

First record of Brachyuran crab *Rhinolambrus lippus* (Lanchester, 1901) (Crustacea: Decapoda: Parthenopidae) from India

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ABSTRACT

The present paper reports the occurrence of the rare parthenopid species *Rhinolambrus lippus* (Lanchester, 1901) for the first time from India. The species is so far reported from Malaysia, Djibouti and Madagascar.

KEYWORDS

Brachyura, new record, Gulf of Mannar, geographic distribution, Indo-Pacific region

The taxonomy of the family Parthenopidae has changed a lot over the years with many genera reclassified under new subfamilies (Ng *et al.*, 2008). Tan (2004) undertook a study on the revision of Parthenopidae and revised the taxonomy of the subfamilies including subfamily Parthenopinae (Tan and Ng, 2007). Tan and Ng (2007) listed 32 genera under Parthenopinae, by elevating many subgenera (*sensu* Flipse, 1930) to genera including the subgenus *Rhinolambrus* A. Milne-Edwards, 1878. *Rhinolambrus* differs from other genera in the presence of a 'neck' like structure at the gastrobranchial notch which is part of the longitudinal elongation of the epistome (Tan *et al.*, 1999). *Rhinolambrus* currently contains 13 species (Ng *et al.*, 2008) distributed in the Indo-Pacific region out of which 6 species: *R. contrarius* (Herbst, 1804), *R. cybelis* (Alcock, 1895), *R. lamelliger* (White, 1847), *R. longispinus* (Miers, 1879), *R. pelagicus* (Rüppell, 1830), and *R. turriger* (White, 1847) are reported from India (Trivedi *et al.*, 2018). The present study reports the occurrence of a seventh species *Rhinolambrus lippus* (Lanchester, 1901) for the first time from India. The affinities of this species with other closely related species is discussed in the report.

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One male specimen of *R. lippus* was collected from the fisheries by-catch that was discarded from the fishing vessels at Pamban fishing port, Tamil Nadu State, India. The specimen was washed properly to remove debris and photographed. It was then preserved in 10% formalin and deposited in the Zoological Reference collection (LFSc.ZRC), Department of Life Sciences, Hemchandracharya North Gujarat University, Patan, Gujarat, India. Abbreviations: CW, carapace width; CL, carapace length; G1, male first left gonopod; G2, male second left gonopod; coll., collector; MNHN, Muséum National d'Histoire Naturelle, Paris; UMZCI, University Museum of Zoology, Cambridge. Morphological terminology used in this article follows Tan (2004).

TAXONOMY

Order Decapoda Latreille, 1802

Family Parthenopidae MacLeay, 1838

Genus *Rhinolambrus* A. Milne-Edwards, 1878

Rhinolambrus lippus (Lanchester, 1901)

(Fig. 1)

Lambrus lippus Lanchester, 1901: 537, pl. 33 fig. 1.

Flipse, 1930: 21, 79, 84.

Lambrus (*Rhinolambrus*) *montiger* Nobili, 1906a: 400. Nobili, 1906b: 185, pl. 11 fig. 3. Laurie, 1915: 411 (list). Flipse, 1930: 89 (list). Tan, 2004: 454.

Parthenope (*Parthenope*) *lippus* Serène, 1968: 59 (list).

Parthenope (*Rhinolambrus*) *montiger* Serène, 1968: 60 (list).

Rhinolambrus lippus Tan, 2004: 454. Ng *et al.*, 2008: 132.

Material. One male, CL 41 mm CW 44 mm, LFSC.ZRC-108, India, Tamil Nadu state, Pamban fishing port (9°16'56"N 079°12'31"E), trawl by-catch, 18 March 2018, coll. Jignesh Trivedi.

Type material. *Lambrus lippus* Lanchester, 1901: holotype, male, CL 37.5 mm CW 40.6 mm (UMZCI 10519), Malay Peninsula, Skeat Expedition. *Lambrus*

(*Rhinolambrus*) *montiger* Nobili, 1905: holotype, juvenile female, CL 9.5mm CW 9.7 mm (MNHN-IU-2014-7824), Djibouti, coll. H. Coutière.

Additional material. One male, CL 37.1 mm CW 39.7 mm, 1 ovigerous female, CL 30.7 mm CW 32.2 mm (MNHN), Madagascar, Nosy Be, intertidal zone, coll. J. Millot.

