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SHORT COMMUNICATION

A NEW DISTRIBUTION RECORD OF STOMATOPODS *ODONTODACTYLUS JAPONICUS* (DE HAAN, 1844) AND *LYSIOSQUILLA TREDECIMDENTATA* (HOLTHUIS, 1941) FROM THE PUDUCHERRY COASTAL WATERS, EAST COAST OF INDIA

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A new distribution record of stomatopods *Odontodactylus japonicus* (De Haan, 1844) and *Lysiosquilla tredecimdentata* (Holthuis, 1941) from the Puducherry coastal waters, east coast of India

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Abstract: Stomatopods in India are well known with 79 species recorded to date. Here I report the *Odontodactylus japonicus* (De Haan, 1844) and Golden Mantis Shrimp *Lysiosquilla tredecimdentata* Holothuis, 1941 for the first time in Puducherry coastal waters. A single specimen of *Lysiosquilla tredecimdentata* was collected from by-catch in the Nallavadu landing centre, Puducherry coast on 19 November 2019 and two specimens of *L. tredecimdentata* were recorded again in Pillaichavadi landing centre of Puducherry coast on 22 November 2019. One specimen of *Odontodactylus japonicus* was collected at Nallavadu landing centre, Puducherry coast on 20 December 2019. The present study was undertaken to identify the status of distribution, habitat, and ecological aspects along with the information of spread, confinement, endemism as well as rare, threatened and endangered species. The significance of these new observations is to discern the taxonomic position and characteristics for better understanding of the mantis shrimp group. The specimens were identified, described, illustrated, and measured morphometrically.

Keywords: By-catch, Golden Mantis Shrimp, morphometric measurements.

Macro invertebrates, especially crustaceans, molluscs, and echinoderms play an important role in ecological interdependence with other species and have a marked influence on benthic community structure (Venkataraman & Wafar 2005; Bijukumar 2008; Wafar et al. 2011). Stomatopods, also called mantis shrimps, are elongate, flattened, shrimp- or lobster-like crustaceans (Carpenter & Neim 1998) and notable for their aggressive behaviour. Stomatopod crustaceans are common members of benthic ecosystems in tropical and subtropical marine and brackish waters throughout the world (Antony et al 2010). The attributed feature of stomatopods are the large well-built raptorial appendages for capturing the prey by 'spiking' or 'smashing' depending on the dactyl is extended or held folded while going on a foray. Stomatopods are prevalent and appealing inhabitants of coral reefs. They form a cardinal status in the ocean food chain (Caldwell 2006). They are a source of food and medicine (Subasinghe 1999). To date, about 485 species, 115 genera, and 17 families of mantis shrimp are described (WoRMS 25 December 2018). The diversification of stomatopods in India put the foundation for the publication of the first monograph of the Indo-Pacific mantis shrimps (Stomatopoda) (Kemp 1913). Succeedingly, numerous studies drawn out the

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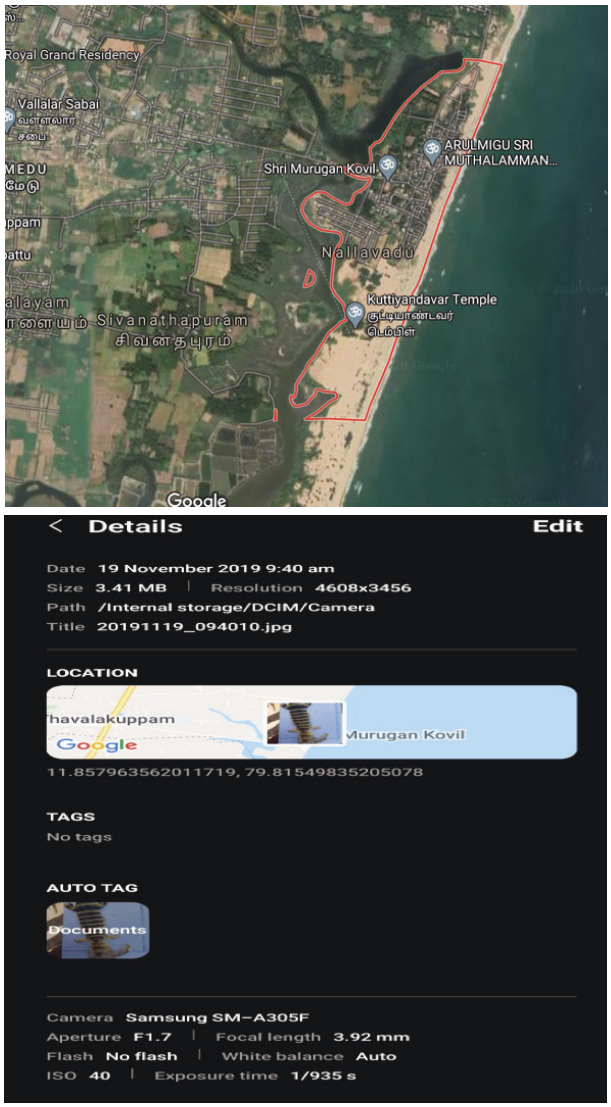

