

***COMPENDIUM OF DEEP-SEA AND CORAL-REEF-  
ASSOCIATED LOBSTERS (CRUSTACEA: DECAPODA:  
ASTACIDEA, ACHELATA AND POLYCHELIDA) OF  
THE INDIAN WATERS COLLECTED DURING THE  
EXPEDITIONS OF FORV SAGAR SAMPADA***

**VINAY P. PADATE, SHERINE SONIA CUBELIO  
& N. SARAVANANE**

**CENTRE FOR MARINE LIVING RESOURCES & ECOLOGY  
MINISTRY OF EARTH SCIENCES, GOVERNMENT OF INDIA  
ATAL BHAVAN, PUTHUVYPE, KOCHI - 682508.**

**March 2021**

***COMPENDIUM OF DEEP-SEA AND CORAL-  
REEF-ASSOCIATED LOBSTERS (CRUSTACEA:  
DECAPODA: ASTACIDEA, ACHELATA AND  
POLYCHELIDA) OF THE INDIAN WATERS  
COLLECTED DURING THE EXPEDITIONS OF  
FORV SAGAR SAMPADA***

**VINAY P. PADATE, SHERINE SONIA CUBELIO  
& N. SARAVANANE**

**CENTRE FOR MARINE LIVING RESOURCES & ECOLOGY  
MINISTRY OF EARTH SCIENCES, GOVERNMENT OF INDIA  
ATAL BHAVAN, PUTHUVYPE, KOCHI - 682508.**

**March 2021**

**Dr. Madhavan Nair Rajeevan**

**Secretary**

## **FOREWARD**

As stated in the Convention on Biological Diversity document, at least 40 per cent of the world's economy and 80 per cent of the needs of the poor are derived from biological resources. The unprecedented loss of biodiversity from the World Oceans is the key concern the humanity is facing while dealing with the sustainability of the ocean services. I am pleased to note that the Centre for Marine Living Resources & Ecology (CMLRE), Kochi is taking up the imperative task of documenting the diversity of deep-sea living resources of Indian EEZ, which would eventually help to assess not only the status of living resources within the country but also remain as a source of information about the genetic resources with biotechnological potential. The present book entitled "*Compendium of deep-sea and coral reef-associated lobsters (Crustacea: Decapoda: Astacidea, Achelata and Polychelida) of the Indian Seas collected during the expeditions of FORV Sagar Sampada*" is an excellent compilation of taxonomic keys of deep-sea lobsters found in Indian waters along with photographic illustrations and maps indicating sampling locations. The species included in this catalogue represent all major phylogenetic groups of true lobsters, and would also serve as a ready reckoner and field guide for the budding crustacean taxonomists and students in identifying the lesser-known deep-water forms. I wish to congratulate CMLRE in their endeavours on biodiversity documentation from the vast seas of our Nation.

(Dr. Madhavan Nair Rajeevan)

## PREFACE

India is one of the most biodiverse nations on the planet with diverse marine ecosystems supporting an estimated 20,000 + animal species. The climate change coupled with human-induced disturbances through fishing, mining, tourism and pollution observed to impair their sustainability, in some cases lead to extinction. Although, several studies have been undertaken to document the biodiversity of the Indian waters (presently Indian Exclusive Economic Zone), they remained as patchy in terms of geographic coverage, thereby necessitating comprehensive surveys across the region for understanding discernible changes in biodiversity. In this regard, the “Resource Exploration and Inventorization System” sponsored by the Ministry of Earth Sciences, Government of India, and executed by the Centre for Marine Living Resources & Ecology, Kochi has been at the forefront of these efforts. Comprehensive surveys of the seas in the Indian EEZ by the CMLRE-owned Fisheries Oceanographic Research Vessel (FORV) Sagar Sampada have resulted in moderately large faunal collections that have been deposited in the Referral Centre of the CMLRE. The present work on the deep-sea and coral reef-associated lobsters is a part of a series of e-books on various groups of marine crustaceans collected on-board the FORVSS.

## ACKNOWLEDGEMENTS

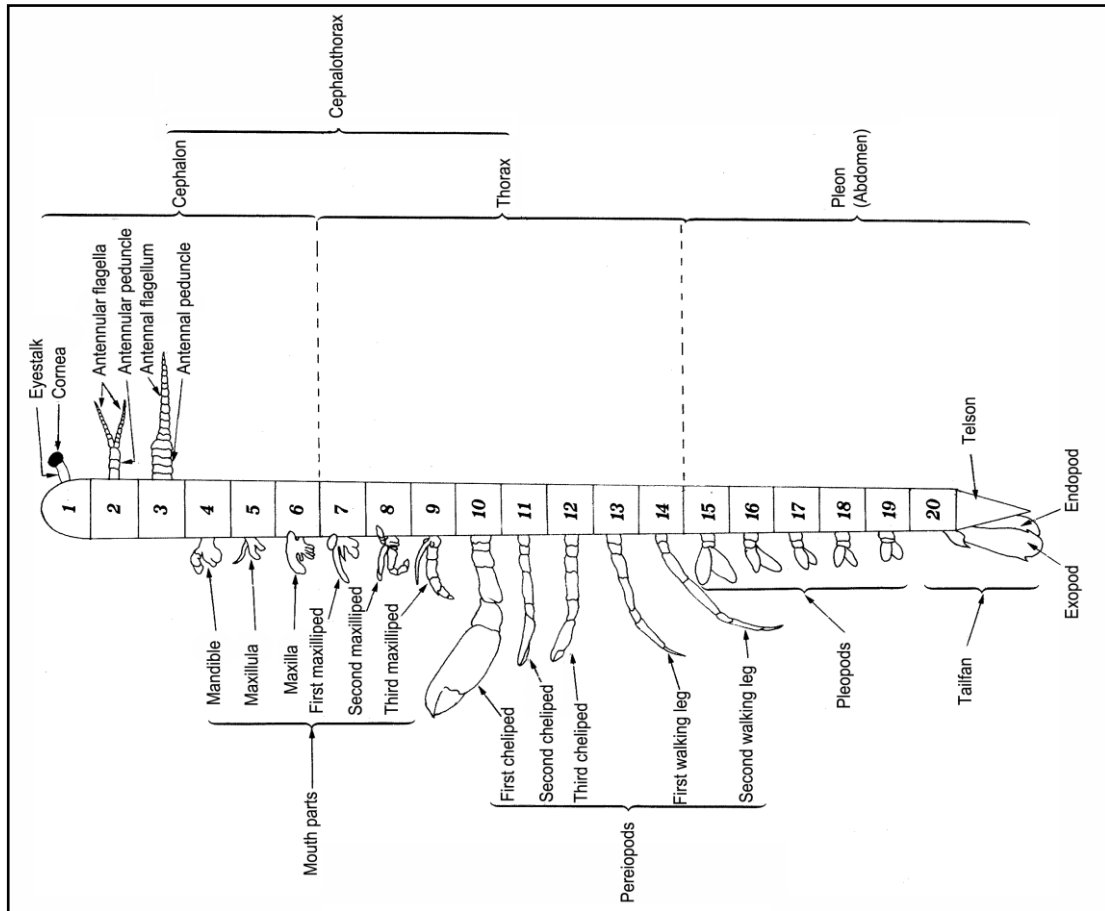
The authors are grateful to the Director, CMLRE, Kochi, India for providing an opportunity and facilities to carry out taxonomic studies on marine crustaceans. The study has been a part of the “Resource Exploration and Inventorization System” Project funded by the Ministry of Earth Sciences, Government of India. The authors are also grateful to the scientific staff and crew members of the FORV Sagar Sampada for meticulously collecting the samples. A special thanks to Shri. Shivam Tiwari, Ph.D. student, CMLRE for plotting the maps.

## CONTENTS

<b>Introduction</b>	<b>1</b>
Historical background	4
<b>Materials and methods</b>	<b>7</b>
<b>Systematics</b>	<b>8</b>
<i>Acanthacaris tenuimana</i> Spence Bate, 1888	8
<i>Metanephrops andamanicus</i> (Wood-Mason, 1892)	12
<i>Nephropsis carpenteri</i> Wood-Mason, 1885	16
<i>Nephropsis ensirostris</i> Alcock, 1901	20
<i>Nephropsis rahayuuae</i> S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020	24
<i>Nephropsis stewarti</i> Wood-Mason, 1872	28
<i>Nephropsis sulcata</i> Macpherson, 1990	32
<i>Linuparus somniosus</i> Berry & George, 1972	36
<i>Puerulus angulatus</i> (Bate, 1888)	40
<i>Puerulus sewelli</i> Ramadan, 1938	44
<i>Bathyarctus rubens</i> (Alcock & Anderson, 1894)	48
<i>Gibbularctus gibberosus</i> (de Man, 1905)	52
<i>Petrarctus rugosus</i> (H. Milne Edwards, 1837)	56
<i>Polycheles typhlops</i> Heller, 1862	61
<i>Stereomastis phosphorus</i> (Alcock, 1894)	67
<i>Stereomastis sculpta</i> (Smith, 1880)	71
<b>Summary</b>	<b>77</b>



# INTRODUCTION



**Fig. 1. Generalized diagram of a lobster (Infraorders Astacidea, Glypheidea, Achelata and Polychelida) indicating body parts (modified from Holthuis, 1991).**

Marine lobsters are morphologically diverse crustaceans belonging to Class Malacostraca Latreille, 1802: Order Decapoda Latreille, 1802: Suborder Pleocyemata Burkenroad, 1963 (Chan, 2010) characterized by well-defined body divisions (cephalon (head), thorax and pleon (abdomen)) covered by a chitinous exoskeleton (Fig. 1). Each division comprises a definite number of somites (segments), namely 6 cephalic, 8 thoracic and 6 pleonal bearing 6, 8 and 5 appendages, respectively. The posterior margin of cephalon fuses with one or more thoracic somites to form a dorso-ventrally depressed cephalothorax covered by a variedly ornamented carapace. The cephalon bears paired compound eyes, biramous antennules, variedly ornamented antennae, and a uniramous mandibular palp. The first 3 pairs of thoracic appendages are flattened external mouth parts called maxillipeds, and the last 5 pairs are ambulatory appendages (pincer-like (chelate) or simple (non-chelate) called pereopods. The pleon comprises 6 movably interconnected somites bearing varied ornamentation, leaf-like appendages called pleopods, and a tail-fan comprising a well-calcified telson and appendages called uropods (Holthuis, 1991;



Fig. 1). Sexual dimorphism is indicated by the position of the gonopores, which are present basally on the ventral surface of the 3<sup>rd</sup> pereopod (6<sup>th</sup> thoracic somite) in females and 5<sup>th</sup> pereopod (8<sup>th</sup> thoracic somite) in males. In addition, the first pair of pleopods in the males are modified to form copulatory stylets, whereas the females possess fan-shaped pleopods for carrying egg masses (Holthuis, 1991).

These organisms are classified into four separate Infraorders: **Astacidea Latreille, 1802** – “true lobsters” with a cylindrical carapace and first 3 pairs of chelate pereopods (Fig. 2A); **Polychelida Scholtz & Richter, 1995** – “blind lobsters” with a flattened carapace, lack of cornea on the ocular peduncle and first 4 pairs of chelate pereopods (Fig. 2B); **Achelata Scholtz & Richter, 1995** – lobsters lacking true chelae on the first 4 pereopods, telson broadly rounded posteriorly, posterior half of telson and uropods soft and flexible (Fig. 2C, D); **Glypheidea Van Straelen, 1925** – “Jurassic shrimps” with eyes located on a median elevation of the cephalon (not dealt in this study). The latest number of known marine lobsters stands at 263 species and 4 species (Chan, 2019; Chang *et al.*, 2020a, 2020b; Yang and Chan, 2020).

Marine lobsters inhabit a wide range of depths from the intertidal zone to almost 3000 m, mostly on rocky substrates with cavities; several species construct burrows in muddy or sandy substrates, whereas few species inhabit eelgrass meadows also form a habitat for some species (Holthuis, 1991). These organisms constitute an important link in the marine benthic food chain between macrophytes (MacArthur *et al.*, 2011) and top marine carnivorous fishes (Boudreau & Worm, 2010). They are known to play a “keystone” role in several intertidal and subtidal ecosystems owing to active predation on the dominant prey species, thereby positively influencing the abundance of lower trophic level organisms (Eddy *et al.*, 2014). They are potential ecological indicators of heavy metal pollution stress in marine ecosystems (Chou *et al.*, 2003), and also support economically important fisheries globally (Holthuis, 1991).

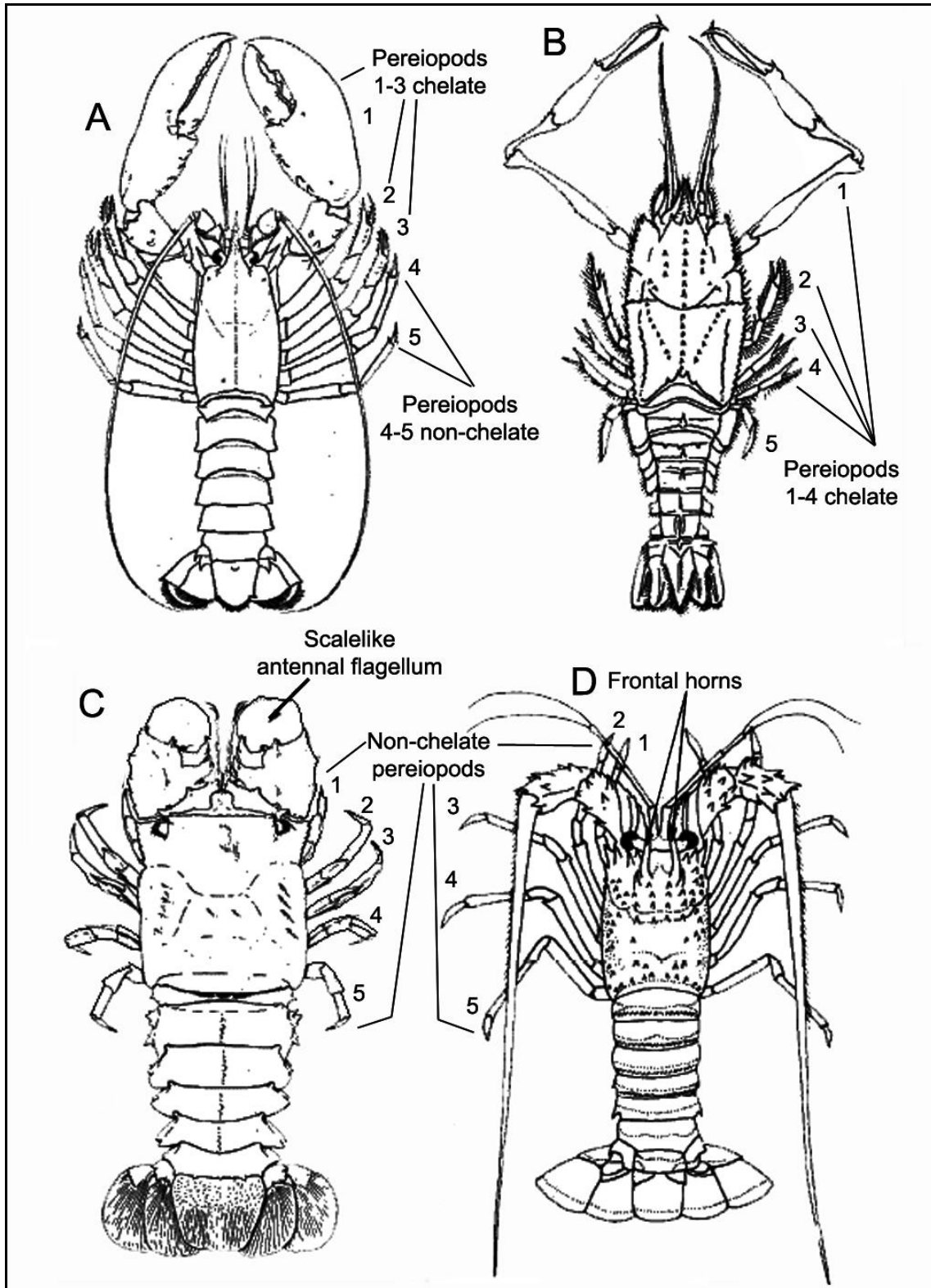


Fig. 2. Diagrammatic illustrations major types of lobsters (A) Infraorder Astacidea: Family Nephropidae, (B) Infraorder Polychelida: Family Polychelidae, (C) Infraorder Achelata: Family Scyllaridae, (D) Infraorder Achelata: Family Palinuridae (all modified from Holthuis, 1991) indicating distinguishing morphological characters.

Commercially, these are the most valuable crustaceans supporting several artisanal as well as mechanized fisheries of the world (Holthuis, 1991). Most published literature pertaining to the taxonomy of the Indian lobster fauna dates back to the British colonial period, with a few recent publications resulting in lacunae in information on the taxonomy, habitat and geographical distribution of these organisms, thereby necessitating detailed work on this aspect. This e-book provides brief illustrated taxonomic accounts of lobsters collected on-board the FORV Sagar Sampada from several locations in the Indian EEZ.

### Historical background

Taxonomic studies on lobsters were initiated by Linnaeus (1758) with the following description of *Cancer gammarus* Linnaeus, 1758 (= *Homarus gammarus* (Linnaeus, 1758)) from the Swedish waters: “*C. macrourus, thorace laevi, rostro lateribus dentato: basi supra dente duplici.*” Substantial volumes of literature have been published over the subsequent 250 years.

With regard to the Indian waters, the studies from the colonial period have dealt with the documentation of lobster fauna of the region. Post-independence, however, the studies largely focussed, in addition to observational reports, upon the biological and fishery aspects of lobsters in the region and has been dealt by Radhakrishnan *et al.* (2019). Hence, the following paragraphs provides accounts of published literature related to the species dealt in the present study.

The English zoologist and Director of the Indian Museum at Kolkata, Prof. James Wood-Mason, pioneered taxonomic studies on deep-water lobsters in India through several new discoveries and taxonomic revisions. He described a new genus and species of clawed lobster *Nephropsis stewarti* Wood-Mason, 1872 from the Andaman Sea (Wood-Mason, 1872, 1873, 1874a); proposed a new genus of clawed lobster *Thaumastocheles* Wood-Mason, 1874a for *Astacus zaleucus* Thomson, 1873 (Wood-Mason, 1874a); established a new family, Polychelidae Wood-Mason, 1874 for the deep-water blind lobster *Polycheles typhlops* Heller, 1862 (Wood-Mason, 1874b). The commissioning of the “Royal Indian Marine Survey Ship *Investigator*” in 1881 resulted in rapid advances in the discovery and taxonomic studies of deep-water lobsters. Wood-Mason (1885) briefly described *Nephropsis carpenteri* Wood-Mason, 1885 from the Bay of Bengal. In a report to the Government of India, Wood-Mason (1891) listed of deep-water crustaceans, including lobsters *Pentacheles* sp. (= *Pentacheles gibbus* Alcock, 1894, *Stereomastis cerata* (Alcock, 1894)). He, along with the British carcinologist Alfred William Alcock, reported several astacidean and polychelid lobsters from the Indian waters (Wood-Mason & Alcock, 1891). Subsequently, he prepared detailed illustrations of deep-sea crustaceans including the newly discovered clawed lobster *Nephrops andamanicus* Wood-Mason, 1892 (= *Metanephrops andamanicus* (Wood-Mason, 1892)). Wood-Mason & Alcock (1894)

commissioned the illustrations of 1 astacidean and 4 polychelid taxa published by the Indian Museum.

Henderson (1893) studied the crustacean fauna of the coastal reefs of the British Indian territory and reported 1 scyllarid and 1 palinurid lobster.

Alcock (1894) provided a detailed description of the adult morphology and the developmental stages of *M. andamanicus* (Wood-Mason, 1892) collected from the Andaman Sea, and reported several species of astacidean and polychelid lobsters including 3 new species namely *Pentacheles gibbus* Alcock, 1894 and *P. cerata* Alcock, 1894 (= *S. cerata* (Alcock, 1894)) from the Andaman Sea, and *P. phosphorus* Alcock, 1894 (= *Stereomastis phosphorus* (Alcock, 1894)) from all the deep-waters off the Indian territory. Alcock & Anderson (1894) reported several species of astacidean, polychelid and achelate lobsters from the Indian waters, including *Arctus rubens* Alcock & Anderson, 1894 (= *Bathyarctus rubens* (Alcock & Anderson, 1894)) from Sri Lankan waters. Anderson (1896) reported 3 astacideans and 2 polychelids from the Arabian Sea. Alcock (1898) published a list of deep-water crustaceans, including 6 astacideans, 8 polychelids and 2 achelate lobsters collected during the RIMS *Investigator* surveys. Alcock & Anderson (1899) briefly reviewed the deep-water crustacean fauna, including 3 astacidean and 2 polychelid lobsters, collected during the *Investigator* expeditions. Alcock's (1901a) monograph of the macrurous crustaceans deposited at the Indian Museum, Kolkata, contained 7 nephropids (including *Nephropsis ensirostris* Alcock, 1901a from the Arabian Sea), 10 polychelids, 2 scyllarids and 1 palinurid lobster. Alcock's (1901b) zoological observations on the deep-water fauna, including lobsters collected during the RIMSS *Investigator* surveys, were published in a memoir titled "Zoological Gleanings from the Royal Indian Marine Survey Ship Investigator". Alcock (1901c) designated *M. andamanicus* as the type of the Order Decapoda and supplemented it with a thorough morphological and anatomical description. Alcock's (1902) memoir of his experiences during the RIMS *Investigator* expeditions contained an exclusive chapter dedicated to the systematics and biology of deep-water lobsters. In addition, these naturalists published illustrations of the deep-water lobsters deposited in the Indian Museum (Alcock & Anderson, 1895, 1896; Alcock & McArdle, 1901, 1903). Kemp & Sewell (1912) reported 2 species of polychelids from the southeastern Arabian Sea.

Prasad & Tampi (1959, 1966, 1968) studied the palinurid phyllosoma and scyllarid nisto larvae collected by fishery research vessels from the Laccadive seas. George & Rao (1965) reported the *N. carpenteri* collected off Kerala coast by the fishing vessels of the Indo-Norwegian project. Jones (1965) listed *P. sewelli* as a potential fishery source along the southwest coast of India. Silas (1965) carried out detailed studies of the taxonomy and adult as well as larval morphology of the deep-sea lobster *Jasus frontalis* (H. Milne Edwards, 1837) from New Amsterdam Island in the Southern Indian Ocean, provided a comprehensive account of the geographical



distribution of the genus *Jasus* Parker, 1883 and also presented a bibliography of this genus. George (1967) reported 2 new records of deep-water scyllarine lobsters *Scammarctus batei* (Holthuis, 1946) and *B. rubens* collected from commercial trawl landings along Kerala coast. Prasad & Tampi (1969) published a detailed account of the zoogeographical distribution of the palinurid and scyllarid lobsters of the Indian Ocean region. Rao & George (1973) studied the biology of the deep-water spiny lobster *Puerulus sewelli* Ramadan, 1938 from 200–305 m depths off Kerala coast and highlighted its commercial potential. Thomas (1979) reported *N. stewarti* from the Gulf of Mannar collected during exploratory cruises of the Norwegian-funded Integrated Fisheries Project. Prasad *et al.* (1980) studied the phyllosoma larvae from the Indian Ocean collected by the Dana Expedition 1928–1930. Kathirvel & James (1990) reported the distribution of palinurid and scyllarid larvae in the shallow coastal and shelf waters, respectively of the Andaman & Nicobar Islands. Kizhakudan & Thirumilu (2006) reported spiny deep-sea lobsters *Palinustus waguensis* Kubo, 1963 and *P. sewelli* from trawl landings at Chennai, and also carried out biological studies of the former species. Jayaprakash *et al.* (2006) studied the deep-water trawl fauna collected from the shelf-break region off southwest India on-board FORV Sagar Sampada and reported the occurrence of *N. stewarti*. Dineshbabu (2008) studied the biology and fishery aspects of *N. stewarti* landed at Mangalore fisheries harbour and revealed morphometric differences between the sexes. Radhakrishnan *et al.* (2011) reported the first record of the deep-water astacid lobster *Enoplometopus macrodontus* T.-Y. Chan & P.K.L. Ng, 2008 from Indian waters based on specimens landed by commercial trawlers off Kerala coast. Jeena (2013) undertook DNA sequencing of 11 species including *L. somniosus* (Andaman Sea), *P. sewelli* (Arabian Sea) and *P. rugosus* (Bay of Bengal). Recently, Indian taxonomists collaborating with foreign experts have discovered a new deep-water slipper lobster *Petrarctus jeppiaari* Yang, Biju Kumar & Chan, 2017 from the commercial trawl landings off southwestern India, and resolved the taxonomy of the *N. carpenteri* and *N. stewarti* species groups resulting in the discovery of new species from the Western Pacific regions (Chang *et al.*, 2020a, 2020b). Radhakrishnan *et al.* (2019) published a comprehensive book on the biological, fisheries and aquacultural aspects of lobsters wherein they listed 38 species from the region.

## MATERIALS AND METHODS

The present study area extended from 6°–23°N latitudes, and from 68°–94°E longitudes at 53–514 metres depths. Samples were collected on-board the FORV Sagar Sampada during cruise numbers 281, 316, 318, 321, 366, 372, 374, 378, 380, 398 in the Arabian Sea; 279, 291, 391 and 392 in the Bay of Bengal; 280, 292 (leg I), 292 (leg II), 334 (leg I), 334 (leg II), 349 (leg II), 367 (leg II), 388 in the Andaman waters.

Specimens were hand-picked from the catch, washed under running tap water to remove debris (wherever possible), photographed using an Olympus TG-5 field camera, and preserved in 10% formalin solution and/ or 70% ethanol. These specimens were deposited as reference vouchers at the Referral Centre, Centre for Marine Living Resources & Ecology, Kochi. Taxonomic identification involved morphology, meristic counts, and morphological measurements following the published identification keys for the families Nephropidae (Macpherson, 1990; Chang *et al.*, 2020a, 2020b), Palinuridae (Holthuis, 1991), Polychelidae (Galil, 2000) and Scyllaridae (Holthuis, 2002). Terminology used in the taxonomic descriptions follows the above-mentioned published literature.

Photographic plates of the diagnostic morphological characters were created using Adobe Photoshop version 6 programme. Maps depicting the locations of sample collections were plotted using the ODV and Adobe Photoshop version 6 programmes.

Abbreviation used in the text is as follows: CL – Carapace length, PI to PV – pereopods 1–5, TL – Total length. Number of antennal segments, thoracic sternites, pereopods and pleonal somites expressed in Roman numerals.

## SYSTEMATICS

### *Acanthacaris tenuimana* Spence Bate, 1888 (Prickly deep-sea lobster)

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Subfamily Neophoberinae Glaessner, 1969

Genus *Acanthacaris* Spence Bate, 1888

*Acanthacaris tenuimana* Spence Bate, 1888

(Figs. 3A–B, 4A–C, 5)

### Synonymy

*Phoberus tenuimanus* Spence Bate, 1888: 171, type locality: Arafura Sea, south off New Guinea, HMS *Challenger* stn. 191, 5°41'S, 134°04'30"E, 800 fathoms (= 1463 m) depth, green mud.

*Acanthacaris tenuimana* Spence Bate, 1888: pls. 21–22; Holthuis, 1974: 752; Fischer & Bianchi, 1984: 3 (list); Holthuis, 1984: unnumbered figs.; Phillips *et al.*, 1980: 67; Fischer & Bianchi, 1984: NEPH Acant 2; Hayashi & Ogawa, 1985: 220, fig. 1; Burukovsky & Ckrekko, 1986: 93, text-fig.; Macpherson, 1990: 293; Holthuis, 1991: 26 (key), 28, figs. 39b, 42; Griffin & Stoddart, 1995: 232, 254 (key), table 1; Chan, 1998: 984 (key), 987 (list), 988; Poore, 2004: 163 (key); Takeda & Nagai, 2004: 9, figs. 1, 2; Chan, 2010: 156 (list); Chan, 2019: 39 (list), fig. 2.1b; Radhakrishnan *et al.*, 2019a: 111.

*Phoberus caecus*: Alcock, 1898: 33; Alcock, 1901a: 156; Alcock, 1902: 127, 168, 264 (not A. Milne Edwards, 1881).

*Phoberus caecus* var. *tenuimanus*: Alcock, 1901a: 156; Alcock & McArdle, 1903: pl. 60; Bouvier, 1925: 416.

*Acanthacaris tenuimanus*: Bruce, 1974: 303, figs. 1–2.

*Phoberus caecus* var. *sublevis* Wood-Mason in Wood-Mason & Alcock, 1891: 197, type locality: Laccadive Sea, southwest off Goa, RIMSS *Investigator* stn. 105, 15°02'N, 72°34'E, 740 fathoms (= 1354 m), grey ooze, coral mud with 12.5 per cent Foraminifera; Alcock & Anderson, 1894: 161; Anderson, 1896: 96.

*Acanthacaris opipara* Burukovsky & Musij, 1976: 1811, figs. 1–2, type locality: Southwestern Indian Ocean, off Durban, 29°57'06"S–29°52'05"S, 31°46'02"E–31°52'05"E, 830–850 m depth; Burukovsky & Ckrehko, 1986: 94, text-fig.

*Acanthacaris opipera*: Phillips *et al.*, 1980: 67 (erroneous spelling).

*Acanthacaris* sp.: von Cosel, 1987: 20, pl. 3F (colour photograph).