Diagnosis. Carapace including frontal projection broader than long, dorsal surface lightly tuberculated, tubercles short, conical at base, blunt. Frontal projection long and broad, declivous; frontal margin with five teeth, with the central three taller and clearly demarcated, two outer most teeth low and less distinctively formed; interorbital region behind frontal projection deeply excavated, with a prominent subcircular frontal depression within a relatively long frontal groove that extends to the beginning of the protogastric region. Supraorbital region strongly raised, accentuating the depth of frontal groove; anterior portion with a short protrusion just above the orbits. Exorbital tooth acute, blunt; gastrobranchial notch posterior to the exorbital tooth deep and distinct, forming an almost 90° angle. Hepatic tooth broad, obtuse, blunt. Epibranchial margin with seven broad anterior teeth, two to three much smaller acute posterior teeth; epibranchial tooth tall, prominent, pedicled, relatively smooth. Posterolateral border with large tubercles separated by large shallow notches. Posterior margin median portion with a blunt, short tooth, tooth not fused with adjacent teeth at base (Figs. 1a–d, f, g).

Gastric, cardiac and branchial regions distinct, elevated; hepatic region lightly tuberculated, slightly inflated but lower than gastric, cardiac and branchial regions; separated from epibranchial region by narrow hepatobranchial groove. Protogastric region occurs as a pair of subcircular protrusions, with distinct tubercles; mesogastric region with a prominent central tubercle; metagastric region not inflated, appearing as a depressed area between the mesogastric and cardiac regions. Cardiac region protruded, with a cluster of tubercles surrounding a larger central blunt tubercle that is directed posteriorly. Epibranchial regions distinctly raised, almost forming a diagonal ridge-like structure. Meso- and metabranchial regions not