Image 1. Map showing the place of Nallavadu Landing, Puducherry.

information of Indian Stomatopoda (Kemp & Chopra 1921; Shanbogue 1969, 1986; Ghosh 1991, 1995, 1998); the most recent checklist of Indian stomatopods records 79 species (Roy & Gokul 2012). Although stomatopods occur along the entire Indian coast, most published records are from localities on the eastern coast. Recent studies of commercial trawl by-catch primarily along the southern and southwestern coasts (Tamil Nadu and Kerala) resulted in numerous new records and discoveries of decapod crustaceans (Komai et al. 2013; Kumar et al. 2013; Ng et al. 2016, 2017; Yang et al. 2017). The pan tropical stomatopod genus Lysiosquilla, which includes the largest known stomatopods, comprises 12 species, five of which are reported in the Indo-West Pacific region. The odontodactylid mantis shrimp is the only genus found in the family Odontodactylidae. These are relatively small when compared to banded mantis shrimp and it displays rare occurrence in Indian waters. The present study documented the first record of *Odontodactylus japonicus* and Golden Mantis Shrimp *Lysiosquilla tredecimdentata* from Puducherry coastal waters, eastern coast of India.

Materials and Methods

A single specimen of *L. tredecimdentata* was collected from by-catch in the Nallavadu landing centre, Puducherry coast on 19 November 2019 (Image 1) and two specimens of *L. tredecimdentata* were recorded again in Pillaichavadi landing centre of Puducherry coast on 22 November 2019 (Image 3). One specimen of *O. japonicus* was collected at Nallavadu landing centre, Puducherry coast on 20 December 2019 (Image 2). All the specimens were collected as a bycatch by hand picking and its identification was carried out using standard guidelines (Manning, 1978; Ahyong et al., 2008). Terminology, description and morphometric measurements generally follow Manning (1978) and Ahyong (2001).

Results

***Odontodactylus japonicus*, De Haan, 1844**

Class: Malacostraca Latreille, 1802
Order: Stomatopoda Latreille, 1817
Family: Odontodactylidae Manning, 1980
Genus: Odontodactylus Bigelow, 1893
Species: *japonicus* De Haan, 1844

Material observed: Paratype, ZSI/MBRC-D1-623, Male, 20.xii.2019, Nallavadu, Puducherry, 11.858N, 79.815E, NW-3543 (Image 2, Table 1), at 18 km, 30 m depth, coll. Nithya Mary

Systematic position

Diagnostic characters

Carapace, thorax, and abdomen smooth, not trimmed with any longitudinal ridges. Antennular scale with smooth anterior margin, without setae in adults. Rostral plate triangular. Raptorial claw short and strengthened at base of terminal segment, adapted for smashing prey; inner margin of dactyl not toothed with more than 5; proximal margin strongly inflated; telson mid-dorsal surface with distinct median carina and four longitudinal carinae either side of midline. Uropodal exopod proximal distinctly longer than distal segment; outer margin with 10–12 movable spines.

Colour in life

Overall pink in colour. Antennal scale white dorsally

Table 1. Morphometric measurements of *Odontodactylus japonicus*

Measurements (mm)	*O. japonicus*
Total length	126
Carapace length	32
Carapace width	39
Thorax length	15
Abdomen length	58
Rostral plate length	4
Rostral plate width	7
Antennal scale length	5
Antennal scale width	3
Raptorial propodus length	29
Raptorial propodus depth	10
Telson length	21
Telson width	35
Total wet weight	25g

Image 2. *Odontodactylus japonicus*.

with purple and orange ventrally. Uropod yellow with red setae. Exopod with outer movable spines yellow orange with blue posterior margin; distal end of endopod and exopod with red setae. Anterior carapace with brown patches.