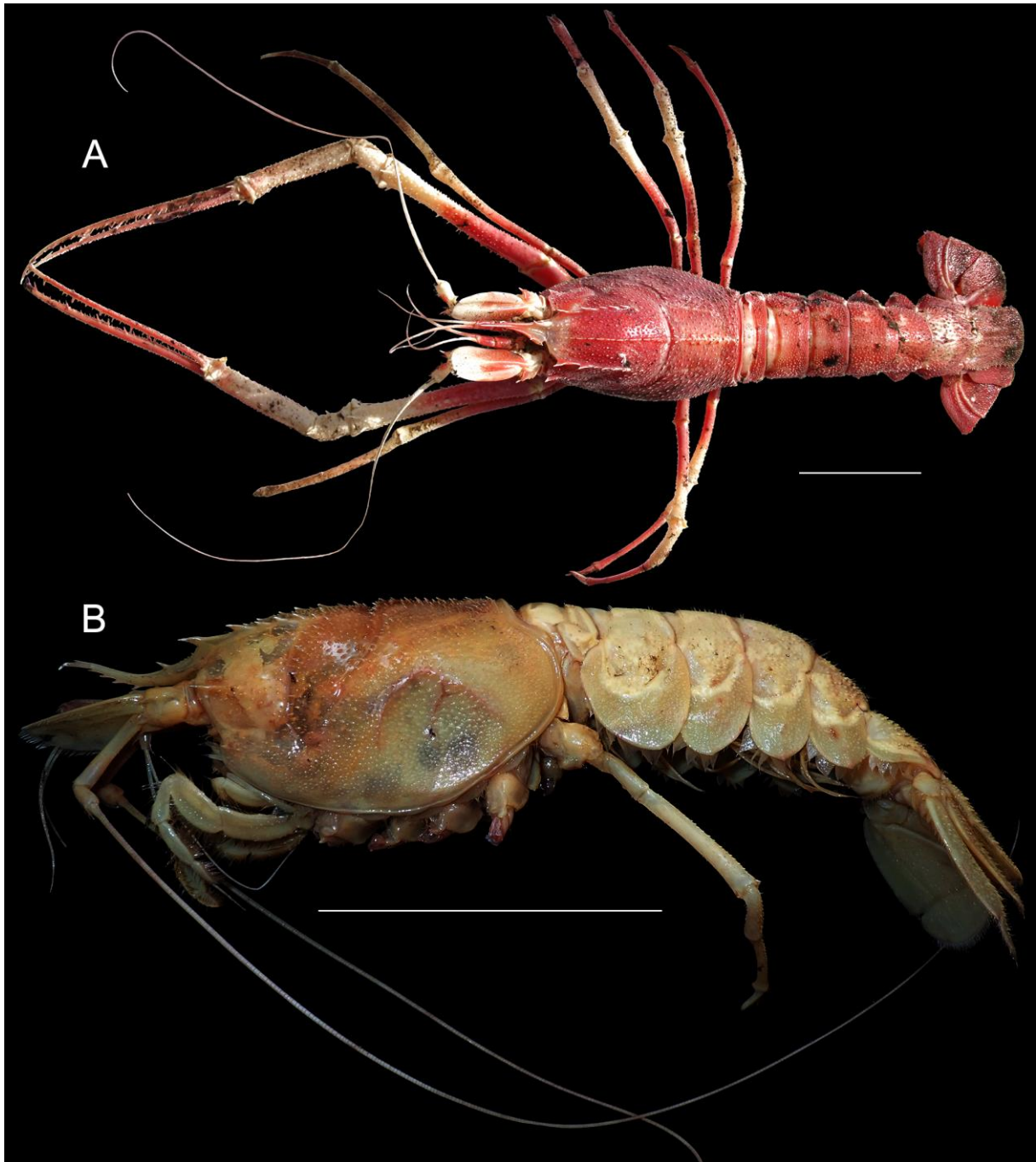
*Phoberus brevirostris* Tung, Wang & Z.-C. Li, 1985: 379, type locality: East China China, 29°00'N–29°30'N, 127°00'E–127°30'E, 300–900 m depth

*Neophoberus caecus tenuimanus*: Firth & Pequegnat, 1971: 81.

**Diagnosis (modified from Spence Bate, 1888):** Body cylindrical, spinose (Fig. 3A, B). Rostrum < 0.5 CL, laterally complexed, strongly downcurved, bearing 1 pair of dorsal teeth, ventral teeth 4. Scaphocerite well-developed, antennal flagellum whip-like. Eyestalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, spinose, bearing median spinose carina, rostral base continues as submedian spinose carina up to mid-length of gastric region, spines progressively decreasing in size posteriorly; branchiostegal spine present (Fig. 4A). PI–PIII chelate; PI slender, longer than body, fingers 1.5 times palm length; PIV–PV simple (Fig. 4A). Pleon spinose, pleura of somites II–VI terminating in blunt angle; somite VI lateral margin bearing acute spine at mid-length with tip short of posterolateral margin (Fig. 4C). Female gonopores on PIII coxa, raised vulvae between PIV–PV (Fig. 4B). Telson lateral margins with 6 spines. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis (Fig. 4C).

**Geographical distribution and habitat:** South Africa, Mozambique, Madagascar, Lakshadweep Islands (India), Philippines, Indonesia, eastern Australia, China Sea and Sea of Japan, at depths of 600–2161 m (Macpherson, 1990; Griffin & Stoddart, 1995). The present specimen was collected from the southeastern Arabian Sea at 1154 m depth (Fig. 5).





**Fig. 3.** *Acanthacaris tenuimana* Spence Bate, 1888 (southeastern Arabian Sea): A) Dorsal habitus (live colouration), 440 mm TL; B) Lateral habitus (preserved colouration), female, 282 mm TL. Scale: 100 mm.

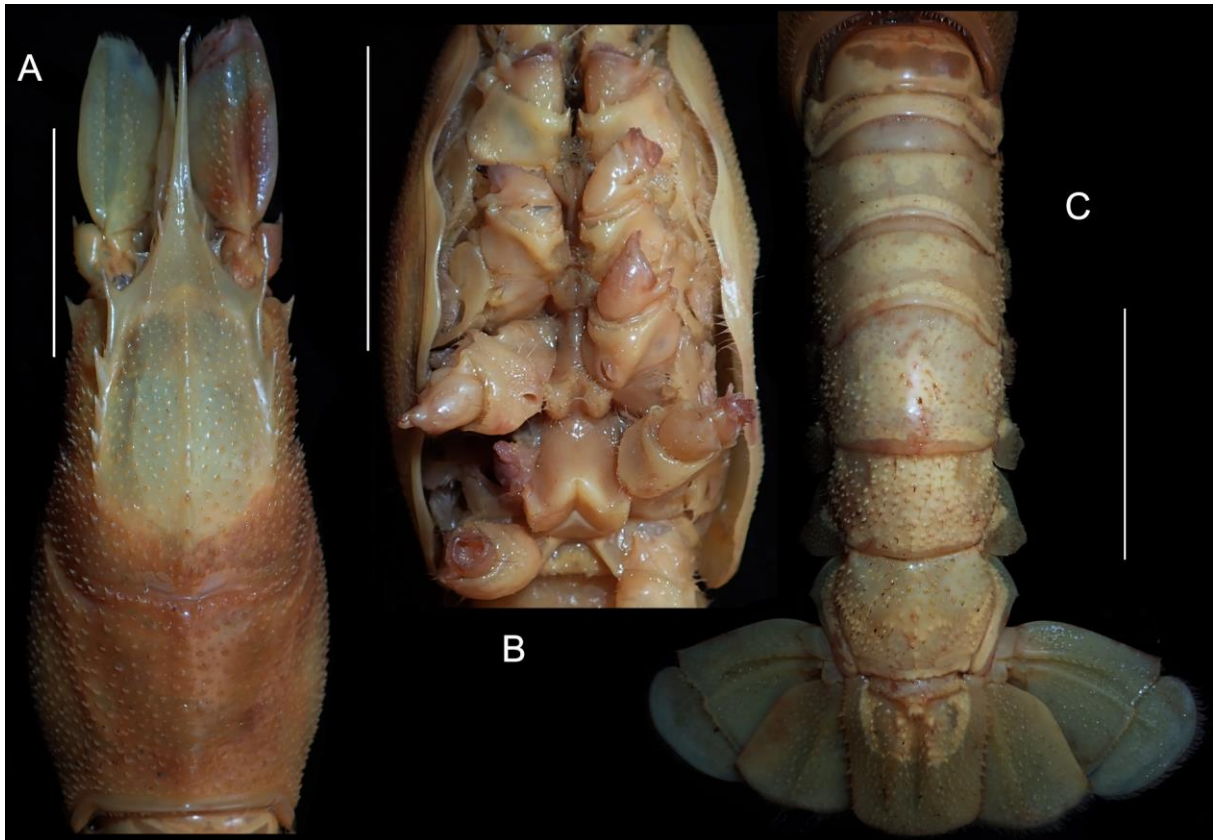


Fig. 4. *Acanthacaris tenuimana* Spence Bate, 1888: A) Dorsal carapace; B) Ventral sternum of female; C) Dorsal pleon and telson. Scale: 50 mm.

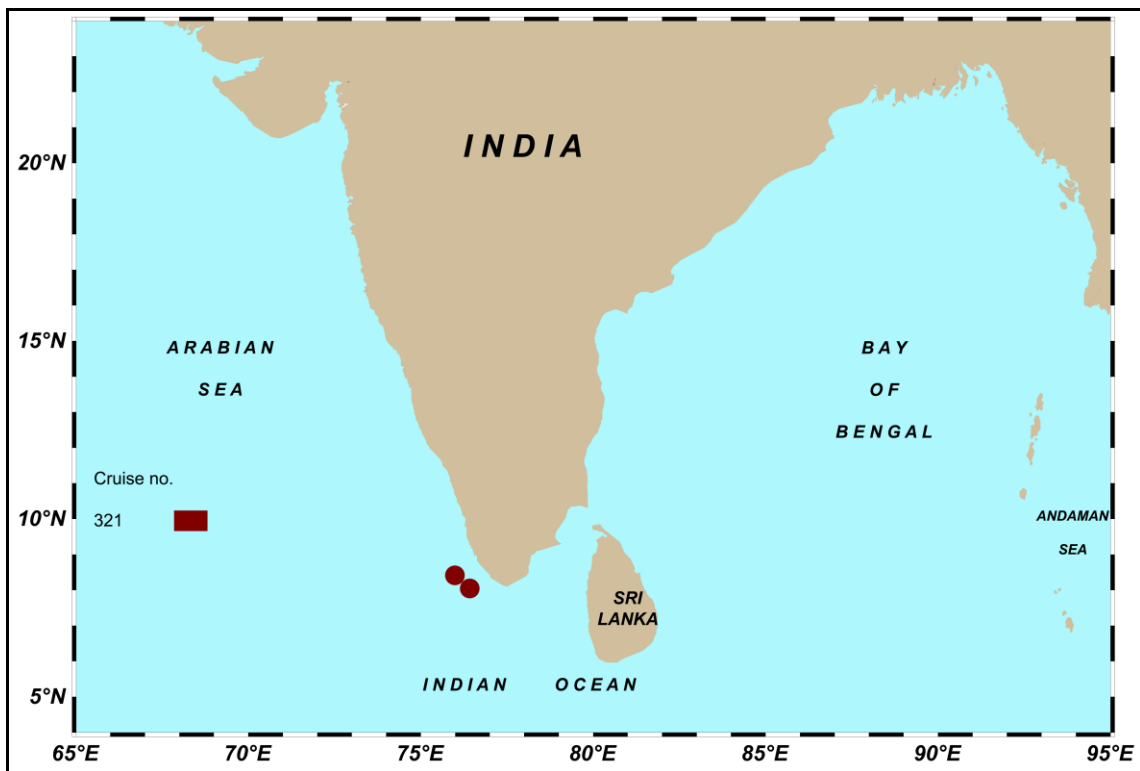


Fig. 5. Geographical locations of collection of *Acanthacaris tenuimana* Spence Bate, 1888.

***Metanephrops andamanicus* (Wood-Mason, 1892) (Andaman lobster)**

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Genus *Metanephrops* Jenkins, 1972

***Metanephrops andamanicus* (Wood-Mason, 1892)**

**(Figs. 6A–C, 7A–E, 8)**

**Synonymy**

*Nephrops andamanicus* Wood-Mason, 1892: pl. 4; Alcock, 1894: 226, type locality: Andaman Sea, RIMSS Investigator stn. 115, 11°31'40"N, 92°46'06"E, 188–220 fathoms (= 344–403 m); Wood-Mason & Alcock, 1894: pl. 8, fig. 5; Ortmann, 1897a: 273; Balss, 1925: 207; Dragovich, 1969: 19; Jenkins, 1972: 162; Burukovsky, 1974: 111 (key); Burukovsky, 1983: 157; Sakai, 1978: 9, fig. 4.

*Nephrops Andamanicus*: Chun, 1900: 364, 500, fig. 368; Chun, 1903: 535.

*Nephrops andamanica*: Alcock, 1901b: 66; Alcock, 1902: 258, 260; Longhurst, 1970: 286.

*Nephrops thomsoni* var. *andamanica*: Alcock, 1901a: 153.

*Metanephrops andamanicus* (Wood-Mason, 1892): George, 1983: figs. 19, 20; Fischer & Bianchi, 1984: NEPH Metan 2; Chan & Yu, 1991: 22 (key), 32, pls. 2a, c, 4a, c, 6a, 7d; Holthuis, 1991: 64 (key), 66, figs. 115, 120c, 128; Chan, 1998: 985 (key), 987 (list), 992, figs. 7, 8; Zarenkov, 2006: 94, fig. 20C–E; Chan, 2010: 156 (list); Chan, 2019: 40 (list); Radhakrishnan *et al.*, 2019a: 114.

Not *Nephrops andamanicus*: Gilchrist, 1921: 4; Gilchrist, 1922: 7; Gilchrist, 1925: 24; Calman, 1925: 22; Barnard, 1925: 127; Berry, 1969a: 5, fig. 1; Crosnier & Jouannic, 1973: 13 (= *Metanephrops mozambicus* Macpherson, 1990); De Man, 1916: 99, pl. 3, fig. 15; Holthuis, 1964: 71 (= *Metanephrops velutinus* T.-Y. Chan & H.-P. Yu, 1991).

Not *Nephrops andamanica*: Barnard, 1950: 528, fig. 99a; Sankarankutty & Subramanian, 1976: 20, pl. 2; Kensley, 1981a: 29 (= *Metanephrops mozambicus* Macpherson, 1990).

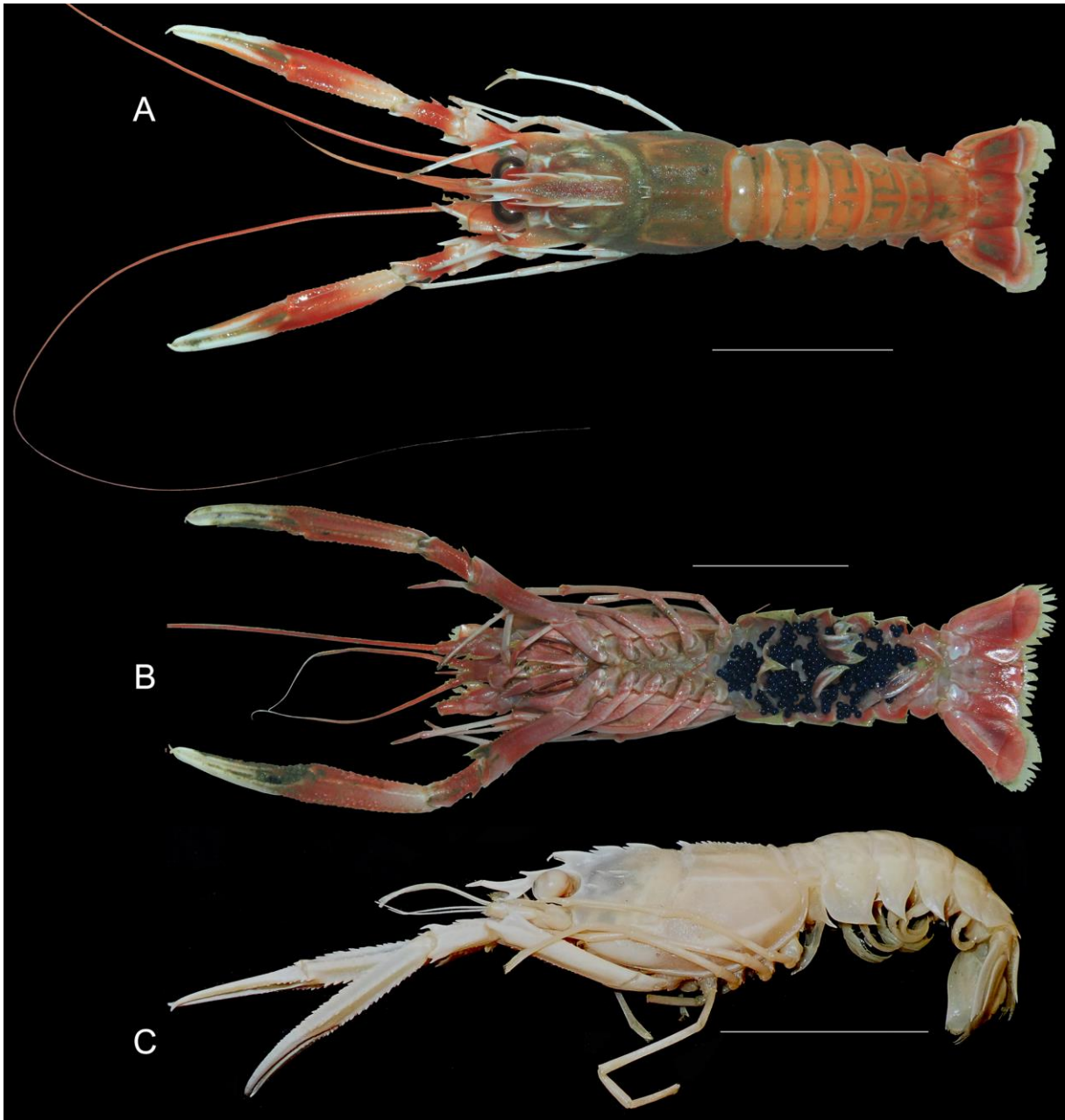
Not *Metanephrops andamanicus*: Wear, 1976: 119, fig. 3f, g; Ivanov & Kuylov, 1980: 288; Anonymous, 1981: 3; Holthuis, 1984: unnumbered pages and figs.; von Cosel, 1987: 13 (= *Metanephrops mozambicus* Macpherson, 1990); Anonymous, 1954: 46; Jenkins, 1972: 162, 171; Chan & Yu, 1987: 184 (key); Carter *et al.*, 1983: 2, 4; Davis & Ward, 1984: 42; Bremner, 1985: 39, fig. 3; Ward & Davis, 1987: 93; Wallner & Phillips, 1988: 36; Macpherson, 1990: 294, figs. 2c–d, 3c–d (= *Metanephrops velutinus* T.-Y. Chan & H.-P. Yu, 1991).

**Diagnosis (modified from Alcock, 1894):** Body cylindrical, generally smooth, finely pubescent (Fig. 6A–C). Rostrum 0.5 CL, gently downcurved, bearing 1 pair of large

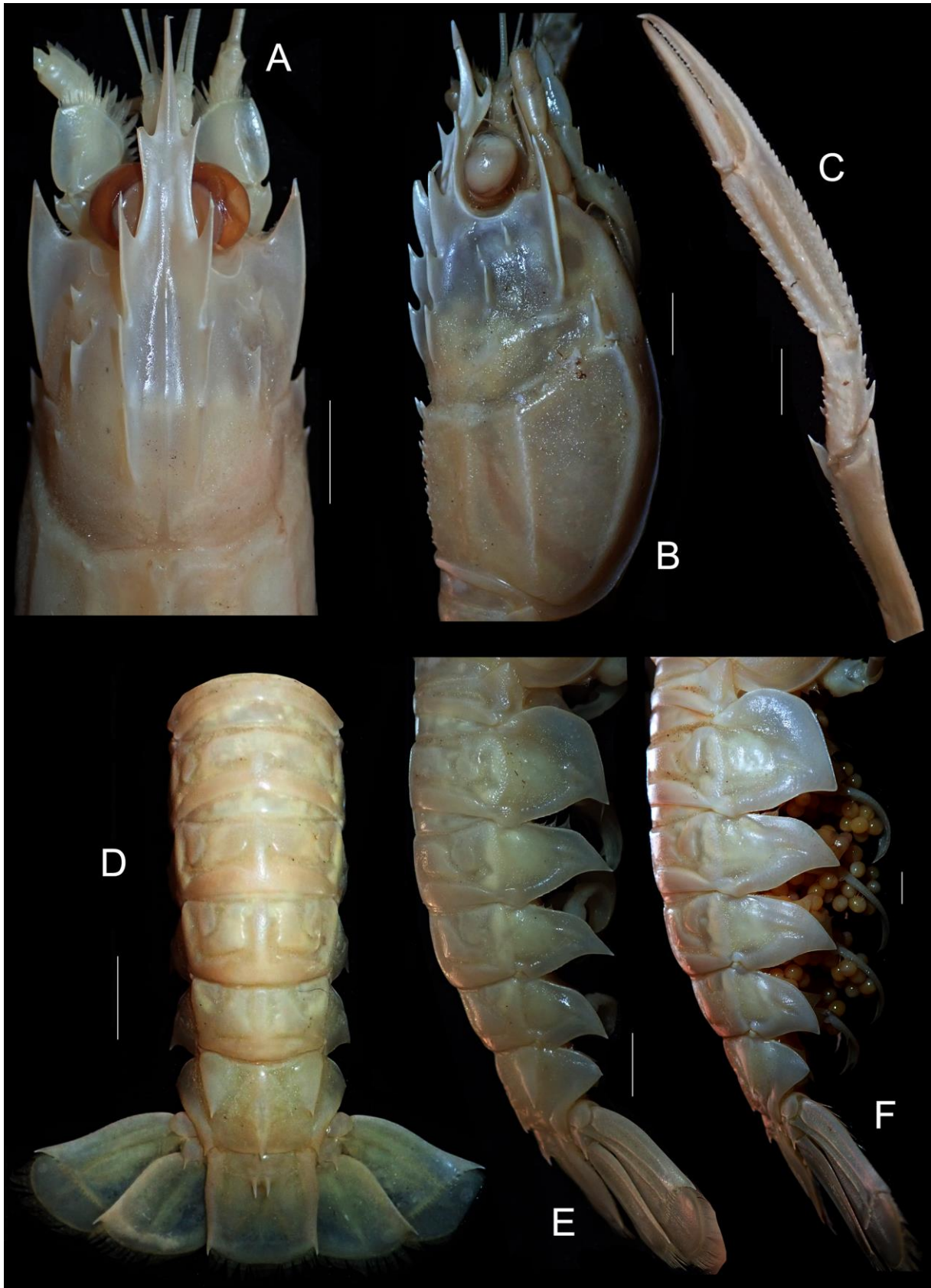
dorso-lateral teeth at mid-length, ventral margin with single curved tooth on distal half. Scaphocerite well-developed, antennal flagellum whip-like. Eystalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, smooth between spines, post-rostral carina with 3 teeth, including supraorbital spines, extending to post-cervical groove; antennal spine large, wing-like, extending to hepatic groove, hepatic spine small; 1 pair of sharp spines behind post-cervical groove followed by pair of spinulose carinae; 1 pair each of submedian, intermediate and lateral carinae present (Fig. 7A, B). PI-PIII chelate, PI slender, shorter than body. PI merus inner margin weakly spinulose, terminating in long flattened spine; carpus bearing rows of dentate granules, large outer spine proximally, distal angles spinose; palm fluted with serrated carinae; fingers subequal to palm length (Fig. 7C). PIV-PV simple. Pleon sparsely pubescent, elevated portions smooth, somites II-V bearing distinct dorso-median carina flanked by 1 pair of submedian longitudinal grooves, elaborately sculptured (Fig. 7D); pleuron of somite II with strongly convex anterior margin, terminating in sharp angle in male, blunt in female, pleura of somites II-VI progressively smaller, terminating acutely in male (Fig. 7E), bluntly in female (Fig. 7F). Telson bearing 1 pair of submedian spines anteriorly, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis (Fig. 7D).

**Geographical distribution and habitat:** East Africa, Andaman Sea, South China Sea, Indonesia and the Philippines, at depths of 250–750 m (Radhakrishnan *et al.*, 2019). The present specimens were collected from southeastern Bay of Bengal at 271–520 m depths, and western Andaman Sea at 441 m depth (Fig. 8).





**Fig. 6.** *Metanephrops andamanicus* (Wood-Mason, 1892) (western Andaman Sea): A) Dorsal habitus (live colouration), female, 167 mm TL; B) Ventral habitus (live colouration); C) Lateral habitus (preserved colouration), male, 157 mm TL. Scale: 50 mm.



**Fig. 7.** *Metanephrops andamanicus* (Wood-Mason, 1892): A) Dorsal anterior carapace, antennules and antennae; B) Lateral carapace; C) Right PI, dorsal; D) Dorsal pleon and telson; E, F) Lateral pleons of male and female. Scale: 10 mm.

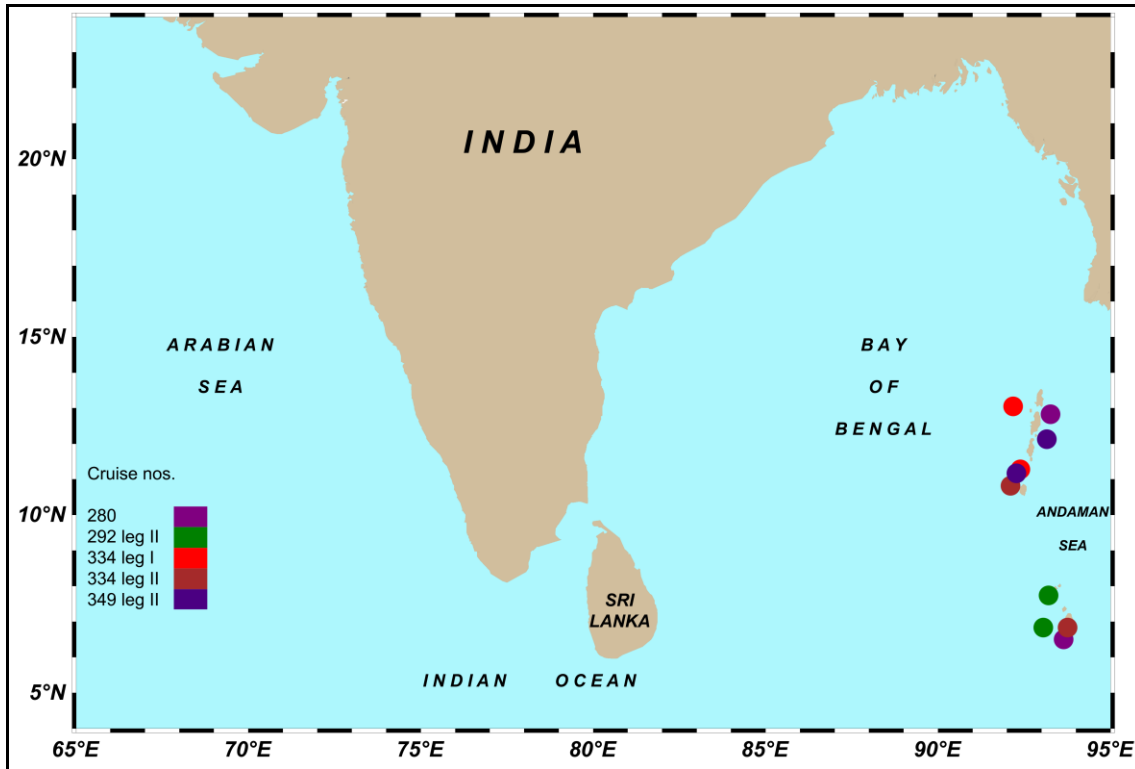


Fig. 8. Geographical locations of collection of *Metanephrops andamanicus* (Wood-Mason, 1892).

*Nephropsis carpenteri* Wood-Mason, 1885 (Ridgeback lobsterette)

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Genus *Nephropsis* Wood-Mason, 1872

*Nephropsis carpenteri* Wood-Mason, 1885

(Figs. 9A-B, 10A-F, 11)

**Synonymy**

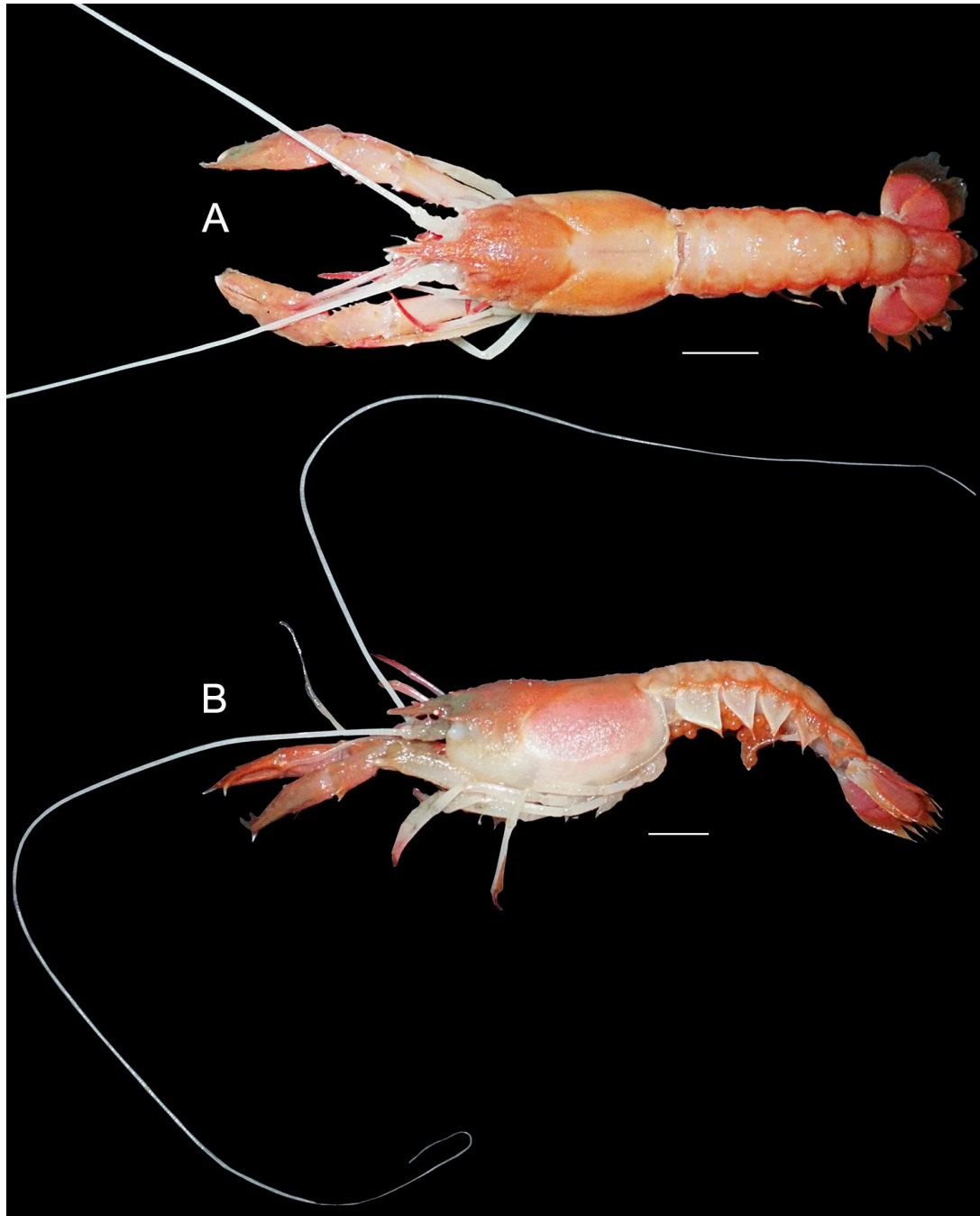
*Nephropsis carpenteri* Wood-Mason, 1885: 72; Alcock & Anderson, 1894: 161, type locality: Bay of Bengal, RIMSS Investigator stn. 162, 13°51'12"N, 80°28'12"E, 145–250 fathoms (= 265–458 m); Alcock & Anderson, 1896: pl. 27, figs. 2, 2a; Bouvier, 1925: 412; George & Rao, 1965: 333; Burukovsky, 1974: 109 (key); Burukovsky, 1983: 154; Phillips *et al.*, 1980: 66; Macpherson, 1990: 302 (key), 316, figs. 5f, 11 e-f, 12, 16 f; Holthuis, 1991: 33 (key), 39, fig. 56a, 69; Chan, 2010: 157 (list); Chan, 2019: 42 (list); Radhakrishnan *et al.*, 2019a: 111; Chang *et al.*, 2020a: figs. 2, 3C, D.

