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## A Systematic Study on Indian Records of *Atypopenaeus* Alcock, 1905 with Special Reference to Extended Distribution of *Atypopenaeus stenodactylus* (Stimpson, 1860)

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### Abstract:

The genus *Atypopenaeus* was erected by Alcock (1905) giving separate generic status to Henderson's (1893) species *Penaeus compressipes* and he also proposed that two of Stimpson's species from Hong Kong, viz., *Penaeus podophthalmus* and *P. stenodactylus* be assigned to this genus. Hall (1961) transferred *P. stenodactylus* from *Penaeus* to *Atypopenaeus*. Alcock (1906) reported this genus from Indian water for the first time. The genus *Atypopenaeus* comprises 5 species throughout the world, out of which Indian representation is only two, *Atypopenaeus compressipes* (Henderson, 1893), found in both east and west coast of India and *Atypopenaeus stenodactylus* (Stimpson, 1860) found only in west coast (Kurian and Sebastean, 1993).

**Key words:** genus, species, *Atypopenaeus*, *compressipes*, *stenodactylus*

### 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). Usage of the term 'Prawn' and 'Shrimp' are some what confusing. In some western literature the term 'Shrimp' is applied for *Penaeoidea* and *Sergestoidea*, but in the east these are called 'Prawn'. Holthuis (1980) discussed the contradiction but did not arrive at any conclusion. In the Prawn Symposium of the Indo-Pacific Fisheries Council held at Tokyo in 1955 it was decided that the word 'Prawn' should be applied to the Penaeids, Pandalids and Palemonids while 'Shrimp' to the smaller species belonging to the other families (Kurian & Sebastian, 1993). As such in the present study the term 'Prawn' is used for all the species belonging to family *Penaeidae*.

Among a variety of edible decapod crustaceans, prawns contribute largely to the fishery wealth of many nations. Exploitation of prawn resource from the seas around each country is playing increasingly significant role in furthering their national economy. In recent years, inspite of some ecological hazards, the demand for prawns and prawn products has increased so much that every country is making efforts to utilize hitherto unknown but usable stocks and expansion of prawn fisheries and industries near coast line is rightly being given the maximum encouragement in the development programme of each nation. Family *Penaeidae* comprises 15 genera and 65 species from Indian water (Chanda and Bhattacharya, 2009). Only two species namely *Atypopenaeus compressipes* (Henderson, 1893) & *Atypopenaeus stenodactylus* (Stimpson, 1860) of the genus *Atypopenaeus* Alcock, 1905 under family *Penaeidae* has been reported.

### 2. Materials & Methods

The present study is mainly based on the specimens collected and 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%) were studied under a stereoscopic binocular microscope. The detailed synonymies have been furnished to the genus and species and also their diagnosis, distribution, taxonomic remarks have been furnished. 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.

### 3. Results and Discussion

The genus *Atypopenaeus* was erected by Alcock (1905) giving separate generic status to Henderson's (1893) species *Penaeus compressipes* and he also proposed that two of Stimpson's species from Hong Kong, viz., *Penaeus podophthalmus* and *P. stenodactylus* be assigned to this genus. Hall (1961) transferred *P. stenodactylus* from *Penaeus* to *Atypopenaeus*. Alcock (1906) reported this genus from Indian water for the first time. A brief history with special reference to Indian contributions are given below.

1893 *Penaeus* Henderson, Trans. Linn. Soc. Lond., (2), Zool., 5:450.

1905 *Atypopeneus* Alcock, Ann. Mag. Nat. Hist., (7) 16:524; 1906, Cat. Indian Dec. Crust., 3(1): 45.

*Atypopenaeus* [amendment of *Atypopeneus* Alcock, 1905, under the plenary powers by the International Commission of Zoological Nomenclature, 1969, Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138]. Placed on the Official List of Generic Names in Zoology, International Commission on Zoological Nomenclature, 1969. Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138. Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138.

1969 *Atypopenaeus* George, Bull. Cent. Mar. Fish. Res. Inst., 14: 5-48; 1979. In 'Contribution to Marine Science', dedicated to Dr. C.V. Kurian, 21-59.

