Record of mated Little Indian squid *Loliolus hardwickei* (Cephalopoda: Loliginidae) from the southwest coast of India

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Cephalopods display some of the most complex behavioural adaptations amongst marine invertebrates, particularly concerning their mating behaviour. The reproductive features of the squids are unique. Sperm

transfer is a complex process, with males transferring intricate spermatophores to females during copulation and the spermatophores everts as spermatangium by spermatophoric reaction. This in turn gets attached to the female body through distinct mechanisms. The squid spawning grounds of cephalopods, are generally identified based on the presence of egg masses and mated individuals. The Little Indian squid, *Loliolus hardwickei* (Gray, 1849) is known to inhabit estuarine and coastal waters to a maximum recorded depth of 30 m. They have a short life span of < 6 months. Nothing is known about the mating season of little Indian squid *L. hardwickei* and presumably the first record of a mated *L. hardwickei* from the southwest coast of India is reported below.

Eight specimens of Little Indian squid *L. hardwickei* (26 to 62 mm dorsal mantle length DML) were caught from off Kochi (10° 06′ 16″ N; 76° 15′ 07″E) in a trawl net operated at a depth of 20 m, on 28 October 2021. The trawl net with 20 kg sinkers and rigged to bottom operated on a substratum that was sandy/ muddy. The bottom temperature and salinity of the area was recorded as 27.2°C and 34 psu respectively. All the sampled individuals were mature. To examine females for any signs of mating activity, the buccal membrane was initially inspected for the presence of spermatophores or spermatangia. Among the two males and six females, a single female *L. hardwickei* had evidence of mating, with attached spermatangia on the buccal membrane (Fig.1).

The particular specimen had a DML of 62 mm and bodyweight of 18 g with 109 spermatangia attached around the buccal region. In fresh condition, it appeared as a bright white mass amid the translucent skin in the ventral buccal region. All spermatangia were stained with malachite green for better visibility and under magnification they appeared as small tear drop-like projections 0.57 mm to 0.73 mm (mean=0.65 mm) long and 0.2-0.3 mm (mean=0.24 mm) width at base (Fig.2 A-C).

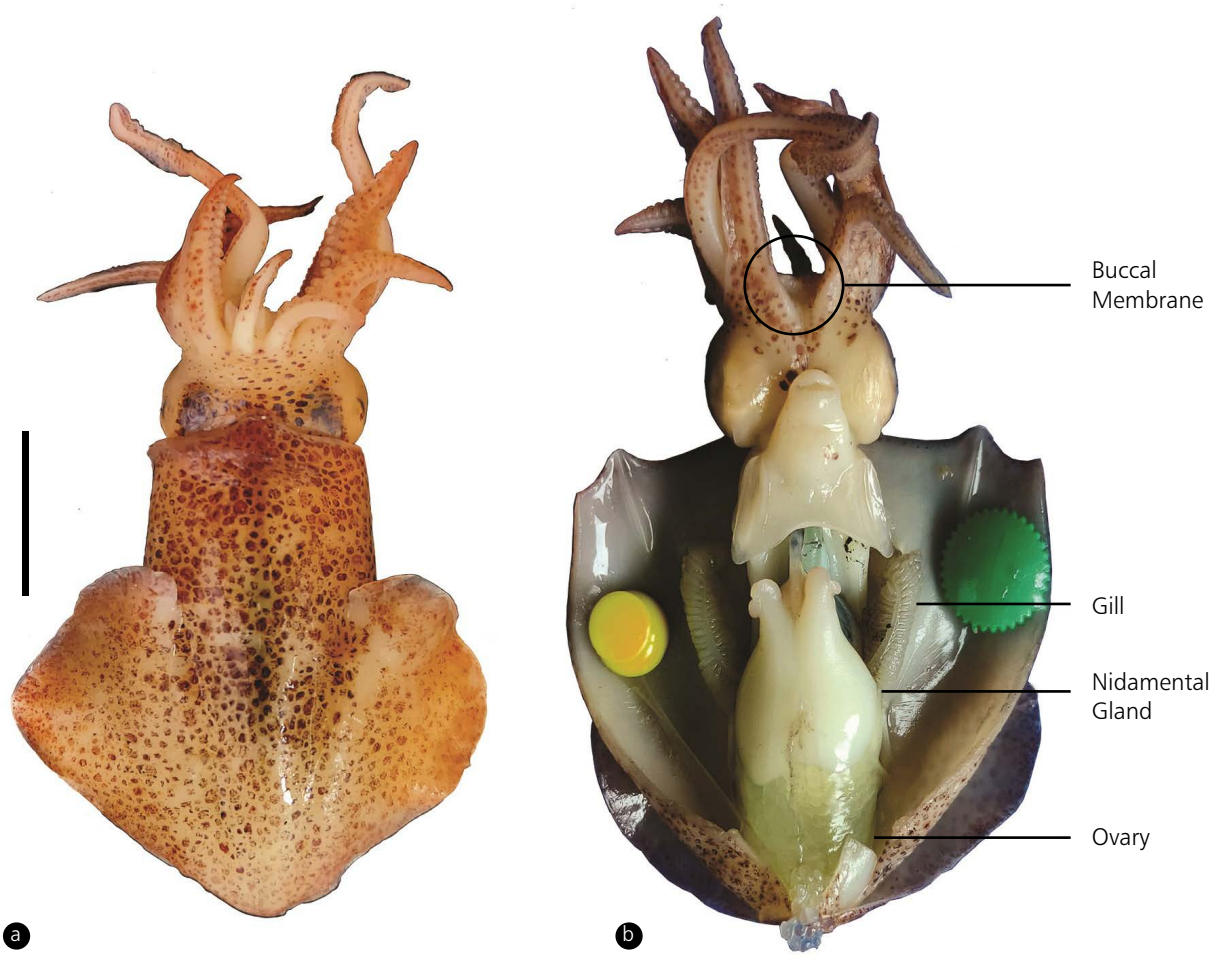

Fig.1. Dorsal (a) and ventral (b) view of mated female *Loliolus hardwickei* from the southwest coast of India (Scale bar=2 cm)