*Nephropsis Carpenteri*: Alcock, 1898: 33; Alcock, 1901a: 158 (key), 160; Thompson, 1901: 17; Balss, 1914a: 83; Balss, 1925: 208; De Man, 1916: 97, 112 (key); Bouvier, 1917: 20.

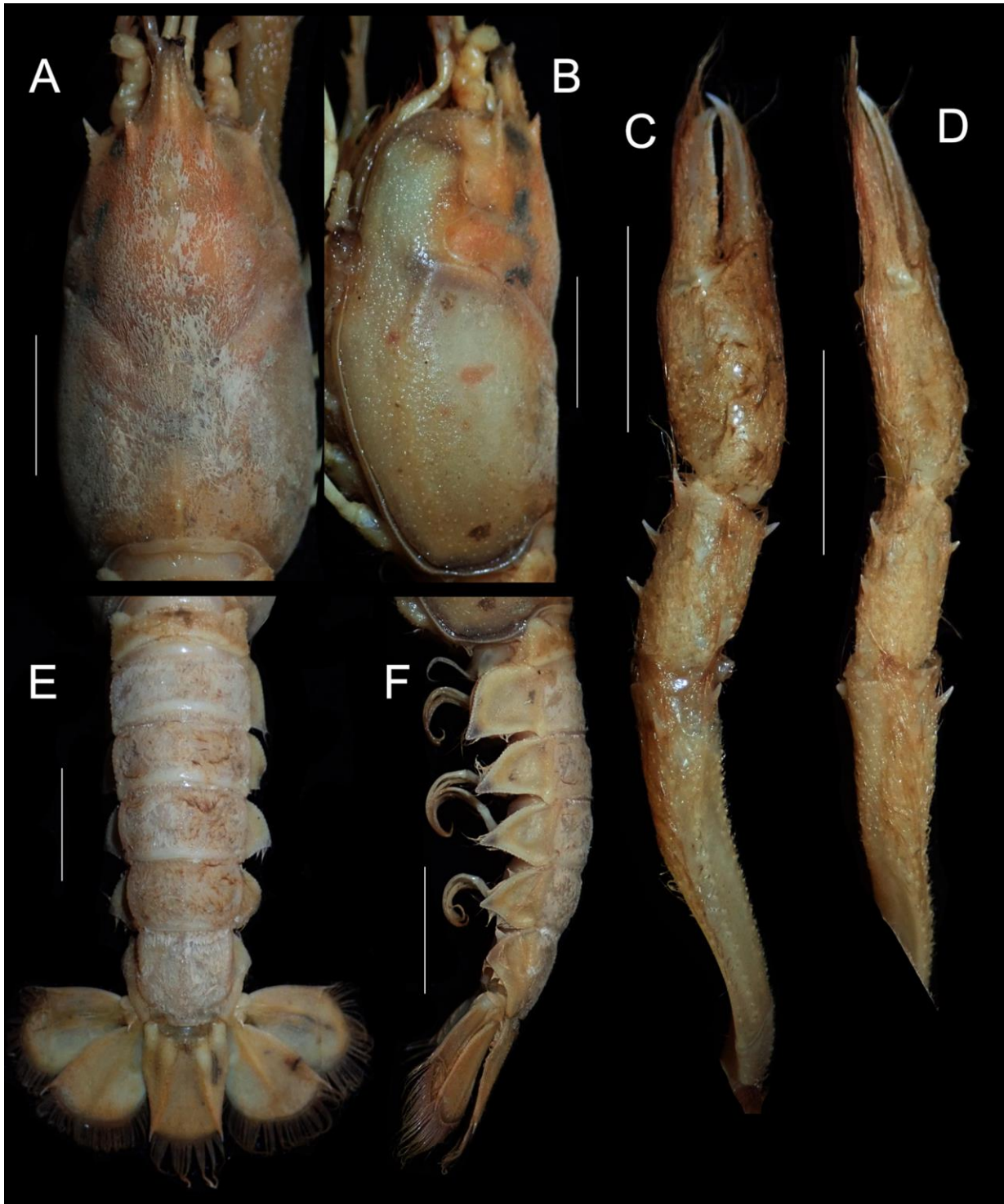
**Diagnosis (modified from Macpherson, 1990):** Body cylindrical, pubescent. Rostrum < 0.5 CL, gently deflexed bearing 1 pair of dorso-lateral teeth posterior to mid-length. Scaphocerite absent, antennal flagellum whip-like (Fig. 9A, B). Eyestalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, granulose, with subdorsal carinae finely denticulate; supraorbital, antennal spines present; post-cervical groove V-shaped in dorsal view; intermediate and lateral carinae distinct. Distance between gastric tubercle and supraorbital spines 0.3 times distance between gastric tubercle and post-cervical groove. Distance between orbital margin and post-cervical groove 1.5–1.6 times distance between post-cervical groove and carapace posterior margin (Fig. 10A, B). PI carpus bearing 1 dorsal spine, inner surface with 2–3 spines at lower margin (Fig. 10C, D). PII carpus length 0.7–0.8 times palm length. PIV–PV simple. Pleon sparsely granulate, somites II–VI bearing distinct dorso-median carina; pleuron II anterior margin convex, lacking spine, terminating ventrally in blunt or sharp angle (Fig. 10E, F). Telson lacking erect basal dorso-median spine, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis.

**Geographical distribution and habitat:** Southeastern Arabian Sea, Bay of Bengal and off Myanmar at 250–503 m depths (Chang *et al.*, 2020a). The present specimens were collected from the eastern Arabian Sea at 691–766 m depths, southeastern Arabian Sea at 326 m depth, southwestern Bay of Bengal at 433–458 depths, and western Bay of Bengal at and 567 m depth (Fig. 11).





**Fig. 9.** *Nephropsis carpenteri* Wood-Mason, 1885 (southwestern Bay of Bengal), female, 72 mm TL: A) Dorsal habitus (live colouration); B) Lateral habitus (live colouration). Scale: 10 mm.



**Fig. 10.** *Nephropsis carpenteri* Wood-Mason, 1885: A) Dorsal carapace; B) Lateral carapace; C) Right PI, dorsal; D) Right PI, mesial; E) Dorsal pleon and telson; F) Lateral pleon and telson. Scale: 10 mm.

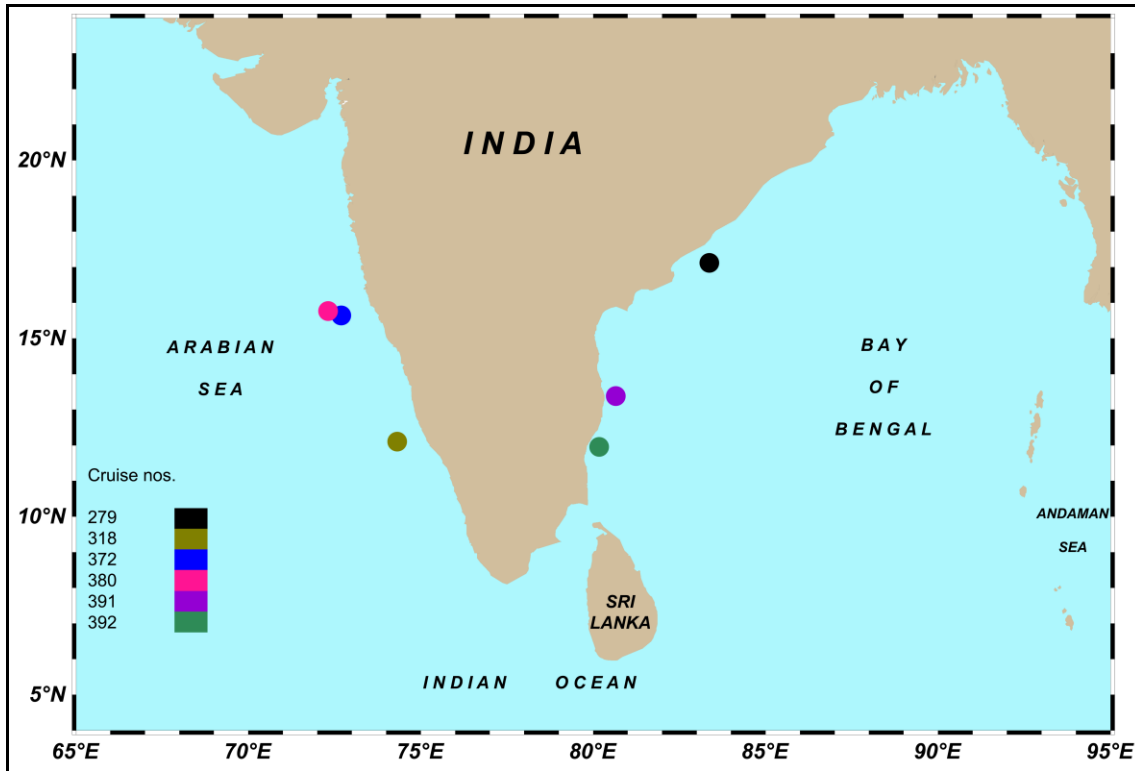


Fig. 11. Geographical locations of collection of *Nephropsis carpenteri* Wood-Mason, 1885.

*Nephropsis ensirostris* Alcock, 1901 (*Gladiator lobsterette*)

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Genus *Nephropsis* Wood-Mason, 1872

*Nephropsis ensirostris* Alcock, 1901

(Figs. 12A-C, 13A-E, 14)

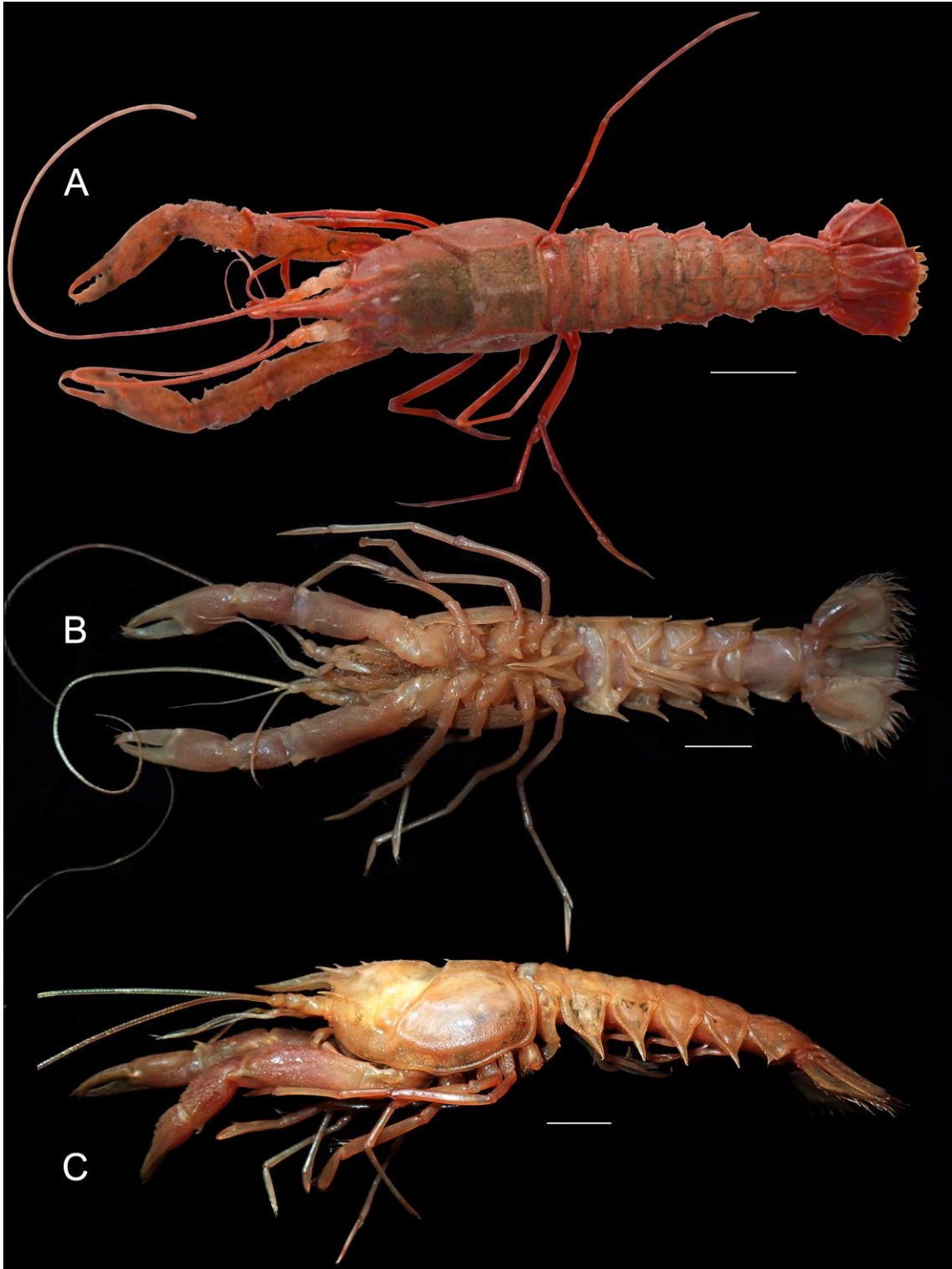
**Synonymy**

*Nephropsis ensirostris* Alcock, 1901a: 158 (key), 162, pl. 1, fig. 2, type locality: Arabian Sea, north of Laccadives, 636 fathoms (= 1163 m) depth, green mud; Alcock & McArdle, 1903: pl. 58, figs. 1, 1a; Lloyd, 1907: 4; De Man, 1916: 97, 112 (key), 113; Bouvier, 1917: 20; Balss, 1925: 208; Burukovsky, 1974: 109 (key); Burukovsky, 1983: 153; Phillips *et al.*, 1980: 66; Macpherson, 1990: 302 (key), 303, figs. 5a, 6, 8a-b, 16a; Holthuis, 1991: 32 (key), 41, figs. 50, 51a, 71; Chan, 1998: 986 (key), 987 (list), fig. 12a; Zarenkov, 2006: 85, fig. 4; Chan, 2010: 157 (list); Chan, 2019: 42, fig. 2.1h; Radhakrishnan *et al.*, 2019a: 113.

*Nephropsis suhmi*: Ramadan, 1938: 125 (in part, only Stn 33) (not Spence Bate, 1888).

**Diagnosis (modified from Alcock, 1901):** Body cylindrical, pubescent. Rostrum 0.5–0.67 CL, gently deflexed, lacking dorso-lateral teeth. Scaphocerite absent, antennal flagellum whip-like (Fig. 12A–C). Eyestalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, granulose, subdorsal carinae bearing spine at rostral base, another anterior to gastric tubercle; supraorbital, antennal spines present, pair of spines posterior to post-cervical groove; intermediate, lateral carinae distinct. Distance between gastric tubercle and supraorbital spines 0.5 times distance between gastric tubercle and post-cervical groove. Distance between orbital margin and post-cervical groove <2.0 times distance between post-cervical groove and carapace posterior margin (Fig. 13A). PI carpus bearing anterodorsal, anteroventral spines, inner dorsal spine at mid-length, outer spine on terminal half, strong spine on inner margin near palmar articulation (Fig. 13B–C). PII carpus slightly longer than palm, PIV–PV simple. Thelycum raised, anterior incision shallow, posterior incision deep (Fig. 13D). Pleon sparsely granulate, somites II–IV bearing indistinct dorso-median carina, somites V–VI with distinct carina; pleuron II anterior margin moderately convex, lacking spine, terminating ventrally in long spine; pleura III–V anterior margins less convex, terminating ventrally as long spine (Fig. 13E). Telson lacking erect basal dorso-median spine, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with incomplete diaeresis.

**Geographical distribution and habitat:** Gulf of Aden, Sri Lanka, southeast Arabian Sea, Indonesia and Philippines at 580–1160 m depths (Radhakrishnan *et al.*, 2019); also Bay of Bengal, Andaman Sea, depths of 315–1300 m (Macpherson, 1990). The present specimens were collected from the eastern Arabian Sea at 214 m depth and southeastern Arabian Sea at 950 m depth (Fig. 14).



**Fig. 12.** *Nephropsis ensirostris* Alcock, 1901 (eastern Arabian Sea): A) Dorsal habitus (live colouration), 79 mm TL; B) Ventral habitus (preserved colouration), 107 mm TL; C) Lateral habitus (preserved colouration), 107 mm TL. Scale: 10 mm.



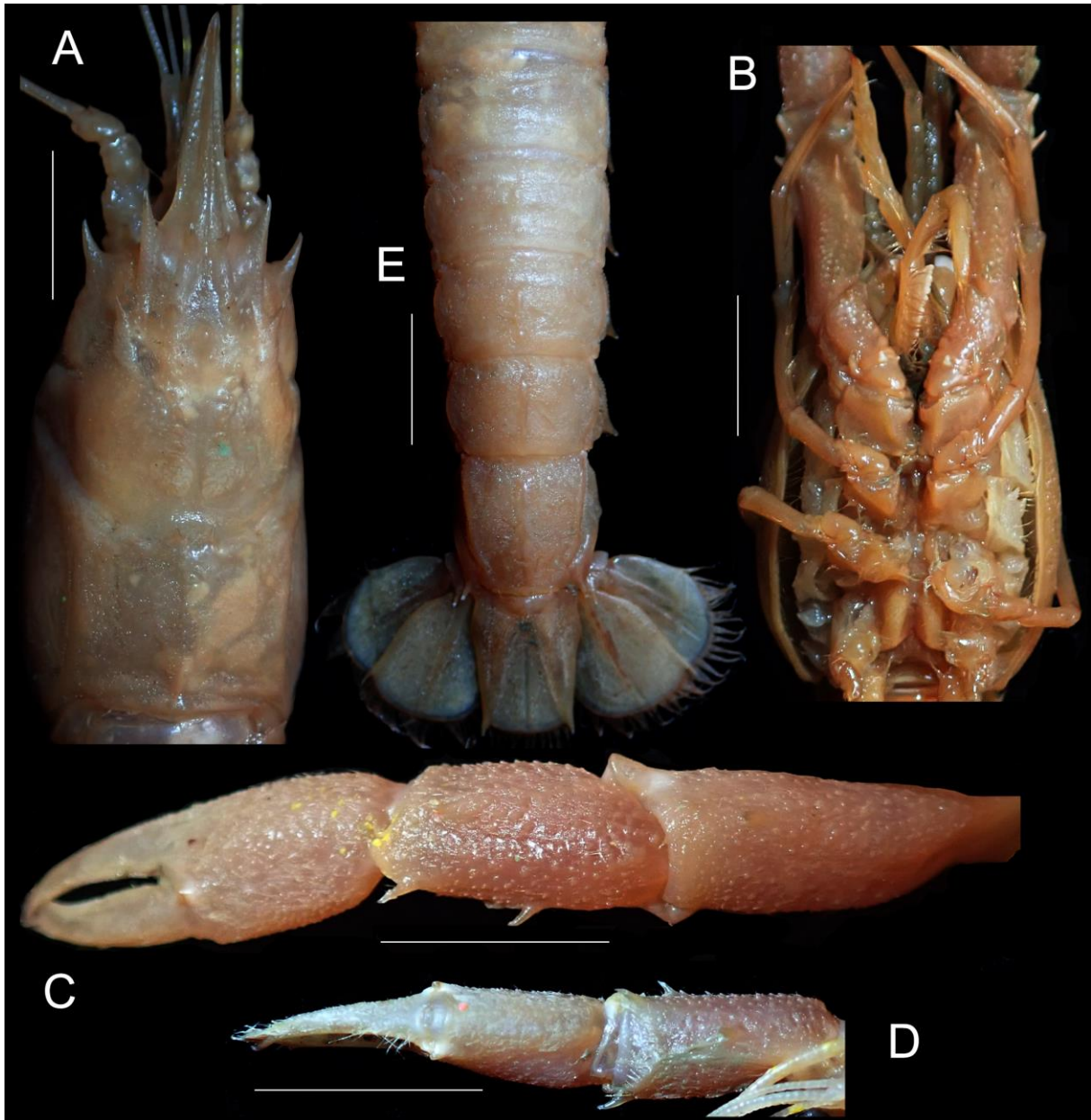


Fig. 13. *Nephropsis ensirostris* Alcock, 1901 (southeastern Arabian Sea): A) Dorsal carapace, antennules and antennae; B) Ventral sternum of female; C) Right PI, dorsal; D) Right PI, mesial; E) Dorsal pleon and telson. Scale: 10 mm.

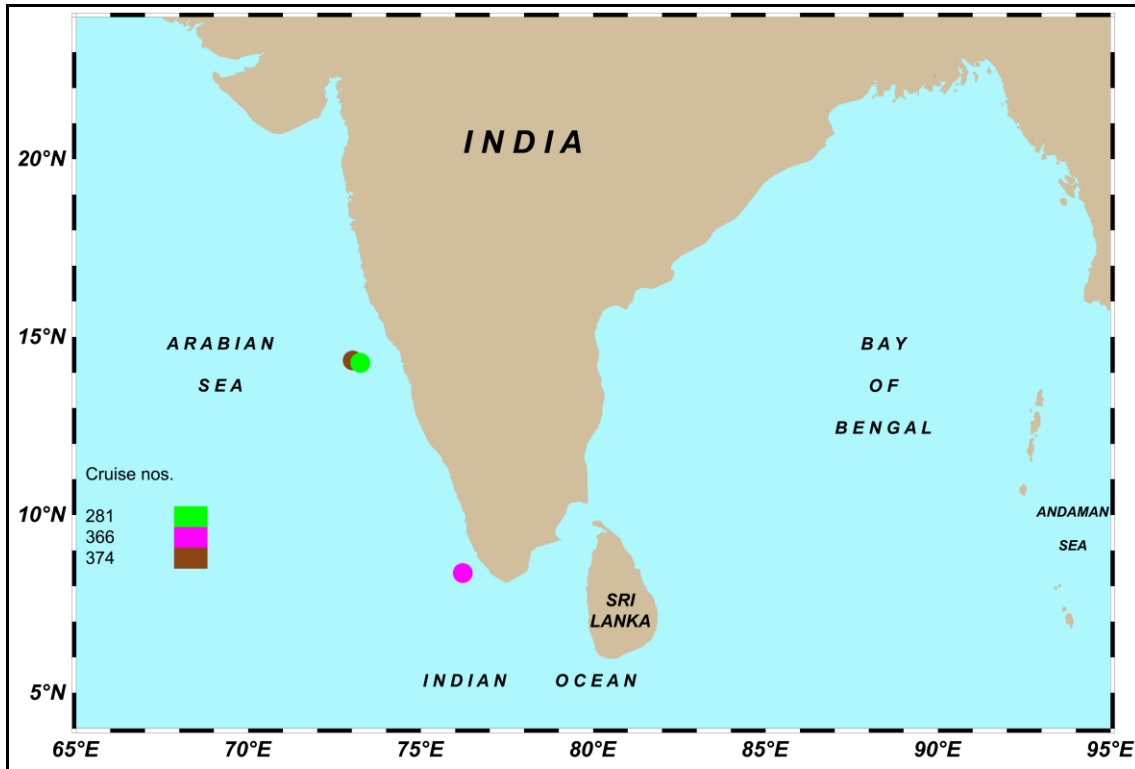


Fig. 14. Geographical locations of collection of *Nephropsis ensirostris* Alcock, 1901.

*Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020a

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Genus *Nephropsis* Wood-Mason, 1872

*Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020a

(Figs. 15A-C, 16A-D, 17)

### Synonymy

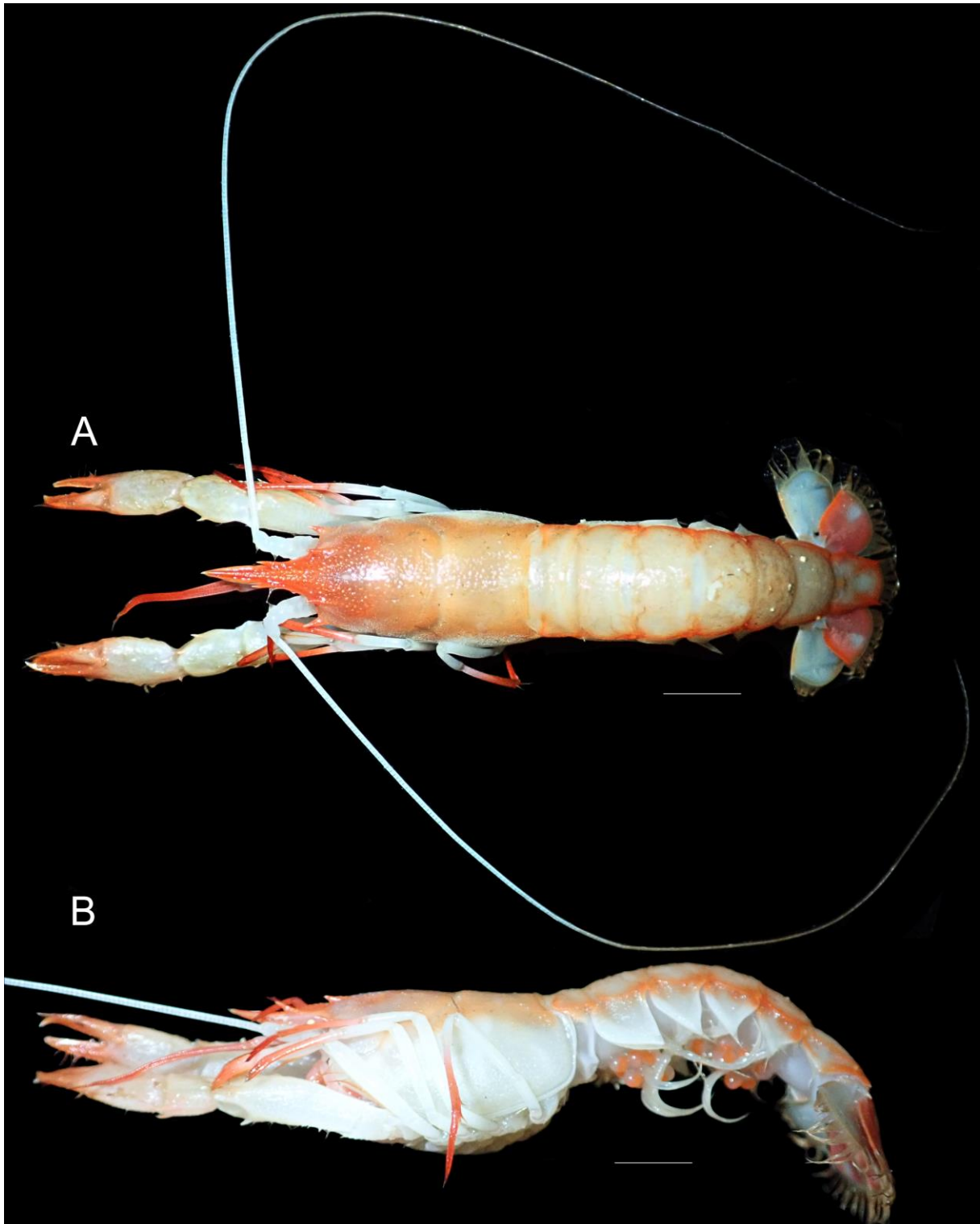
*Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020a: 52, fig. 1, 3A, B, type locality: south of Java, SJADES 2018, stn CP 33, 7°42.912'S, 107°36.559'E, 525–312 m depth.

**Diagnosis (modified from Chang *et al.*, 2020a):** Body cylindrical, pubescent. Rostrum > 0.5 CL, gently deflexed, bearing 1 pair of dorso-lateral teeth posterior to mid-length. Scaphocerite absent, antennal flagellum whip-like (Fig. 15A, B). Eyestalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, granulose, with subdorsal carinae finely denticulate; supraorbital,

antennal spines present; post-cervical groove U-shaped in dorsal view; intermediate and lateral carinae indistinct (Fig. 16A, B). Distance between gastric tubercle and supraorbital spines about 0.3 times distance between gastric tubercle and post-cervical groove. Distance between orbital margin and post-cervical groove 1.5–1.6 times distance between post-cervical groove and carapace posterior margin. PI carpus bearing anteroventral spine, small subdistal spine on outer-lower margin, inner surface with distal spine on upper margin and subdistal spine at lower margin of carpus (Fig. 16C). PII carpus 0.9–1.0 times palm length. PIII coxal process of male slightly flattened, with 1 spine near the articulation with the basis and another spine medially on the posterior border (Fig. 16D), Thelycum raised, with the anterior margin split into two lobes, incision on posterior margin wider (Fig. 16E). PIV–PV simple. Pleon sparsely granulate, somites II–IV bearing indistinct dorso-median carina, somites V–VI with distinct carina; pleuron II anterior margin strongly convex, lacking spine, terminating ventrally in blunt or sharp angle; pleura III–V anterior margins moderately convex, terminating ventrally as long spine (Fig. 16F). Telson lacking erect basal dorso-median spine, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis.

**Geographical distribution and habitat:** Southwestern Java (Indonesia) at 312–525 m depths (Chang *et al.*, 2020a). The present specimens were collected from the southeastern Bay of Bengal at 213–388 m depths, and western Andaman Sea at 299–332 m depths (Fig. 17). **This is the first record from the Indian waters.**





**Fig. 15.** *Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020 (southeastern Bay of Bengal): A) Dorsal habitus (live colouration), female, 42 mm CL; B) Lateral habitus (live colouration), female, 42 mm CL. Scale: 10 mm.

