



Notes on some Indo-Pacific Caridean shrimps (Crustacea: Decapoda: Caridea: Palaemonidae and Gnathophyllidae) particularly from India

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Abstract

Although among the less conspicuous members of the tropical shallow reef fauna, the caridean shrimps are not less abundant. Much scope for further study on the marine carideans of Indian waters still exists and many species must certainly remain to be discovered. Although, the recent checklist on prawn fauna of Indian waters reports 285 species of caridean shrimps (including fresh water forms) (Radhakrishnan et al, 2012). With this, the present study also contributes another report on the documentation of six species of caridean shrimps from the Gulf of Mannar and Lakshadweep waters of Indian peninsula. Out of six species *Ancylomenes magnificus* (Bruce), *Periclimenes soror* Nobili, *Stegopontonia commensalis* Nobili, *Gnathophyllum americanum* Guerin Meneville and *Gnathophyllodes mineri* Schmitt are new to the Indian fauna. In the present paper, detailed notes on species description, color pattern, distribution, habitat and hosts were discussed.

Key words: Caridea, Palaemonidae, Gnathophyllidae, Gulf of Mannar, Lakshadweep, India

Introduction

Caridean shrimp fauna inhabiting the marine and estuarine waters of India are much diverse and relatively less known. Significant contributions to the systematics of these marine caridean shrimps were reported from the few studies of Alcock and Anderson (1894), Alcock (1901), Kemp (1914, 1922 and 1925) and Jayachandran (2005). Since publication of these pioneering works on India, numerous changes in taxonomy and systematic positions of species took place. De Grave and Fransen (2011) provided a complete checklist of caridean shrimps with 389 genera and 3438 species. Earlier, the faunal checklist provided for coral reef regions of India such as Gulf of Mannar, Lakshadweep, Gulf of Kutch, Andaman & Nicobar Islands, includes only few species of caridean shrimps (Venkataraman *et al.*, 2004). However, a recent checklist of (Radhakrishnan et al, 2012), authenticated that the caridean shrimps of Indian waters was reasonably well known, which was dominated by the family Palaemonidae (28 genera and 127 species) but other families are still poorly recorded.

Commensal relationship of carideans with other invertebrates like echinoids, crinoids, cnidarians, corals etc. are widespread in the world oceans being especially numerous in tropical seas, but was not adequately known from India. Kemp (1922) has documented 39 species of pontonine shrimps from Indian waters, which was considered to be a major contribution as far as caridean shrimps were concerned. Later, the occurrence of symbiotic crustaceans associated with other echinoderms was also recorded from Gulf of Mannar (Sankarankutty 1962), Andaman & Nicobar Islands (Sastry, 1977, 1981). Recently, a sea cucumber associated gnathophyllid shrimp *Pycnocaris chagoae* Bruce was also reported from Lakshadweep (Prakash *et al.*, 2011). Hence, the present study deals with the caridean shrimp species collected from two coral reef regions (Gulf of Mannar and Lakshadweep) of India during the period January 2011 to May 2013 with detailed notes on the diagnosis of the material, color pattern, host and habitats were discussed.

