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A systematic study on Indian record of the genus *Trachysalambria* Burkenroad, 1934

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Abstract

Burkenroad (1934) created two subgenus of the genus *Trachypenaeus* Alcock, 1901 viz., *Trachypenaeus* (*Trachypenaeus*) and *Trachypenaeus* (*Trachysalambria*). These two subgenus were raised to the status of genus by Pérez Farfante and Kensley (1997). The genus *Trachypenaeus*, s. s. was further divided into two genus namely *Megokris* and *Rimapenaeus* by Perez-Farfante and Kensley (1997). Therefore, the original *Trachypenaeus* Alcock, 1901 is now divided into four established genus such as *Trachypenaeus* Alcock, 1901, *Trachysalambria* Burkenroad, 1934, *Megokris*, Pérez Farfante and Kensley, 1997 and *Rimapenaeus*, Pérez Farfante and Kensley (1997). Genus *Trachysalambria* Burkenroad, 1934 represents eight species throughout world. Indian water represents only two species viz., *T. aspera* (Alcock, 1905) and *T. curvirostris* (Stimpson, 1860).

Keywords: Indian, Water, *Trachypenaeus*, *Trachysalambria*, *aspera*, *curvirostris*.

1. Introduction

Shrimps and Prawns of various kinds have certainly been a source of protein for human consumptions from very early times. Within historical times reference is made to prawn in ancient Chinese and Japanese literature (Pérez Farfante & Kensley 1997) [8]. In Indian literature, earliest known penaeid prawn was *Penaeus monodon*, described by Fabricius in 1798. Since then, the literature on many aspects of the systematics and biology of this group has grown enormously because of their commercial importance (Chanda & Bhattacharya, 2002; Chanda, 2014). In 1814 the *Penaeoidea* was recognized as a taxonomic group by Rafinesque – Schmaltz. Since then, the literature on many aspects of the systematics and biology of this group has grown enormously because of their commercial importance. Genus *Penaeus* is the actual mother genus of the present genus under study. Genus *Trachypenaeus* was established by (Alcock, 1901) [1], as a subgenus under genus *Penaeus*. Further, Alcock, 1905 [2], raised *Penaeus* (*Trachypenaeus*) into its generic status. Later, the genus *Trachypenaeus*, (Alcock, 1901) [1] was divided into four genus. Indian water represents two of the said genus namely *Trachysalambria* Burkenroad, 1934 and *Megokris*, (Pérez Farfante and Kensley, 1997) [8]. Present work reveals that out of eight species Indian water represents two species under genus *Trachysalambria*.

2. Materials & methods

The present study is mainly based on the specimens collected by the author from commercial trawler catch of different fish landing centers throughout Indian coast line. In addition to this penaeid prawns preserved in the National Collection of the Zoological Survey of India, Kolkata, India; Central Marine Fishery Research Institute, Cochin, Kerala and its regional stations at Mandapam, Tamil Nadu.

The materials preserved in rectified spirit (90%) and body parts of taxonomic importance have been dissected and studied under a stereoscopic binocular microscope. The detailed synonymies have been furnished to the genera and species and also their diagnosis, distribution, taxonomic remarks have been furnished. The genera and species are arranged alphabetically for convenience. In addition an attempt has been made to include a comprehensive coverage of the references in the Reference section. For all citations of taxon author's name and year of publication has been given.

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3. Results and discussions

Genus *Trachysalambria* Burkenroad, 1934^[5]

In 1934, Burkenroad established subgenus *Trachysalambria* under genus *Trachypeneus* (Alcock, 1905)^[2], with *Penaeus curvirostris* (Stimpson, 1860)^[13] as type. The subgenus was elevated as a distinct genus *Trachysalambria* Burkenroad, 1934, by (Pérez Farfante and Kensley, 1997)^[8]. This genus was first recorded from India by (Alcock, 1901)^[1] as a subgenus of *Peneus*. A brief history of the genus with special reference to Indian contributions are given below.

1860 *Paeaeus* Stimpson, Proc. Acad. nat. Sci. Philad., 12:44

1901 *Peneus* (*Trachypeneus*) Alcock, Descr. Cat. Indian Deep-Sea Crust.,: 15[Part].

1905 *Trachypeneus* Alcock, Ann. Mag. nat. Hist., (7) 26:522 [part]; 1906, Cat. Indian decapod Crustacea in the Collection of the Indian Museum Part III. Macrura. Fascicle I.: 1-55.

1906 *Metapenaeus* Nobili, Ann. Sci. nat. Zool. Paris, (9) 4: 20 [Part].

1934 *Trachypeneus* (*Trachysalambria*) Burkenroad, Bull. Bingham Oceanogr. Coll., 4(7): 49 [Division I, Section 2]; Menon, 1956, Proc. Indo – Pacific Fish. Coun., 6:345-47; George, 1969, Bull. Cent. Mar. Fish. Res. Inst., 14:5-48; 1972, Indian J. Mar. Sci., 1:89-92; 1979, In ‘Contributions to Marine Sciences’, dedicated to Dr. C.V. Kurian, 21-59; Kurian and Sebastian, 1993, Hindustan Publishing Corporation (India): 1-280.