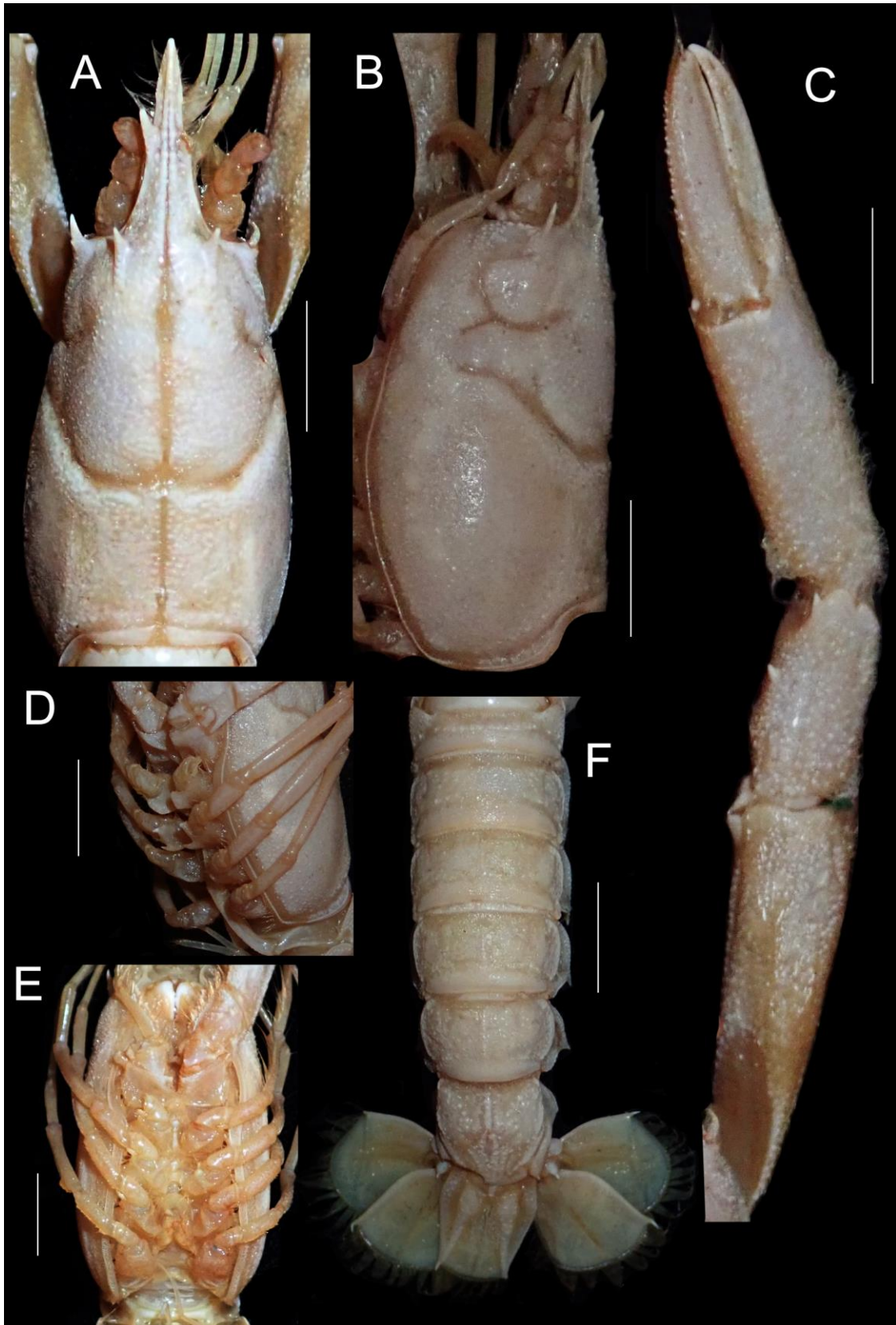


Fig. 16. *Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020: A) Dorsal carapace, antennules and antennae; B) Lateral carapace; C) Sub-lateral male sternum; D) Ventral female sternum; E) Right PI, sub-dorsal; F) Dorsal pleon and telson. Scale: 10 mm.

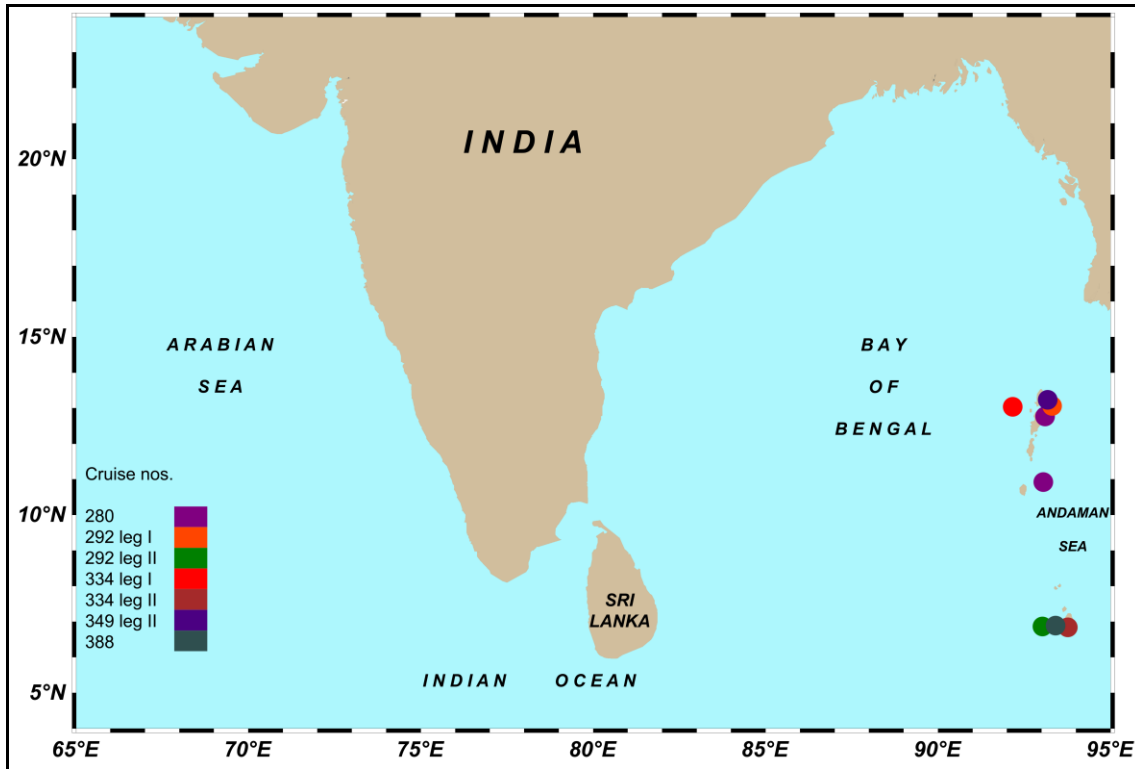


Fig. 17. Geographical locations of collection of *Nephropsis rahayuae* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020.

*Nephropsis stewarti* Wood-Mason, 1872 (Indian Ocean lobsterette)

Infraorder Astacidea Latreille, 1802

Superfamily Nephropoidea Dana, 1852

Family Nephropidae Dana, 1852

Genus *Nephropsis* Wood-Mason, 1872

*Nephropsis stewarti* Wood-Mason, 1872

(Figs. 18A-C, 19A-E, 20)

**Synonymy**

*Nephropsis Stewarti* Wood-Mason, 1872: 151, type locality: Andaman Sea, 260–300 fathoms (= 476–549 m depth); Wood-Mason, 1873: 60; Wood-Mason, 1874a: 40, pl. 4; Wood-Mason, 1876: 231; Wood-Mason, 1885: 71; A. Milne Edwards, 1874: pl. 20, figs. 1-3; Alcock, 1894: 230; Anderson, 1896: 96; Alcock, 1898: 33; Alcock & Anderson, 1899: 286; Alcock, 1901a: 158 (key), 159; Bouvier, 1917: 21.

*Nephropsis stewartii*: Alcock & Anderson, 1894: 161; Alcock & Anderson, 1896: pl. 27, figs.1, 1a; Lloyd, 1907: 3, 6; Ramadan, 1938: 124, fig. 1; Thomas, 1979: 43.

*Nephropsis stewarti*: Stebbing, 1893: 206; Thompson, 1901: 17; Alcock, 1902: 148; Calman, 1925: 21; Bouvier, 1925: 412; Barnard, 1950: 531; Anonymous, 1954: 756, fig. 2179; Sewell, 1955: 203; Holthuis, 1956: 113; Thomas, 1979: 43; Fischer & Bianchi, 1984: NEPH Nephps 3; Holthuis, 1984: unnumbered pp. and figs.; Hemming, 1959: 285; Sakai & Yamashita, 1968: 43, fig. h; Berry, 1969a: 45; Nishimura & Suzuki, 1971: 87; Crosnier & Jouannic, 1973: 13; Burukovsky, 1974: 109 (key); Burukovsky, 1983: 154; Miyake, 1975: 106, unnumbered fig.; Phillips *et al.*, 1980: 66; Kensley, 1981a: 29; Abele & Felgenhauer, 1982: 309, unnumbered fig.; George, 1983: 19; Fischer & Bianchi, 1984: NEPH Nephps 3; Macpherson, 1990: 302 (key), 312 (in part), figs. 5e, 10, 11c-d, 16e; Holthuis, 1991: 33 (key), 45 (in part), figs. 53, 80; Griffin & Stoddart, 1995: 255 (key), table 1; Chan, 1998: 987 (key, list), 991, fig. 14b; Poore, 2004: 163 (key); Zarenkov, 2006: 93 (in part); Chan, 2010: 157 (list); Chan, 2019: 42 (list); Radhakrishnan *et al.*, 2019a: 112, fig. 3.22; Chang *et al.*, 2020b: 40, figs. 1, 4A-F.

? *Nephropsis Stewarti*: Balss, 1925: 208.

*Nephropsis* sp.: Chun, 1900: 366, unnumbered fig.; Chun, 1903: 566, unnumbered fig..

Not *Nephropsis stewarti*: De Man, 1916: 97, 111 (key), 112, pl. 3, fig. 117 [= *Nephropsis serrata* Macpherson, 1993].

Not *Nephropsis stewarti*: Kubo, 1965: 629, fig. 1031; Miyake, 1982: 77, pl. 26, fig. 1; Baba, 1986: 153, 281, fig. 103; Chan & Yu, 1988: 8, pl. 1A; Chan & Yu, 1993: 83, n.n. photo; Holthuis, 1991 (in part); Wadley & Evans, 1991: 39, n.n. photo; Macpherson, 1993: 63; Chan, 1997: 415; Jones & Morgan, 2002: 83, n.n. photo; Davie, 2002: 391; Zarenkov, 2006: 93 (in part), fig. 19; Chang & Chan, 2019: 50 (in part), fig. 7 [= *Nephropsis grandis* Zarenkov, 2006].

Not *Nephropsis stewarti*: Macpherson, 1990: 312 (in part) [? = *Nephropsis grandis* Zarenkov, 2006 and/or *Nephropsis pygmaea* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020b]

Not *Nephropsis stewarti*: Chang & Chan, 2019: 50 (in part) [= *Nephropsis pygmaea* S.-C. Chang, T.-Y. Chan & A.B. Kumar, 2020b]

Not *Nephropsis stewarti*: Chang & Chan, 2019: 50 (in part), figs. 2C, D [= *Nephropsis serrata* Macpherson, 1993].

**Diagnosis (modified from Wood-Mason, 1873):** Body cylindrical, pubescent. Rostrum 0.4–0.5 CL, gently deflexed, bearing 1 pair of dorso-lateral teeth near mid-length. Scaphocerite absent, antennal flagellum whip-like (Fig. 18A–C). Eyestalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, granulose, with subdorsal carinae granulate; supraorbital, antennal spines present; post-cervical groove U-shaped in dorsal view; intermediate and lateral carinae distinct. Distance between gastric tubercle and supraorbital spines about 0.4 times distance between gastric tubercle and post-cervical groove. Distance between orbital margin and post-cervical groove 1.2–1.5 times distance between post-cervical groove



and carapace posterior margin (Fig. 19A). PI carpus bearing distoventral, ventro-outer distal, and dorso-inner distal spines, inner surface with dorsal margin generally bearing 2–4 spines, outer surface without distinct spines (Fig. 19B). PII carpus length 0.5–0.7 times palm length. PIII coxal process of male rounded, ending in a single, high, sharp tooth on outer surface near basal articulation (Fig. 19C). PIV–PV simple. Thelycum raised, lobes separated by wide incision, posterior margin wider than anterior margin, with deep incision (Fig. 19D). Pleon finely granulate, somites II–VI lacking dorso-median carina; pleura lacking spine on anterior margins, terminating ventrally into blunt to sharp spine (Fig. 19E). Telson lacking erect basal dorso-median spine, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis.

**Geographical distribution and habitat:** Eastern coast of South Africa to Andaman Sea, at 250–1720 m (Chang *et al.*, 2020b). The present specimens were collected from the southeastern Arabian Sea at 610 m depth, southwestern Bay of Bengal at 540–777 m depths, southeastern Bay of Bengal at 271–567 m depths, and western Andaman Sea at 213–635 m depths (Fig. 20).

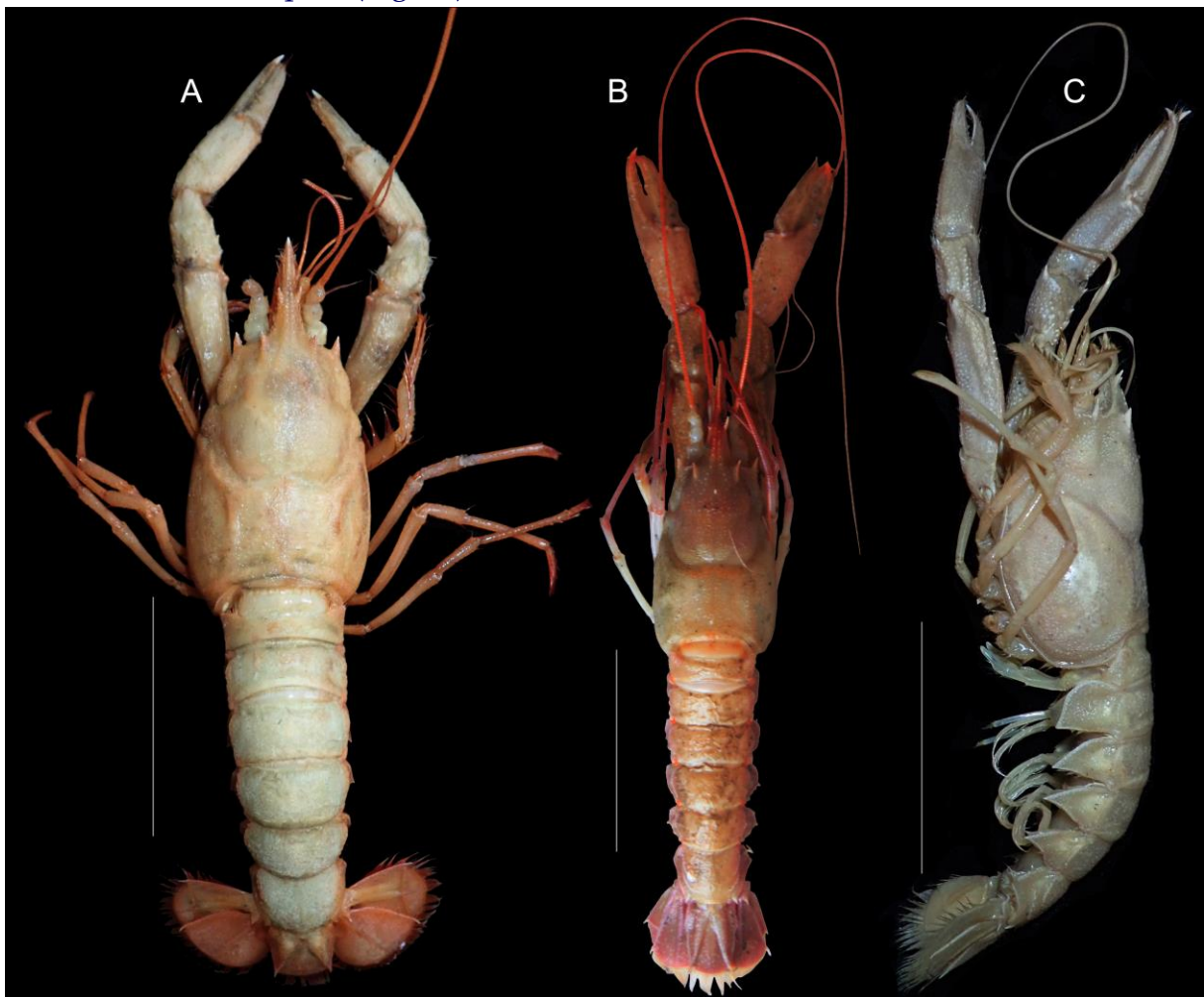


Fig. 18. *Nephropsis stewarti* Wood-Mason, 1872: A) Dorsal habitus: southeastern Arabian Sea (preserved colouration), female, 114 mm TL; B) Dorsal habitus: southeastern Bay of Bengal (live colouration), 150 mm TL; C) Lateral habitus (preserved colouration), 109 mm TL. Scale: 50 mm. (previous page)

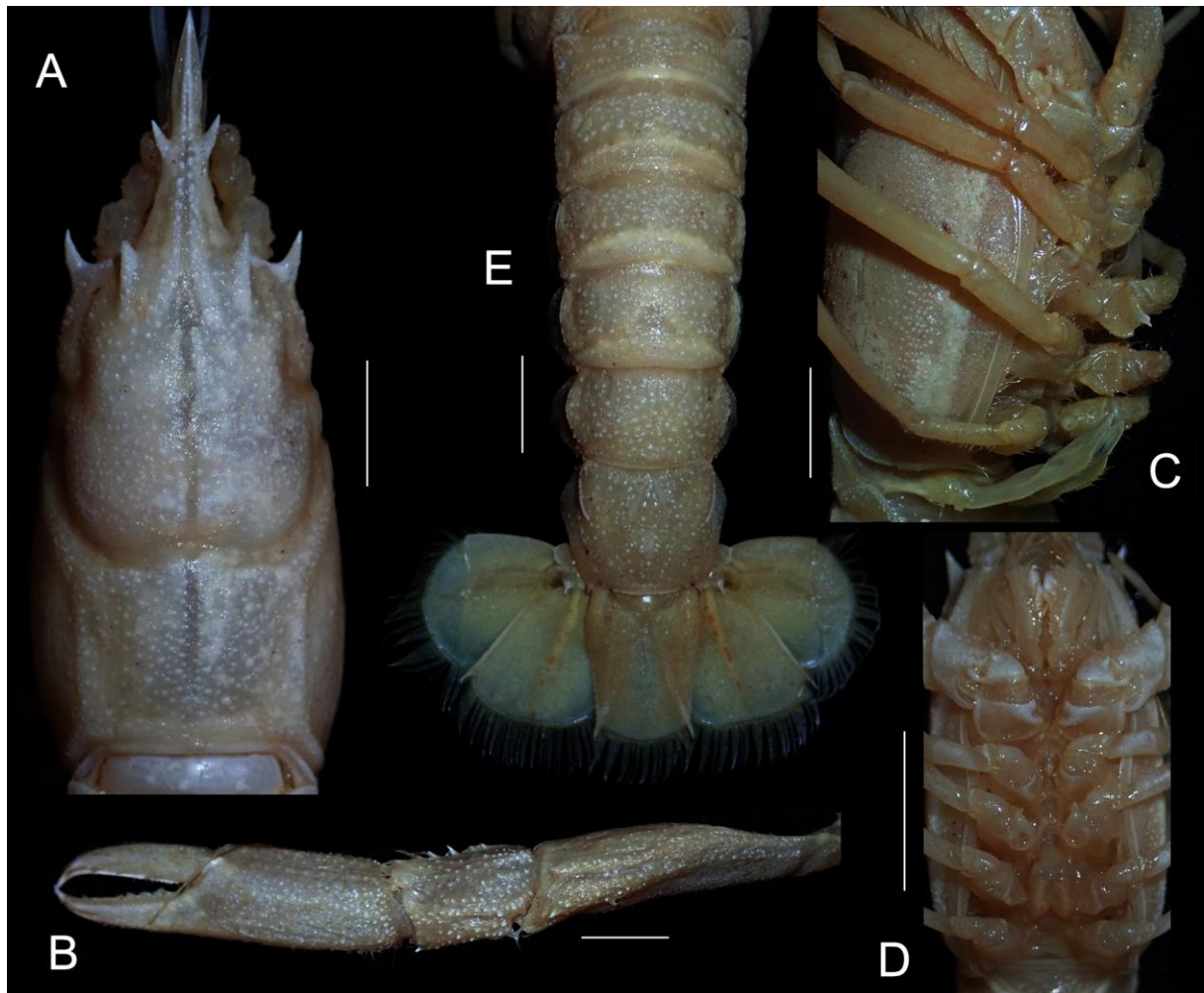


Fig. 19. *Nephropsis stewarti* Wood-Mason, 1872: A) Dorsal carapace, antennules and antennae; B) Sub-lateral male sternum; C) Ventral female sternum; D) Left PI dorsal view; E) Dorsal pleon and telson. Scale: 10 mm.

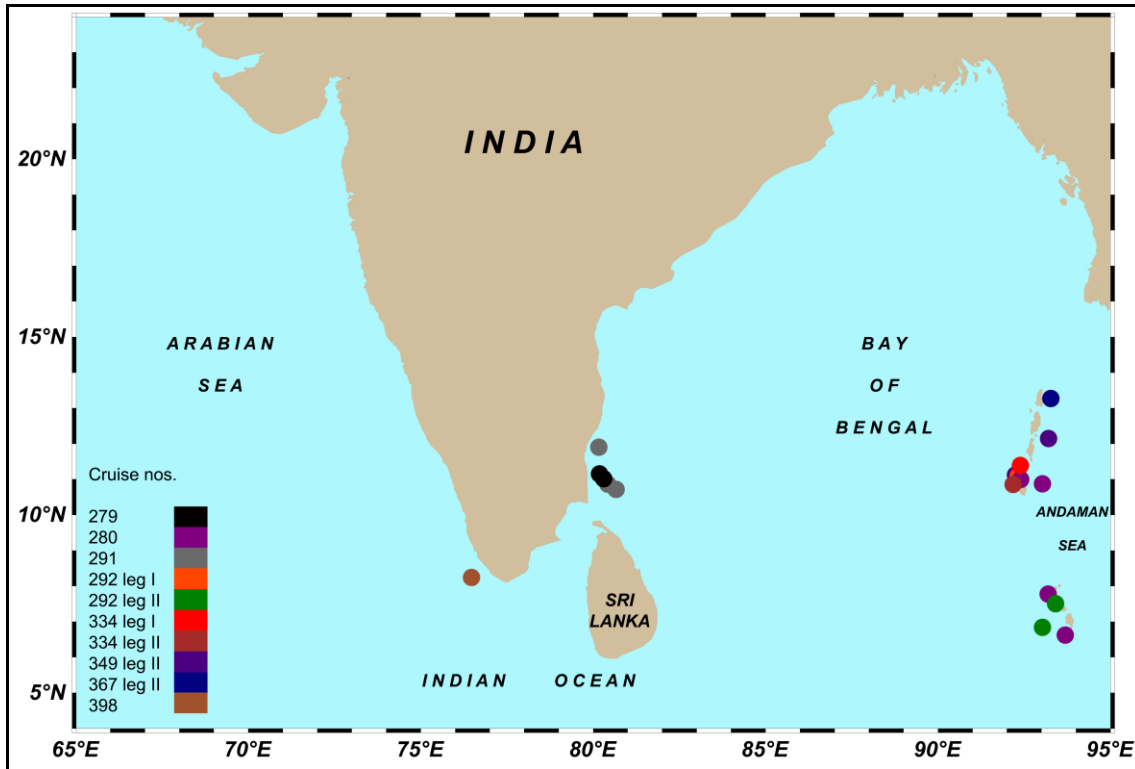


Fig. 20. Geographical locations of collection of *Nephropsis stewarti* Wood-Mason, 1872.

***Nephropsis sulcata* Macpherson, 1990 (Grooved lobsterette)**

Infraorder Astacidea Latreille, 1802  
 Superfamily Nephropoidea Dana, 1852  
 Family Nephropidae Dana, 1852  
 Genus *Nephropsis* Wood-Mason, 1872  
***Nephropsis sulcata* Macpherson, 1990**  
**(Figs. 21A-C, 22A-D, 23)**

**Synonymy**

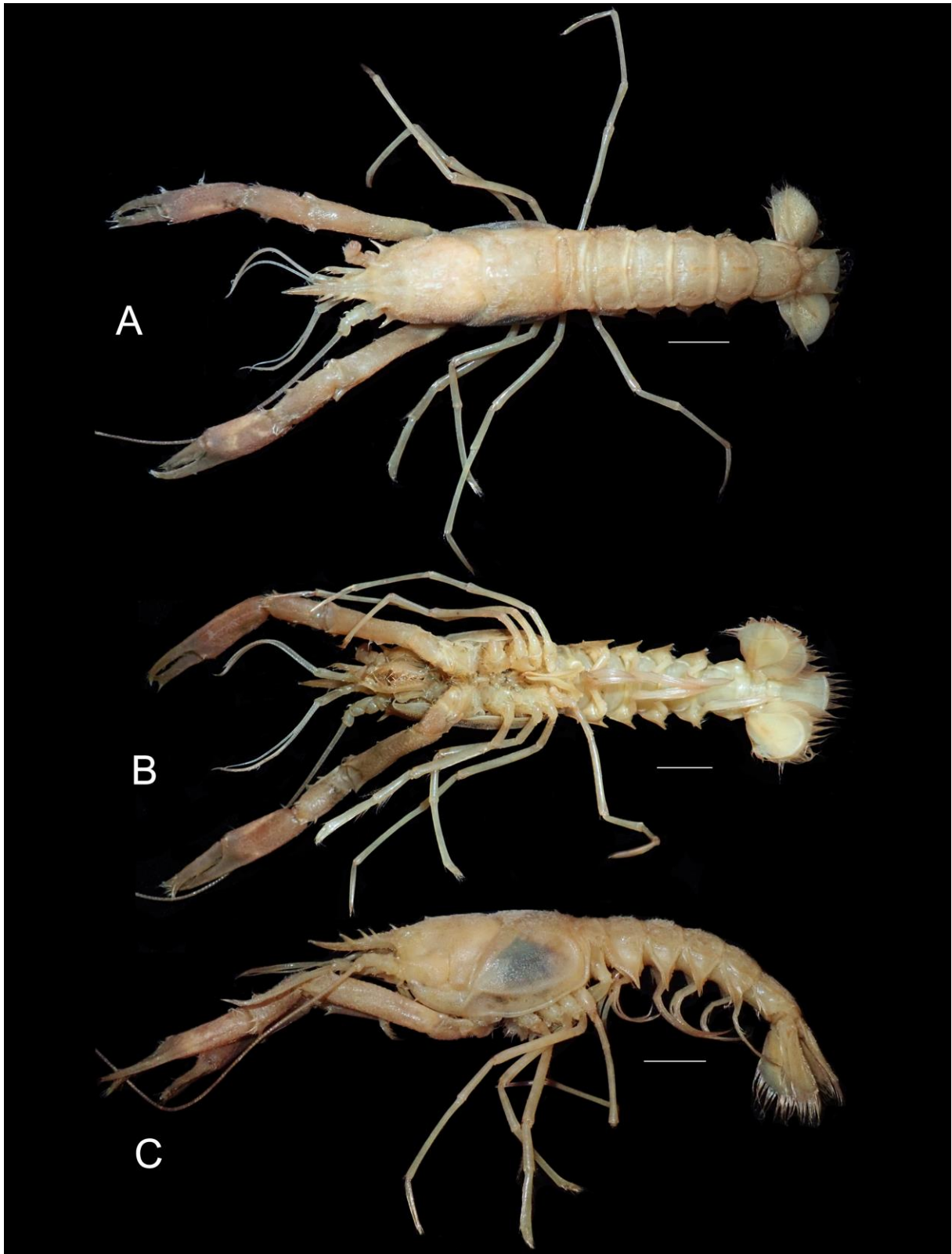
*Nephropsis atlantica*: Wood-Mason & Alcock, 1891: 197, Fig. 4; Alcock, 1894: 230; Alcock, 1898: 33; Alcock, 1901a: 158 (key), 161; Alcock & Anderson, 1894: 162; Anderson, 1896: 96; Stebbing, 1902a: 34; Stebbing, 1902b: 130; Stebbing, 1910: 379; Gilchrist, 1918: 48; Balss, 1925: 208; Von Bonde, 1932: 59; Von Bonde & Marchand, 1935: 6; Barnard, 1950: 530, fig. 99b-e; Barnard, 1964: 12; Bruce, 1966: 223; Kensley, 1981a: 29; Baba *et al.*, 1986: 153, 282, fig. 103 (Not Norman, 1882).

*Nephropsis sulcata* Macpherson, 1990: 303 (key), 319, figs. 13 e-g, 14a-b, 15a-b, 16 g, type locality: South China Sea, MUSORSTOM 2, stn. CP 56, 13°53.7'N, 119°56.3'E,

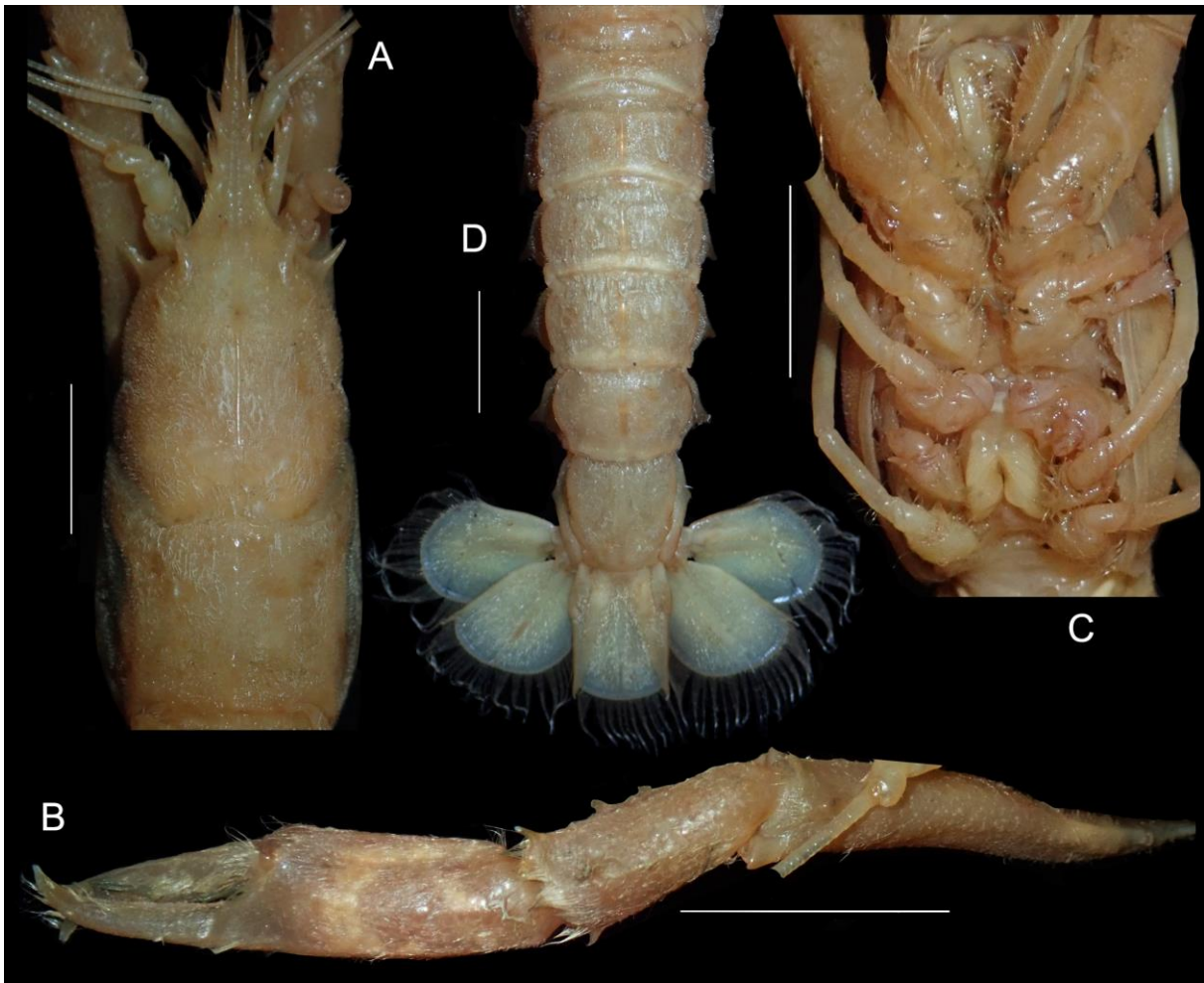
970 m depth; Holthuis, 1991: 34 (key), 47, figs. 58, 84; Macpherson, 1993: 64, 65; Griffin & Stoddart, 1995: 235, 255 (key), fig. 1, table 1; Richer de Forges & Laboute, 1996: 66; Chan, 1997: 415; Chan, 1998: 987 (key, list), figs. 12b, 13; Zarenkov, 2006: 94, fig. 20A; Chan, 2010: 157; Chan, 2019: 43 (list); Radhakrishnan *et al.*, 2019a: 113.

