

## ESTIMATING ACTUAL FECUNDITY OF A LOLIGINID SQUID

Sauer, Warwick <sup>(1)</sup>, Melo, Yolanda <sup>(2)</sup>

<sup>(1)</sup> Department of Ichthyology and Fisheries Science, Rhodes University, P.O. Box 94, Grahamstown, 6140 South Africa. Ihws@warthog.ru.ac.za

<sup>(2)</sup> Department of Sea Fisheries, P.Bag X2, Roggebaai, 8012, South Africa. YCMELO@sfri.wcape.gov.za

More precise methods for calculating actual fecundity in loliginids are required. True semelparity is now accepted to be the exception rather than the norm, making actual fecundity estimations notoriously difficult. Tagging studies, histological examination of the ovary, and aquarium maintenance have confirmed the chokka squid, *loligo vulgaris reynaudii*, to be a serial spawner. Females were found to move between spawning sites within the general spawning area off the South Coast of South Africa, the ovary was characterized into eight different stages, and chokka squid deposited three batches totalling 8140 eggs over a thirty six hour period in captivity.

This confirmation of serial spawning provides a number of obstacles when estimating actual fecundity. Detailed investigation of the ovary adds even further to our woes. Oocyte atresia, previously unknown in loliginid squid, has now been identified as a regular phenomenon during the reproductive cycle of this species. Atresia takes place in all stages of oocyte development, but is more prevalent in the late yolkless and vitellogenic oocytes. Follicular atresia lowers the number of maturing oocytes in the ovary and true fecundity will certainly be overestimated if follicular atresia is not considered.

Two further results may, however provide some solutions to this complex issue:

Firstly, the atretic oocytes are useful as an index of chokka squid reproductive capability. Spent squid can now be positively identified from the percentage of atretic oocytes in the ovary.

Secondly, post-ovulatory follicles were found in the ovary of actively spawning females, and the rate of breakdown of these follicles may provide us with answers on the number of batches spawned. Analysis of the rate of resorption of post-ovulatory follicles in the ovaries of squid collected at regular intervals over one spawning cycle may provide the number of batches of eggs spawned