



Paralarva of the sharpear enope squid *Ancistrocheirus lesueurii* (Oegopsida: Ancistrocheiridae) in the southeastern Arabian Sea

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Short Communication

Abstract

First morphological description of an early stage paralarva of the sharpear enope squid *Ancistrocheirus lesueurii* from southeastern Arabian Sea is presented. The paralarva was collected at dusk by using surface tows of zooplankton nets in February 2012. The presence of paralarva *A. lesueurii* indicates that this species completes its life cycle in this sea. A comparison of the arm formula of paralarva and adult stages shows a major change in the formula during metamorphosis to adult.

Keywords: *Ancistrocheirus lesueurii*, Arabian Sea, *Thelidoteuthis alessandrinii*, squid paralarvae, arm formula, Lakshadweep Archipelago, plankton.

Introduction

Ancistrocheirus lesueurii (d'Orbigny, 1842), the sharpear enope squid, is the only known species in the genus *Ancistrocheirus* and family Ancistrocheiridae. This mesopelagic squid occurs worldwide in tropical and temperate open ocean waters (Roper and Jereb, 2010). The records of adult specimens are extremely rare in comparison to other pelagic cephalopods and records are mainly found for juvenile stages (D'Onghia, *et al.*, 1997). Planktonic juveniles of this genus previously were thought to be *Thelidoteuthis alessandrinii* (Verany, 1851) (Clarke, 2006). Nevertheless, it is now reported (Bello,

1992) that *T. alessandrinii* is a junior synonym of *A. lesueurii*. Planktonic juveniles are found in upper mesopelagic waters (Clarke, 1966). Paralarval stages have been mainly recorded in plankton nets whereas adults are frequently recorded in the stomach contents of sperm whales (Clarke, 2006).

Earlier adult specimens were reported from Indian waters by Chun (1910), Roper *et al.* (1984) and Silas *et al.* (1985). Aravindakshan and Sakthivel (1973) recorded juveniles from the Bay of Bengal. Silas (1968) first reported paralarvae of *A. lesueurii* from the southeastern Arabian Sea and included a distribution map showing 12 locations of capture. However detailed descriptions were not given. The taxonomic history of this squid species is complicated and descriptions of paralarvae and early stages are limited.

Material and methods

Paralarva of *A. lesueurii* was collected in the zooplankton samples during targeted cruises conducted for exploration of the ommastrephid squid *Sthenoteuthis oualaniensis* (Lesson, 1830) (Ommastrephide) carried out by *MV Titanic* from September 2010 to March 2013. The study covered the oceanic waters from 8°N to 17°N latitudes and 64°E to 76°E longitudes along the eastern and central Arabian Sea at depths ranging from 300 to 4000 m. Sampling was conducted

at 58 stations during this period. Squid were collected at dusk or at night with light attraction from oceanic fishing grounds with plankton nets (KC Denmark, Model 23.100-WP-2). The single paralarva was recorded from one station (10°38' N latitude, 73°46' E longitude) on 21st February 2012 (Fig.1). Plankton samples were preserved in 5% formaldehyde following capture. Sorting and identification were done in the laboratory. Photographic images were taken with a Nikon zoom stereomicroscope (SMZ 1000). The pattern of chromatophores on the body could not be determined due to loss of colouration as a result of long term preservation in formaldehyde.

Synonyms: *Onychoteuthis lesueurii* d'Orbigny, 1842; *Thelidioteuthis alessandrini* (Verany, 1847); *Abralia megalops* Verrill, 1882b; *Enoploteuthis pallida* Pfeffer, 1884; *Enoploteuthis polyonyx* Troschel, 1857.

Material examined

A single paralarva of *A. lesueurii* (CMFRI, DD.2.1.1.1) which was collected from the oceanic squid fishing ground in Arabian Sea (10°38' N; 73°46' E) (Figs. 2 & 3).

