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AN ACCOUNT OF SOME REEF ASSOCIATED CARIDEAN SHRIMPS AND STOMATOPODS OF ANDAMAN ISLANDS

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INTRODUCTION

The infraorder Caridea is the major shrimp group in the world, containing almost 2,800 described species with estimates of twice that number of species yet to be exposed and described. They occur in all of the world's oceans, the Caridean shrimp reach their maximum level of species and generic diversification in the Indo-Pacific. In the tropical marine environment a lot of small species have evolved with specialized lifestyles, living commensally on and within a sort of species of sponges, corals, echinoderms, sea anemones. The exoskeletons of many carideans are totally transparent, particularly with juveniles or very tiny species, yet there are species that are very colorful. Commensal association of carideans with other invertebrates like crinoids, cnidarians, corals, echinoids, etc. are extensive in the world oceans. Kemp (1922) has documented 39 species of pontoniine shrimps from Indian waters, which was considered to be a major contribution as far as caridean shrimps are concerned. Later on the occurrence of symbiotic crustaceans associated with other echinoderms was also recorded from Gulf of Mannar (Sankarankutty 1962), Andaman & Nicobar Islands (Sastry, 1977, 1981).

Mantis shrimps are another group of marine crustaceans that live in the shallow waters of tropical and subtropical seas. There are about 400 species of mantis shrimp which come in a wide range of colours, from shades of browns to bright neon colours. They usually grow up to 30 centimetres in length. During their life they may breed from 20 to 30 times. Depending on the species, the eggs can be laid and kept in a burrow, or carried around under the female's tail until they

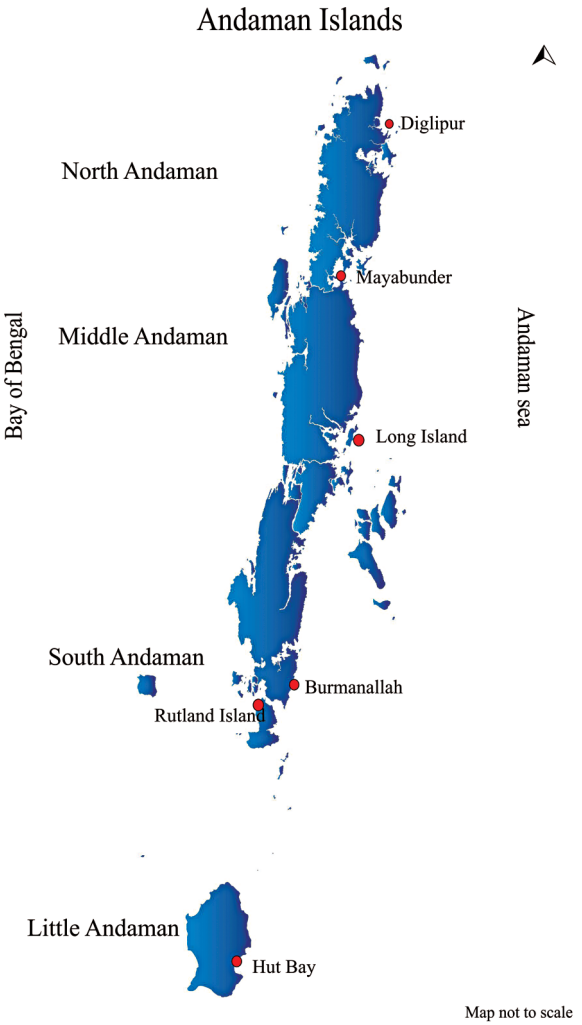

Fig. 1. Map showing the area surveyed

hatch. The stomatopod crustaceans are benthic marine predators (Cheroske *et al*., 2009). The gonodactyloids appear to be relatively abundant on coral reef habitats (Moosa & Erdmann 1994; Moosa 2000). In modern decades these shrimps have been recorded from western Andaman Sea of Malaysia, Indonesia, New Caledonia (Ahyong 2001).

REVIEW OF LITERATURE

The marine caridean shrimps were reported through the few studies in India [Alcock and Anderson (1894), Alcock (1901), Kemp (1914, 1922 and 1925) and Jayachandran (2005)]. The checklist of shrimps and mantis shrimps provided for coral reef regions of Andaman & Nicobar Islands, shown few species of caridean shrimps (Venkataraman *et al*., 2004). The original taxonomical work on the Indian Stomatopods was initiated by Wood-Mason (1875, 1895, 1896), who reported 6 new species, Later, Henderson (1893), Thurston (1895), Lanchester (1903), Kemp (1911, 1913), Kemp and Chopra (1921), Gravely (1927), and Chopra (1934) reported either on new species or new distributional records from Indian waters. Ghosh (1995) reported the mantis shrimps of the Chilika Lagoon.

