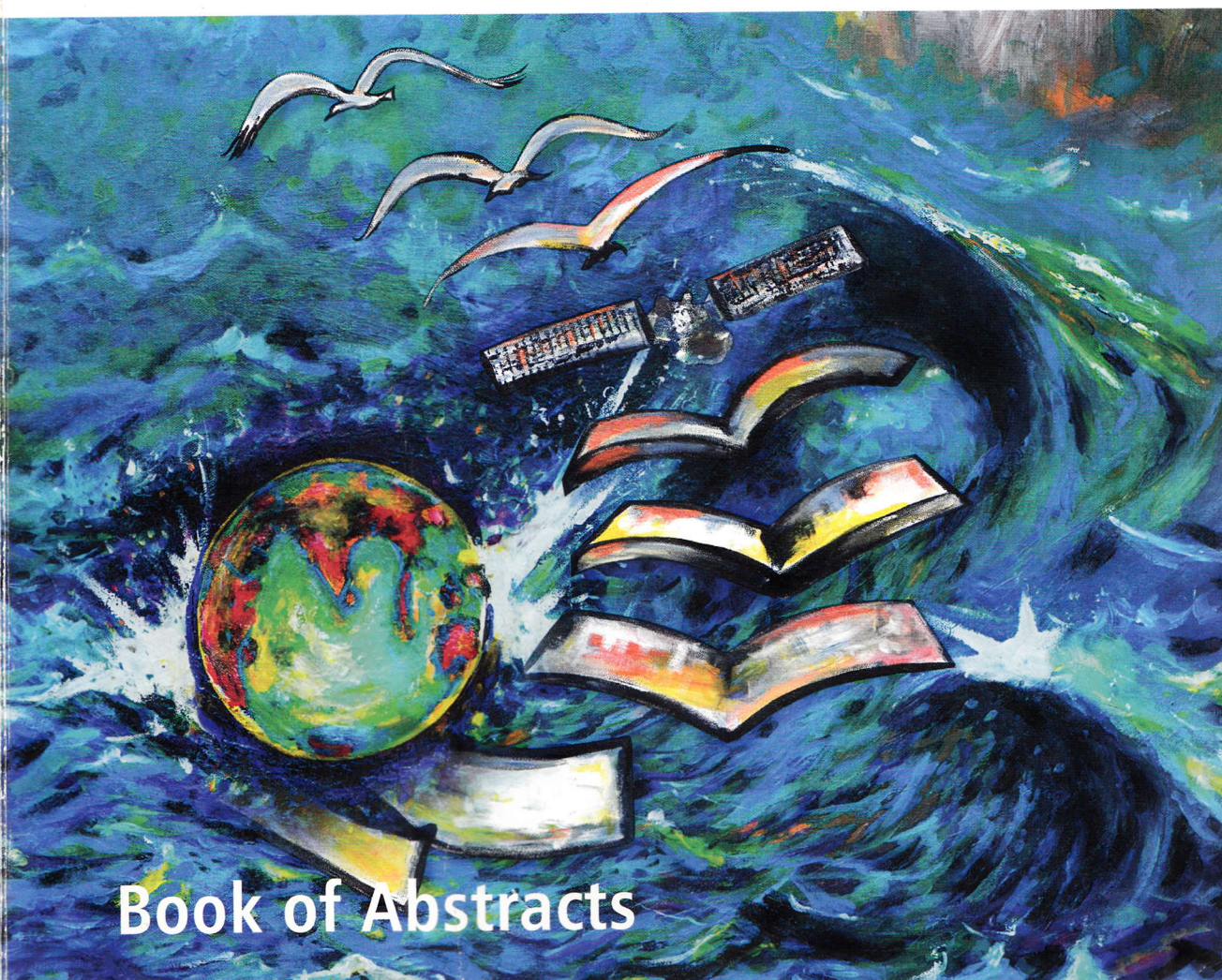
MECOS 2

Marine Ecosystems

Challenges & Opportunities

International Symposium | 2-5 December 2014, Kochi, India

MBAI Marine Biological Association of India



Book of Abstracts

Ageing of paralarvae, juvenile and adults of purple-back flying squid, *Sthenoteuthis oualaniensis* (Lesson, 1830) based on statolith microstructure