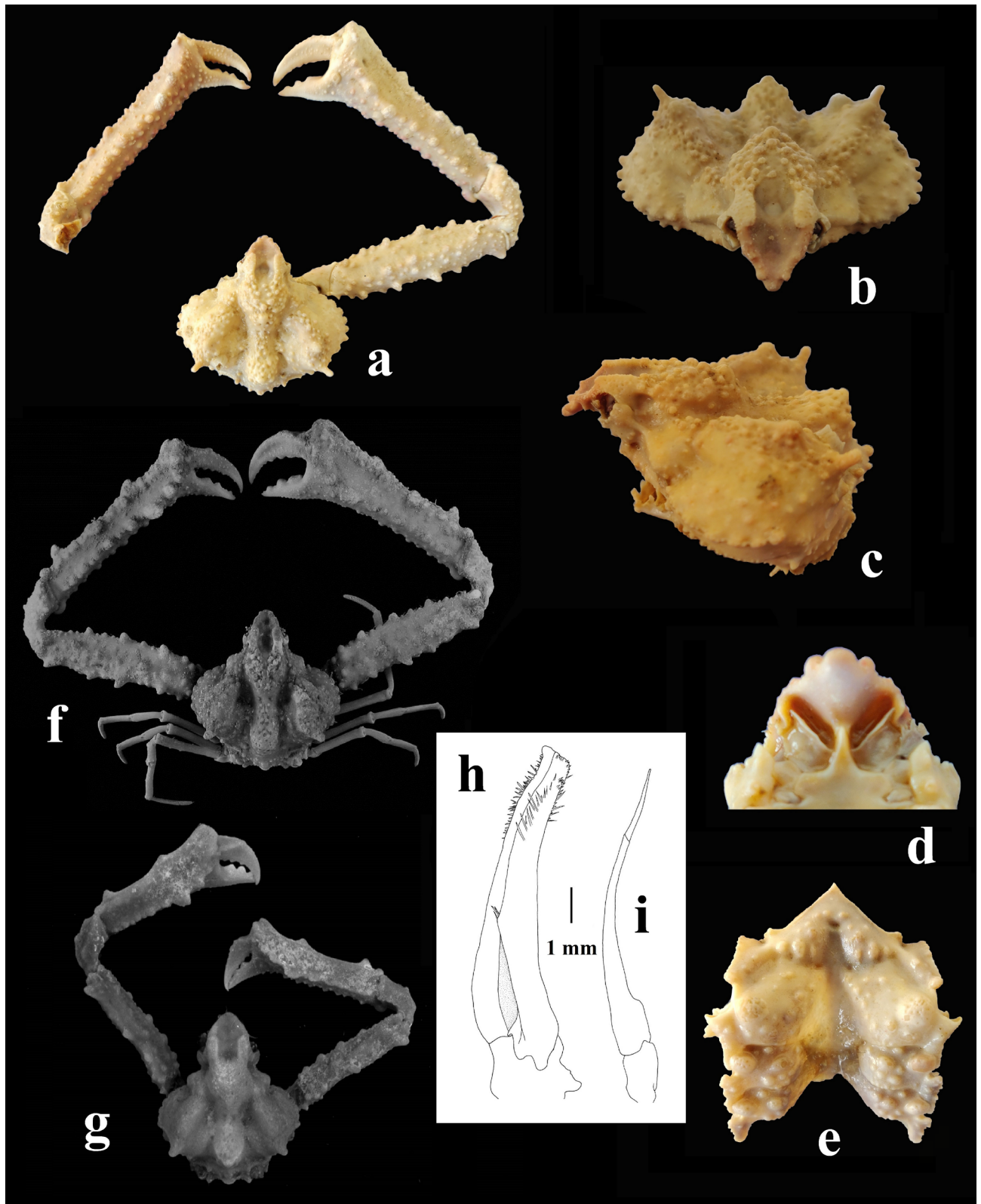


Figure 1. *Rhinolambrus lippus* (Lanchester, 1901), male (LFSC.ZRC-108), CL 41 mm CW 44 mm: **a**, Dorsal view; **b**, carapace front view; **c**, carapace lateral view; **d**, frontal projection lower view; **e**, sternum. *Lambrus lippus* Lanchester, 1901, male, (MHNH), CL: 37.1 mm; CW: 39.7 mm: **f**, Dorsal view. *Lambrus (Rhinolambrus) montiger* Nobili, 1905, holotype (MNHN-IU-2014-7824), juvenile female, CL 9.5mm CW 9.7 mm: **g**, Dorsal view. *Rhinolambrus lippus*, male (MHNH), CL 37.1 mm CW 39.7 mm: **h**, G1; **i**, G2 (after Tan, 2004: fig. 130J, K).

inflated, below epibranchial region. Gastrobranchial groove deep and broad.

Cheliped 3.2 times carapace length; manus outer margin with three sub-lamelliform, rounded projections, middle one smaller, lower margin dentate, teeth rounded, smooth, teeth periphery without smaller tubercles; carpus outer surface with small tubercles, inner surface smooth; palm margins covered with large tubercles; pollex and dactylus cutting margin dentate; dorsal anterior tip of major manus broadly raised, with a short blunt tooth (Fig. 1a).

Ambulatory legs cylindrical in cross section; meri upper margins smooth, entire, without any teeth or tubercles, lower margins usually entire, occasionally with two or three small tubercles; carpi upper and lower margins entire; propodi upper and lower margins entire; dactyli upper and lower margins entire. Male anterior sternum with shallow inverted T-shaped excavation (Fig. 1e). G1 blunt distally, slightly flattened dorsoventrally. G2 slender, slightly curved, apical lobe slender, tapering anteriorly (Figs. 1h, i).

Distribution. The species is so far reported from Djibouti (Nobili, 1905), Madagascar (Tan, 2004; present paper), Malaysia (Lanchester, 1901), and now from India. Its presence in India is not totally unexpected as the other extant specimens of this species were all found in the Indian Ocean.

We were informed by Joseph Poupin that there are three specimens identified as *R. lippus* at the MNHN that were collected from the Papua New Guinea expedition of 2012. MNHN-IU-2013-7854 has no image of the specimen attached to this record and as such, we are unable to verify the identification. We are certain that the specimen of the lot MNHN-IU-2013-2070 (5°5'16.1988"S 145°48'7.2072"E; 12–17 November 2012) is conspecific with *R. lippus* based on the image that accompanied this record. Specimen MNHN-IU-2013-120 identified as *R. lippus* on the MNHN website is, however, erroneous, and we think it resembles *R. rudis* (Rathbun, 1916). There are, however, some interesting morphological differences between the specimen from Papua New Guinea and the type specimen of *R. rudis*. Differences between *R. lippus* and *R. rudis* are discussed below in the remarks

section. This particular specimen might warrant a closer investigation since the diversity of the Parthenopidae from Papua New Guinea is practically unknown.