1997 *Atypopenaeus* Pérez Fartante and Kensley, Mem. Mus. nat. Hist. nat., 175:1- 233.

- Type Species: *Penaeus compressipes* Henderson, 1893, Trans. Linn. Soc. Lond., (2), Zool. 5:450.
- Type Locality: Gulf of Martaban, Myanmar.

### 3.1. Diagnosis of the Genus

Body glabrous; rostrum armed only dorsally; epigastric tooth widely separated from first rostral tooth; carapace with minute orbital spine; antennal spine reduced, pterygostomian spine absent, hepatic spine small; pterygostomian, antennal and gastroorbital carina absent; postocular sulcus prominent, orbitoantennal sulcus absent, cervical sulcus short, hepatic sulcus reduced, hepatic carina and sulcus placed anterior to hepatic spine; branchiocardiac carina indistinct, sulcus very feeble; longitudinal structure absent; transverse suture distinct; sixth abdominal somite without cicatrices; telson unarmed; antennule without parapenaeid spine, flagella shorter than carapace; basal spine present on second and third pereopod; petasma symmetrical and semiclosed; appendix masculina small, jointed, a strong dorsomedian rib of endopod of second pleopod present; thelycum closed and two lateral plate placed on sternite XIV.

### 3.2. Remarks

The genus *Atypopenaeus* is represented by only two closely related species, namely *A. compressipes* and *A. stenodactylus* in Indian coastal water. A key to separate these two species and their taxonomic accounts are given below.

### 3.3. Key to the species found in India

Post rostral carina short; distolateral lobule short, inwardly curved horn-like structure; median thelycal plate rounded both anteriorly and posteriorly ..... *A. compressipes* (Henderson, 1893)

----Post rostral carina long, ending near posterior margin of carapace; distolateral lobule swollen, anteriorly divided into three processes, directed forward; median plate of thelycum long, constricted medially; anterior portion concave, posteriorly rounded. .... *A. stenodactylus* (Stimpson, 1860).

### 3.4. *Atypopenaeus compressipes* (Henderson, 1893)

Alcock (1906) was the first who recorded the species from Madras (now Chennai), East Coast of India. A brief history with special reference to Indian contributions are given below.

- 1893- *Penaeus compressipes* Henderson, Trans. Linn. Soc. Zool., 5(2) : 450.
- 1905- *Atypopeneus compressipes* Alcock, Ann. Mag. Nat. Hist. 4(7): 524; 1906, Cat. Indian Dec. Crust. Part-III, Macru. Fas I: 1-55.
- 1960- *Atypopenaeus compressipes* Kunju, J. mar. biol. Ass. India, 2(1): 82-84; Pérez-Farfante & Kensley, 1997, Mem. Mus. nat. d'Hist. nat. Paris, 175: 77.
- Type Species: *Penacus compressipes* Henderson, 1893, Trans. Linn. Soc. Zool., 5(2): 450.
- Type Locality: Gulf of Martaban, Myanmar.

### 3.5. Material Examined

No example of this species were collected during the present study. Following account is based on the existing literature. Alcock's (1906) collection from Madras (now Chennai), Tamil Nadu, India, consisting of only one male (ZSI. Reg. No. 5090/10), was examined for following diagnosis.

### 3.6. Diagnosis of the Species

Body minutely setose; rostrum short armed dorsally with 8+1 teeth, post rostral carina ending near posterior margin of carapace, epigastric tooth placed far back; post antennular spine short, post ocular spine absent; cervical sulcus short, hepatic spine small, hepatic sulcus distinct, horizontal; abdominal carina starting from third somite, ending posteriorly at midposterior end of sixth somite with a short spine; telson short lateral spine absent; antennular flagellum cylindrical, smooth longer than carapace, subequal; external maxillipeds much longer, extended upto the tip of antennular scale; fifth pair of pereopod longer than others and all pleopods are slender; petasma symmetrical, distomedian projection end as a pair of short slightly incurved horns; median plate of thelycum on sternite XIII and XIV with rounded ends, narrow in middle, longer than two lateral parallel plates.