1997 *Trachysalambria* Pérez-Farfante and Kensley, Mem. Mus. natl. Hist. nat. France, 175:1-233.

Type Species: *Penaeus curvirostris* Stimpson, 1860, Proc. Acad. nat. Sci. Philad.,^[12]:44.

Type Locality: Port “Simoda”, [Shimoda Ko], Japan.

Diagnosis of the Genus

Body densely setose; rostrum relatively short with dorsal teeth only, extending beyond the base of second antennular segment but not beyond the third segment; epigastric tooth distinctly separated from first rostral tooth; carapace with orbital, antennal and hepatic spines prominent; pterygostomian angle usually blunt, always lacking spine; postocular sulcus absent; orbit antenna sulcus shallow; cervical sulcus weak, short, moderately long or absent; hepatic sulcus marked or indistinct; branchiocardiac carina extremely weak or lacking; longitudinal suture short, faint, almost indistinct, ending anterior to hepatic spine; transverse suture may be short and well-marked or indistinct; abdomen with sixth somite lacking cicatrix; telson with 1-4, usually 3, pairs of movable lateral spines; antennule lacking parapenaeid spine; antennular flagella shorter than carapace; basal spine lacking on third maxilliped, present on first pereopod and usually on second; ischial spine present or absent on first pereopod; epipod present on first through third pereopods, on second and third, or on third only; petasma symmetrical, semiclosed, with lateral lobes produced distally into usually large, hornlike or wing like projections, extending either horizontally or curving downward; thelycum closed, with plate on sternite XIV broad anterior margin bracket shaped (}) anterior sternal plate on

sternite XIII like an inverted heart shaped, anterior angle raised, posterior broad margin divided into two half with a deep cleft, each half with two short lobule posteriorly.

Remarks

In Indian water only two species viz. *T. aspera* (Alcock, 1905)^[2] and *T. curvirostris* (Stimpson, 1860)^[13] are found which can be distinguished by the following key.

Key to the species

1. Rostrum straight, postrostral carina low, distolateral projection of petasma straight, directed laterally, anterior plate of thelycum anteriorly semicircular; telson with two pairs of lateral movable spine *aspera* (Alcock, 1905)^[2].

---- Rostrum slightly upcurved, postrostral carina high, distolateral projection of petasma directed laterally slightly curved downwards, anterior plate of thelycum anteriorly, angular; telson with three pairs of lateral movable.....*T. curvirostris* (Stimpson 1860)^[13].

Trachysalambria aspera (Alcock, 1905)^[2]

Alcock (1905) described the species from Ganjam Coast, India as *Trachypeneus asper*. (Burkenroad 1934)^[5], Created two subgenus viz., *Trachypenaeus* (*Trachypenaeus*) and *Trachypenaeus* (*Trachysalambria*). These subgenus were raised to the status of genus by Pérez Farfante and Kensley (1997). A brief history of the species with special reference to the Indian contributions are given below.

1905 *Trachypeneus asper* Alcock, Ann. Mag. Nat. Hist., (7)14: 531-532; 1906, Cat. Indian Dec. Curst. Part III. Mac. Fas.I: I 1-55.

1926 *Trachypenaeus curvirostris* Schmitt, Zool. Res. Fish. Exp. ‘Endeavour’, 5:309-381.

1934 *Trachypenaeus* (*Trachysalambria*) *curvirostris* Burkenroad, Bingham Oceanogr. Coll. 4(7):1-109.

1997 *Trachysalmbria aspera* Pérez Farfante and Kensley. Mem. Mun. nat. d’Hist. nat. 175:1-233.

Type Spceceis: *Trachypenaeus asper* Alcock, 1905, Ann. Mag. nat. Hist., (7)14:531.

Type Locality: Ganjam Coast, Orissa, East Coast of India.

Materials Examined

5 females (80-90 mm); ZSI. Reg. No. C4861/2; Bhimapattanam, Andhra Pradesh; 25.3.1997; T.Roy and Party. 3 males and 1 female (36-65 mm); ZSI. Reg. No. C4796/2; Pulicot Lake, Andhra Pradesh; 26.8.1995; A. Chanda. 3 females (70-80 mm) ZSI. Reg. No. 7218-19/9, 3 females (75-80 mm) ZSI. Reg. No. 1680/7, 2 males (65-70 mm), ZSI Reg. No. 4054/9, 2 males (75-80 mm) ZSI Reg. No. 7220/9. Same locality Ganjam, Orissa, Alcock 1906.