Remarks. This Indian specimen of *R. lippus* matches the original description of the species given by Lanchester (1901). This Indian specimen (Fig. 1a) also has chelipeds that are more tuberculated than the type specimen of *R. lippus* (Fig. 1f), which we think is due to intraspecific variation due to the size of the carapace width of the current specimens being 3.4 mm broader than the holotype (CW 44 mm versus CW 40.6 mm).

Tan (2004) mentioned that *Rhinolambrus montiger* is probably conspecific with *R. lippus*. There were, however, some difficulties encountered when comparing the holotype of *R. montiger* with existing *R. lippus* specimens due to size differences. The holotype of *R. montiger* (CW 9.5 mm, CL 9.7 mm) is almost three times smaller than the smallest *R. lippus* female specimen that was examined (CW 32.2 mm, CL 30.7 mm). Other than the carapace dorsal surface being somewhat smoother in *R. montiger*, both *R. montiger* and *R. lippus* have a broadly triangular frontal projection margin; very close similarities in the shape and depth of the frontal depression and frontal groove; and a distinctively raised epibranchial region that terminates in a tall tubercle (*sensu* Tan, 2004). Other than the lack of a row of teeth on the outer margin of the cheliped in *R. montiger* (present in *R. lippus*), which we attribute to size differences, these morphological characteristics of the *R. montiger* holotype strongly suggest that it is conspecific with *R. lippus*. We posit that *R. montiger* is a juvenile specimen of *R. lippus*, and is considered to be synonymous with *R. lippus* having priority.

Among the other *Rhinolambrus* species, *R. montiger* has a superficial resemblance to *R. rudis* due to the deep frontal depression and groove. They both have only one cardiac tubercle and only one median tooth on the posterior margin. *Rhinolambrus montiger* is not a juvenile specimen of *R. rudis* because, based on the comparison of similar sized specimens, *R. montiger* has comparatively smaller teeth on the cheliped manus outer margin and both cheliped meri inner and outer margins. Whereas in *R. rudis*, there are about four distinctive teeth that are lobiform in shape. In addition,

the epibranchial tubercles of *R. montiger* are shorter than that of *R. rudis*.

Rhinolambrus lippus shows some similarity with *R. turriger*, *R. lamelliger*, *R. longispinus*, *R. contrarius*, and *R. rudis* in having the frontal projection longer than broad with the excavated upper surface extended up to the gastric elevation. *Rhinolambrus turriger* differs from *R. lippus* in having a less tuberculate carapace surface, presence of two teeth on the median portion of the posterior margin, frontal projection anterior margin with a single lobe and the rostrum upper surface excavation is shallow (Nagai and Innocenti, 2015).

Rhinolambrus lamelliger differs from *R. lippus* in having slender and long chelipeds and ambulatory legs, cheliped manus with six large lobiform projections on the outer margin, cheliped merus lower margins with distinct triangular teeth, cheliped major manus dorsal anterior corner with a broad triangular protrusion (Tan, 2004). *Rhinolambrus longispinus* differs from *R. lippus* in having a more tuberculated carapace with the tubercles generally being taller, narrower and ending in a narrow tip, three spines on the cardiac region, branchial region with five to six large spines, frontal projection anterior margin with a single central pointed lobe, cheliped merus with a long spine on the outer and inner margins, cheliped manus with multiple lobiform projections on outer margins, and the carpus and propodus of ambulatory legs having tall narrow spines on the upper margin (Naruse *et al.*, 2014). *Rhinolambrus contrarius* can be distinguished from *R. lippus* in having a more tuberculated carapace, a sharp and long hepatic spine, cheliped manus with five lobiform projections, merus with long spines on inner and outer margin and ambulatory legs with small spines (Tan *et al.*, 1999). *Rhinolambrus rudis* differs from *R. lippus* in having four large lobiform projections on the cheliped manus, merus having lobiform projections on the outer and inner margins, and the upper surface having rounded tubercles (Tan and Ng, 2003).

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