### 3.7. Remarks

*Atypopenaeus compressipes* (Henderson, 1893) was established as type of *Atypopenaeus* by Alcock in 1905. Hall (1962) considered *A. compressipes* as a synonym of *A. stenodactylus* (Stimpson, 1860). George (1967 & 1969) and Grey, Dall and Baker (1983) also regarded these two as same species. Racek and Dall (1965) opined that *A. compressipes* and *A. stenodactylus* are two

separate species and suggested that *A. stenodactylus* can be distinguished from *A. compressipes* by the shorter postrostral carina, finely granulated dorsum of the carapace and greater length of the outer maxillipeds, which extend beyond the antennal scales. Pérez-Farfante and Kensley (1997) also listed these as separate species, as such these two are regarded as separate species in the present study.

### 3.8. Distribution

- India: Chennai, Tamil Nadu, East Coast of India; Mumbai, Maharashtra, West Coast of India.
- Elsewhere: Myanmar; Indonesia; Hong Kong; Philippines; Japan; New Guinea; Northern Territory, Australia.

### 3.9. *Atypopenaeus stenodactylus* (Stimpson, 1860)

George (1969) first recorded the species from Maharashtra, West Coast of India. A brief history of records with special reference to Indian contributions are given below.

- 1860- *Penaeus stenodactylus* Stimpson, Proc. Acad. Nat. Sci. Philad., 12:22-47; George, 1969, Bull. Cent. Mar. Fish. Res. Inst.; No. 14:5-48; 1979, Cont. Mar. Sci, dedicated to Dr. C.V. Kurian, 21-59; Kurian and Sebastean, 1993, In prawn Fisheries of India, Hindustan Publication, Delhi.
- Type Species: *Penaeus stenodactylus* Stimpson, 1860 Proc. Acad. Nat. Sci. Philad., 12:22-47.
- Type Locality: Hong Kong, West Pacific.

### 3.10. Material Examined

1 female (75 mm) ZSI. Reg. No. C4913/2, Subhas port, Porbandar, Gujarat, India. Stn. No. 5, 10.12.1992, H.C. Ghosh; 1 male (60 mm) and 3 females (45-72 mm), Reg. No. AR. 267, Mumbai, Maharashtra India, CMFRI, Mandapam, Tamil Nadu.

### 3.11. Diagnosis of the species

Carapace minutely pubescent; rostrum straight, extend upto distal end of first antennular segment, armed with 9+1 dorsal teeth, placed throughout entire length of rostrum; post rostral carina extend upto middle of carapace, post orbital sulcus marked; hepatic spine reduced, dorsal abdominal carina start from fourth somite, antennular flagella longer than carapace, hepatic sulcus indistinct; petasma with distolateral projection divided into three denticular processes projected anteriorly; median plate of thelycum on sternite XIII to XIV elongate with a median constriction, anteriorly convex, tongue-like posteriorly rounded; a pair of distinctly separate, long, flaplike lateral plate flanking posteriorly upto concavity of median plate.

### 3.12. Remarks

All the materials examined are morphologically similar to the illustration and description of Hall (1961) and illustration of Pérez-Farfante and Kensley (1997). George (1969) mentioned that the distribution of the species is restricted northward up to Mumbai coast in west coast of India and contribute a considerable amount to the fishery. During the course of study first author have observed a lot of collection from Gujarat coast remain unidentified within the general collection of ZSI. So, author took an opportunity to study the hitherto unidentified lot and found one female specimen of the species. Author also visited CMFRI and studied their registered identified specimens (Reg. No. AR. 267), which is identical to the present material. So, this is the first record of the species from Gujarat Coast of India indicating northward extension of distribution of the species.

### 3.13. Distribution

- India: Porbandar, Gujarat, Mumbai, Maharashtra, West Coast of India.
- Elsewhere: Sri Lanka, Malaysia; Indonesia; Gulf of Tonkin; South China Sea; Philippines; Hong Kong; Taiwan; Japan; New Guinea; Northern Territory, Australia.

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