MATERIAL AND METHODS

The underwater surveys were conducted using SCUBA diving at the depth of 10-20m, in twelve islands of Andaman group (Fig. 1 & Table 1) during 2013 to 2014 to study the Decapoda and Stomatopoda. The underwater photography were made by Sony cyber shot (DSC-T900) and Canon (G-15) camera with housing facility. All collected specimens were identified and confirmed upto species level by standard monographs and literature [(Abele and Kim, 1986; Bruce, 1967; Holthuis, (1980)].

SYSTEMATIC LIST OF CARIDEA SHRIMPS AND STOMATOPODA FROM ANDAMAN ISLANDS

The present paper describes 15 species of Caridean and stomatopod crustacean, of which 12

Table 1. Area Surveyed

Sl. No.	Area	Coordinates
	North Andaman	
1	Landfall Island	Lat 13°16.595'N & Long 093°01.202'E
2	Trilby Island	Lat 13°16.727'N & Long 093°01.385'E
3	Table Delgarno Island	Lat 13°17.337'N & Long 093°00.963'E
4	Table Exelsior Island	Lat 13°16.130'N & Long 093°02.401'E
	Middle Andaman	
5	Oliver Island	Lat 12°59.731' N & Long 092°59.918' E
6	Sound Island	Lat 12°58.926' N & Long 092°57.211' E
7	North Reef Island	Lat. 13°04.502' N Long. 092°42.636' E
8	North Passage	Lat 12°17.734'N & Long 092°56.821'E
9	Guitar Island	Lat 12°20.211'N & Long 092°54.326'E
	South Andaman	
10	Burmanallah Station-I	Lat 11º34.247' N & Long 092º44.244' E
11	Burmanallah Station –II	Lat 11º33.495' N & Long 092º44.023' E
12	Rutland Island	Lat. 11°29.485'N & Long. 092°40.577'E
13	Hut Bay	Lat 10°35.531' N & Long 092°32.764'E

species of shrimps and 1 species of mantis shrimp were newly recorded from Andaman Islands.

Kingdom ANIMALIA Linnaeus, 1758

Phylum ARTHROPODA von Siebold, 1848

Subphylum CRUSTACEA Pennant, 1777

Class MALACOSTRACA Latreille, 1806

Subclass EUMALACOSTRACA Grobben, 1892

Superorder EUCARIDA Calman, 1904

Order DECAPODA Latreille, 1806

Suborder PLEOCYEMATA Burkenroad, 1963

Infraorder CARIDEA Dana, 1852

Family ALPHEIDAE Rafinesque, 1815

Genus ***Alpheus*** Fabricius, 1798

1. *Alpheus lobidens* De Haan, 1849
2. *Alpheus rapax* Fabricius, 1798
3. *Alpheus lottini* Guérin-Méneville, 1838

Genus ***Synalpheus*** Spence Bate, 1888

4. *Synalpheus stimpsonii* (Man, 1888)

Family PALAEMONIDAE Rafinesque, 1815

Genus ***Conchodytes*** Peters, 1852

5. *Conchodytes nipponensis* (De Haan, 1844 [in De Haan, 1833-1850])

Genus ***Periclimenes*** O.G. Costa, 1844

6. *Periclimenes brevicarpalis* (Schenkel, 1902)
7. *Periclimenes imperator* Bruce, 1967

Genus ***Urocardidella*** Borradaile, 1915

8. *Urocardidella antonbruunii* (Bruce, 1967)-

Family RHYNCHOCINETIDAE Ortmann, 1890

Genus ***Rhynchocinetes*** H. Milne Edwards, 1837

9. *Rhynchocinetes durbanensis* Gordon, 1936

Family HIPPOLYTIDAE Spence Bate, 1888

Genus ***Saron*** Thallwitz, 1891

10. *Saron negletus* Man, 1902

Genus ***Thor*** Kingsley, 1878

11. *Thor amboinensis* (de Man, 1888)

Infraorder EUCARIDA Calman, 1904

Family GNATHOPHYLLIDAE Dana, 1852

Genus ***Gnathophyllum*** Latreille, 1819

12. *Gnathophyllum americanum* Guerin-Meneville, 1855

Infraorder STENOPODIDEA Spence Bate, 1888

Family STENOPODIDAE Claus, 1872

Genus ***Stenopus*** Latreille, 1819

13. *Stenopus hispidus* (Oliver, 1811)

Subclass HOPLOCARIDA Calman, 1904

Order STOMATOPODA Latreille, 1817

Suborder UNIPELTATA Latreille, 1825

Superfamily GONODACTYLOIDEA Giesbrecht, 1910

Family GONODACTYLIDAE Giesbrecht, 1910

Genus ***Gonodactylus*** Berthold, 1827

14. *Gonodactylus Chiragra* (Fabricius, 1781)

Genus ***Gonodactylellus*** Manning, 1995

15. *Gonodactylellus affinis* (Man, 1902)

1. ***Alpheus lobidens*** De Haan, 1849 (Fig. 2)

1850. *Alpheus lobidens* De Haan, *Crustacea,* illustravit p: i-xxxi, 1-244.