Remarks

Specimen of *O. japonicus* examined above show adult diagnostic characters. The longitudinal carina on the inner intermediate denticle and the colour pattern resembles adults. It inhabits in level sandy or shelly substrates from 30–80 m depth. *Odontodactylus* is the only genus found in the family Odontodactylidae. Nothing much is known about the biology of odontodactylids and there is no organised fisheries known to exist for them. Ahyong & Kumar (2018), reported the first record of *O. japonicus* from Muttom, Tamil Nadu. Since then, Kumar reported *O. japonicus* in east coast, after which there is no record of *O. japonicus*. We report this species for the first time in Puducherry coastal waters, the east coast of India. The previously known Indian Ocean distribution of *O. japonicus* is highly disjunct and hence the present record has enlarged the distributional gap.

Ecology and Distribution

Homed in simple U-shaped burrows and lined and covered with rubble (Caldwell 2006). Indo-West Pacific, from the western Indian Ocean to Australia and Japan (Manning 1967).

***Lysiosquilla tredecimdentata* Holthuis, 1941**

Class: Malacostraca Latreille, 1802
Order: Stomatopoda Latreille, 1817
Family: Lysiosquillidae Giesbrecht, 1910
Genus: *Lysiosquilla* Dana, 1852
Species: *tredecimdentata* Holthuis, 1941

Material observed: Paratype, ZSI/MBRC-D1624, Male, 19.xi.2019, Nallavadu, Puducherry, 11.858N, 79.815E, NW-3543 and again 22.xi.2019, Pillaichavadi Puducherry, 12.008N, 79.858E, NW 4892 (Image 1, 3, Table 2), at 18 km, 30 m depth, coll. Nithya Mary.

Diagnostic characters

The texture of Carapace, thorax, and abdomen are smooth without any carina or ridges; raptorial claw large and slender with 9–13 teeth. Rostral plate cordate and broad. Eyes T-Shaped, with large, bilobed cornea; pereiopods 1–3 with slender, elongate endopod. Uropodal protopod with small spine anterior to endopod articulation. Telson lacking movable sub median teeth and longitudinal carina.

Colour in life

Lysiosquillids are clearly banded with alternate light and darkly pigmented bands. Carapace with three dark, broad, transverse bands intervened by narrower pale bands. Uropodal exopod with distal ½ of proximal segment and proximal 2/3 of distal segment black; outer movable spines dark red. Uropodal endopod with distal 2/3 black. Antennal scale with dark brown outline. Pereiopods with pink setae on distal segment.

Remarks

Morphological characteristics of the specimen

Table 2. Morphometric measurements of *Lysiosquilla tredecimdentata*

Measurements (mm)	*L. tredecimdentata*
Total length	295
Carapace length	65
Carapace width	85
Thorax length	69
Abdomen length	146
Rostral plate length	8
Rostral plate width	13
Antennal scale length	26
Antennal scale width	5
Raptorial propodus length	13
Raptorial propodus depth	45
Telson length	45
Telson width	69
Total wet weight	250 g

Image 3. *Lysiosquilla tredecimdentata*.

indicate that it belongs to banded mantis shrimps from the family Lysiosquillidae (Giesbrecht, 1910) and it is perfectly synchronized with the original description given by Holothuis (1941) and Shanbhogue (1970). Lysiosquillids live in monogamous pairs in long, deep burrows in coral reef flats, mud flats and soft sub tidal substrates (Ahyong et al. 2008). Pillai & Thirumilu (2006) have reported *L. tredecimdentata* from Cuddalore fishing harbour, Tamil Nadu coast of India. Silambarasan & Senthilkumaar (2014) reported the first occurrence of *L. tredecimdentata*, from Kasimedu fishing harbour, Chennai coast, Tamil Nadu, India and Chesalin (2013) also reports first record of the same species in the Omani waters of the Arabian Sea.

Ecology and Distribution

The species inhabits deep burrows on intertidal sand and mudflats, and level sub tidal substrates to 30 m (Ahyong 2001). Almost nothing is known about the biology of Lysiosquillids. According to Manning (1998) they make burrows with double entrance, one at each end, in level-bottom habitats in shallow water, from shore to a depth of about 25 m. Although they generally hunt from the mouth of their burrow, they occasionally leave their burrows and may be caught at night by lights or in trawls.