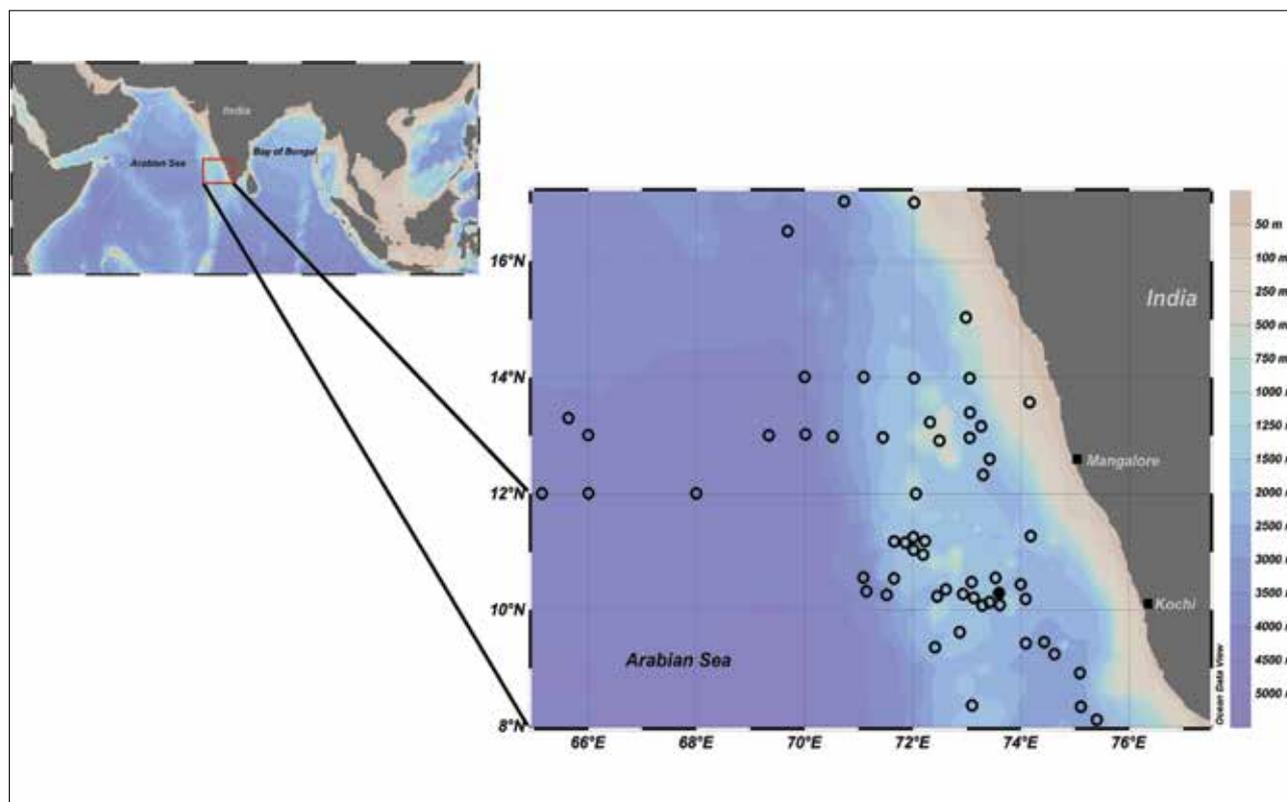


Fig.1. Map of the study area showing sampling stations, closed circle indicates the site where *A. lesueurii* was caught, open circles indicate all stations sampled but with nil records during 2009-2013

Results and discussion

SYSTEMATICS

Order: TEUTHOIDEA Naef, 1916
 Suborder: OEGOPSIDA d'Orbigny, 1845
 Family: ANCISTROCHEIRIDAE Pfeffer, 1912
Ancistrocheirus lesueurii d'Orbigny, 1842

Description

The specimen examined agrees well with earlier descriptions of paralarvae. The arm apparatus is well developed, except for the short, ventral arms which form only short stumps and blunt posterior. The arm formula is II > III > I > IV. Each arm bears suckers; arm suckers large and few in numbers; suckers absent on the proximal sections of arms as also observed by Vecchione *et al.* (2001). Transformation of suckers into hooks not observed (Fig.3). Mantle rounded, cup-shaped; fins small, weakly muscular. Tentacles long, robust, without photophores.