1911. *Alpheus lobidens* Man, Decap. Sibo. Exped. Part II. **39a1**(2): 133-465.

Fig. 2. *Alpheus lobidens* De Haan, 1849

1975. *Alpheus lobidens* Banner, A.H. and D.M. Banner, (1974). *Pacif. Sci*., **28**(4): 423-437.

Material examined: 1 ex, Locality: Burmanallah Station-I (Lat. 11º34.247´ N, Long. 092º44.244´ E), South Andaman.

Diagnostic characters: The Orbitorostral harmonize shallow and curved. Rostrum acute; Stylocerite acute, reaching to end of first antennular article. Scaphocerite with lateral tooth reaching just beyond antennular peduncle; squamous

portion reaching end of antennular peduncle. Tip of carpocerite reaching to end of lateral tooth of scaphocerite.

Distribution: India (Burmanallah, South Andaman). *Elsewhere*: Indo-Pacific area from the Red Sea to Hawaii, Australia: Houtman Abrolhos.

Remarks: New record to India reported from Andaman and Nicobar Islands.

2. ***Alpheus rapax*** Fabricius, 1798 (Fig. 3)

1798. *Alpheus rapax* Fabricius, Hafniae (Alpheidae: pp. 404-406).

1909b. *Alpheus rapax* de Man, *M. Mem Soc. Zoo. Fr.* **22**: 146-164.

Fig. 3. *Alpheus rapax* Fabricius, 1798

Material examined: 1 ex, Locality: Burmanallah Station-II (Lat. 11º33.495´ N, Long. 092º44.023´ E), South Andaman.

Diagnostic characters: Rostrum sharp, rostral carina, high and slender, reaching posteriorly to base of orbital hoods. Orbital hoods inflated, forming deep orbitorostral grooves. Outer margin of scaphocerite and first and second antennular articles with fringe of setiferous bristles, distal end of second article bearing a group of long hairs reaching to and beyond tip of third article; third article with long hairs at tip.

Distribution: India (Burmanallah, South Andaman). *Elsewhere*: South Africa, East Africa, Madagascar, Red Sea, Maldive Archipelago, Ceylon (Sri Lanka), Mergui, Archipelago, Singapore, Indonesia, Thailand.

Remarks: New record to India reported from Andaman and Nicobar Islands.

3. ***Alpheus lottini*** Guérin-Méneville, 1838 (Fig. 4)

1829-44. *Alpheus lottini* Guerin-Meneville, *Crustaces*; 1-48.

1837. *Alpheus lottini* Milne-Edwards, classification de ces animaux, **2**: 1-532.

1958. *Alpheus lottini* Holthuis. *Bull. Sea Fish. Res*. Stn., Israel No. 17, pp. 1-40.

Fig. 4. *Alpheus lottini* Guérin-Méneville, 1838

Material examined: 1 ex, Locality: North Reef Island (Lat. 13°04.502´ N Long. 092°42.6360´ E), North Andaman 1 ex, Locality: Rutland Island (Lat. 11°29.485´N, Long. 92°40.577´E). South Andaman.

Diagnostic characters: Rostrum slight, acute, reaching to end of first article of antennular peduncle. Rostral base expanded, flattened, not carinate dorsally, bearing acute teeth on more medial portion of hood, teeth directed faintly inward. Antennular peduncle slender, with second article changeable but usually 1.4 times as long as broad, only slightly longer than visible portion of first or third. Lateral spine of basicerite acute, equal to or exceeding length of stylocerite. Color: In general orange red coloration with a darker brown median dorsal band, expanded anteriorly round eyes, and with reddish speckling over the chelae of the first pair of pereiopods.

Distribution: India (North Reef Island, Middle Andaman; Rutland Island, South Andaman) *Elsewhere*: Indo-West Pacific region from the Red Sea to Hawaii. Great Barrier Reef and New Zealand.

Remarks: New record to India reported from Andaman and Nicobar Islands.

4. ***Synalpheus stimpsonii*** (Man, 1888) (Fig. 5)

1888b. *Synalpheus stimpsonii* Man. *J. Linn. Soc*., **22**: 1-312.

1905. *Synalpheus stimpsonii* Coutiere, The fauna and geography of the Maldive and Laccadive Archipelagos. **2**(4): 852-921.

Fig. 5. *Synalpheus stimpsonii* (Man, 1888)

Material examined: 1 ex, Locality: Intertidal area of Hut Bay (Lat. 10° 35.531´ N, Long. 92° 32.764´ E). Little Andaman.