**Diagnosis (modified from Macpherson, 1990):** Body cylindrical, pubescent. Rostrum  $> 0.5$  CL, gently deflexed, bearing 2 pairs of dorso-lateral teeth, anterior pair at mid-length, posterior pair between anterior tooth and supraorbital spine; median groove overreaching anterior pair of teeth. Scaphocerite absent, antennal flagellum whip-like (Fig. 21A–C). Eystalks reduced, close together under rostrum, cornea unpigmented. Carapace cylindrical, granulose, with subdorsal carinae finely granulate; supraorbital, post-supraorbital, antennal spines present; intermediate and lateral carinae distinct. Distance between gastric tubercle and supraorbital spines  $< 0.5$  times distance between gastric tubercle and post-cervical groove (Fig. 22A). PI carpus bearing large anterodorsal, small anteroventral spine, 2 anteroventral spines, one each on inner and outer margins, 2 spines on inner margin (Fig. 22B). Thelycum anterior margin incised, posterior margin wider (Fig. 22C). PII carpus shorter than palm. PIV–PV simple. Pleon sparsely granulate, somites II–VI bearing distinct dorso-median carina; pleuron II anterior margin moderately convex, bearing short spine, terminating ventrally in long spine; pleura III–V anterior margins less convex, terminating ventrally as long spine (Fig. 22D). Telson lacking erect basal dorso-median spine, posterolateral margin bearing spine. Uropodal endopods and exopods bearing posterolateral spine, exopods with complete diaeresis.





**Fig. 21.** *Nephropsis sulcata* Macpherson, 1990 (southeastern Arabian Sea): A) Dorsal habitus (preserved colouration), 90 mm TL; B) Ventral habitus (preserved colouration), 90 mm TL; C) Lateral habitus (preserved colouration), 90 mm TL. Scale: 10 mm.



**Fig. 22.** *Nephropsis sulcata* Macpherson, 1990: A) Dorsal carapace, antennules and antennae; B) Ventral sternum; C) Left PI dorsal view; D) Dorsal pleon and telson. Scale: 10 mm.

**Geographical distribution and habitat:** Natal (South Africa), Madagascar, Laccadive Sea, the Philippines, South China Sea, north-western and eastern Australia, Coral Sea, New Caledonia and Chesterfield Islands at 415–1115 m (Macpherson, 1990; Radhakrishnan *et al.*, 2019). The present specimens were collected from the southeastern Arabian Sea at 1154–1245 m depths (Fig. 23).

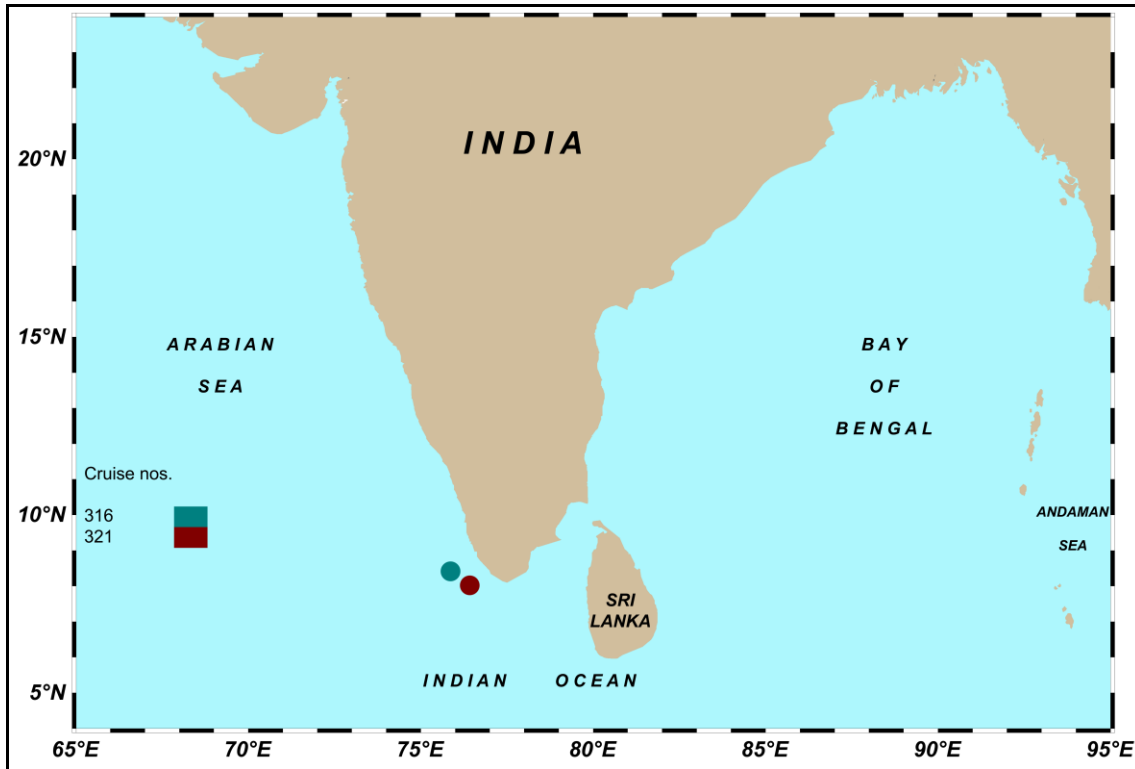


Fig. 23. Geographical locations of collection of *Nephropsis sulcata* Macpherson, 1990.

*Linuparus somniosus* Berry & George, 1972 (African Spear lobster)

Infraorder Achelata Scholtz & Richter, 1995

Family Palinuridae Latreille, 1802

Genus *Linuparus* White, 1847

*Linuparus somniosus* Berry & George, 1972

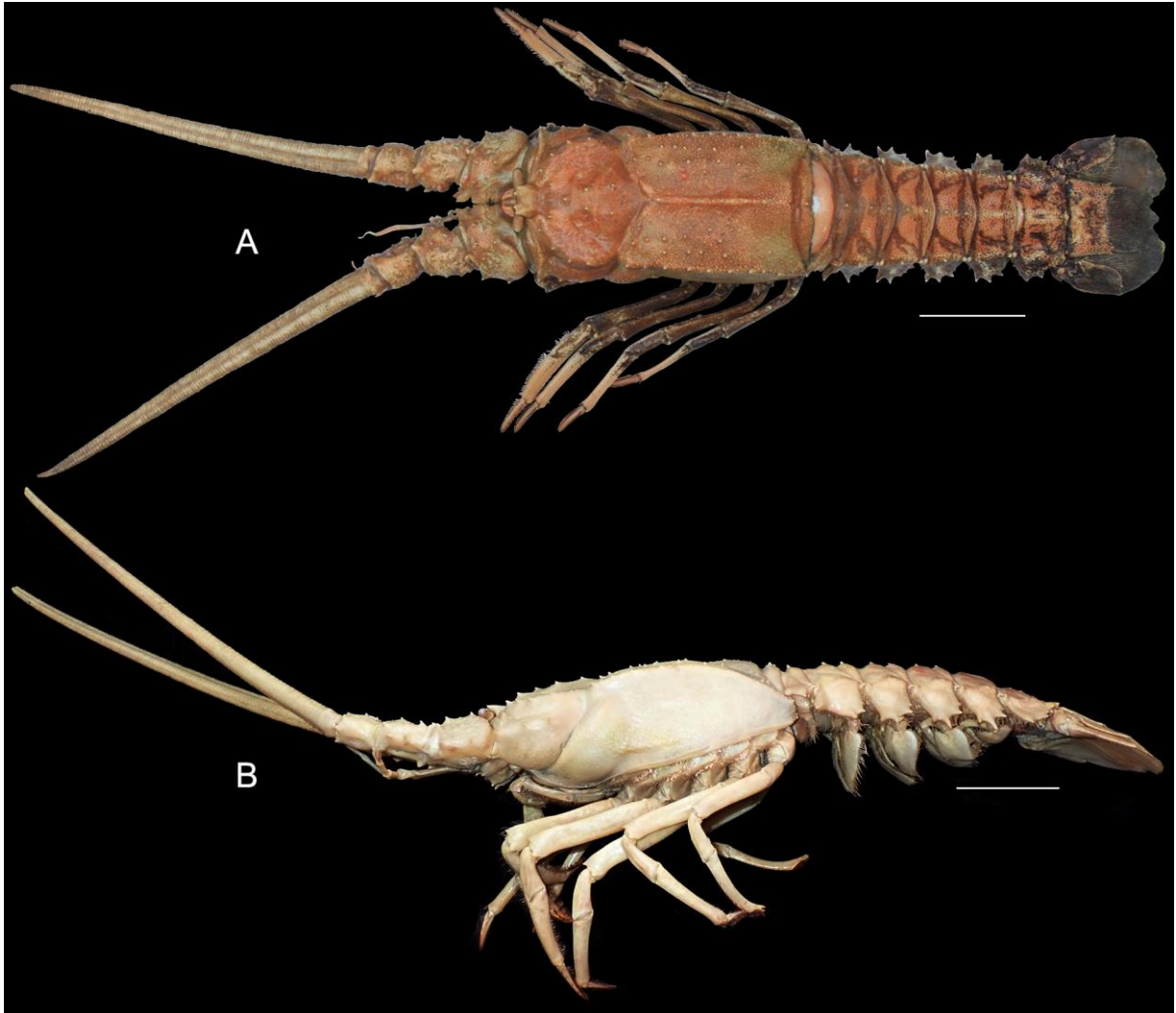
(Figs. 24A-B, 25A-C, 26)

**Synonymy**

*Linuparus somniosus* Berry & George, 1972: 18 (key), 18, text-fig. 1, pls. 1, 2, type locality: southwestern Indian Ocean, Northeast off Bazaruto Island, Natal, South Africa, 234 m depth; Fischer & Bianchi, 1984: PALIN Lin 1; Williams, 1986: 14, fig. 30; Holthuis, 1991: 111 (key), 112, figs. 209a, 211; Ng, 1992: 180, figs. 1, 2; Wowor, 1999: 674, figs. 1, 2A, 3A; Chan, 2010: 158 (list); Tsoi *et al.*, 2011: fig. 3c; Chan, 2019: 44 (list); Kizhakudan *et al.*, 2019: fig. 9.8f, 9.13b-c; Radhakrishnan *et al.*, 2019a: 86; Radhakrishnan *et al.*, 2019b: table 5.2.

**Diagnosis (modified from Berry & George, 1972):** Body cylindrical. Rostrum absent (Fig. 24A, B). Antennal segments 3 bearing randomly arranged spines, flagellum longer than carapace, multiarticulate, rigid. Eystalks short, cornea terminal, as thick as peduncle, darkly pigmented. Carapace minutely granular, bearing 1 pair of supraorbital horns fused at base with 1 pair of small spines between them; gastric region bearing 3 conical spines, followed by 1 median spine, 2 rows of submedian spines, lateral pre-cervical carina bearing 4 spines; anterolateral margin bearing large spine followed 2 smaller spines; median carina behind post-cervical groove with 6 low tubercles, lateral carinae bearing 9–10 low spines, space between these carinae bearing randomly scattered sharp tubercles; submarginal posterior groove wider medially than laterally, bearing double teeth (Fig. 25A). PI–PIV simple, PV propodal extension forming chela with dactylus (Fig. 24A, B), female gonopore on PIII coxa (Fig. 25B). Pleonal somite I bearing median spine dorsally, somites II–IV bearing anterior and posterior median spines and 1 pair of oblique submedian depressions, somite V bearing 4 or 5 spinules, somite VI bearing 1 pair of granular submedian carinae joined anteriorly; pleural margins of somites I–V bearing 1, 3, 5, 4, 4 spines, respectively, that of somite VI bearing 3 spines and 2 or 3 denticles; bases of pleurae II–IV with 1 tubercle at mid-length, 1 tubercle on posterior half of pleuron V, 3 spinules on anterior half of pleuron VI; sternum I of female with vestigial pleopods (Fig. 25C). Telson subquadrate, longer than wide, calcified portion finely granulate; tail-fan flexible. Uropodal endopods and exopods bearing oblique carina on calcified portion, posterolateral angle acute, posterior margin with 2 small tubercles (Fig. 25C).

**Geographical distribution and habitat:** Southern and eastern coast of Africa, Andaman Sea, Strait of Malacca, and Java, Indonesia at 20–25 m and 100–400 m depths on sand and organic mud (Radhakrishnan *et al.*, 2019). The present specimen was collected from the western Andaman Sea at 299 m depth (Fig. 26).



**Fig. 24.** *Linuparus somniosus* Berry & George, 1972 (western Andaman Sea): A) Dorsal habitus (live colouration), 300 mm TL; B) Lateral habitus (preserved colouration), female, 305 mm TL. Scale: 50 mm.



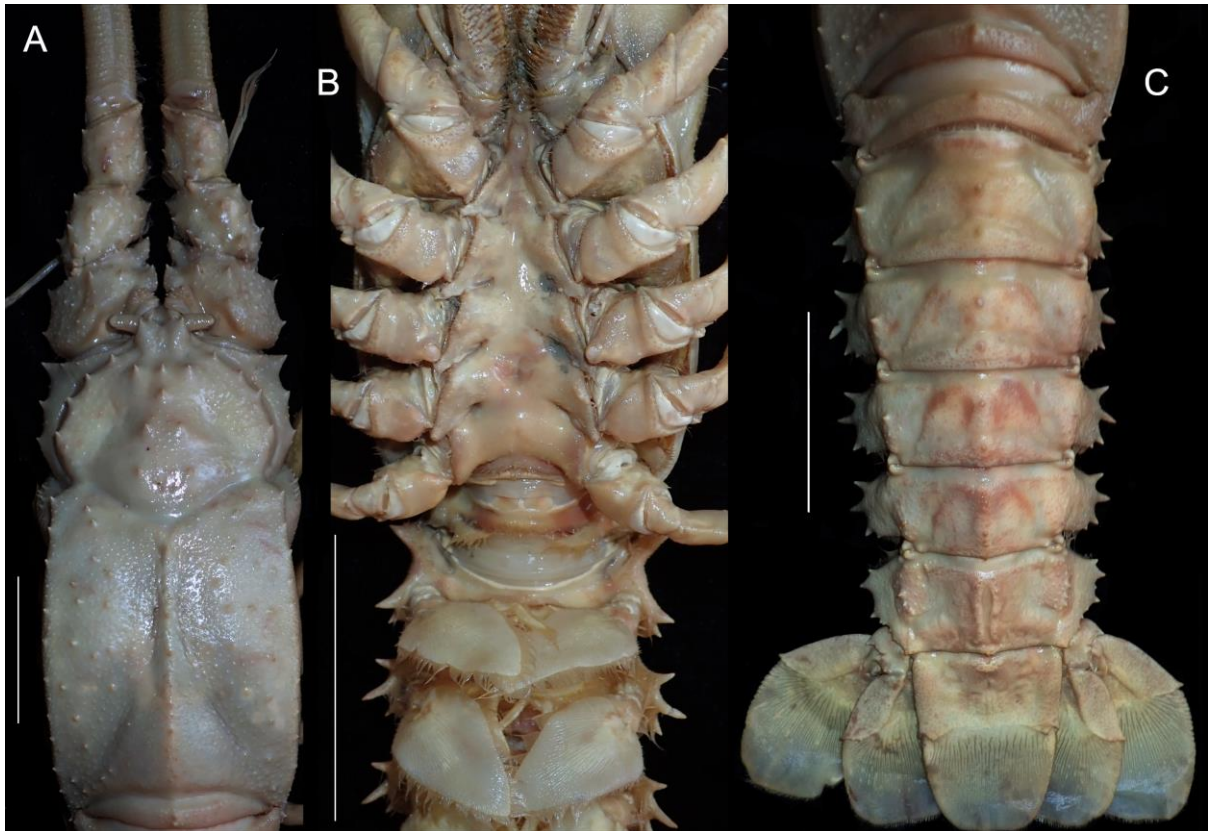


Fig. 25. *Linuparus somniosus* Berry & George, 1972: A) Dorsal carapace, antennules and antennae; B) Ventral sternum; C) Dorsal pleon and telson. Scale: 50 mm.

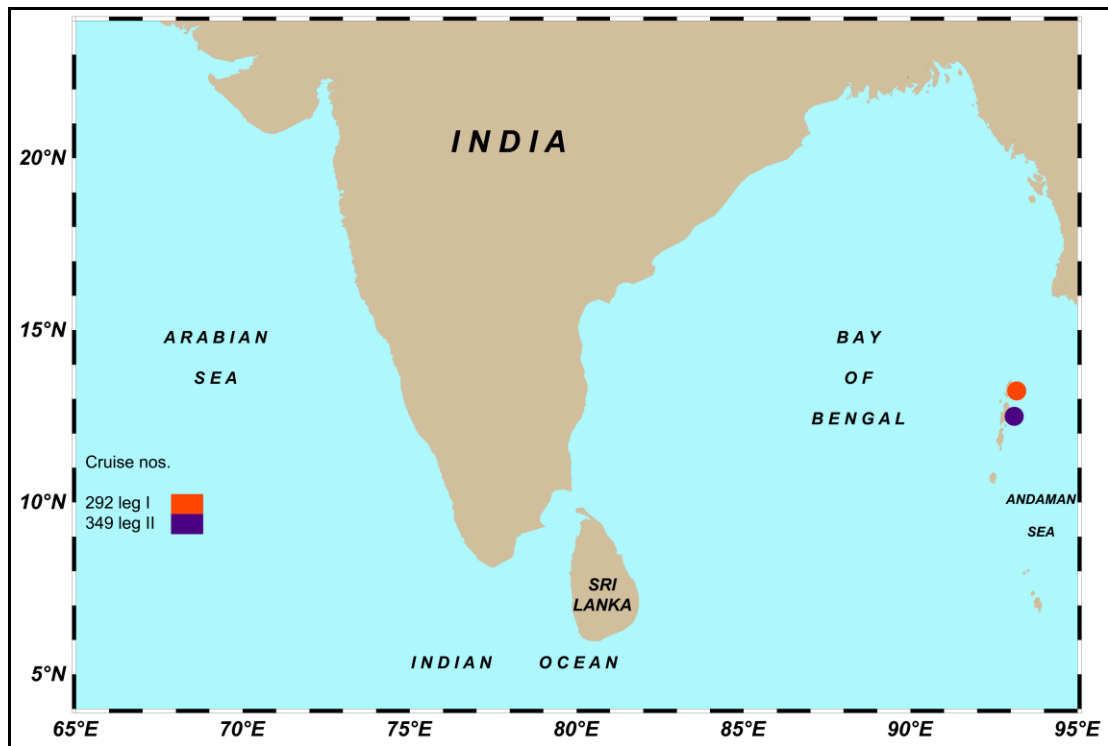


Fig. 26. Geographical locations of collection of *Linuparus somniosus* Berry & George, 1972.

*Puerulus angulatus* (Spence Bate, 1888) (Banded whip lobster)

Infraorder Achelata Scholtz & Richter, 1995

Family Palinuridae Latreille, 1802

Genus *Puerulus* Ortmann, 1897b

***Puerulus angulatus* (Spence Bate, 1888)**

**(Figs. 27A–C, 28A–D, 29)**

### **Synonymy**

*Panulirus angulatus* Spence Bate, 1888: 81, pl. 11, figs. 2–4, type locality: Bismarck Sea, HMS *Challenger* stn 219, 1°54'S, 146°39'40"E, 150 fathoms (= 275 m) depth, coral mud.

*Puer angulatus*: Ortmann, 1891: 37; Belloc, 1959: 9.

*Puerulus angulatus* (Spence Bate, 1888): Calman, 1909: 442; Gruvel, 1911a: 1350; Gruvel, 1911b: 7, fig. 1; Bouvier, 1913: 78; Balss, 1925: 203; Holthuis, 1946: 110; Holthuis, 1956: 114; Hemming, 1958: 138; Holthuis, 1966: 267 (in part, part = *P. carinatus* Borradaile, 1910); Berry, 1969b: 247, pl. 1 fig. 2, pl. 2 fig. 2, pl. 3 fig. 2; Harada, 1980: 244, figs. 1,2; Kensley, 1981a: 30; George, 1983: 16, 19 (key), 20; Baba, 1986: 155, 282, fig. 106; Williams, 1986: 25 (key), fig. 59A; King, 1988: 109; Williams, 1988a: 111 (key), unnumbered figs.; Williams, 1988b: 315; Chan & Yu, 1989a: 2, pl. 1; Holthuis, 1991: 161 (key), 162, figs. 300b, 301; Wadley & Evans, 1991: 31, unnumbered figs.; Griffin & Stoddart, 1995: 237, 257 (key); Chan, 1998: 1012 (key), 1014 (list), 1027, fig. 18b; Poore, 2004: 204; Chan, 2010: 159 (list); Chan, 2019: 46; Radhakrishnan *et al.*, 2019a: 3; Radhakrishnan *et al.*, 2019b: table 5.2.

*Puerulus carinatus*: Borradaile, 1910: 261, pl. 16, fig. 5; Ramadan, 1938: 133, figs. 6, 7; Holthuis, 1946: 110 (Not *Puerulus carinatus* Borradaile, 1910).

*Puerulus gracilis* Kubo, 1939: 316, figs. 1, 2.

Not *Panulirus angulatus*: Alcock & Anderson, 1894: 166; Alcock, 1899: 33; Alcock, 1901a: 185; Sewell, 1913: 350 (= *Puerulus sewelli* Ramadan, 1938).

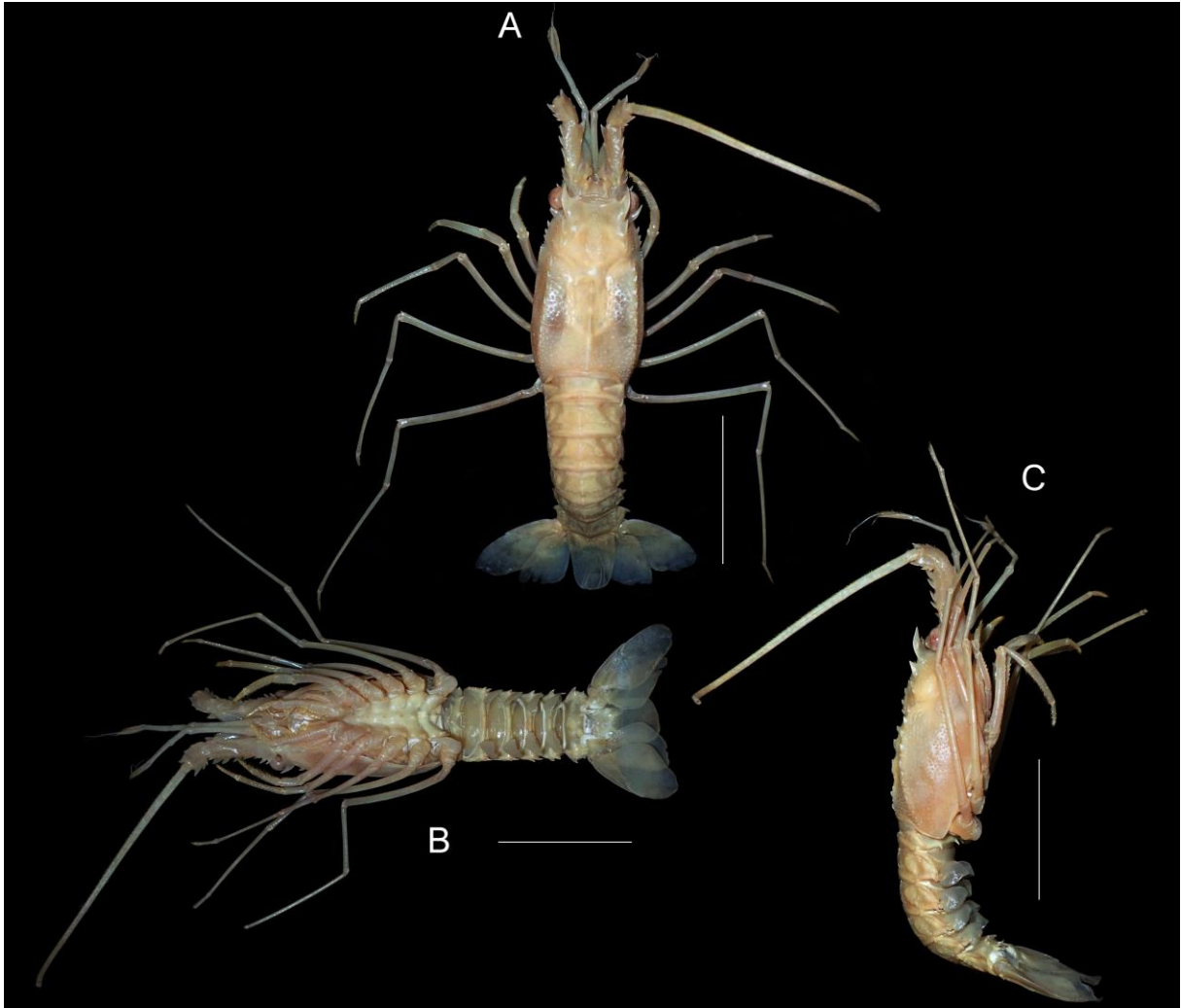
Not *Puerulus angulatus*: de Man, 1916: 36, pl. 2, fig. 5. (= *P. velutinus* Holthuis, 1963).

**Diagnosis (modified from Spence Bate, 1888):** Body sub-cylindrical (Fig. 27A–C). Rostrum absent. Antennular plate distinct, stridulating organ present, first segment not overreaching antennal peduncle, flagellum shorter than distal segment. Antennal segments III–IV rigid, bearing rows of large sharp lateral spines, flagellum long, multiarticulate, flexible (Fig. 28A). Eye well-developed, cornea pigmented. Carapace sub-quadrate in cross-section, lateral margins perpendicular to dorsal surface bearing large suborbital spine and 3 spinules, cervical incision distinct, posterolateral margin granular. Pre-cervical dorsal surface largely smooth, post-cervical portion with distinct randomly scattered tubercles; 1 pair of supraorbital horns tapering to sharp point, single or bifid spine on anterior margin mesial to base, 3 progressively



smaller teeth between horn and cervical groove; gastric region bearing median patch of spinules and 4 pairs of submedian spines; median post-cervical carina bearing 3 post-cervical and 2/3 intestinal teeth, lateral angular carina bearing 9–10 teeth, space between lateral carina and lateral margin bearing scattered granules (Fig. 28A, B). Thoracic sternites IX–XIV bearing median spine, sternites X–XIV bearing 1–2 lateral spines (Fig. 28C). PI–PV simple, progressively longer, meri bearing distal spine dorsally, PI–PII distal row of spines ventrally, male copulatory stylet on PV coxa, in females, PV propodal extension forming chela with dactylus (Fig. 27A–C). Pleonal somite I smooth, longitudinal median carina bearing 1 large anterior and 1 small posterior teeth, pleuron anterior margin lobulated, terminating in posteriorly directed spine, sternite I with pair of submedian and intermediate spines; somites II–V with pair of intermediate oblique grooves anteriorly, transverse groove near posterior margin, longitudinal median carina bearing 2 teeth before and 1 tooth after transverse groove, pleura II–V terminating in 2 strong acuminate teeth, bearing oblique tuberculate carina, pleura III–IV bearing posterior marginal tooth in few specimens; somite VI with 2 carinae bearing 5–6 small submedian teeth converging posteriorly, posterolateral angle acuminate, separated from pleuron by tuberculate carina, pleuron VI terminating in 1 tooth (Fig. 28D). Telson subquadrate, longer than wide, calcified portion bearing pair of submedian spines and pair of diverging carinae bearing 3 spines each, lateral margin bearing spine at mid-length, posterolateral angle spinose; tail-fan flexible. Uropodal endopods and exopods calcified portion narrow, grooved medially, posterolateral margin spinose.

**Geographical distribution and habitat:** Mozambique, Zanzibar, Somalia, Bay of Bengal (off Nicobar Islands), Japan, Philippines, Taiwan, New Guinea, northwestern and eastern Australia, western Tasman Sea at 200–500 m depths (Radhakrishnan *et al.*, 2019). The present specimens were collected from the southeastern Bay of Bengal at 271 m depth (Fig. 29).



**Fig. 27. *Puerulus angulatus* (Bate, 1888) (southeastern Bay of Bengal): A) Dorsal habitus (preserved colouration); B) Ventral habitus (preserved colouration); C) Lateral habitus (preserved colouration). Scale: 50 mm.**



**Fig. 28. *Puerulus angulatus* (Bate, 1888): A) Dorsal carapace; B) Lateral carapace; C) Ventral sternum of female; D) Dorsal pleon and telson. Scale: 10 mm.**

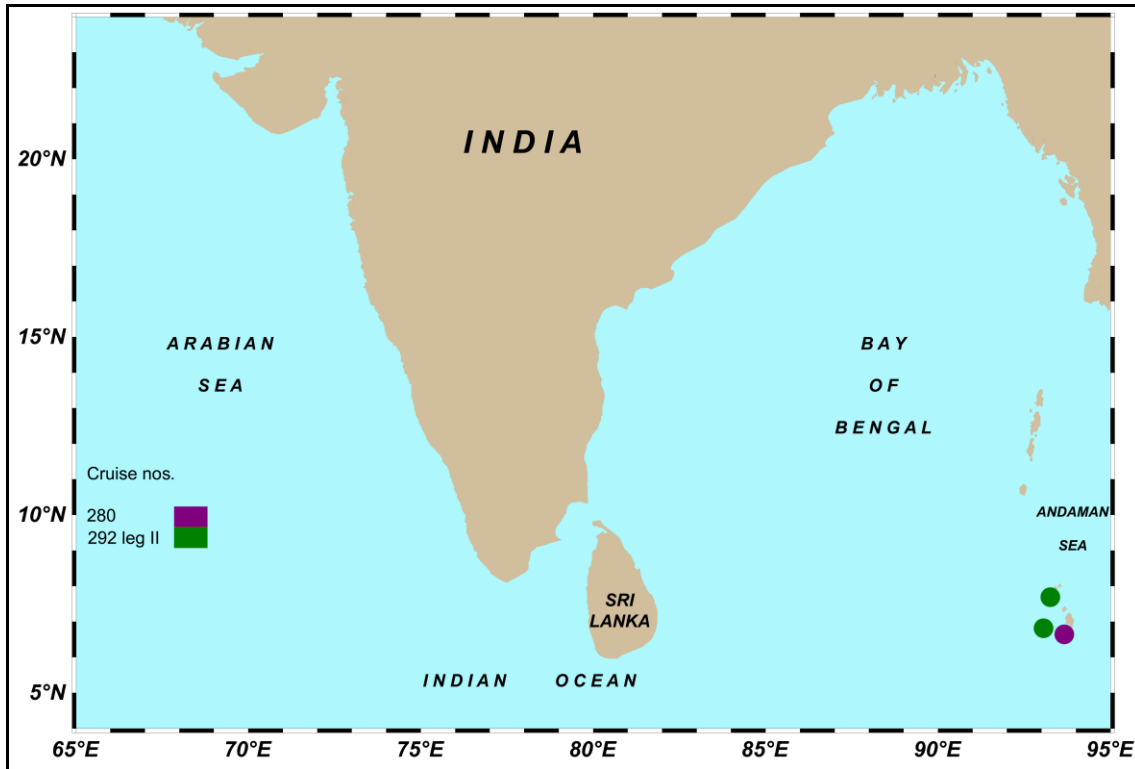


Fig. 29. Geographical locations of collection of *Puerulus angulatus* (Bate, 1888).