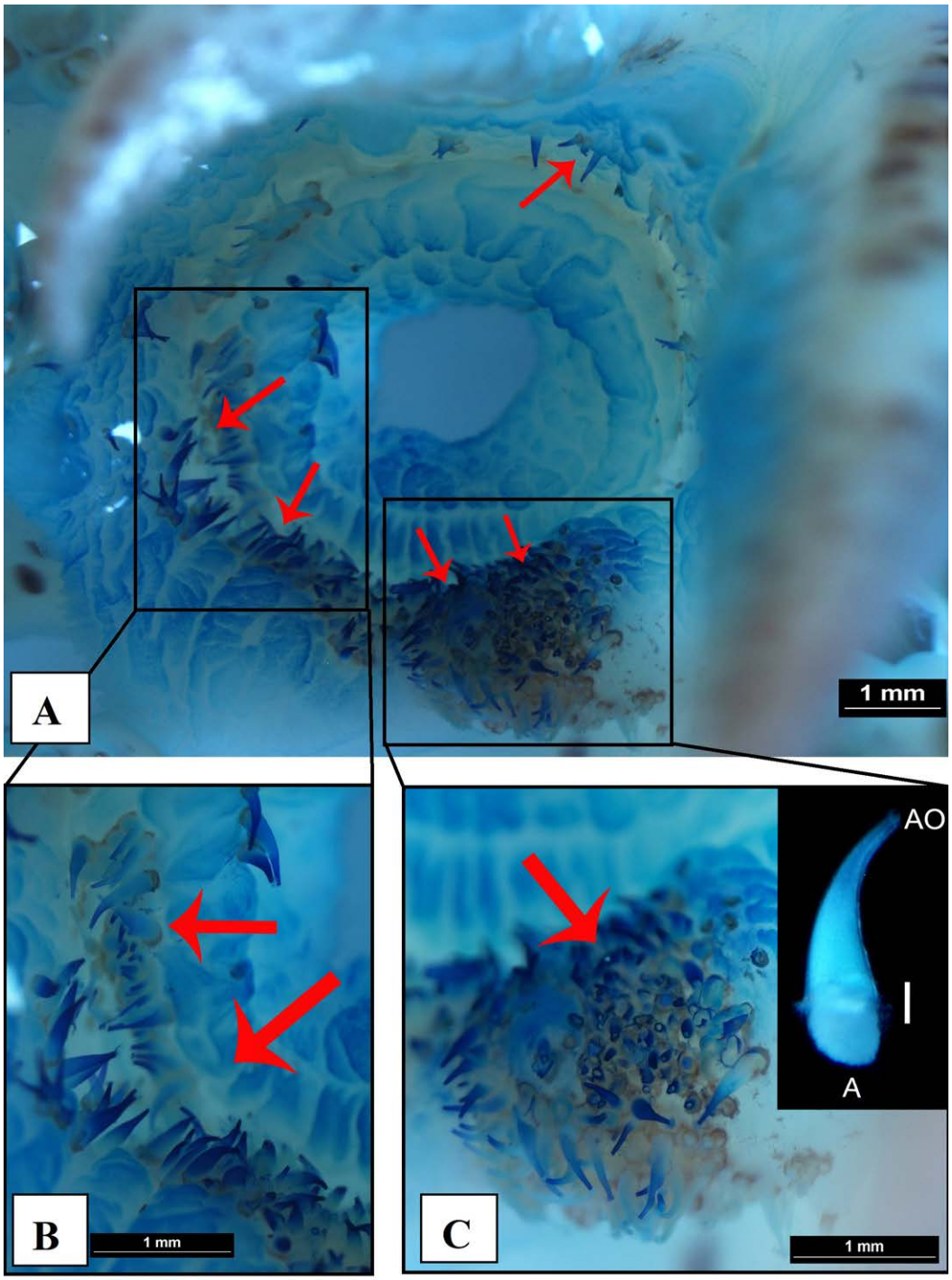

Fig. 2. Buccal region of mated female *Loliolus hardwickei* from the southwest coast of India; A) top view of buccal region, B & C = enlarged view of spermatangium attachment (inset: enlarged view of single spermatangia, A=attachment area, AO= aboral opening). Arrow marks indicate the location of spermatangium attachment.

The individual had a total of 824 oocytes in the ovary. The gonadosomatic index (GSI) of the individual was 25.1 % of the body weight. The size of the ova ranged from 0.59 mm to 1.8 mm (mean= 1.29 mm). The multi-modes in the egg size frequencies at 1.2 to 1.3 and 1.6 to 1.7 mm indicated the species may be intermittent spawner. The present observation indicated that the species may be spawning in nearshore waters of the southwest coast of India and post-monsoon (October) might be a spawning period of the species.