Diagnostic characters: Rostrum reaching near end of second antennular article, with slightly curved carina reaching from tip to level of eyes. Orbitorostral harmonize moderate, also disappearing at level of eyes. Orbital teeth with acute tips but not carinate, varying from one-third to more than one-half as long as rostrum. Carapace posterior to basicerite and lateral to eyes carrying rounded ridge that extends one-fourth length of carapace, In lateral view rostral region of carapace depressed relative to gastric region.

Distribution: India (Hut Bay, Little Andaman) *Elsewhere*: Indonesia, Philippines, Japan, Marshall and Gilbert Islands.

Remarks: New record to India reported from Andaman and Nicobar Islands.

Family PALAEMONIDAE Rafinesque, 1815

5. ***Conchodytes nipponensis*** (De Haan, 1844 [in De Haan, 1833-1850]) (Fig. 6)

1833-1850. *Conchodytes nipponensis* De Haan, Crustacea. Leiden, pp. 1-243.

1922. *Conchodytes nipponensis* Kemp, *Rec. Indi. Muse.,* **24**(2):113-288.

Fig. 6. *Conchodytes nipponensis* (De Haan, 1844 [in De Haan, 1833-1850])

Material examined: 1 ex, Locality: North Passage Island (Lat. 12°17.734´ N, Long. 092° 56.821´ E).

Diagnostic characters: The body glabrous, faintly depressed. rostrum slightly rounded ventrally, with bluntly rounded tip, slightly overreaching medial margin of second segment of antennular peduncle. Carapace slightly depressed, supraorbital, hepatic, and antennular spines absent. Abdomen each somite with curved pleuron; first to third somites large; fourth one smaller; fifth one smallest. Eye moderately squat, stout, and globular. Each dactyl compressed, biunguiculate with rounded proximoventral and bearing with pointed tip. Color: Generally pinkish red with white spots.

Distribution: India, (North Passage Island, Middle Andaman). *Elsewhere*: Australia, Philippines, Japan and Korea.

Remarks: New record to India reported from Andaman and Nicobar Islands.

6. ***Periclimenes brevicarpalis*** (Schenkel, 1902) (Fig. 7)

1914. *Periclimenes brevicarpalis* Rathbun, M. J. *Proceedings of the Zoological Society of London*, 1914: 653-664.

1922. *Periclimenes brevicarpalis* Kemp, *Rec. Indi. Muse.* **24**: 113-288.

1952. *Periclimenes brevicarpalis* Holthuis, Deca. Sibo. Exped. Part XI. 39:1-253.

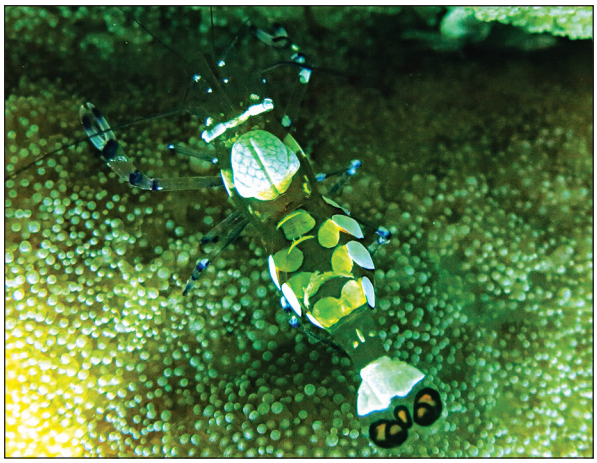

Fig. 7. *Periclimenes brevicarpalis* (Schenkel, 1902)

Material examined: 1 ex, Locality: Landfall Island (Lat. 13°16.595´N, Long. 093°01.202´E), North Andaman.

Diagnostic characters: Carapace with well developed hepatic and antennal spines. Telson with 2 pairs of small dorsolateral spines, posterior margin with 3 pairs of small spines. Body tiny size, integument horizontal. Rostrum virtually straight, dorsal margin armed with 6 teeth, ventral margin armed with 1 tooth. Color: Blue bands on chelipeds and pereiopods. Transparent body with large white spots on carapace, abdomen, telson, and uropods five brown eyespots with orange centers on telson and uropods.

Distribution: India: Gulf of Kutch and Gulf of Mannar and Andaman Island (Landfall Island, North Andaman). *Elsewhere*: Indo-West Pacific region from the Red Sea, Great Barrier Reef of Australia, Indonesia, Tanzania,Singapore, Japan, Philippines.

Remarks: New record to Andaman and Nicobar Islands.

7. ***Periclimenes imperator*** Bruce, 1967 (Fig. 8)

1967. *Periclimenes imperator* Bruce, *Zool. Verh.,* **87**: 1-73.

1977a. *Periclimenes imperator* Bruce, *Rec. Austr. Muse.* **31**: 39-81.

1990. *Periclimenes imperator* Bruce, *The Beagle*, **7**(2): 9-19.

Fig. 8. *Periclimenes imperator* Bruce, 1967

Material examined: 1 ex, Locality: Guitar Island (Lat. 12°20.211´N, Long. 092°54.326´E).

