

ABSTRACT

Oosthuizen, A., Roberts, M.J., Baird, D. and W. Sauer (1996)

Chokka Squid spawning grounds: environmental influences on the development and hatching success of chokka eggs.

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p. 55.**

Catch statistics for the South African chokka squid fishery show a high degree of variability on all time scales including inter-annual. Roberts et al (in press) suggests that the main reason for this is that chokka squid make use of two, adjacent, spawning grounds found off the eastern cape coast. These have respectively become known as the 'shallow spawning' grounds (viz. <70m) and the 'deep spawning' grounds (viz. >70m). Because chokka are normally widely dispersed and can only be targeted during spawning using handlines, commercial fishing is only viable (at present) on the shallow spawning grounds. Needless to say, catches will be poor when the deep grounds are preferred by the spawning stock. It is presently thought that this preference of spawning strategy is environmentally driven (Roberts et al – in press). Now, while the above thinking on the surface appears to make sense, there are some questions which need answers to strengthen or even disprove the above hypothesis. The questions concern the environments of these two spawning grounds and their effect on the development and hatching success of the eggs. Although adjacent to each other, the benthic environmental conditions on these spawning grounds are sharply contrasting. The shallow grounds are, in general, exposed to warm, sub-tropical water temperatures (17°-22°C) but also experience rapid episodic changes in temperature due to summer wind-induced upwelling (viz. 10-12°C). In addition, swell above a certain height causes suspension of sediments resulting in benthic turbidity storms in the shallow regions of the coast, especially during winter. In contrast the region of sea floor used for deep spawning lies well below the shelf thermocline which results in stable bottom water temperatures being between 9° and 11°C. Swell at these depths has far less impact and consequently, it appears that water clarity is seldom impaired. The questions therefore begging are; do eggs survive at these low temperatures? and if so, is there any abnormality? What effect does the low light level have on development and hatching? If eggs are buried under do they survive? Is wave action necessary for enhancing excretion of metabolic by-products and uptake of oxygen?

The aim of this work is to investigate the influence of these two contrasting environments on the development rate and hatching success of chokka eggs, with special emphasis on checking for abnormalities. Preliminary results obtained from laboratory trials currently being conducted at UPE indicate that the deep spawning grounds, as far as egg development is concerned, are viable although hatching is delayed for as much as two and a half months.