The known distribution of *L. tredecimdentata* is from Yemen (Red Sea) (Holthuis 1941) southward to Madagascar (Manning 1968) and South Africa (Manning 1978); from India eastward to Thailand, Vietnam, Taiwan, Australia and the central Pacific (Ahyong 2001). This is the first record of this species from the Puducherry coastal waters.

References

Ahyong, S.T. & A. Bijukumar (2018). First records of seven species of mantis shrimp from India (Crustacea: Stomatopoda). *Zootaxa* 4370(4): 381–394. https://doi.org/10.11646/zootaxa.4370.4.4

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

Ahyong, S.T., T.Y. Chan & Y.C. Liao (2008). A Catalog of the Mantis Shrimps (Stomatopoda) of Taiwan. National Science Council, Taipei, 191pp.

Antony, P.J., S. Dhanya, P.S. Lyla, B.M. Kurup & S.A. Khan (2010). Ecological role of stomatopods (mantis shrimps) and potential impacts of trawling in a marine ecosystem of the southeast coast of India. *Ecological Modelling* 221: 2604–2614.

Bijukumar, A. (2008). Biodiversity of trawl bycatch in Kerala coast, south Indian, pp. 236–243. In: Natarajan, P., K.V. Jayachandran, S. Kannaiyan, B. Ambat & A. Augustine (Eds.). *Glimpses of Aquatic Biodiversity*. Rajiv Ganthi Chair Special Publication. 7, Cochin University of Science and Technology, Kochi.

Caldwell, R. (2006). "*Odontodactylus scyllarus*" (On-line). *Stomatopods for the Aquarium*. Accessed February 22, 2012 at http://www.ucmp.berkeley.edu/arthropoda/crustacea/malacostraca/eumalacostraca/royslist/species.php?name=o_scyllarus

Carpenter, K.E. & V.H. Neim (1998). F.A.O. The Living Marine Resources of the Western Central Pacific, 2: 1046–1155

Chesalin, M., S. Al-Shajibi, G. Al-Shagaa & S. Al-Kathiri (2013). First Record of the Mantis Shrimp *Lysiosquilla tredecimdentata* Holthuis, 1941 (Stomatopoda: Lysiosquillidae) in the Omani Waters of the Arabian Sea. *Indian Journal of Applied Research* 3(55): 609–610.

De Haan, W. (1833–1850). Crustacea. In: von Siebold, P.F. (Ed.). Fauna Japonica sive descriptio animalium, quae in itinere per Japoniam, jusse et auspiciis superiorum, qui summum in India Batavia Imperium tenent, suscepto, annis 1823–1830 collegit, notis observationibus et adumbrationibus illustravit. A. Arnz, Lugdunum Batavorum, pp. 1–243.

Fabricius, J.C. (1798) Supplementum Entomologiae Systematicae, Hafniae, ii+572pp.

Ghosh, H.C. (1991). Crustacea: Stomatopoda. Fauna of Lakshadweep. State Fauna Series 2: 199–212.

Ghosh, H.C. (1995) Stomatopoda: Crustacea. Hughli Matla Estuary, West Bengal. Estuarine Ecosystem Series 2: 179–189.

Ghosh, H.C. (1998) Crustacea: Stomatopoda. Fauna of West Bengal. State Fauna Series 3: 417–443.

Giesbrecht, W. (1910) Stomatopoden, Erster Theil. Fauna and Flora des Golfes von Neapel, 33, i–vii, 1–239, pls. I–XI.

Holthuis, L.B. (1941). The Stomatopoda of the Snellius Expedition. Biological Results of the Snellius Expedition, XII. Temminkia 6: 241–294. https://doi.org/10.11646/zootaxa.4329.5.5

Kemp, S. & B. Chopra (1921) Notes on Stomatopoda. Records of the Indian Museum 22: 297–311. https://doi.org/10.5962/bhl.part.1475

Kemp, S. (1913). An account of the Crustacea Stomatopoda of the Indo-Pacific region, based on the collection in the Indian. Museum. *Memoirs of the Indian Museum* 4: 1–217.