Diagnostic characters: The rostrum is deep and strongly depressed. The teeth decrease regularly in size anteriorly and the two most posterior teeth are situated behind the posterior level of the orbital margin. The largest male has the fewest teeth and the smallest female. There are no epigastric or supra-orbital spines. Carapace is smooth; the antennal spine is acute and slender and placed on the anterior margin of the carapace below the inferior orbital angle. The antero-lateral angle of the carapace is bluntly obtuse and the posterior margin of the branchiostegite broadly rounded. Color: The general colour is bright red. The rostrum, vanishing out posteriorly on the sixth abdominal segment to blend with the white caudal fan. The eyestalk and cornea are of a similar red.

Distribution: India, (Guitar Island, Middle Andaman). *Elsewhere*: Indo-West Pacific region from the Red Sea and Zanzibar to Hawaii, Australia (Queensland: Heron Island and Lizard Island).

Remarks: New record to India, reported from Andaman and Nicobar Islands.

8. ***Urocardidella antonbruunii*** (Bruce, 1967) (Fig. 9)

1967. *Urocardidella antonbruunii* Bruce, *Zool. Verh*., **87**: 1-73.

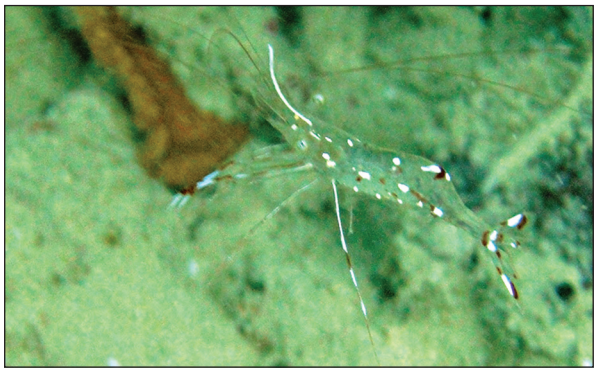

Fig. 9. *Urocardidella antonbruunii* (Bruce, 1967)

Material examined: 1 ex, Locality: Trilby Island (Lat. 13°16.727´N, Long. 093°01.385´E). North Andaman.

Diagnostic characters: The rostrum is extended and slight and greatly exceeds the length of the antennular peduncle, reaching anteriorly to the level of the end of the shorter ramus of the upper flagellum. The rostrum is uniformly up rounded and tapering and its dorsal margin bears five teeth with a single epigastric tooth present on the carapace. Colour: The specimen was mainly transparent, with small red dots scattered over the carapace and the first to fifth abdominal segments and a red bar across the hump of the third abdominal segment, parallel to its anterior margin.

Distribution: India: Chilka Lake, Andaman Island (Trilby Island, North Andaman, Port Blair). *Elsewhere*: Maldives, Singapore and Indonesia (Mergui Archipelago).

Remarks: New record to India reported from Andaman and Nicobar Islands.

9. ***Rhynchocinetes durbanensis*** Gordon, 1936 (Fig. 10)

1917. *Rhynchocinetes durbanensis* Stebbing, Annals of the Durban Museum, **2**: 1-33.

1936a. *Rhynchocinetes durbanensis* Gordon, *Proce. Zool. Soc. Lond*., **36**: 75-88.

Material examined: 1 ex, Locality: Table Delgarno Island (Lat. 13°17.337´N, Long. 093°00.963´E).North Andaman.

Diagnostic characters: Carapace with transverse numerous grooves, Two sharp teeth just behind rostral articulation; supraorbital and antennal spines strong, stridently pointed; pterygostomial spine indistinguishable, its apex being more or less rounded. Rostrum tangentially compressed, obliquely curved upward at its anterior half, 1.1-1.4 times as long as carapace; three large teeth on upper margin of rostrum with regular intervals between proximal and median parts; distal part of upper margin with 5-7 small teeth; lower margin with 16-18 strong teeth decreasing in size distally. Eyes are extremely large, curved. Color: The nature color pale pink, rather translucent, brilliant red labyrinth lines cover whole surface; white ocelli and lines in interspaced of red lines; all of white ocelli on body smaller than eye. Dorsal surface of carapace with a white Y shaped mark, associated with a longitudinal white line at each side. posterior margin of carapace white. Upper margin of rostrum white, lower margin red. Cornea dark, and eyestalk red with longitudinal white line in median part. In large male, red parts of body become more or less blackish.

Fig. 10. *Rhynchocinetes durbanensis* Gordon, 1936

Distribution: India, (Table Delgarno Island, North Andaman). *Elsewhere*: South Africa, Ryukyus, Philippines, and Indonesia.

10. ***Saron negletus*** Man, 1902 (Fig. 11)

1890. *Saron negletus* Ortmann, *Zool. Jb. Syst*., **5**: 437 542.

1914. *Saron negletus* Kemp, *Rec. Ind. Mus*., **10**: 81-129.