***Puerulus sewelli* Ramadan, 1938 (Arabian whip lobster)**

Infraorder Achelata Scholtz & Richter, 1995

Family Palinuridae Latreille, 1802

Genus *Puerulus* Ortmann, 1897b

***Puerulus sewelli* Ramadan, 1938**

**(Figs. 30A–B, 31A–E, 32)**

**Synonymy**

*Panulirus angulatus*: Alcock & Anderson, 1894: 166; Alcock, 1898: 33; Alcock, 1901a: 185 (not *Panulirus angulatus* Spence Bate, 1888).

*Puerulus angulatus* Calman, 1909: 442 (p.p.); Sewell, 1913, p. 350.

*Puerulus sewelli* Ramadan, 1938: 128, figs. 3-5, type locality: Gulf of Aden, *John Murray Expedition*, HEMS *Mabahiss*, stn 24, 11°53'42"N, 51°13'12"E, 73–200 m depth, HEMS *Mabahiss*, stn. 194, 13°16'00"N, 46°20'24"E to 13°16'36"N, 46°14'00"E, 220 m depth; Holthuis, 1946: 110; Sewell, 1955: 200, 201, 203; Jones, 1965: 1339 (note); Holthuis, 1966: 271; Prasad & Tampi, 1966: 339–341; Mohammed *et al.*, 1971: 208–215; Rao & George, 1973: 634–640; Fischer & Bianchi, 1984: PALIN Puer 1; Holthuis, 1991: 161 (key), 164, figs. 300d, 305; Anrose *et al.*, 2010: 162–164; Chan, 2010: 159 (list);

Chan, 2019: 46 (list); Kizhakudan *et al.*, 2019: fig. 9.8f; Radhakrishnan *et al.*, 2019a: 84, fig. 3.9; Radhakrishnan *et al.*, 2019b: table 5.2.

*Puerulus Sewelli*: Oommen & Philip, 1974: 369–385.

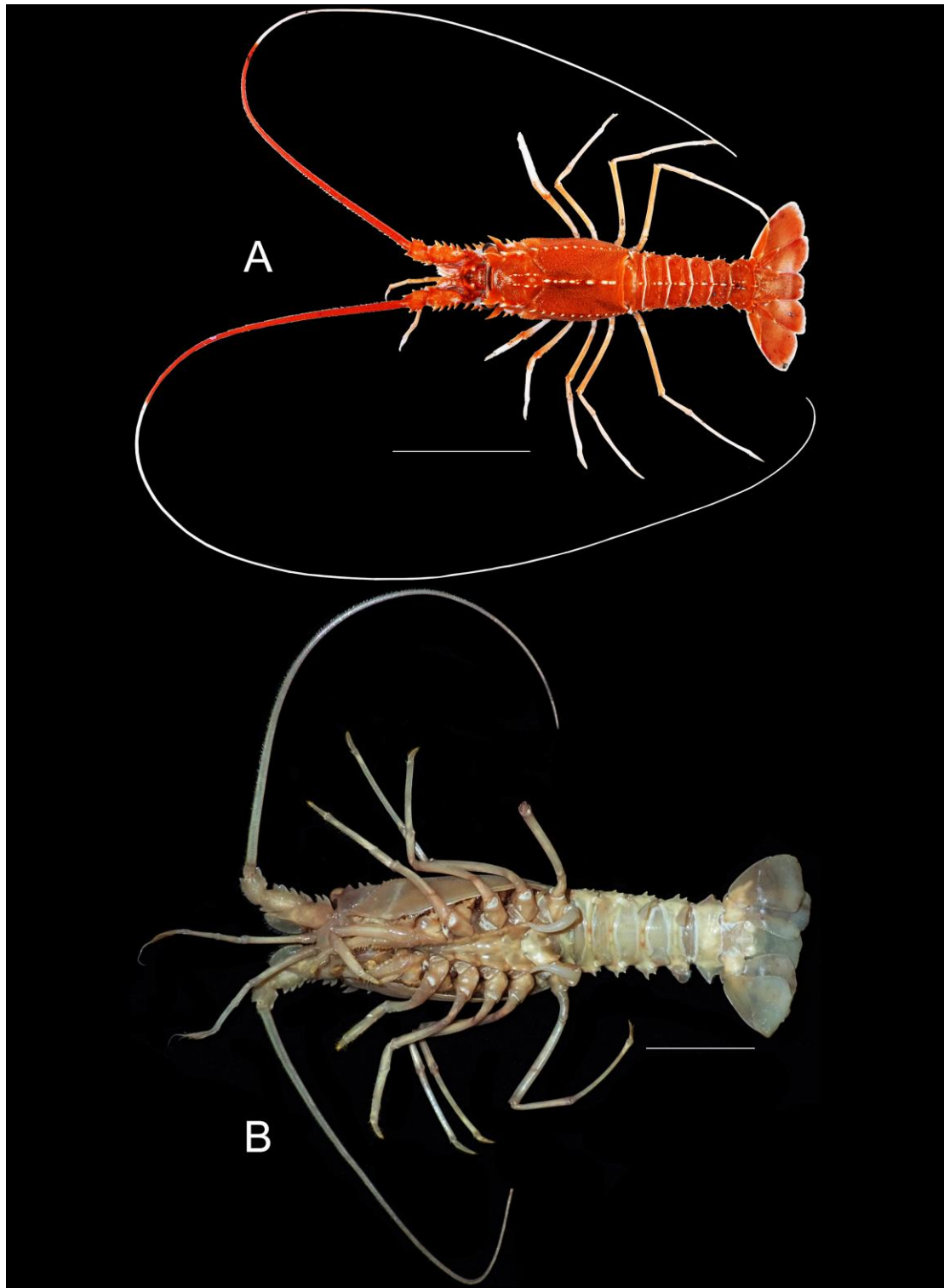
*Puer sewelli* Belloc, 1959: 7, 8, 9, fig. 6.

**Diagnosis (modified from Ramadan, 1938):** Body sub-cylindrical (Fig. 30A–B). Rostrum absent. Antennular plate distinct, stridulating organ present, first segment not overreaching antennal peduncle, flagellum shorter than distal segment. Antennal segments III–IV rigid, bearing rows of large sharp lateral spines, flagellum long, multiarticulate, flexible (Fig. 31A). Eye well-developed, cornea pigmented. Carapace sub-quadrate in cross section, lateral margins perpendicular to dorsal surface bearing large suborbital spine and 2 spinules, cervical incision distinct, posterolateral margin granular. Pre-cervical dorsal surface largely smooth, post-cervical portion with distinct randomly scattered tubercles; 1 pair of supraorbital horns tapering to sharp point, single or bifid spine on anterior margin mesial to base, 2 progressively smaller teeth between horn and cervical groove; gastric region bearing median patch of spinules and 4 pairs of submedian spines; median post-cervical carina bearing 4–6 post-cervical and 3–4 intestinal teeth, lateral angular carina bearing 10 teeth, space between lateral carina and lateral margin bearing scattered granules (Fig. 31A–B). Thoracic sternites IX–XIV bearing median spine, sternites X–XIV bearing 1–2 lateral spines (Fig. 31C). PI–PV simple, progressively longer posteriorly, meri bearing distal spine dorsally, PI–PII distal row of spines ventrally, male copulatory stylet on PV coxa, in females, PV propodal extension forming chela with dactylus (Fig. 30A–B). Pleonal somite I smooth, longitudinal median carina bearing 1 large anterior and 1 small posterior teeth, pleuron anterior margin lobulated, terminating in posteriorly directed spine, sternite I with pair of submedian and intermediate spines; somites II–V with 1 pair of intermediate oblique grooves anteriorly, transverse groove near posterior margin, longitudinal median carina bearing 2 teeth before and 1 tooth after transverse groove, pleura II–V terminating in 2 strong acuminate teeth, bearing oblique tuberculate carina; somite VI with 2 carinae bearing 5–6 small submedian teeth converging posteriorly, posterolateral angle acuminate, separated from pleuron by tuberculate carina, pleuron VI terminating in 1 tooth (Fig. 31D). Telson subquadrate, longer than wide, calcified portion bearing pair of submedian spines, followed by pair of diverging carinae bearing 3 spines each, lateral margin bearing spine at mid-length, posterolateral angle spinose; tail-fan flexible. Uropodal endopods and exopods calcified portion narrow, grooved medially, posterolateral margin spinose.

**Geographical distribution and habitat:** Off Somalia, Gulf of Aden, Pakistan, India and Myanmar at 73–450 m (Radhakrishnan *et al.*, 2019). The present specimens were



collected from southeastern Arabian Sea at 449 m depth, southeastern Bay of Bengal at 160–535 m depths, and western Andaman Sea at 299–635 m depths (Fig. 32).



**Fig. 30. *Puerulus sewelli* Ramadan, 1938 (southeastern Arabian Sea): A) Dorsal habitus (live colouration); B) Ventral habitus (preserved colouration). Scale: 50 mm.**

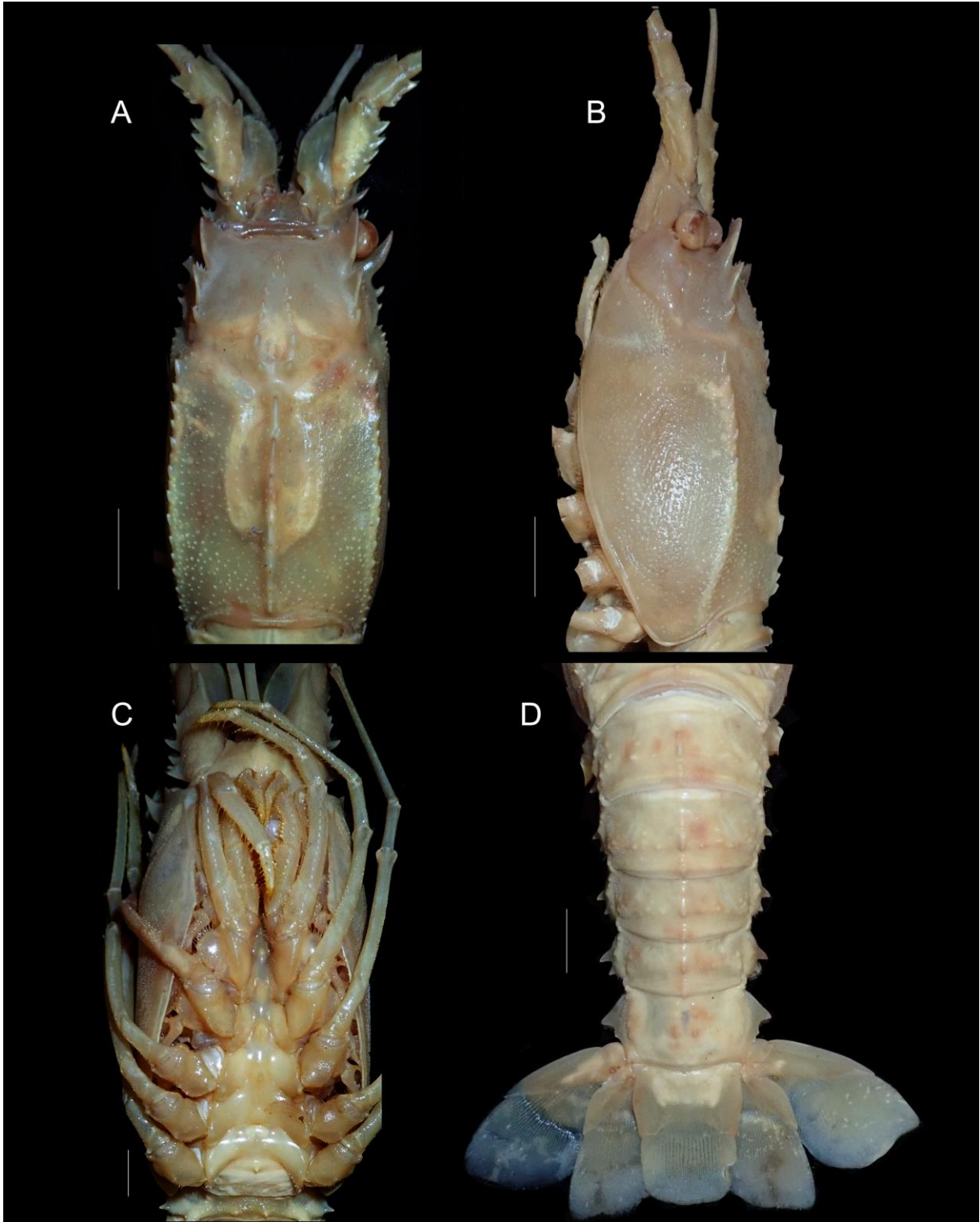


Fig. 31. *Puerulus sewelli* Ramadan, 1938: A) Dorsal carapace, antennules and antennae; B) Lateral carapace; C) Ventral sternum; D) Dorsal pleon and telson; E) Lateral pleon and telson. Scale: 10 mm.

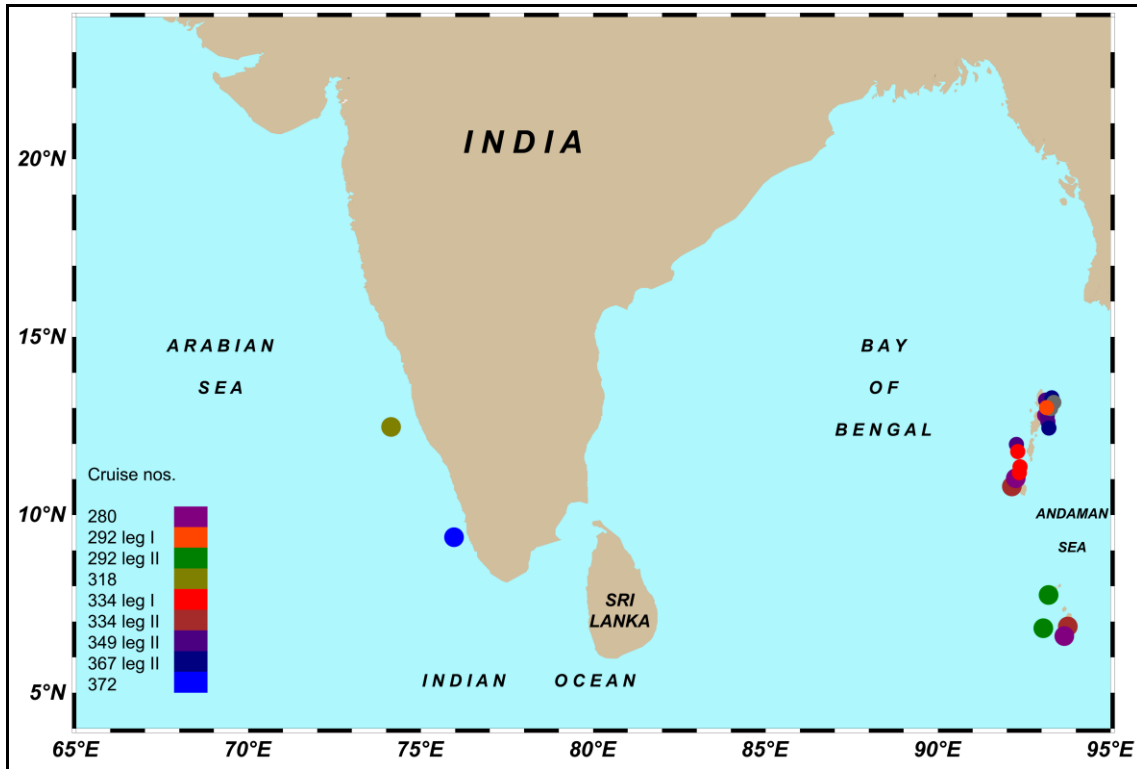


Fig. 32. Geographical locations of collection of *Puerulus sewelli* Ramadan, 1938.

*Bathyarctus rubens* (Alcock & Anderson, 1894) (Deep-sea brown lobster)

Infraorder Achelata Scholtz & Richter, 1995

Family Scyllaridae Latreille, 1825

Subfamily Scyllarinae Latreille, 1825

Genus *Bathyarctus* Holthuis, 2002

*Bathyarctus rubens* (Alcock & Anderson, 1894)

(Figs. 33A-C, 34A-D, 35)

**Synonymy**

*Arctus rubens* Alcock & Anderson, 1894: 165, type locality: Gulf of Mannar, northwest of Colombo Lighthouse, RIMSS *Investigator* stn 151, 142–400 fathoms (= 260–732 m) depth; Anderson, 1896: 98; Alcock, 1898: 33; Alcock, 1901: 182.

*Scyllarus rubens* (Alcock & Anderson, 1894): De Man, 1916: 69; Bouvier, 1917: 105, 106; Bouvier, 1925: 447; Prasad & Tampi, 1969: 84; George, 1967: 434; Burukovsky, 1974: 107; Burukovsky, 1983: 150; Phillips *et al.*, 1980: 70; Holthuis, 1991: 217 (list); Chan, 2010: 160; Radhakrishnan *et al.*, 2019a: 93.

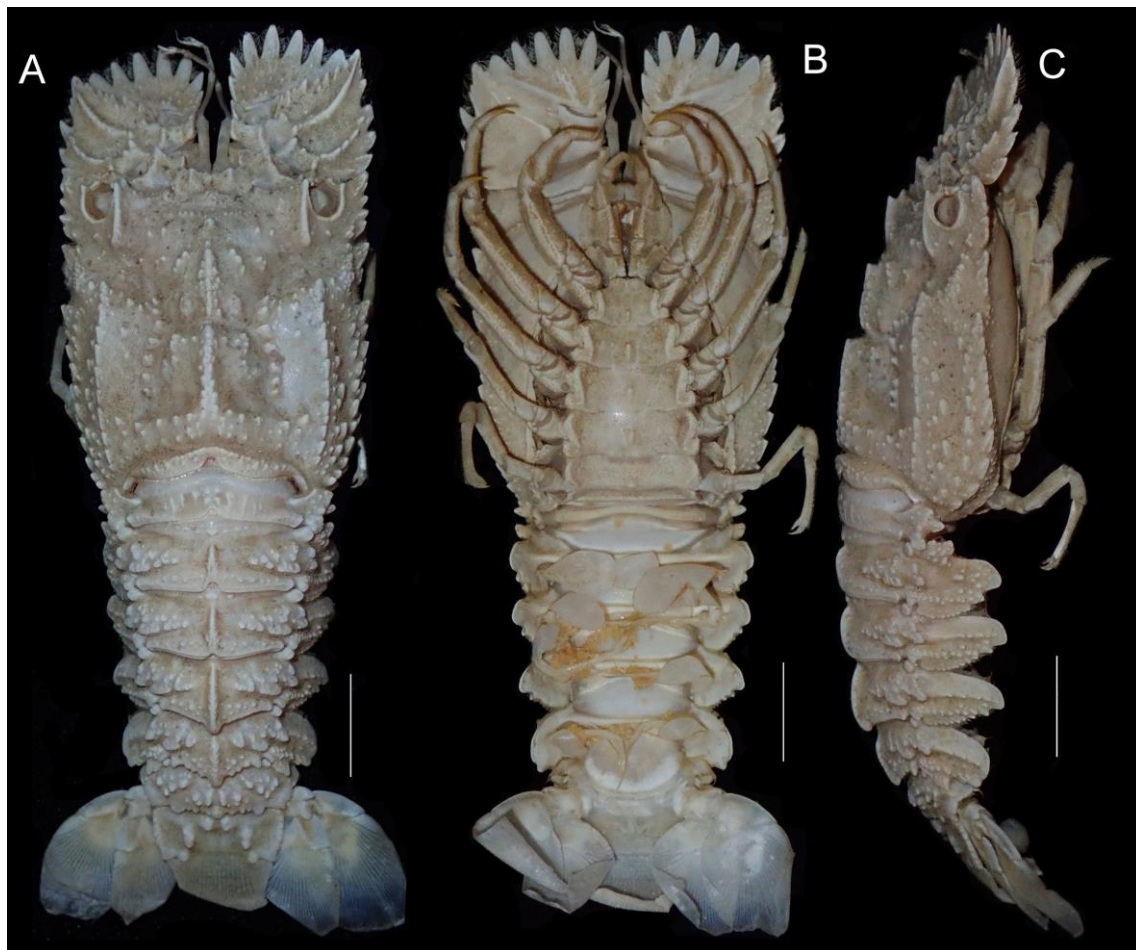
*Bathyarctus rubens* (Alcock & Anderson, 1894): Holthuis, 2002: 505 (key), 505, figs. 1–3, 66A, B; Poore, 2004: 209, fig. 59h; Chan, 2010: 160 (list); Chan, 2019: 48 (list); Radhakrishnan *et al.*, 2019a: 93.

**Diagnosis (modified from Alcock & Anderson, 1894):** Body dorso-ventrally compressed (Fig. 33A–C). Rostrum blunt, elevated, rostral tooth lacking. Eyes well developed, orbital margin distinct, with elevated supra-orbital tooth. Small tubercle behind orbit. Carapace sub-quadrilateral, wider between the antero-lateral angles than posteriorly, antero-lateral angle acuminate, lateral pre-cervical teeth 4, cervical incision distinct, 3 blunt teeth between cervical and post-cervical incisions, post-cervical incision wide, post-cervical spine short, 9 tubercles on posterolateral margin. Dorsal surface bearing two transverse rows of minute tubercles behind rostrum, anterior post-rostral carina bearing distinct pre-gastric tooth, tuberculated gastric tooth, flanked by transverse rows of tubercles; cervical groove with tubercles on posterior margin; median post-cervical carina tuberculated, bearing cardiac tooth; branchial carina commencing inner to orbit, bearing elevated tooth anteriorly, interrupted by cervical groove, post-cervical portion reaches posterior carapace margin, bearing 10 flattened tubercles; longitudinal row of 5 low tubercles between median post-cervical and branchial carinae, 2–3 irregular rows of tubercles between posterior branchial carina and lateral margin, posterior marginal carina minutely tuberculated. Antennules longer than antennae, flagellum overreaching distal antennal segment. Antennal flagellum reduced to 6 broad, flat segments, segment IV lateral margin divided into 3 teeth (excluding the apical tooth), mesial margin dentate, dorsal surface bearing 2 distinct, curved carinae, anterior carina terminating apically, posterior carina terminating at second lateral tooth, bearing 6/7 tubercles; segment V anterior margin bearing 2 teeth laterally, 1 mesial tooth bearing carina; segment VI anterior margin divided into 7 teeth, outer 5 teeth with rounded margins, inner 2 teeth pointed, dorsal surface randomly tuberculate (Fig. 34A). Thoracic sternum anterior margin truncate, gently sinuous, bearing tubercle, located on horizontal plane at level of anterolateral teeth, all sternites with median tubercle, elongate on sternites I–IV somites, dentate on sternite V (Fig. 34B). PI–PV simple, PI–PIV propodi bearing ventral rows of setae, PV chelate in females, propodus with short distal spinule in males. Pleonal somite I flattened dorsally, with median notch posteriorly, pleuron I lateral margin reduced to tubercle, pleopod absent; somites II–IV with transverse groove over posterior half with flattened tubercles on either side, somites II–V bearing distinct median longitudinal carina, those on somites IV–V bearing postero-median tooth, postero-median tooth of somite IV higher than that of somite III, pleura II–V tips blunt rounded, directed posteriorly, pleuron II bearing distinct tooth on anterior and posterior margins, pleura III–IV bearing tooth only on posterior margin, pleura II–V bearing transverse rows of small tubercle on posterior



half; somite VI dorsal surface with 1 median and 2 submedian patches of squamiform tubercles, posterior margin bearing 3 large and 6 small teeth. Telson sub-rectangular, slightly longer than wide, with 1 pair of short sub-median, 1 pair of long intermediate ridges, posterior margin bearing 1 pair of short teeth behind intermediate ridge, postero-lateral angle acuminate; tail-fan soft, flexible. Uropodal exopod and endopod sub-triangular, longer than telson (Fig. 34D, E). Male gonopore on PV coxa, female gonopore on PIII coxa. Pleopods II–III subequal, thread-like in males, pleopod IV–V endopods reduced to small tubercles; in females, pleopods II–III broadly lamellar, pleopod IV–V exopods narrow lamellar, endopods thread-like.

**Geographical distribution and habitat:** Mozambique, Madagascar, southeastern Arabian Sea, Gulf of Mannar, Sri Lanka, Indonesia, Philippines, including Australia, Chesterfield and Loyalty Islands, Vanuatu, Fiji, and New Caledonia at 183–732 m depths (Radhakrishnan *et al.*, 2019). The present specimens were collected from the southeastern Arabian Sea at 327 m depth, southeastern Bay of Bengal at 402 m depth, and western Andaman Sea at 278–332 m depths (Fig. 35).



**Fig. 33.** *Bathyarctus rubens* (Alcock & Anderson, 1894) (western Andaman Sea), female, 75 mm TL: A) Dorsal habitus (preserved colouration); B) Ventral habitus



(preserved colouration); C) Lateral habitus (preserved colouration). Scale: 10 mm. (previous page).

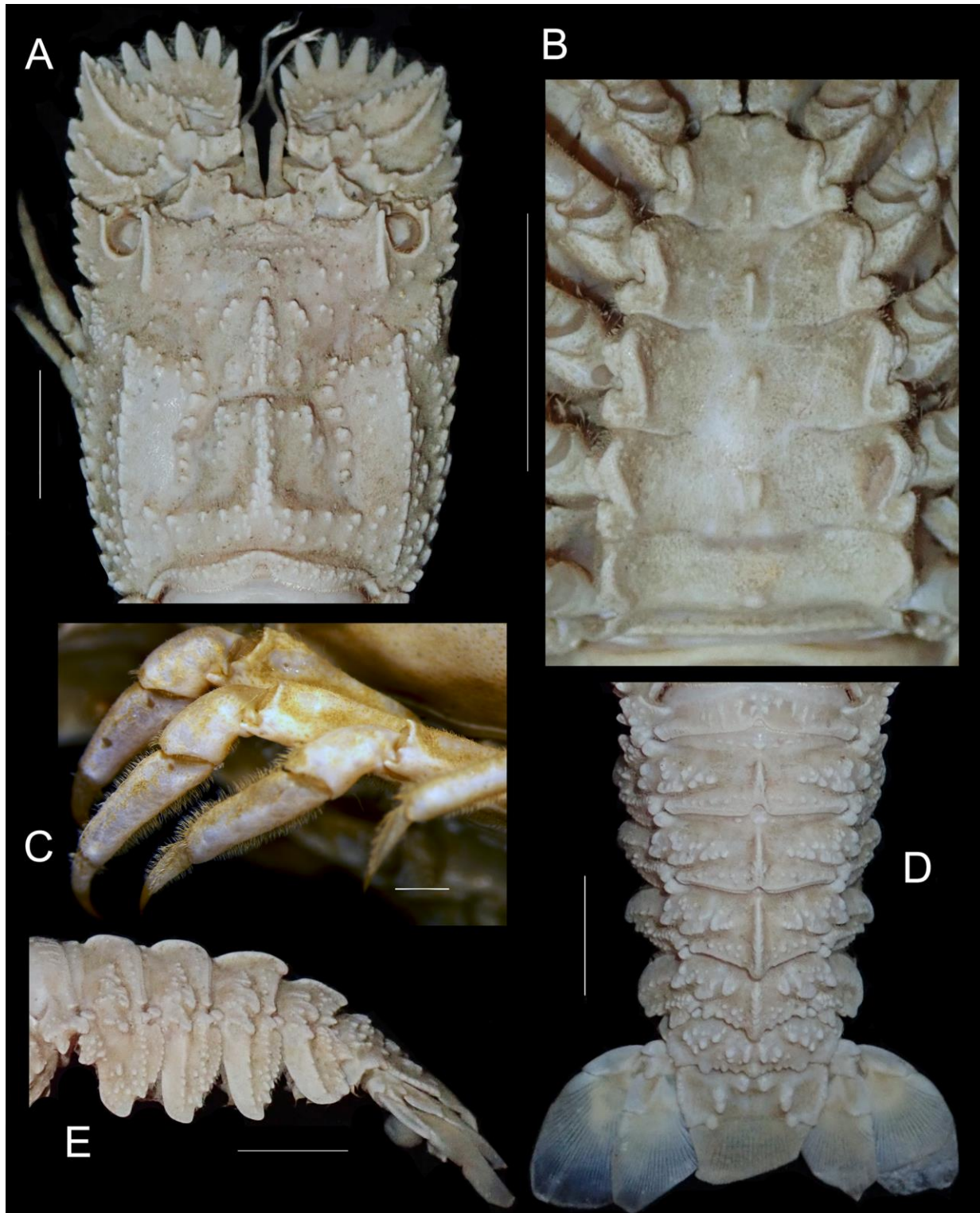


Fig. 34. *Bathyarctus rubens* (Alcock & Anderson, 1894): A) Dorsal carapace, antennules and antennae; B) Ventral sternum; C) Pereopods II-V lateral view; D) Dorsal pleon and telson; E) Lateral pleon and telson. Scale: A, B, D, E - 10 mm; C - 2 mm.