References

- Alcock, A. & Anderson, A.R.S. (1894) Natural history notes from H.M. Royal Indian marine survey steamer 'Investigator', Commander C.F. Oldham, R.N., commanding. Series II, No. 14. An account of a recent collection of deep sea Crustacea from the Bay of Bengal and Laccadive Sea. *Journal of Asiatic Society of Bengal*, 63, 141–185, plate 9.
- Alcock, A. (1901) *A descriptive catalogue of the Indian deep-sea Crustacea Decapoda Macrura and Anomala, in the Indian Museum. Being a revised account of the deep-sea species collected by the Royal Indian marine survey ship Investigator.* Indian Museum, Calcutta, 286 + i–iv pp., 3 plates.
- Allen, G.R. & Steene, R. (2003) *Indo-Pacific Coral Reef Field Guide.* Tropical Reef Research, Singapore, 378 pp.
- Apte, D. (2012) *Field guide to the Marine Life of India.* Bombay Natural History Society, Bombay, 500 pp.
- Borradaile, L.A. (1917) The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. No. VIII - On the Pontoniinae. *Transactions of the Linnaean Society of London, Series 2 (Zoology)*, 17, 323–396, Plates 52–57.
- Bruce, A.J. (1965) Notes on Indo-Pacific Pontoniinae, X. *Periclimenes cristimanus* sp. nov., a new pontoniid shrimp from Singapore. *The Annals and Magazine of Natural History*, 8 (13), 487–493.
<http://dx.doi.org/10.1080/00222936508651602>
- Bruce, A.J. (1973) The pontoniinid shrimps collected by Yale—Seychelles Expedition 1957–58 (Decapoda, Palaemonidae). *Crustaceana*, 24 (1), 132–142.
<http://dx.doi.org/10.1163/156854073X00137>
- Bruce, A.J. (1974a) The Occurrence of *Gnathophylloides mineri* Schmitt (Decapoda, Natantia, Gnathophyllidae) in the Indian Ocean. *Crustaceana*, 26 (3), 313–315.
<http://dx.doi.org/10.1163/156854074X00712>
- Bruce, A.J. (1974b) A report on small collection of pontoniine shrimps from the northern Indian Ocean. *Journal of Marine Biological Association of India*, 16 (2), 437–454.
- Bruce, A.J. (1978) *Periclimenes soror* Nobili, a pontoniin shrimp new to the American fauna, with observations on its Indo-West Pacific distribution. *Tethys*, 8 (4), 299–306.
- Bruce A.J. (1979) Notes on some Indo-Pacific Pontoniinae, XXXI. *Periclimenes magnificus* sp. nov., a coelenterate associate from the Capricorn Islands (Decapoda, Palaemonidae). *Crustaceana*, 5 (Supplement), 195–208, pl. 1.
- Bruce, A.J. (1982) The shrimps associated with Indo-West Pacific echinoderms, with the description of a new species in the genus *Periclimenes* Costa, 1844 (Crustacea: Pontoniinae). *Australian Museum. Memoir*, 16, 191–216.
- Bruce, A.J. (1983) Expedition Rumphius II (1975) Crustaceans parasites, commensaux, etc. (T. H. Monod ed.) IX. Crustaceans Decapodes (1ere partie: Natantia Pontoniinae). *Bulletin du Muséum national d'Historie naturelle Section A, Zoologie, Biologie et Ecologie Animales*, Paris, Série 4e, 5, 871–902.
- Bruce, A.J. (1984) Marine Caridean Shrimps of the Seychelles. *Monographiae Biologicae*, 55, 141–169.
- Bruce, A.J. (2007) Palaemonid shrimps from the Dampier Archipelago (Crustacea: Decapoda), with a review of the Western Australian pontoniine shrimp fauna. In: Jones, D.S. (Ed.), *Crustaceans collected by the Western Australian Museum/Woodside Energy Ltd. Partnership to explore the Marine Biodiversity of the Dampier Archipelago Western Australia 1998–2002. Records of the Western Australian Museum*, supplement, 73, pp. 97–129.
- Castro, P. (1971) The natantian shrimps (Crustacea, Decapoda) associated with Invertebrates in Hawaii. *Pacific Science*, 25, 395–403.
- Chace, F.A. Jr. & Bruce, A.J. (1993) The caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition, 1907–1910, part 6: Superfamily Palaemonoidea. *Smithsonian Contributions to Zoology*, 543, 1–152.
<http://dx.doi.org/10.5479/si.00810282.543>
- Costa, O.G. (1844) Su due nuovi generi di Crostacei decapodi macrouri.— *Annali delle Accademia degli Aspiranti Naturalisti*, 2 (Napoli), 285–292.
- Dana, J.D. (1852) *Crustacea. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U. S. N. Vol. 13.* C. Sherman, Philadelphia, viii + 685 pp.
- De Grave, S. & Fransen, C.H.J.M. (2011) Carideorum catalogus: the recent species of the dendrobranchiate, stenopodidean, procarididean and caridean shrimps (Crustacea: Decapoda). *Zoologische Medelingen Leiden*, 85 (9), 195–589.
- Edmondson C. (1935) New and rare polynesian crustacea. *Occasional Papers of the Bishop Museum.*, 10 (24), 1–38. [Honolulu]
- Fautin, D.G., Guo, C.G. & Hwang, J.S. (1995) Costs and benefits of the symbiosis between the *Periclimenes brevicarpalis* and its host *Entacmaea quadricolor*. *Marine Ecology Progress Series*, 129, 77–84.
<http://dx.doi.org/10.3354/meps129077>
- Gordon, I. (1939) A new species of *Sergestes* (Crustacea, Decapoda) from the South Atlantic. *The Annals and Magazine of Natural History*, Series 4, 498–509
- Guérin-Méneville, F.E. (1855–1856) Animaux articulés con piés articulés. In: de la Sagra, R. (Ed.), *Historia física política y natural de la isla de Cuba. Segunda Parte. Historia Natural, Tomo VII (Crustaceos, Arágnides é Insectos) [1856] & Tomo VIII (Atlas de Zoología) [1855]*. Paris, pp. i–xxxii + 1–371, plates 1–20.
- Hayashi K.I. (1973) *Periclimenes soror* Nobili associated with the Crown of Thorns starfish from Japan (Decapoda Natantia, Palaemonidae). *Proceedings of Japanese Society of Systematic Zoology*, 9, 29–35
- Holthuis, L.B. (1949) The Caridean Crustacea of the Canary Islands. *Zoologische Mededelingen*, 30 (15), 227–255.