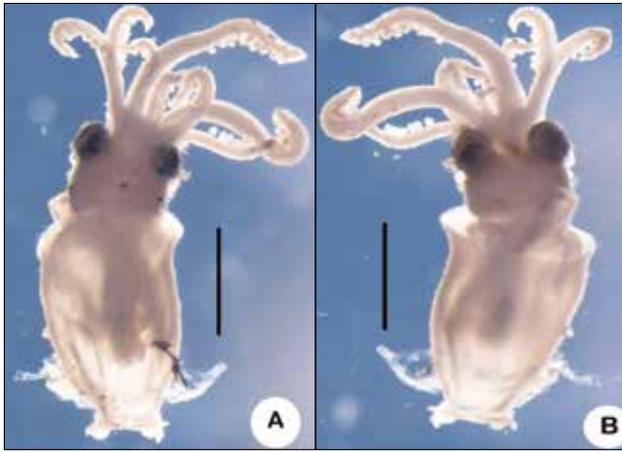


Fig.2. Paralarvae of *A. lesueurii* (A) dorsal view and (B) ventral view (Scale = 1mm)

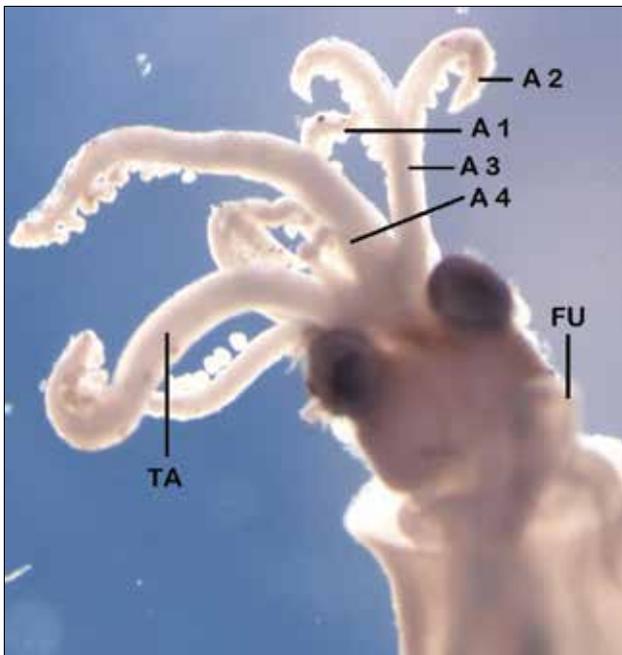


Fig.3. Ventral view of *A. lesueurii* A1=Arm 1, A2=Arm 2, A3=Arm 3, A4=Arm 4, FU= Funnel and TA= Tentacle

The paralarva had a total length of 3.56 mm and a dorsal mantle length of 1.67 mm. Arms well developed except arm pair IV. The ventral arms were very small with a blunt posterior end. Funnel cartilage long. Eyes protrude. Suckers on arms and tentacular clubs were well developed, relatively large with 16 suckers present on tentacular clubs. The adult arm formula has been reported as III>IV=II>I (D'Onghia *et al.*, (1997). A comparison of arm formula between paralarva and adult shows a major change in the formula during metamorphosis to adult. The main change is with respect to arm II, I and IV.

Morphometric indices related to mantle length were higher for total length and tentacle length (213.17 and 105 respectively). A lowest index was observed for the ventral arm pair (14.9) (Table 1).

The paralarva was seen close to the surface layer and it was observed near the Lakshadweep Archipelago which must be very close to the site where they hatched indicating that this species spawns around the archipelago. Silas (1968) also observed paralarvae of *A. lesueurii* near the edge of the continental shelf and around the Lakshadweep Islands during the research cruises of *R V Varuna*. He recorded the presence

Table 1. Morphometric measurement and indices in relation to mantle length of *Ancistrocheirus lesueurii* from southeastern Arabian Sea

Measurements	Length(mm)	Morphometric Indices
Total length	3.56	213.17
Dorsal Mantle length	1.67	100.00
Ventral Mantle length	1.4	83.83
Head length	0.67	40.12
Head width	0.73	43.71
Mantle width	0.73	43.71
Funnel length	0.49	29.34
I Arm length	0.82	49.10
II Arm length	1.27	76.05
III Arm length	1.01	60.48
IV Arm length	0.25	14.97
Tentacle length	1.77	105.99
Tentacular club length	0.39	23.35

of 12 paralarvae *A. lesueurii* in 2363 plankton hauls from January 1962 to May 1965. In the present instance only one positive record was made out of 58 stations from September 2010 to March 2013 indicating the rarity of the species in the habitat.

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