1958. *Saron negletus* Holthuis, *Bull. Sea Fisheries Res. Sta. Haifa*, (17): 1-40.

Material examined: 1 ex, Locality: Table Excelsior Island (Lat. 13°16.130´N, Long. 093°02.401´E). North Andaman.

Fig. 11. *Saron negletus* Man, 1902

Diagnostic characters: The rostrum is provided with seven teeth on the upper border and three to six teeth (mostly five) on the lower. The anterior part of the carapace is armed with three spines, namely, antennal, branchiostegal and pterygostomian. The rostrum is provided with seven teeth on the upper border and three to six teeth (mostly five) on the lower. The pterygostomian spine is sharply pointed, and the distance between the branchiostegal and pterygostomian spines is slightly shorter than that in. *Saron marmoratus* (Olivier). Color: The entire carapace and abdominal somites including the antennal peduncle and antennal scale are mottled with many dark brown spots fringed with pale yellow on a ground colour of yellowish-brown. The rostrum is green with a few small pale yellow spots.

Distribution: India (Table Excelsior Island, North Andaman). *Elsewhere*: Southern Japan-Kagoshima.

Remarks: New record to India reported from Andaman and Nicobar Islands.

11. ***Thor amboinensis*** (de Man, 1888) (Fig. 12)

1916. *Thor amboinensis* Kemp, *Rec. Ind. Mus*., **12**: 385-405.

1947. *Thor amboinensis* Holthuis, *Siboga Exped., Livr.* 140, *Monogr*., **39**(a8): 1-100.

Material examined: 1 ex, Locality: North Reef Island (Lat. 13°04.502´ N, Long. 092°42.636´ E). North Andaman.

Diagnostic characters: The rostrum is very squat with two to four teeth on the upper border, but smooth without teeth on the lower; The carapace is provided with a small antennal spine, but is absent from the supraorbital and pterygostomian spines. The third maxilliped is long, reaching to the distal tip of the antennal scale.The first pereiopod is short and stout. The carpus of the second pereiopod is subdivided into six joints. Color: The body and legs are deep yellowish-brown and translucent. The carapace is decorated with large patches which are very light purple in the center with a extensive margin of whitish-yellow, and the whole is again closely circumscribed by a deep blue being confluent in the median line. The apex of the telson is margined by pale green as in the endopod of uropod, but distal part of the exopod is circumscribed by reddish-brown. The antennular flagellum is pure green distally, and the upper side of the eyestalk is pale green.

Fig. 12. *Thor amboinensis* (de Man, 1888)

Distribution: India, (North Reef Island, Middle Andaman). *Elsewhere*: Indian and tropical West-Pacific Oceans.

Remarks: New record to India recorded from Andaman and Nicobar Islands.

12. ***Gnathophyllum americanum*** Guerin-Meneville, 1855 (Fig. 13)

1949. *Gnathophyllum americanum* Holthius, *Zoologische Mededelingem Leidem*, **30**: 227-255.

1963. *Gnathophyllum americanum* Manning, *Curstaceana*, **5**(1): 47-63.

1989. *Gnathophyllum americanum* Titgen, *Crustaceana*, **56**(2): 200-210.

Material examined: 1 ex, Locality: Landfall

Island (Lat. 13°16.595´N, Long. 093°01.202´E). North Andaman.

Fig. 13. *Gnathophyllum americanum* Guerin-Meneville, 1855

Diagnostic characters: Anterolateral angle of carapace reaching distinctly beyond level of antennal spine; intermediate spines on distal margin of telson nearly twice, or more than twice as long as median pair; third maxilliped with exopod not overreaching endopod; second pereopod with carpus distinctly longer than broad; 3 posterior pereopods with dactyli distinctly longer than broad. Posterior tooth of dorsal rostral series situated on rostrum anterior to level of orbital margin; color pattern composed of transverse stripes.

Distribution: India, (Landfall Island, North Andaman). *Elsewhere*: Atlantic Ocean: Canary Islands in the eastern Atlantic.

Remarks: New record to India reported from Andaman and Nicobar Islands.

13. ***Stenopus hispidus*** (Oliver, 1811) (Fig. 14)

1946. *Stenopus hispidus* Holthuis, The Decapoda, Macrura of the Snellius Expedition, 1. Temminckia, **7**: 1-178.

Material examined: 1 ex, Locality: Table Delgarno Island (Lat. 13°17.337´N, Long. 093°00.963´E). North Andaman.

Diagnostic characters: Pleonal terga covered with dense spines, rostrum not exceeding second segment of antennular peduncle; third pleonal somite without bare area posterodorsally. Third pereopod blue on proximal segments.

Distribution: India, (Table Delgarno Island, North Andaman). *Elsewhere*: French Polynesia: Society (Tahiti); Tuamotu (Hao, Makatea, Raraka, Raroia).

