certain protected shallow inshore areas along the southern Cape coast to spawn.

Results from the present study, however, show that the above hypothesis is an oversimplification and the link between the environment and the chokka life cycle is not obvious. The physical environment within which chokka live was found to be remarkably diverse and contrasting, particularly between the seabed environments of the inshore and shelf regions, as well as in the vertical structure of the water column overlying the shelf. Results obtained appear to be conflicting. On one hand different water masses appeared to have little influence on the distribution and abundance of juvenile and adult chokka. But in contrast, the presence of extended periods of cold upwelled water inshore is seen to be correlated with increase catches suggesting that there is an environmental link. In addition, it was found that spawning is not limited to the shallow inshore regions of the coast but also extends onto the shelf where the environments was previously thought to be too hostile for eggs. Laboratory trails now indicate that eggs laid in these deep waters may survive although the hatching rate is greatly reduced.

From these results the authors propose a number of hypotheses to explain the importance of the environment influencing the various stages of the chokka life cycle, and suggest future research directives in this regard.