- Holthuis, L.B. (1952) The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species II. Subfamily Pontoniinae. *Siboga Expeditie*, 39a10, 1–253
- Jayachandran, K.V. (2005) *The biodiversity of palaemonid prawns from Indian Seas (in Hindi)*. *Aspects of Aquatic Biodiversity*. CMFRI Special Publication No. 84, 21–28.
- Kemp, S. (1914) Notes on Crustacea Decapoda in the Indian Museum. V. Hippolytidae. *Records of the Indian Museum*, 10, 81–129, plates 1–7.
- Kemp, S. (1922) Notes on Crustacea Decapoda in the Indian Museum, XV. Pontoniinae. *Records of the Indian Museum*, 24, 113–288, plates 1–9.
- Kemp, S. (1925) Notes on Crustacea Decapoda in the Indian Museum. XVII On various Caridea. *Records of the Indian Museum*, 27, 249–342.
- Kingsley, J.S. (1879) List of the North American Crustacea belonging to the suborder Caridea. *Bulletin of the Essex Institute*, 10, 53–71.
- Latreille, P.A. (1802) *Histoire naturelle, générale et particulière, des Crustacés et Insectes*. Vol. 3. F. Dufart, Paris, 480 pp.
- Latreille, P.A. (1819) Salicoques, Carides, Latr.—Nouveau Dictionnaire d'Histoire Naturelle 30, 68–73.
- Lewis, J.B. (1956) The Occurrence of the Macruran *Gnathophylloides mineri* Schmitt on the Spine of the Edible Sea Urchin *Tripneustes esculentus* Leske in Barbados. *Bulletin of Marine Science of the Gulf and Caribbean*, 6 (4), 288–291.
- Li, X. (1997) Report on gnathophyllidae and pontoniinae (Decapoda, Palaemonidae) shrimps from the Xisha islands and Adjacent waters, South China Sea. *Studia Marina Sinica*, 38, 223–249.
- Manning, R.B. (1963) The East American Species of *Gnathophyllum* (Decapoda, Caridea), with the Description of a New Species. *Crustaceana*, 5 (1), 47–63.
<http://dx.doi.org/10.1163/156854063X00057>
- Manning, R.B. & Chace, Jr. F.A. (1990) Decapod and Stomatopod Crustacea from Ascension Island, South Atlantic Ocean. *Smithsonian Contributions to Zoology*, 503, i–vi + 99 pp.
- Marin, I.N., Britayev, T.A. & Anker, A. (2004) Pontoniine shrimps associated with cnidarians: new records and list of species from coastal waters of Viet Nam. *Arthropoda Selecta*, 13 (4), 199–218.
- Nobili, G. (1904) Diagnoses préliminaires de vingt-huit espèces nouvelles de stomatopodes et décapodes macroures de la Mer Rouge. *Bulletin du Muséum d'Histoire naturelle*, 10, 228–238.
- Nobili, G. (1906) Diagnoses préliminaires de Crustacés. Décapode set Isopodes nouveaux recueillis par M. le Dr. G. Seurat aux îles Touamotou. *Bulletin du Muséum d'Histoire Naturelle*, A2 (5), 256–270.
- Okuno, J. & Bruce, A.J. (2010) Designation of *Ancylomenes* gen. nov., for the '*Periclimenes aesopius* species group' (Crustacea: Decapoda: Palaemonidae), with the description of a new species and a checklist of the congeneric species. *Zootaxa*, 2372, 85–105.
