

ABSTRACT

Oosthuizen, A., Roberts, M. J., Sauer, W. H. H. and D. Baird (1997).

Chokka Squid spawning grounds: Environmental influences on the development and hatching success of chokka *Loligo vulgaris reynaudii* eggs.

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Catch statistics for the South African chokka fishery show a degree of variability on all time scales. The suggested reason for this is that chokka make use of two adjacent spawning grounds, "shallow" (<70m) and "deep" (>70m) spawning grounds. Chokka are only available to the commercial jig fishery on the "shallow" spawning grounds, thus catches are poor when the "deep" spawning grounds are preferred. The preference of spawning strategy is thought to be environmentally driven.

The "shallow" grounds have relatively warm temperatures (17-22°C), upwelling during summer (rapid temperature fluctuations) and strong wave action (high turbidity near seabed) during winter. In contrast the "deep" spawning grounds have stable, cold temperatures (9-12°C), less light and very little wave action (clear water). The aim of this study is to investigate the influence of the two contrasting environments on the development rate and hatching success of chokka eggs and the viability of the "deep" spawning grounds, with particular emphasis on the occurrence of abnormalities.

Laboratory trials undertaken at UPE have tested the developmental rates under stable conditions, with results showing the optimum temperature range as 11°C - 20°C.

However, to test the natural fluctuating conditions in the laboratory a good understanding of the temperature regime is necessary. SFRI has been recording sea temperatures at specific and well known "shallow" spawning site for the last five years. The analysis of the bottom temperatures show annual trends with specific characteristics. These characteristics will be replicated to test the influence of the fluctuations and occurrence of abnormalities found in the natural environment.

Analysis of the occurrence of abnormalities under stable conditions suggests that the "deep" spawning might not be as conducive to development as previously thought.

However, more laboratory trials and *in situ* experiments are necessary to either prove or disprove the viability of the "deep" spawning grounds.