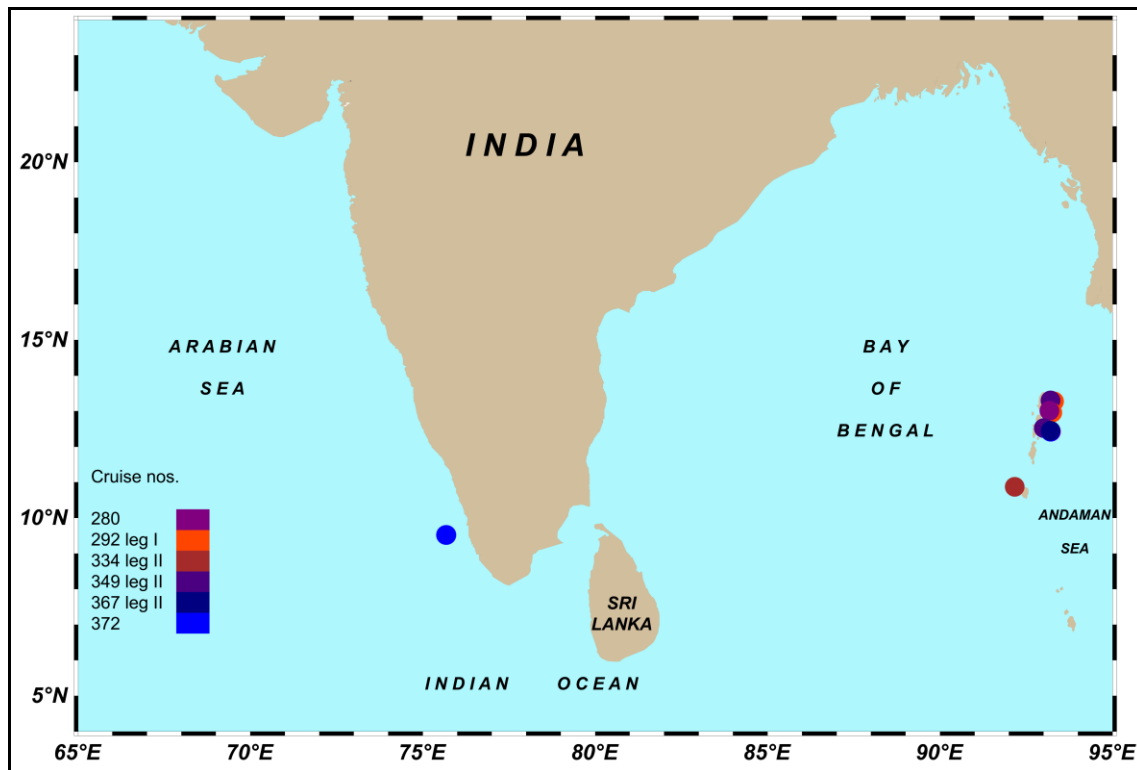


Fig. 35. Geographical locations of collection of *Bathyarctus rubens* (Alcock & Anderson, 1894).

*Gibbularctus gibberosus* (de Man, 1905) (Dark-spot locust lobster)

Infraorder Achelata Scholtz & Richter, 1995

Family Scyllaridae Latreille, 1825

Subfamily Scyllarinae Latreille, 1825

Genus *Gibbularctus* Holthuis, 2002

*Gibbularctus gibberosus* (de Man, 1905)

(Figs. 36, 37A–E, 38)

**Synonymy**

*Arctus gibberosus* de Man, 1905: 588, type localities: Sulu Sea, Philippines, off North Ubian, *Siboga* Expedition stn. 99, 6°7.5'N, 120°26'E, 16–23 m; Indonesia, northeast of Misool, 164, 1°42.5'S, 130°47.5'E, 32 m.

*Scyllarus gibberosus* (de Man, 1905): De Man, 1916: 64, 68, 70, 90, pl. 3 fig. 14; Estampador, 1937: 496; 1959: 41; Holthuis, 1968: 288; McNeill, 1968: 25; Burukovsky, 1974: 107; Phillips *et al.*, 1980: 70; Burukovsky, 1983: 150; Vine, 1986: 107; Holthuis, 1991 (list); McWilliam *et al.*, 1995: 564; Chan, 1998: 1033 (list); Chan, 2010: 161 (list).

*Scyllarus Gundlachii*: Paulson, 1875: 96, pl. 12 fig. 5, 5a; Paulson, 1961: 102, pl. 12 fig. 5 [non *Scyllarus gundlachi* von Martens, 1872].

*Scyllarus sordidus* Nobili, 1905a: 160 [non *Scyllarus sordidus* Stimpson, 1858].

*Arctus Nobilii* De Man, 1905: 589.

*Scyllarus Paulsoni* Nobili, 1905b: 395; Nobili, 1906a: 88; De Man, 1916: 65, 68, 71.

*Scyllarus Nobilii*: Nobili, 1906b: 56, pl. 4, fig. 15; Bouvier, 1914: 704; Bouvier, 1915a: 188; De Man, 1916: 65, 68, 70.

*Scyllarus nitidus* Nobili, 1906b: 59, pl. 6, fig. 27.

*Scyllarus paulsoni*: Prasad & Tampi, 1969: 84; Phillips *et al.*, 1980: 70.

*Scyllarus nobilii*: Prasad & Tampi, 1969: 82; Michel, 1974: 256; Phillips *et al.*, 1980: 70.

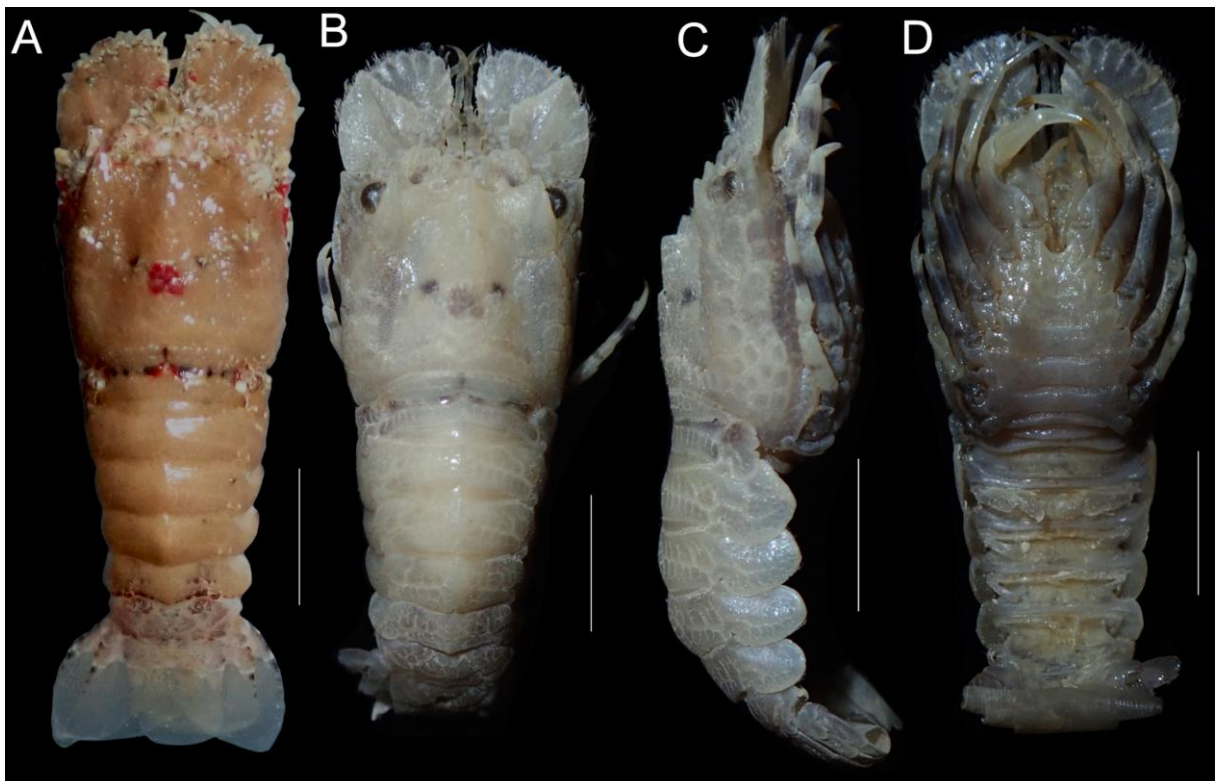
*Gibbularctus gibberosus* (de Man, 1905): Holthuis, 2002: 624, fig. 69C, D. Chan, 2010: 217: 161 (list); Chan, 2019: 49 (list).

**Diagnosis (modified from de Man, 1905):** Body dorso-ventrally compressed (Fig. 36A–D). Rostrum broad, margin bilobed, rostral tooth blunt. Eyes well-developed, orbital margin distinct (Fig. 37A). Small tubercle behind orbit. Carapace sub-quadrilateral, wider between the antero-lateral angles than posteriorly, antero-lateral angle blunt, pre-cervical tubercles 2, cervical incision distinct, 2/3 blunt teeth between cervical and post-cervical incisions, post-cervical incision narrow, post-cervical spine short, 5/6 small tubercles on posterolateral margin. Dorsal midline bearing small, low pre-gastric tooth, high, single-topped gastric tooth, low, broad, two-topped cardiac tooth and double row of 5 squamiform tubercles; branchial carina commencing inner to orbit, bearing 2 elevated rectangular teeth anteriorly, widely interrupted by cervical groove, 4 squamiform tubercles between posterior tooth and cervical groove, small tubercle located medially of branchial gap, post-cervical portion anteriorly terminating in blunt tooth, comprising 3 parallel rows of squamiform tubercles, few tubercles between posterior branchial carina and lateral margin, posterior marginal groove narrow, flanked by 2 transverse rows of tubercles, posterior margin incised medially (Fig. 37B). Antennules longer than antennae, flagellum overreaching distal antennal segment. Antennal flagellum reduced to 6 broad, flat segments, segment IV anterior margin 7-toothed, lateral margin divided into 3 blunt teeth (excluding the apical tooth), dorsal surface bearing distinct, oblique carina terminating apically, outer half bearing curved row of tubercles originating from base of carina; segment V antero-internal angle bearing blunt tooth carinate dorsally segment VI margin divided into 7 teeth, outer 5 teeth with rounded margins, inner 2 teeth blunt (Fig. 37A). Thoracic sternum anterior margin emarginate, V-shaped, swollen, oblique carinae from anterolateral teeth converging medially, sternites lacking tubercle, posterior margin entire (Fig. 37C). PI–PV simple, PI–PIV propodi lacking ventral setae, PIII propodus wider than other propodi, PV propodus in female with short distal spinule (Fig. 37B). Pleonal somite I



anterior half smooth, transverse groove distinct, 20 short longitudinal grooves not extending to posterior margin, pleuron bilobed, margins crenulated, pleopod absent; somites II–V anterior half smooth, posterior half with arborescent pattern of narrow, deep central transverse groove with branched side grooves, confluence of halves arched along midline, arch on somite IV higher than somite III; somites I–IV posterior margins deeply incised, somites V–VI ending in blunt median point; pleura II–V tips blunt rounded, directed ventrally, pleuron II bearing indistinct lobe on anterior margin, pleura II–V bearing arborescent pattern similar to tergites; somite VI dorsal surface bearing squamiform tubercles of various sizes (Fig. 37D–E). Telson sub-rectangular, slightly longer than wide, calcified portion bearing squamiform tubercles of various sizes; tail-fan soft, flexible. Uropodal exopod and endopod sub-triangular, longer than telson. Male gonopore on PV coxa, female gonopore on PIII coxa. Pleopods II–III broadly lamellar in female, pleopods IV–V narrow lamellar.

**Geographical distribution and habitat:** Red Sea to Madagascar east to the Ryukyu Islands, Philippines, Indonesia and New Caledonia at 12–57 m depths (Holthuis, 2002). The present specimen was collected from the southwestern Andaman Sea at 56 m depth (Fig. 38). **This is a new record for the Indian waters.**



**Fig. 36.** *Gibbularctus gibberosus* (de Man, 1905) (southwestern Andaman Sea), female, 22 mm TL: A) Dorsal habitus (live colouration); B) Dorsal habitus (preserved colouration); C) Lateral habitus (preserved colouration); D) Ventral habitus (preserved colouration). Scale: 5 mm.

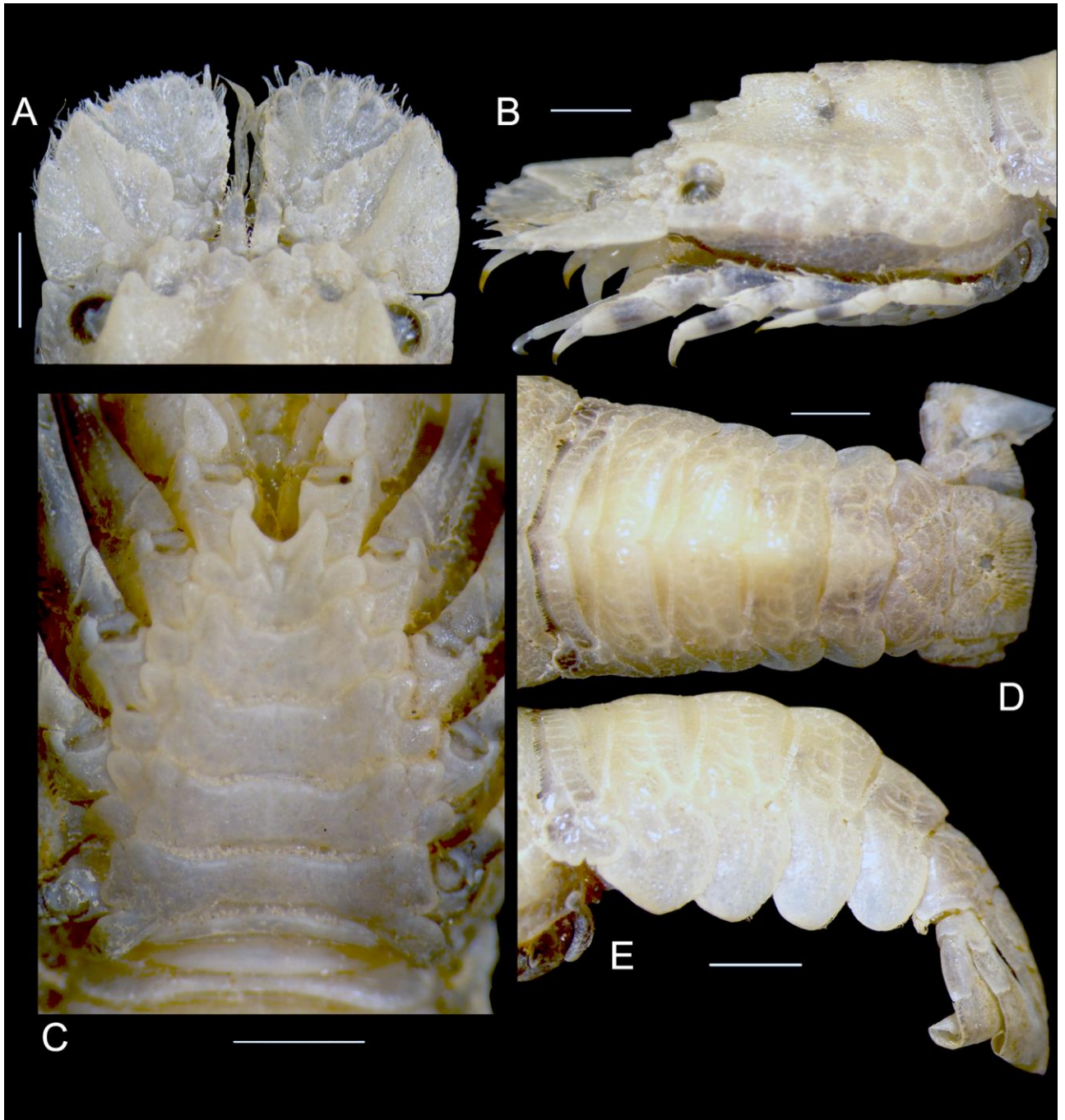


Fig. 37. *Gibbularctus gibberosus* (de Man, 1905): A) Dorsal anterior carapace, antennules and antennae; B) Lateral carapace; C) Ventral sternum; D) Dorsal pleon and telson; E) Lateral pleon and telson. Scale: 2 mm.



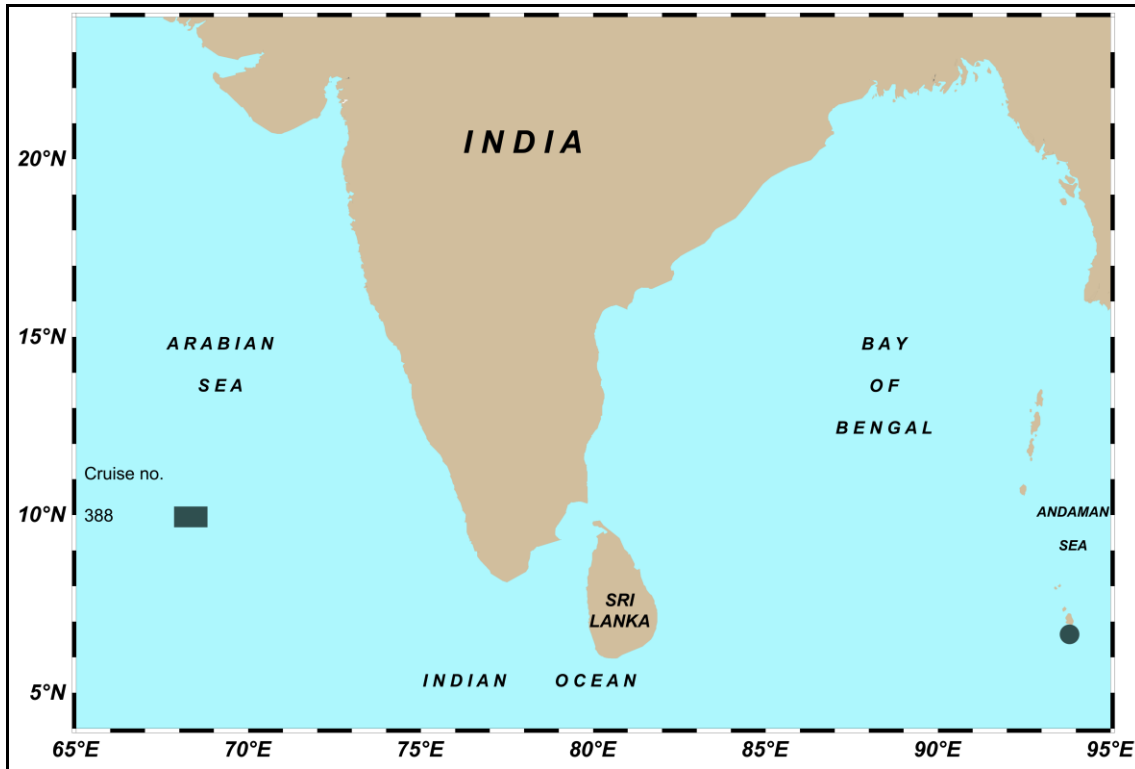


Fig. 38. Geographical locations of collection of *Gibbularctus gibberosus* (de Man, 1905).

*Petrarctus rugosus* (H. Milne Edwards, 1837) (Hunch-back locust lobster)

Infraorder Achelata Scholtz & Richter, 1995

Family Scyllaridae Latreille, 1825

Subfamily Scyllarinae Latreille, 1825

Genus *Petrarctus* Holthuis, 2002

*Petrarctus rugosus* (H. Milne Edwards, 1837)

(Figs. 39, 40A-E, 41)

**Synonymy**

*Scyllarus rugosus* H. Milne Edwards, 1837: 283, type locality: Bay of Bengal, off Pondicherry, India; H. Milne Edwards, 1838: 168; White, 1847: 67; Morice, 1875: 110; Pfeffer, 1881: 47; Holthuis, 1946: 89, pl. 7 fig. c, pl. 8 fig. a, pl. 9 fig. c; Harada, 1962: 128; Naiyanetr, 1963: 68; Harada, 1965: 36; Holthuis, 1968: 288; Prasad & Tampi, 1969: 84; Stephenson *et al.*, 1970: 492; Berry, 1974: 13, 14; Burukovsky, 1974: 106; Tampi & George, 1975: 34, figs. 34-36; Naiyanetr, 1980: 22; Phillips *et al.*, 1980: 70; Prasad *et al.*, 1980: 83, fig. 10; Miyake, 1982: 84; Burukovsky, 1983: 149; Prasad, 1983: 144, fig. 3a; Chan & Yu, 1986: 150, pl. 1, pl. 8 fig. A, pl. 10 fig. C; Sekiguchi, 1986a:

1289-1291; Sekiguchi, 1986b: 15, 17; Sekiguchi, 1987a: 331; Sekiguchi, 1987b: 415, 417, 418, fig. 48; Sekiguchi, 1988: 3; Sekiguchi, 1989: 457; Barnett, 1989: 123, 126, fig. 3; Holthuis, 1991: 217 (list), 225, figs. 425, 426; Mutchacheep, 1992: 26; Chan & Yu, 1993: 201, coloured fig.; Huang, 1994: 564; McWilliam *et al.*, 1995: 564; Nguyễn Van Chung & Pham Thi Du, 1995: 105; Hu & Tao, 1996: 144, pl. 3 figs. 3, 4; Chan, 1998: 1033 (list), 1043, 3 figs. n.n.; Naiyanetr, 1998: 12, 44, fig.

*Arctus tuberculatus* Spence Bate, 1888: 70, pl. 10 figs. 1, 2; Doflein, 1900: 132; Lanchester, 1901: 557; Chan, 2019: 50 (list).

*Scyllarus tuberculatus*: Nobili, 1903: 12; Pearson, 1905: 90; De Man, 1916: 68, 89; Barnard, 1925: 123, pl. 10; Barnard, 1950: 560; Dawydoff, 1952: 136; Prasad & Tampi 1968: 116, fig.; Zarenkov, 1971: 167; Kensley, 1981a: 30; Huang, 1994: 564 [non *Scyllarus tuberculatus*: De Man, 1924: 53, fig. 18 (= *Scyllarus demani* Holthuis, 1946)]; Chan, 2010: 161 (list).

*Scyllarus ramosus*: Vine, 1986: 107.

*Scyllarus spec. A?* Berry, 1974: 13, figs. 36, 38, 45-47.

*Scyllarus cultrifer*: Hwang & Yu, 1983: 264, fig. 5 [non *Arctus cultrifer* Ortmann, 1897a].

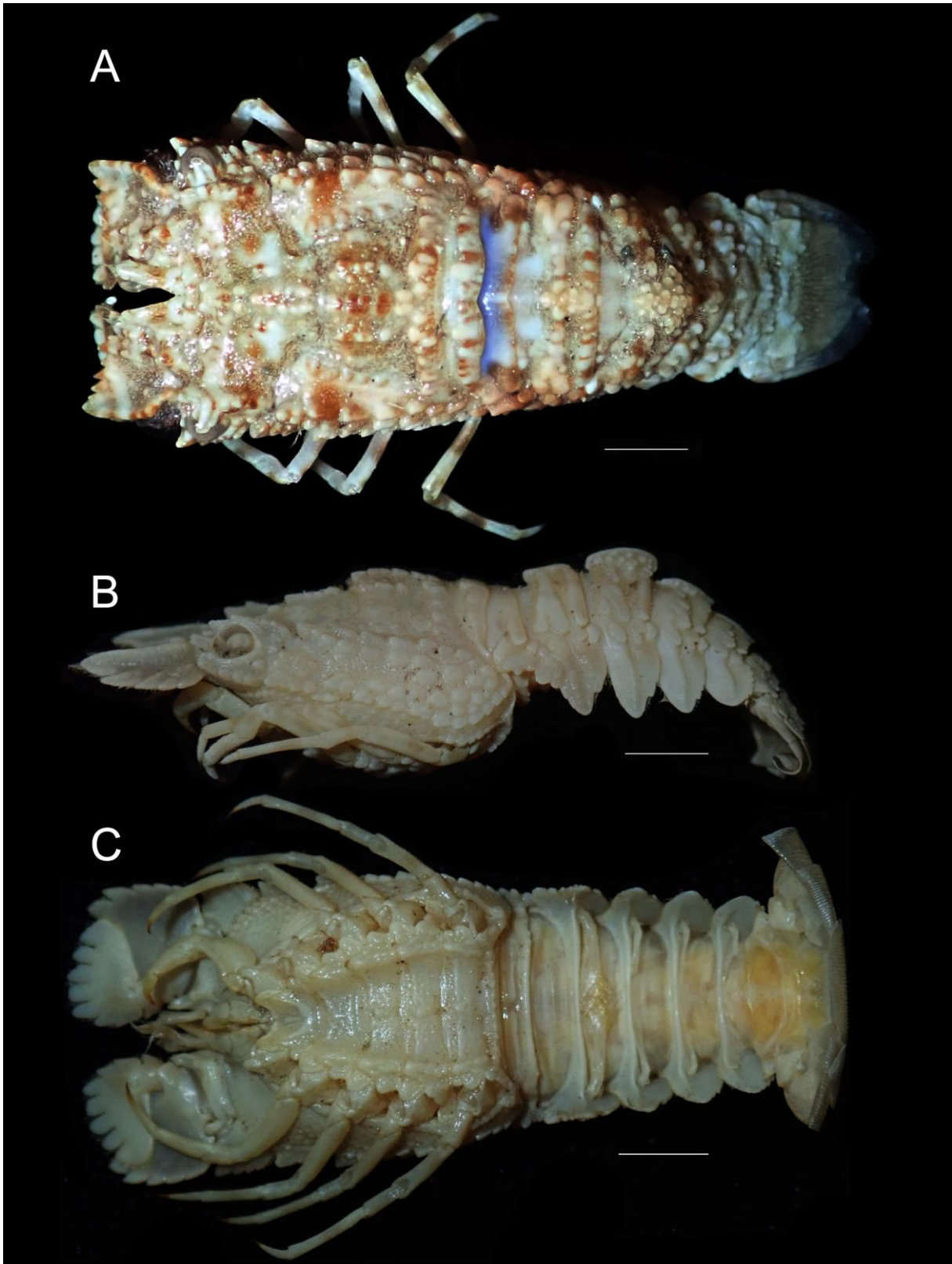
Non *Arctus rugosus* Yokoya, 1933: 46, fig. 24 (= *Scyllarus brevicornis* Holthuis, 1946).

*Petrarctus rugosus* (H. Milne Edwards, 1837): Holthuis, 2002: 528 (key), 529, figs. 12, 13; Chan, 2010: 161 (list); Chan, 2019: 50 (list); Radhakrishnan *et al.*, 2019a: 94, fig. 3.13.

**Diagnosis (modified from Milne Edwards, 1837):** Body stony, dorso-ventrally compressed (Fig. 39A-C). Rostrum blunt, bearing low dorsal tubercle, diverging rows of minute tubercles fused to low carina. Eyes well-developed, orbital margin distinct, supra-orbital tooth elevated, 2/3 tubercles behind orbit. Carapace sub-quadrilateral, wider between antero-lateral angles than posteriorly, antero-lateral angle blunt, lateral pre-cervical teeth 2, cervical incision distinct, 3 blunt teeth between cervical and post-cervical incisions, post-cervical incision wide, double row of 10 tubercles on posterolateral margin. Dorsal surface lacking pre-gastric tooth, replaced by curved row of 2 tubercles, which continue as anterior submedian carinae with 2 tubercles; anterior post-rostral carina comprising blunt broad gastric tooth, 2 rows of 5 moderately large tubercles each converging posteriorly; posterior post-rostral carina comprising distinct, two-topped cardiac tooth located behind deep cervical groove, 2 rows of 4 larger tubercles each, posterior submedian carinae with 4 tubercles; branchial carina commencing inner to orbit, bearing 2 tooth anteriorly, posterior tooth low, carina of 3 small tubercles, carina interrupted by cervical groove, post-cervical portion commencing with blunt tooth, double row of 6-8 blunt tubercles, space between it and lateral carina filled by tubercles; intermediate carina between posterior submedian and branchial carinae located near the latter,

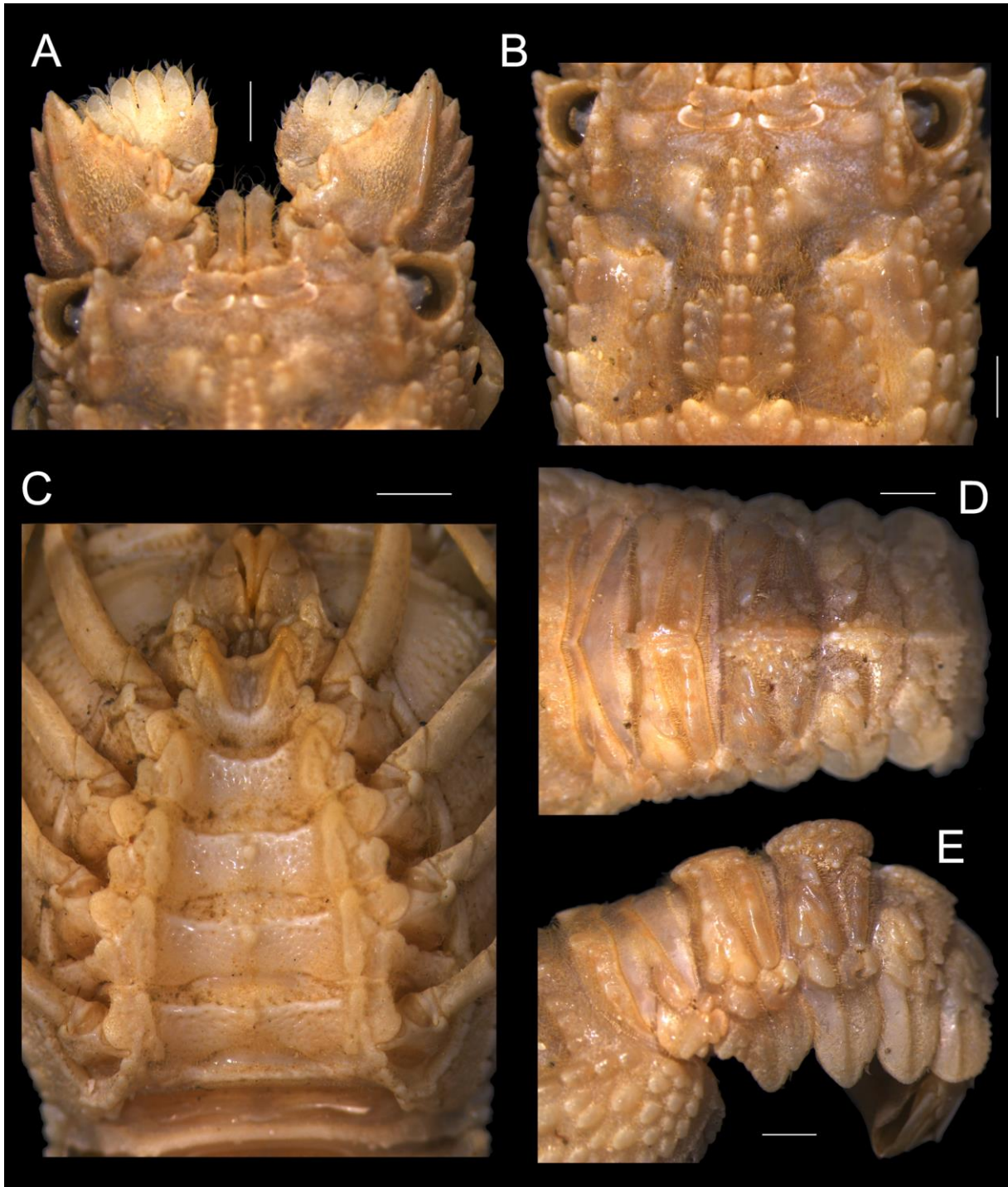
comprising 5 tubercles, large tubercle between submedian and intermediate carinae; 4 tubercles between cervical and post-cervical incisions; marginal groove wide, preceded and followed by transverse row of small tubercles, except large submedian pair, posterior margin bluntly incised (Figs. 39A–B, 40B). Antennules longer than antennae, flagellum overreaching distal antennal segment. Antennal flagellum reduced to 6 broad, flat segments, segment IV anterior margin divided into 5/6 teeth, lateral margin divided into 4–5 teeth (excluding the apical tooth) bearing dorsal carina, dorsal surface bearing sharp distinct, carina terminating apically; segment V anterior margin unarmed, lacking dorsal carina; segment VI anterior margin divided into distinctly separated 7 teeth, outer 5 teeth with rounded margins, inner 2 teeth pointed (Fig. 40A). Thoracic sternum anterior margin deeply U-shaped, with narrow median incision, anterolateral teeth blunt, tubercle formed by anteriorly converging carinae, sternites II–V with median tubercle anteriorly, lateral margins elevated, posterior margin of last sternite tuberculated (Fig. 40C). PI–PV simple, PI heavy, PII–PV slender (Fig. 39C), PIII propodus bearing rows of setae along dorsal and ventral margins, PII dactylus longest, PIII–PV pubescent basally, PV simple in males. Pleonal somite I flattened dorsally, posterior margin incised, transverse groove laterally only, pleuron I short, margin irregularly lobate, pleopod absent; somites II–V with anterior half smooth, posterior half bearing elevated longitudinal carina medially (highest on somite III overhanging posterior margin, that of somite IV terminating in small posterior point), tubercles fused to carina giving it lobulated appearance; median carina flanked by pair of transverse carinae separated by deep groove, anterior carina smooth on somites II–III, lateral tip bilobed, posterior carina smooth, with crenulate margin on somites IV–V, somite II posterior margin with median emargination, somite VI tuberculate, posterior margin crenulate; pleura II–V bearing median carina, tips bluntly rounded, directed ventrally, posterior margins crenulate, pleuron II anterior margin crenulate (Figs. 39A–B, 40D–E). Telson sub-rectangular, slightly longer than wide, calcified portion bearing 2 pairs of bosses (anterior pair larger), 2 pairs of marginal teeth (outer pair broader); tail-fan soft, flexible. Uropodal exopod and endopod sub-triangular, longer than telson. Male gonopore on PV coxa. Pleopods II well-developed, pleopods III–V narrow.