Komai, T., R. Reshmi & A.N.B. Kumar (2013). Rediscovery and range extension of *Ciliopagurus liui* Forest, 1995 and description of a new species of *Pagurus Fabricius,* 1775 (Crustacea: Decapoda: Anomura: Paguroidea) from the Kerala State, south western India. *Zootaxa* 3710: 467–484. https://doi.org/10.11646/zootaxa.3710.5.5

Kumar, A.B., M.S. Kumar & B.S. Galil (2013). Calappid and leucosiid crabs (Crustacea: Decapoda: Brachyura) from Kerala, India, with the description of a new species of *Mursia Desmarest*, 1823, from the Arabian Sea and redescription of *M. bicristimana* Alcock & Anderson, 1894. *Zootaxa* 3746(4): 529–551. https://doi.org/10.11646/zootaxa.3746.4.2

Manning, R.B. (1967). Review of the genus *Odontodactylus* (Crustacea: Stomatopoda). *Proceedings of the United States National Museum* 123: 1–35.

Manning, R.B. (1968). Stomatopod Crustacea from Madagascar. Proceedings of the United States National Museum 124: 1–61.

Manning, R.B. (1978). Synopses of the Indo-West Pacific species of Lysiosquilla Dana, 1852 (Crustacea: Stomatopoda: Lysiosquillidae). *Smithsonian Contributions to Zoology* 259: 1–16.

Manning, R.B. (1998). Stomatopods, pp. 827–849. In: Carpenter, K.E. & V.H. Niem (Eds.). FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 2. Cephalopods, crustaceans, holothurians and sharks. FAO, Rome.

Ng, P.K.L. & A.B. Kumar (2016). *Carcinoplax fasciata*, a new species of deep-water goneplacid crab from southwestern India and the identity of T. craterifer Rathbun, 1914 (Crustacea: Brachyura: Pilumnidae). *Zootaxa* 4272(1): 131–141. https://doi.org/10.11646/zootaxa.4272.1.7

Ng, P.K.L., S. Devi & A.B. Kumar (2017). *Typhlocarcinus* kerala, a new species of rhizopine crab from southwestern India, and the identity of *T. craterifer* Rathbun, 1914 (Crustacea: Brachyura: Pilumnidae). *Zootaxa* 4272(1): 131–141. https://doi.org/10.11646/zootaxa.4272.1.7

Pillai, S.L. & P. Thirumilu (2006). Large-sized stomatopod Lysiosquilla tredecimdentata from north Tamil Nadu coast. *Marine Fisheries Information Services*, T&E Ser. No. 189pp.

Shanbhogue, S.L. (1970). Three new records of Stomatopoda (Crustacea) from the seas around India. *Journal of Marine Biological Association of India* 12 (1&2): 197–201.

Shanbhogue, S.L. (1969). Catalogue of stomatopods in reference collections of the Central Marine Fisheries Research Institute. *Bulletin of the Central Marine Fisheries Research Institute* 9: 33–36.

Shanbhogue, S.L. (Ed.) (1986). Studies on stomatopod Crustacea from the seas around India, pp. 515–567. In: James, P.S.B.R. (ed.). *Recent Advances in Marine Biology*. Today & Tomorrow's Printers & Publishers, New Delhi.

Silambarasan, K. & P. Senthilkumaar (2019). First report of the Golden Mantis Shrimp, *Lysiosquilla tredecimdentata* Holthuis, 1941 (Crustacea: Stomatopoda) from Chennai coastal waters, southeast India. *International Journal Aquatic Biology* 7(1): 9–13

Subasinghe, S. (1999). Chitin from shellfish waste-health benefits over-shadowing industrial areas**.** *Infofish International* 99: 58–65.

Venkataraman, K. & M. Wafar (2005). Coastal and marine biodiversity of India. Marine Biological Station, Zoological Survey of India (NIO). *Indian Journal of Marine Sciences* 34(1): 57–75.

Wafar, M., K. Venkataraman, B. Ingole, S. Ajmal Khan, & P. LokaBharathi (**2011).** State of Knowledge of Coastal and Marine Biodiversity of Indian Ocean Countries. *PLoS ONE*, 6, 6(1): e14613

WoRMS (2018). *Lysiosquilla tredecimdentata* Holthuis, 1941. World Register of Marine species at http://www.marinespecies.org. Accessed on 12.i.2020

Yang, C.H., A.B. Kumar & T.Y. Chan (2017). A new slipper lobster of the genus *Petrarctus* Holthuis, 2002 (Crustacea, Decapoda, Scyllaridae) from southwest coast of India. *Zootaxa* 4329: 477–486.

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