Fig. 14. *Stenopus hispidus* (Oliver, 1811)

Remarks: New record to India reported from Andaman and Nicobar Islands.

14. ***Gonodactylus chiragra*** (Fabricius, 1781) (Fig. 15)

1781. *Gonodactylus chiragra* Fabricius, Descriptionibus 1, pp. Vii+552. Hamburgii et Kilionii.

1847. *Gonodactylus chiragra* White, British Museum, London, pp. Viii+143.

1999. *Gonodactylus chiragra* Debelius, *Crustacea Guide of the World.*

Fig. 15. *Gonodactylus chiragra* (Fabricius, 1781)

Material examined: 1 ex, Locality: Oliver Island (Lat. 12°59.731´ N, Long. 092°59.918´E). Mayabunder.

Diagnostic characters: Ocular scales extensive, compressed, disconnect, together broader than ½ rostral plate width.; anterolateral angles dulled or curved; lateral margins subparallel or slightly divergent anteriorly; apical spine shorter or

longer than base. Telson with LT tooth indicated by shallow notch in margin of telson between anterolateral angle and apex of IM tooth; mid-dorsal carinae blunt, Rostral plate basal portion with anterior margins strongly concave in adults. Color: Males: body dark green to brownish; pereiopods yellow, with orange-red dactyl; Females: mottled grey-green and white.

Distribution: India, (Oliver Island, Middle Andaman), Lakshadweep. *Elsewhere*: French Polynesia to Japan, Australia, and Indo-Malayan.

Remarks: Reported for the first time from Andaman and Nicobar Islands.

15. ***Gonodactylellus affinis*** (de Man, 1902) (Fig. 16)

1902. *Gonodactylus chiragra Var. affinis* de Man, *Abh. Senckenb. Naturf. Ges.* **25**: 467–929.

1903. *Gonodactylellus affinis* Lanchester, fau. Maldi. Laccadi. vol. 1, pp. 444–459.

1978c. *Gonodactylellus affinis* Manning, *Smithson. Contr. Zool.* **264**: 1–36.

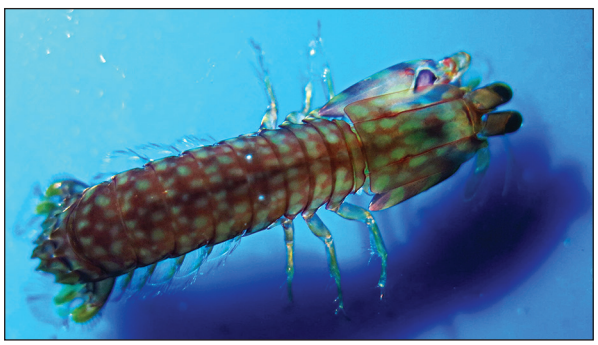

Fig. 16. *Gonodactylellus affinis* (de Man, 1902)

Material examined: 1 ex, Locality: Sound Island (Lat. 12°58.926' N, Long. 092°57.211' E).

North Andaman.

Diagnostic characters: Rostral plate basal portion with anterior margins oblique or slanting anteriorly; anterolateral angles smoothed or directly angular. telson dorsal carinae strongly inflated in adult males; without spinules over dorsal surface; proximal segment outer margin with 9–11 movable spines and distal, ventral spine; inner margin of proximal segment and entire margin of distal segment setose.

Distribution: India, (Sound Island, Middle Andaman), Lakshadweep. *Elsewhere*: South China Sea, Vietnam, Thailand, Indonesia and Australia, East African water the Red sea, Maldives and New Caledonia.

Remarks: Reported for the first time from Andaman and Nicobar Islands.

DISCUSSION

In the present study, 13 species of shrimps which belongs to 10 genera under the families Alpheidae, Palaemonidae, Rhynchocinetidae, Hippolytidae, Gnathophyllidae, Stenopodidae. and 2 species of Mantis shrimps belong to 2 genera under the family Gonodactylidae were reported from Andaman Islands. Ghosh (1990) reported two species of Gonodactylidae from Lakshadweep. Taxonomical and distributional details of stomatopoda in various part of India are given by Karthivel, (2008). A total of 68 species belonging to 23 genera and 8 families were reported, of which Tamil Nadu shows maximum species (38 sp), followed by West Bengal (22 sp), Maharashtra (17 sp), Andaman and Nicobar Islands (16 sp), Lakshadweep (13 sp), Andhra Pradesh (08 sp), Orissa (08 sp), Kerala (05 sp), Gujarat (04 sp), Karnataka (03 sp), Pondicherry (03 sp) and Goa (01 sp).

Out of 15 species, 10 species of shrimps are new record to India. One species of mantis shrimp (Family Gonodactylidae) has been recorded as new to Andaman and Nicobar Islands.