- Prakash, S., Babu, I., Gopi, M., Ajithkumar, T.T. & Balasubramanian, T. (2011) Discovery of the shrimp *Pycnocaris chagoae* Bruce, 1972 (Decapoda: Caridea: Gnathophyllidae) in the Lakshadweep Archipelago, India. *Zootaxa*, 2988, 66–68.
- Radhakrishnan, E.V., Deshmukh, V.D., Maheswarudu, G., Josileen, J., Dineshababu, A.P., Philipose, K.K., Sarada, P.T., Pillai, S.L., Saleela, K.N., Chakraborty, R., Dash, G., Sajeev, C.K., Thirumilu, P., Sridhara, B., Sreedhara, B., Muniyappa, Y., Sawant, A.D., Vaidya, N.G., Johny, R.D., Verma, J.B., Baby, K.G., Unnikrishnan, C., Ramachandran, N.P., Vairamani, A., Palanichamy, A., Radhakrishnan, M. & Raju, B. (2012) Prawn Fauna (Crustacea: Decapoda) of India - An Annotated Checklist of the Penaeoid, Sergestoid, Stenopodid and Caridean Prawns. *Journal of Marine Biological Association of India*, 54 (1), 50–72.
- Rafinesque, C.S. (1815) *Analyse de la Nature ou Tableau de l'Univers et des corps organisés*. Palerme, 224 pp.
- Ramesh, R., Nammalwar, P. & Gowri, V.S. (2008) *Database on coastal information of Tamilnadu*. Chennai, India: Institute for Ocean Management, Anna University, Chennai. Report submitted to Environmental Information System (ENVIS), Department of Environment, Government of Tamilnadu, 133 pp.
- Sankarankutty, C. (1962) On the occurrence of *Athanas dorsalis* (Stimpson) (Decapoda: Alpheidae) in the Gulf of Mannar. *Journal of Marine Biological Association of India*, 4 (2), 167–171.
- Sastry, D.R.K. (1977) On some crustacean associates of sea-urchins of the Andaman and Nicobar Islands: Newsletter. *Zoological Survey of India*, 3, 119–120.
- Sastry, D.R.K. (1981) On some crustacean associates of Echinodermata from the Bay of Bengal. *Records of the Zoological Survey of India*, 79, 19–30.
- Schenkel, E. (1902) Beitrag zur Kenntnis der Dekapodenfauna von Celebes. *Verhandlungen der Naturforschenden Gesellschaft in Basel*, 13, 485–585, plates 7–13.
- Schmitt, W.L. (1933) Four new species of decapods crustaceans from Porto Rico. *American Museum Novitates*, 662, 1–9, figs. 1–4.
- Tikader, B.K., Daniel, A. & Subbarao, N.V. (1986) *Sea shore animals of Andaman and Nicobar Islands*. The Director, Zoological Survey of India, Kolkata, 188 pp.
- Unmesh, K. & Prakash, S. (2011) On a documentation of Haddon's carpet anemone (*Stichodactyla haddoni*) (Saville-kent, 1893) (Anthozoa: Actiniaria: Stichodactylidae) and its unique symbiotic fauna from Gulf of Kutch. *Bugs R All. Newsletter of the Invertebrate Conservation and Information Network of South Asia*, 17, 31–34.
- Venkataraman, K., Jeyabaskaran, R., Raghuram, K.P. & Alfred, J.R.B. (2004) *Bibliography and checklist of corals and coral reef associated organisms of India*. *Records of Zoological Survey of India*. No. 226. The Director, Zoological Survey of India, Kolkata, 468 pp.