

## ABSTRACT

OOSTHUIZEN, A., ROBERTS, M.J. and SAUER, W.H.H

**Temperature effects on embryonic development and hatching success of the squid *Loligo Vulgaris Reynaudii*.**

**In press - Bulletin of Marine Science**

The squid *L. vulgaris reynaudii* spawns in two environmentally different areas, shallow (< 60 m) inshore bays and in deeper (60 m - 120 m) waters on the mid-continental shelf off the south east coast of South Africa. The temperature regimes between these two spawning environments are variable. The effects of temperature on the embryonic development of *L. v. reynaudii* were investigated at both stable and fluctuating laboratory temperatures and natural fluctuating conditions. The relationship between embryonic development time and water temperature was defined by a polynomial regression function. Embryonic development time decreased with increasing temperature. An optimum temperature range for development was identified between 12 °C and ~17 °C, at which development took 50.1 and ~26.6 days respectively. Outside the optimal temperature range ( $\leq 9$  °C and  $\geq 21$  °C) abnormal embryonic development occurred. Fluctuating temperature experiments were based on inshore temperature data collected over seven years. The early development stages were more sensitive to variable temperature regimes than later development stages. Embryonic development under laboratory and natural conditions was similar. Natural upwelling events in the inshore spawning areas had a negligible effect on the development success of eggs in these areas.