Diagnosis of the species

Body densely setose; rostrum straight, not reaching end of second antennular segment, armed only dorsally by 9+1 teeth; antennular flagellum shorter than carapace; postrostral carina low reaching almost posterior border of carapace; a prominent orbital spine; antennal spine very strong, antennal carina reaching posteriorly to the base of hepatic spine, hepatic spine

small, pterygostomian angle prominent spine like, hepatic sulcus and cervical sulcus indistinct; longitudinal and transverse suture small but prominent; dorsal abdominal carina starts from second segment like a tubercle high and prominent between third to sixth segment, terminating into a short spine; telson with a pair of fixed subterminal spine and two lateral movable spine; basal spine present on first and second pereopod, an ischial spine present on first pereopod; petasma closed type, T-shaped, distolateral projection of petasma directed laterally; thelycum consists of two plates, anterior plate semicircular, dorsally concave, posterior plate bar shaped.

Remarks

Trachypenaeus asper (Alcock, 1905) [2] is very similar to *Trachypenaeus curvirostris* (Stimpson, 1860) [13] in general appearance. Schmitt (1926) synonymised former with the latter depending on the rostral characters. (Burkenroad, 1934) [5] described *Trachypenaeus (Trachysalambria) curvirostris* (Stimpson, 1860) as type of the sub genus. (Pérez –Farfante and Kensley, 1997) [8] raised the subgenus to generic rank and *Trachypenaeus asper* was included under the genus *Trachysalambria* as a valid species *Trachysalambria aspera* (Alcock, 1905) [2].

Distribution

India: Orissa, Andhra Pradesh, East coast of India; Andaman Sea.

Elsewhere: Indonesia; Philippines; Persian gulf.

Trachysalambria curvirostris (Stimpson, 1860)

Stimpson (1860) described the species from Hong Kong as *Penaeus curvirostris*. Alcock (1905) recorded it for the first time from Indian coast as *Trachypeneus curvirostris*. A brief history of the species with special reference to Indian contributions are given below.

1860 *Penaeus curvirostris* Stimpson, Proc. Acad. Nat. Sci. Philad., 1860:22-47.

1905 *Trachypeneus curvirostris* Alcock, Ann. Mag. Nat. Hist. (7) 16:508-532.

1934 *Trachypeneus (Trachysalambria) curvirostris* Burkenroad, Bingham Oceanogr. Coll. 4(7):1-109.

1938 *Trachypenaeus curvirostris* Ramdan, "John Murray" Exped. Ser. Rep. 5(3):35-76; Kunju, 1960, J. mar. biol. Ass. India 2(1):82-84; George, 1967, Proc. Symp. Crustacea. Mar. biol. Ass. India, Pt.I:337-346; 1979, Cont. Mar. Sci., dedicated to Dr. C.V. Kurien:21-59.

Type Species: *Penaeus curvirostris* Stimpson, 1860, Proc. Acad. nat. Sci Philad. (12):44.

Type Locality: Hong Kong Sea.

Material Examined

1 male (70 mm) and 1 female (90 mm); ZSI. Reg. No. C4899/2; Veraval sea coast, Gujarat; 16.12.1992; H.C. Ghosh and Party. 1 male (90 mm) and 1 female (95 mm); ZSI Reg. No. C4856/2; Lowsim's Bay Visakhapattanam, Andhra Pradesh; 26.3.1997; T. Roy and Party. 1 male (87 mm); CMFRI-AR 278; off Cochin, Arabian Sea. 4 males (30-50

mm); ZSI Red. C4930/2; Gujarat Coast; 16.12.1992; H.C. Ghosh & Party.

Diagnosis of the species

Body densely setose, pubescent; rostrum armed with 9+1 dorsal teeth, reaching tip of second segment of antennular peduncle, strongly upcurved; adrostral carina reaching posteriorly upto first rostral tooth, adrostral sulcus absent, postrostral carina not reaching posterior margin of carapace; cervical and hepatic sulci feeble; longitudinal suture short; transverse suture faint; pterygostomian angle blunt, abdomen with a small median tubercle on second segment and a high middorsal carina from middle of fourth to sixth segment; telson with three pairs of lateral spines; antennular flagella shorter than carapace and peduncle; distolateral spine of first segment diverging from longitudinal axis pointing slightly upwards; epipod present on first three pereopods, a small ischial spine on first pereopod only; petasma with broad wing like distolateral projections, directed laterally and tip slightly curved downwards; thelycum closed, anterior plate concave dorsally and inverted heart shaped, with a median groove posteriorly anterior margin of posterior plate invaginate like a bracket shaped groove extending anterolaterally.

Distribution

India: Orissa, Andhra Pradesh, East coast; Veraval, Gujarat; Cochin, Kerala, West coast and also in Andaman Islands.

Elsewhere: Eastern Mediterranean; Natal, South Africa to Tanzania; Red Sea; Madagascar; Yemen to Persian Gulf; Sri Lanka; Malaysia; Indonesia; Gulf of Tonkin; China; Hong Kong; Taiwan; Philippines; Japan; Korea; New Guinea; Western Australia, Northern Territory, New South Wales, Australia.

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