Radhakrishnan *et al*. (2012) authenticated the recent checklist of caridean shrimps from Indian waters. His paper dealt with only one family Palaemonidae comprising 28 genera and 127 species, but additional families are still inadequately recorded.

Further intensive survey on coral reef associated organisms may bring more species of commensal shrimps around Andaman and Nicobar islands.

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REFERENCES

Abele, L. G. & Kim, W. 1986. An illustrated guide to the marine decapods crustaceans of Florida. *Technical Series of the State of Florida*, Department of Environmental Regulation. Vol. **8**, part 1, 326 p.

Ahyong, S.T. 2001. Revision of the Australian stomatopod Crustacea. *Records of the Australian Museum (supplement),* **26**: 1–326.

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.

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.

Alfred, J.R.B., Das, A.K. and Sanyal, A.K. 2002 Ecosystems of India, *ENVIS-Zool. Surv. India, Kolkata*: 1-410.

Caldwell, R.L., & Dingle, H. 1976. Stomatopods. *Scientific American,* **234**(1): 80–89.

Cheroske, A.G., T.W. Cronin, M.F. Durham & R.L. Caldwell 2009. Adaptive signaling behaviour in stomatopods under varying light conditions. *Marine and Freshwater Behaviour and Physiology,* **42**(4): 219–232; http://dx.doi.org/10.1080/10236240903169222.

Chhapgar, B.F. & Sane, S.R. 1968. Stomatopoda of Bombay. *J. Biol. Sci*., Bombay, **9**(1&2): 43-46.

Chopra, B. 1934. On the Stomatopod Crustacean collected by the Bengal pilot Service off the mouth of the river Hugli. Together with note on some other forms. *Rec. Indian Mus*., **36**: 17-43.

Bruce, A.J. 1967: Notes on some Indo-Pacific Pontoniinae III-IX. Descriptions of some new genera and species from the Western Indian Ocean and the South China Sea. - *Zool. Verh*., **87**: 1-73.

Ghosh, H.C. 1990. Crustacea: Stomatopoda. In: State Fauna Series 2: Fauna of Lakshadweep, Zoological Survey of India, Calcutta : 337-344.

Gravely, F.H. 1927. The littoral fauna of Krusadai Island in the Gulf of Mannar. Order: Decapoda (except Paguridea) and Stomatopoda. *Bull. Madras Govt. Mus*., (*Nat. Hist.*). **1**(1): 135-155.

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.

Henderson, J.R. 1893. A contribution to Indian Carcinology. *Trans Linn. Soc. London*, (Zool.), Ser., **2**(5): 325-458.

Holthuis, L.B. 1980. FAO species catalogue. Vol. 1. Shrimps and prawns of the world. An annotated catalogue of species of interest to fisheries. *FAO Fisheries Synopsis*, **1**(125): 1-261.

Kathirvel, M. 2008. Biodiversity of Indian Stomatopods, *Glimpses of Aquatic Biodiversity-Rajiv Gandhi Chair Spl. Pub.*, **7**: 93-102.

Kemp, S. 1911. Preliminary descriptions of new species and varieties of Crustacea Stomatopoda in the Indian Museum. *Rec. Indian Mus.,* **6**(2): 93-100.

Kemp, S. 1913. An account of the Crustacea Stomatopoda of the Indo-Pacific Region based on the collection in the Indian Museum. *Mem. Indian Mus*., **4**: 1-127.

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.

Lanchester, W.F. 1903. Stomatopoda, with an account of the varieties of *Gonodactylus chiragra*. Marine Crustaceans, VIII. In: J.S. Gardiner. The Fauna and Geography of the Maldive and Laccadive Archipelagoes, being an account of the work carries out on and of the collection made by an expedition during the years 1899 and 1990, **1**: 444-459.

Moosa, M.K. & M. Erdmann 1994. A survey of the stomatopod crustacea of the spermonde archipelago. *Tarani Marine Science and Technology Bulletin,* **5**: 74–92.

Moosa, M.K. 2000. Marine biodiversity of the South China Sea: a checklist of stomatopod crustacean. *The Raffles Bulletin of Zoology,* **8**: 405–457.

Radhakrishnan, E.V., Deshmukh, V.D., Maheswarudu, G., Josileen, J., Dineshbabu, 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.

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.

Thurston, E. 1895. Rameswaram Island and Fauna of the Gulf of Mannar. *Bull. Madras Goct. Mus*., (Nat. Hist.), **3**: 79-138.

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.

Wood-Mason, J. 1875. On new or little –Known crustaceans. *Proc. Asiatic Soc. Bengal*, 230-232.

Wood-Mason, J. 1876. On Some new species of Stomatopod Crustacea. *Ann. Mag. Nat. Hist.,* Ser., **4**(17): 263.

Wood- Mason, J. 1895. Figures and descriptions of nine species of *Squilla* from the collections in the Indian Museum. *Trustees of Indian Museum*, Calcutta, 1-11. www.chucksaddiction.com.

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