Mohamed, K. S., K. K. Sajikumar, Geetha Sasikumar*, K. P. Said Koya and M. Ragesh
Central Marine Fisheries Research Institute, Kochi, Kochi 682 018, Kerala, India Email: gs.pallath@gmail.com

The methodology for ageing of cephalopods using growth increments in hard

structures was applied on squid species along Indian waters. In squids, the growth increments occur in hard-parts such as the squid beak, radula, gladius and statolith. The interpretation of statolith increments has been proved as the most promising method for ageing squids.In this study the age and growth of purple-back flying squid, *Sthenoteuthis (=Symplectoteuthis) oualaniensis* (Lesson, 1830), (ommastrephids) were examined by statolith microstructure and morphological measurements. The statoliths are calcareous structures located in the equilibrium organs of cephalopods,responsible for detection of linear and angular acceleration.

Exploratory jigging surveys undertaken along the eastern Arabian Sea by Central Marine Fisheries Research Institute identified spawning grounds of the purple back oceanic squid *Sthenoteuthis oualaniensis*. The study conducted as part of an NAIP, collected oceanic squids in Lakshadweep waters between 10°00 N 71°59 E and 10°14 N 73°44 E (between Agatti and Kalpeni Islands) during October. Dense aggregations (~130,000 numbers/km2) of oceanic squid paralarvae and juveniles with dorsal mantle lengths (DML) ranging from 5 to 11 mm size were collected from the water surface during 1900-0001h and 0300-0500h. Adult squids were collected in squid jigs, paralarvae and juveniles were collected by using scoop net (2mm mesh size). The squids were attracted to the powerful lights (1.5 KW x 18 metal halide lights) on board the vessel at station depths ranged from 700 to 1500 m. In the laboratory, statoliths were extracted by surgically dissecting the severed squid head in the frontal plane manually. The tissue fragments attached to the statoliths after dissection were removed prior to mounting for proper observation. They were mounted on glass slides using thermoplastic glue for grinding. After drying, the statoliths of juveniles and adults were ground using lapping films and observed under binocular microscope continuously for completely grinding the opaque area. In paralarvae, the statoliths were translucent, and therefore they were examine without grinding. Growth rings were counted using the binocular microscope by changing the focal plane under higher magnifications.

The age in days for the purple-back flying squid paralarvae of DML 5.7-8.8 mm ranged from 18-32 days. In juveniles of DML ranging from 9.2 to 11.01 mm the age was 22-35 days and adults of 115-123 mm DML were aged as 63-72 days. The growth index (GI) was 0.326±0.062 mm/day in paralarvae; 0.351±0.05 mm/day in juvenile and 1.773±0.152 mm/day in adults. The growth index of female squids based on statoliths was extrapolated for arriving at estimates of monthly dorsal mantle lengths (Fig. 1). The results were then compared with the monthly mantle length projections based on length-based growth estimation methods.

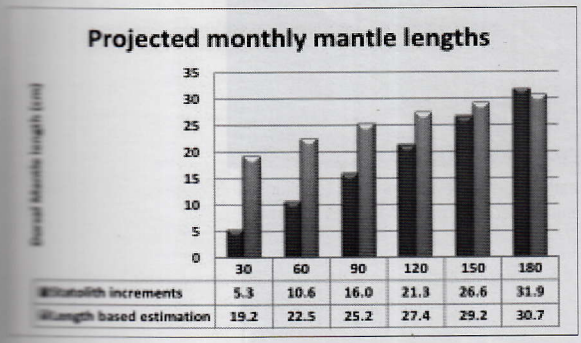


Fig. 1.Projected monthly mantle lengths (cm) based on adult growth index in female *S. oualaniensis*