**Geographical distribution and habitat:** Red Sea, Mozambique, northern Madagascar, Comoros, Socotra, Lakshadweep Islands, southeast coast of India, Thailand, Malaysia, Indonesia, Philippines, Vietnam, Taiwan, China and northern Queensland (Australia) at 20–60 m depths. The present specimens were collected from the southeastern Bay of Bengal at 61–62 m depths, and western Andaman Sea at 71 m depth (Fig. 41).



**Fig. 39.** *Petrarctus rugosus* (H. Milne Edwards, 1837) (southeastern Bay of Bengal), male, 37 mm TL: A) Dorsal habitus (live colouration); B) Lateral habitus (preserved colouration); C) Ventral habitus (preserved colouration). Scale: 5 mm.





**Fig. 40. *Petrarctus rugosus* (H. Milne Edwards, 1837): A) Dorsal anterior carapace, antennules and antennae; B) Dorsal carapace; C) Ventral sternum; D) Dorsal pleon and telson; E) Lateral pleon and telson. Scale: 2 mm.**



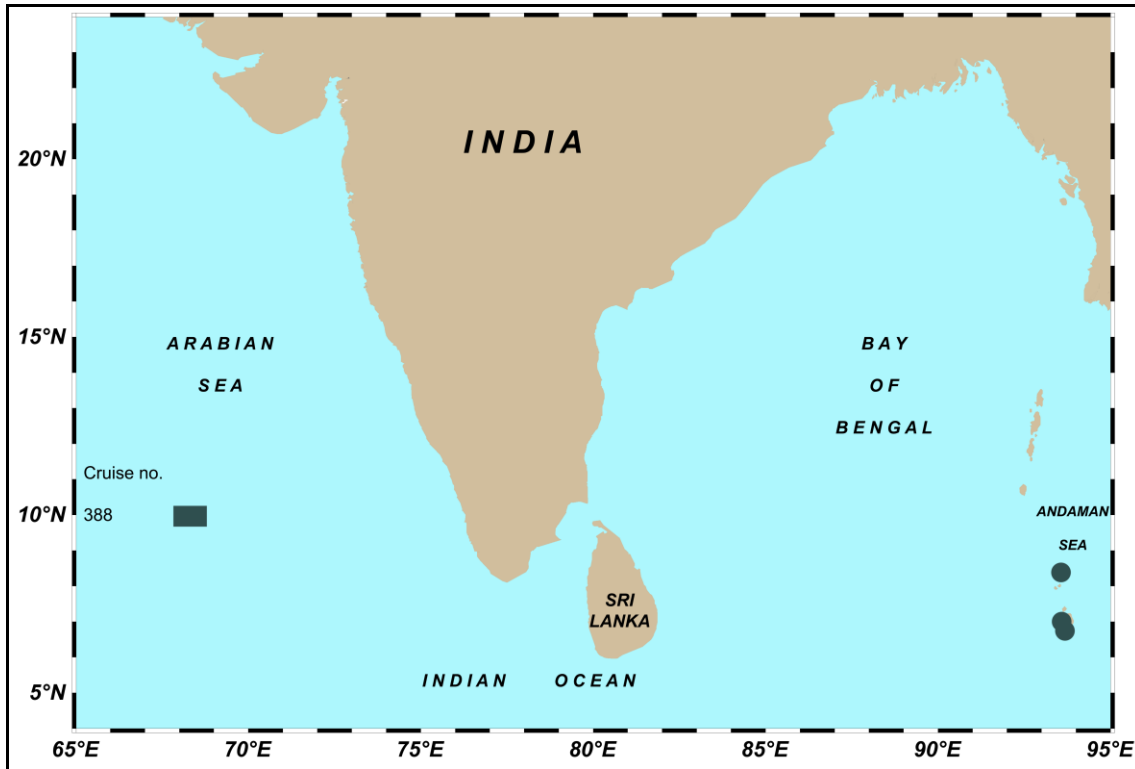


Fig. 41. Geographical locations of collection of *Petrarctus rugosus* (H. Milne Edwards, 1837).

***Polycheles typhlops* Heller, 1862**

Infraorder Polychelida Scholtz & Richter, 1995

Superfamily Eryonoidea De Haan, 1841 [in De Haan, 1833-1850]

Family Polychelidae Wood-Mason, 1874b

Genus *Polycheles* Heller, 1862

***Polycheles typhlops* Heller, 1862**

(Figs. 42A-C, 43A-D, 44)

**Synonymy**

*Polycheles typhlops* Heller, 1862: 392, pl. 1 figs. 1-6, type locality: Mediterranean Sea, off Sicily; Heller, 1863: 211, pl. 7 figs. 1-2; Carpenter & Jeffreys, 1870: 154; Wood-Mason, 1874b: 180; Wood-Mason, 1875: 134; Spence Bate, 1878a: 273; Spence Bate, 1878b: 563; Norman, 1878: 382 (p.p.); Norman, 1879: 175 (p.p.); Carus, 1885: 486; Norman, 1886: 7; Spence Bate, 1888: 100; Steindachner, 1891: 438; Stebbing, 1893: 200; Adensamer, 1898: 621; Senna, 1902: 332, fig. 7, pl. 18, figs. 1-11; Lo Bianco, 1903: 250; Magri, 1904: 7; Bouvier, 1905a: 480; Bouvier, 1905b: 3; Kemp, 1905: 7; Richard, 1907: 322; Kemp, 1910: 413; Pesta, 1912: 103; Kemp & Sewell, 1912: 24; Selbie, 1914: 12, pl. 1

figs. 1-13; Bouvier, 1915b: 2; Sund, 1915: 372; Williamson, 1915: 437; De Man, 1916: 6; Bouvier, 1917: 35, pl. 2 figs. 1-6; Pesta, 1918: 162, fig. 53; Miranda & De Rivera, 1921: 184; Stephensen, 1923: 67; Balss, 1924: 179, figs. 5, 8; Balss, 1925: 201, pl. 19; Bouvier, 1925: 433, fig. 9; Calman, 1925: 18; Dieuzeide, 1929: 103; Bolivar, 1930: 21, fig. 2; Seurat, 1930: 37; Santucci, 1931: 1; Santucci, 1932: 1; Miranda & De Rivera, 1933: 18; Santucci, 1933: 1; Schmitt, 1935: 172; Zariquiey Cénarro, 1935: 6; Vilela, 1936: 224; Ramadan, 1938: 129; Bouvier, 1940: 75, pl. 2. fig. 5; Parenzan, 1940: 139 (list); Seurat, 1940: 145; Zariquiey Alvarez, 1946: 99, figs. 123-124; Le Danois, 1948: 139, pl. 3; Barnard, 1950: 568; Dieuzeide, 1950: 46; Tortonese, 1951: 220; Bernard, 1953: 86; Marshall, 1954: 120; Peres & Picard, 1955: 51; Sewell, 1955: 203; Zariquiey Alvarez, 1955: 407; Holthuis, 1956: 114; Springer & Bullis, 1956: 14 (p.p.); Dieuzeide & Roland, 1957: 19; Dieuzeide & Roland, 1958: 23; Hemming, 1958: 137; Holthuis & Gottlieb, 1958: 114; Longhurst, 1958: 32; Rossi, 1958: 7; Tortonese, 1958: 195; Tortonese, 1959: 448; Dieuzeide, 1960: 77; Forest & Gantes, 1960: 348; Maurin, 1962: 180; Zariquiey Alvarez, 1962: 30, 33; Russell, 1962: 6; Tortonese, 1962: 112; Forest, 1963: 627; Lewinsohn & Holthuis, 1964: 54; Peres, 1964: 22; Torchio, 1964: 120; Bullis & Thompson, 1965: 8; Dawson, 1965: 1; Forest, 1965: 346; Grindley & Penrith, 1965: 286; Tortonese, 1965: 85; Kotthaus, 1966: 348, figs. 1-3; Allen, 1967: 55; Torchio, 1967: 122; Maurin, 1968a: 45; Maurin, 1968b: 479; Massuti, 1968: 306; Zariquiey Alvarez, 1968: 209, fig. 86b; Berry, 1969a: 46; Števcíć, 1969: 128; Carpine, 1970a: 135; Firth & Pequegnat, 1971: 50, figs. 9-10; Pequegnat *et al.*, 1971: 4; Rubio Lois, 1971: 10; Lagardere, 1972: 672, fig. 5; Relini-Orsi & Relini, 1972, fig. 5; Koukoura, 1973: 753; Relini, 1973: 29; Neves, 1974: 7; Thiriot, 1974: 344; Pastore, 1976: 107; Turkay, 1976: 26; Lagardere, 1977: 399; Voss & Jeuniaux, 1978: 127; Beaubrun, 1979: 35, figs. 15-16; Rodriguez, 1980: 194; Soto, 1980: 87; Burkenroad, 1981: 263; Moncharmont, 1981: 66; Kensley, 1981a: 29; Takeda, 1982: 74; Manning & Froglija, 1982: 321; Burukovsky, 1983: 134, fig. 178; George, 1983: 16; Ohta, 1983: 230; Riedl, 1983: 481, pl. 176; Lemaitre, 1984: 427; O'riordan, 1984: 322; Omori, 1985: 63; Baba, 1986: 157, pl. 107; Relini *et al.*, 1986: 156, tab. 4, fig. 4; Duris, 1987: 9; Garcia & Massuti, 1987: 75; Gonzalez-Gurriaran & Olaso, 1987: 328 (list); Holthuis, 1987: 297, fig. 2; Abello & Valladares, 1988: 98; Abello *et al.*, 1988: 41; Morgan & Jones, 1988: 15; Gonzales *et al.*, 1988: 28; Chan & Yu, 1989b: 166, pl. 1; Intes & Bach, 1989: 21; Cartes & Abello, 1990: 35; Števcíć, 1990: 210; Cartes & Abello, 1992: 139; Cartes & Sarda, 1992: 1315; Falciai & Minervini, 1992: 134, pl. 9, fig. 3; Cartes, 1993: 32; Cartes *et al.*, 1993: 210; Chan & Yu, 1993: 105; Emmerson, 1993: 181; Kocatas & Katagan, 1993: 35; Rodriguez, 1993: 197 (list); Vaso & Gjinknuri, 1993: 397; Pipitone & Tumbiolo, 1993: 361 (list); Turkay, 1993: 284; Galil & Goren, 1994: 45, fig. 2b; Quackenbush, 1994: 85; Gonzalez Pérez, 1995: 126, fig. 65; Galil, 2000: 291 (key), 354, fig. 30; Ahyong & Brown, 2002: 77 (key); Poore, 2004: 152 (key), 156, fig. 41h; Follesa *et al.*, 2008: 731, fig. 1; Ahyong, 2009: 383

(key), fig. 2A; Chan, 2010: 162 (list); Chang *et al.*, 2013: 9, 13 (key); Bezerra & Ribeiro, 2015: 127, fig. 2; Chan, 2019: 51 (list), fig. 26a; Radhakrishnan *et al.*, 2019a: fig. 3.19.

*Pentacheles agassizii* A. Milne Edwards, 1880: 65, type locality: Caribbean Sea, off Grenada, Blake stn 246; Faxon, 1896: 155; Young, 1900: 441.

*Polycheles doderleini* Riggio, 1885: 103, pl. 3, figs. 1-5.

*Pentacheles hextii* Alcock, 1894: 237; Alcock, 1898: 35; Alcock, 1901a: 172; Alcock, 1902: 264; Alcock & Anderson, 1894: 165; Alcock & Anderson, 1895, pl. 10 fig. 2.

*Polycheles agassizii*: Faxon, 1895: 120.

*Polycheles agassizi*: Bouvier, 1905a: 480; Bouvier, 1905b: 3.

*Polycheles hexti*: Bouvier, 1905a: 481.

*Polycheles typhlops*: Magri, 1911: 32; Bombace, 1968: 113; Relini-Orsi & Relini, 1972: 59 [erroneous spelling]

*Polycheles intermedins* Balss, 1914b: 599.

*Polychelles typhlopi*: Nobre, 1931: 246, fig. 137; Nobre, 1936: 153, pl. 51, fig. 130. [erroneous spelling]

*Polycheles typhlops typhlops*: Firth & Pequegnat, 1971: 51, fig. 7; Wadley & Evans, 1991: 27, pl. n.n.; Griffin & Stoddart, 1995: 242, figs. 6-8; Tiefenbacher, 1995: 5; Dawson, 1997: 13; Radhakrishnan *et al.*, 2019a: 104.

*Polycheles typhlos*: Arena & Greci, 1973: 164 [erroneous spelling].

*Polycheles thyphlos*: Arena & Greci, 1973: 173. [erroneous spelling].

*Polycheles tiphlops*: Frogliia, 1976: 78 (list) [erroneous spelling].

*Polycheles sp.*: Gamo, 1980, pl. 7b; Utinomi, 1983: 105.

*Stereomastis nana*: Miyake, 1982: 78, pl. 26 fig. 6 [non Smith, 1884].

*Polycheles hextii*: Holthuis, 1984: 4.

*Polycheles thyphlops*: Gonzalez-Gurriaran & Olaso, 1987: 329; Jacques, 1989: 4. [erroneous spelling]

*Polycheles typholps*: Miyake, 1982, pl. 26 fig. 6. [erroneous spelling]

not *Polycheles typhrops*: Takeda, 1982, pl. 38.

*Stereomastis artuzi* Artüz, Kubanç & Kubanç, 2014 (unavailable name under Art. 16.4.2): 1247, figs. 2-7 (not *P. typhlops* Heller, 1862).

**Diagnosis (modified from Heller, 1862):** Body dorso-ventrally compressed (Fig. 42A-C). Rostral spine single, antrorse. Orbital sinus V-shaped, bearing short spine medially, internal margin pectinated, internal angle bearing spine, cornea absent. Carapace sub-quadrilateral, dorsal surface minutely granular, densely setose; lateral spination including 7/8 pre-cervical + 5 between cervical and post-cervical incisions + 20-22 spines posterior to post-cervical incision; dorsal spination including 7-9 irregularly spaced spinules on median post-rostral carina, 5 antrorse spinules arranged in arc-shaped row on gastro-orbital carinae, 3-4 spinules on posterior margin of cervical groove between post-cervical and branchial carina, 11-12 pairs of

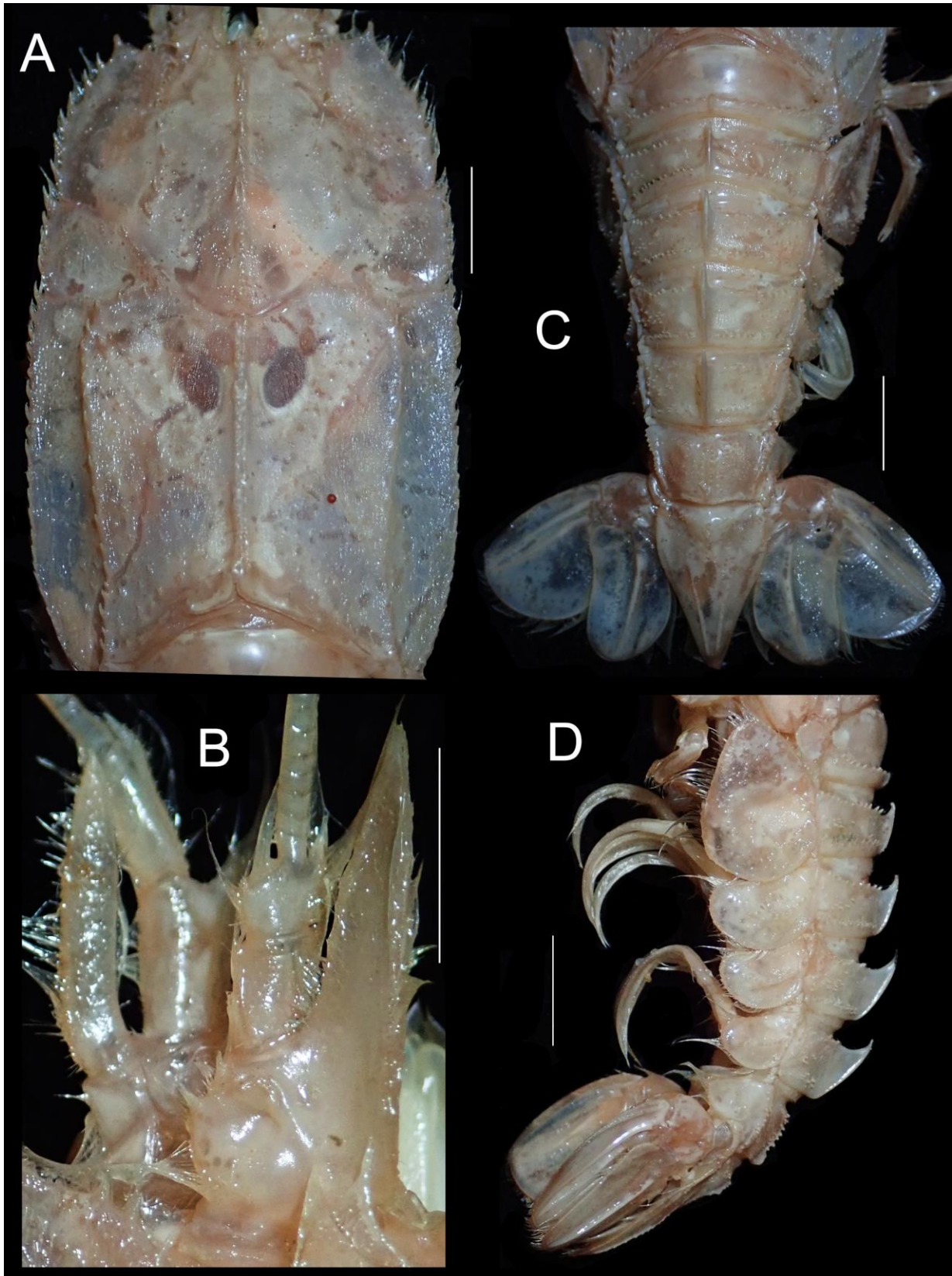
spinules on median post-cervical carina, 16–18 spines on branchial carina, random spinules on region between post-cervical and branchial spines, 4–5 pairs of antrorse spinules on posterior margin (Fig. 43A). Basal antennular segment proximally rounded, produced anteriorly to sharp point, antero-lateral margin bearing 2 spines; flagellum double whip-like, inner flagellum 3 times longer than outer flagellum. Scaphocerite lanceolate, setose, extending to base of antennal flagellum (Fig. 43B). Maxilliped III epipod rudimentary. P1 largest, chelate; merus bearing 2 subdistal spinules on dorsal margin, ventral margin serrated; carpus bearing 2 subdistal spines each on dorsal and ventral margins; propodus serrated on dorsal and ventral margins, 2 dorso-distal spinules posterior to dactylar articulation larger; fingers extremely slender, smooth, bent distally, cutting edges pectinated (Fig. 42A, B). PII–PIV progressively shorter, slender, chelate; PII carpus with distal spinule on dorsal margin; PV shortest, simple in male, chelate in female (Fig. 42A, B). Pleon widest anteriorly, tapering posteriorly; somites I–V bearing mid-dorsal longitudinal carina, somites II–V bearing progressively larger antrorse spines on carina, somite VI bearing pair of prominent denticulate carinae converging posteriorly; pleuron on somite I reduced, ovate; pleura II–VI with serrated margins, pleura II–V bearing curved mesial ribs, pleuron II ovate, largest (Fig. 43C, D); sternites II–V bearing median spinule. Telson elongate triangular, bearing median and 1 pair of lateral oblique carinae dorsally. Uropodal exopod bicarinate ventrally (Fig. 42B). In females, thelycal plates present between bases of PIV and PV (Fig. 42B). Pleopods I of male spatuliform, those of female lamellate.

**Geographical distribution and habitat:** Pacific, Atlantic and Indian oceans at 400–600 m depths (Galil, 2000). The present specimens were collected from the southeastern Arabian at 404–995 m depths, southeastern Bay of Bengal at 390–535 m depths, and western Andaman Sea at 441 m depth (Fig. 44).



**Fig. 42. *Polycheles typhlops* Heller, 1862 (Eastern Bay of Bengal), female, 115 mm TL: A) Dorsal habitus (preserved colouration); B) Ventral habitus (preserved colouration); C) Lateral habitus (live colouration). Scale: 10 mm.**





**Fig. 43.** *Polycheles typhlops* Heller, 1862: A) Dorsal carapace; B) Antennules and antennae; C) Dorsal pleon and telson; D) Lateral pleon and telson. Scale: A, C, D - 10 mm, B - 5 mm.

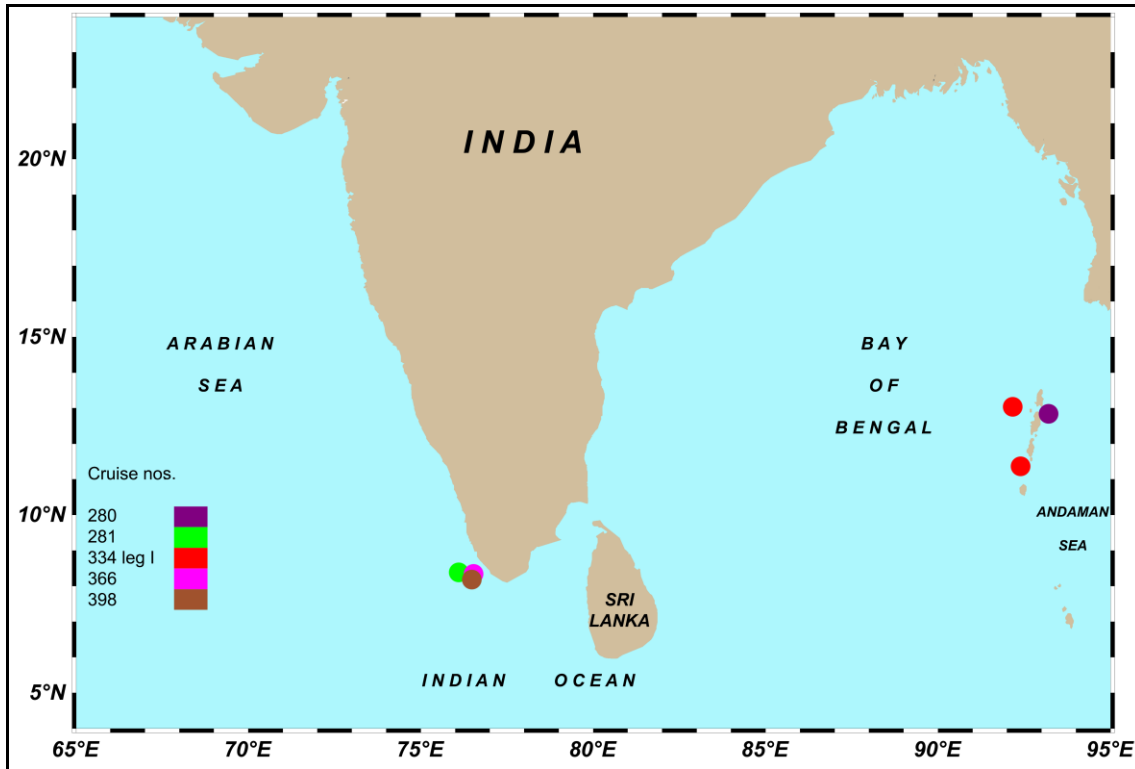


Fig. 44. Geographical locations of collection of *Polycheles typhlops* Heller, 1862.

***Stereomastis phosphorus* (Alcock, 1894) (Pink blind lobster)**

Infraorder Polychelida Scholtz & Richter, 1995

Superfamily Eryonoidea De Haan, 1841 [in De Haan, 1833-1850]

Family Polychelidae Wood-Mason, 1874b

Genus *Stereomastis* Spence Bate, 1888

***Stereomastis phosphorus* (Alcock, 1894)**

**(Figs. 45A-C, 64A-D, 47)**

**Synonymy**

*Pentacheles phosphorus* Alcock, 1894: 240; type locality: Bay of Bengal, RIMSS Investigator stn 112, 13°47'30"N, 92°36'E, 561 fathoms (= 1026 m) depth; Wood-Mason & Alcock, 1894, pl. 8, fig. 2; Alcock & Anderson, 1894: 165; Anderson, 1896: 98; Alcock, 1901b: 74; Thomson, 1901: 18; Alcock, 1902: 134, 135; Lloyd, 1907: 6; Hansen, 1925: 142; Boas, 1939, fig. 1.

*Polycheles phosphorus*: Alcock, 1898: 77; Alcock, 1901a: 168; Calman, 1910: 59, fig. 38; Calman, 1911: fig. 46; Kemp & Sewell, 1912: 24; Balss, 1924: 177, fig. 2; Duncan, 1948: 69; Galil, 2000: 292 (key), 336, fig. 22 (part); Ah Yong & Brown, 2002: 71, 77 (key), figs. 3C-D, 10, 11; Chan, 2010: 163 (list).

*Stereomastis andamanensis*: De Man, 1916: 16, pl. 1, figs. 2-2b (p.p.); Takeda & Hanamura, 1994: 31; Griffin & Stoddart, 1995: 244 (p.p.) [non Alcock, 1894].

*Stereomastis phosphorus*: Calman, 1927: 55, fig. 37; Dahl, 1954: 46; Firth & Pequegnat, 1971: 68; Monod, 1973: 126, figs. 40-44 (p.p.); Holthuis, 1984: 4; Ahyong, 2009: 384 (key); Chan, 2010: 163 (list); Chan, 2019: 52 (list); Radhakrishnan *et al.*, 2019a: 102.

not *Polycheles phosphorus*: Rathbun, 1906: 898 [= *P. surdus* Galil, 2000]; Galil, 2000: 336, fig. 22 (part) [= *Stereomastis galil* (Ahyong & Brown, 2002)]

not *Stereomastis phosphorus*: De Man, 1916: 15 [= *P. aculeatus* Galil, 2000].

not *Stereomastis phosphorus*: Griffin & Stoddart, 1995: 246 [= *P. aculeatus* Galil, 2000, *P. auriculatus* Bate, 1878, *P. surdus* Galil, 2000].

**Diagnosis (modified from Alcock, 1894)**: Body dorso-ventrally compressed (Fig. 45A–C). Rostral spine bifid, antrorse. Orbital sinus U-shaped, bearing short tubercle medially, internal angle bearing spine, cornea absent. Carapace sub-quadrilateral, dorsal surface minutely granular, densely setose; lateral spination including 6/7 pre-cervical + 3–4 between cervical and post-cervical incisions + 6–7 spines posterior to post-cervical incision; dorsal spination including 5 (1+1+2+1) on median post-rostral carina, 5 antrorse spinules arranged in arc-shaped row on gastro-orbital carinae, 1 median antrorse spinule on posterior margin of cervical groove between post-cervical and branchial carina, 2 pairs of spinules on median post-cervical carina, 7–9 spines on branchial carina, 4–5 spinules behind oblique groove between post-cervical and branchial carinae, 1 pair of antrorse spines on posterior margin (Fig. 46A). Basal antennular segment proximally rounded, produced anteriorly to sharp point, anterolateral margin bearing spine; flagellum double whip-like, inner flagellum slightly longer than outer flagellum. Scaphocerite lanceolate, setose, anterior end extending almost to base of antennal flagellum (Fig. 46B). Maxilliped III epipod rudimentary. PI largest, chelate; merus bearing 2 proximal and 1 sub-distal spinule on dorsal margin, ventral margin serrated; carpus bearing subdistal spine each on dorsal and ventral margins; propodus serrated on dorsal and ventral margins, subdistal spinule posterior to dactylar articulation; fingers extremely slender, smooth, bent distally, cutting edges pectinated. PII–PIV progressively shorter, slender, chelate; PII carpus with distal spinule on dorsal margin; PV shortest, subchelate in male, chelate in female (Fig. 45A, B). Pleon widest anteriorly, tapering posteriorly; somites I–V bearing mid-dorsal longitudinal carina with antrorse spine, somites III–IV with larger spines, somite VI bearing pair of prominent denticulate carinae converging posteriorly; pleuron on somite I reduced, ovate; pleura II–VI with serrated margins, pleura II–V bearing curved mesial ribs, pleuron II ovate, largest (Fig. 46C, D); sternites II–V bearing median spinule. Telson elongate triangular, bearing median and 1 pair of lateral oblique carinae dorsally. Uropodal exopod unicarinate ventrally



(Fig. 45B). In females, thelycal plates present between bases of PIV and PV (Fig. 45B). Pleopods I of male spatuliform, those of female lamellate.

**Geographical distribution and habitat:** Arabian Sea, Laccadive Sea, Gulf of Mannar, Sri Lanka, Bay of Bengal and Andaman Sea (Radhakrishnan *et al.*, 2019). The present specimens were collected from the eastern Arabian Sea at 214–957 m depths, southeastern Arabian Sea at 610–1078 m depths, southeastern Bay of Bengal at 645 m depth, and western Andaman Sea at 635–850 m depths (Fig. 47).

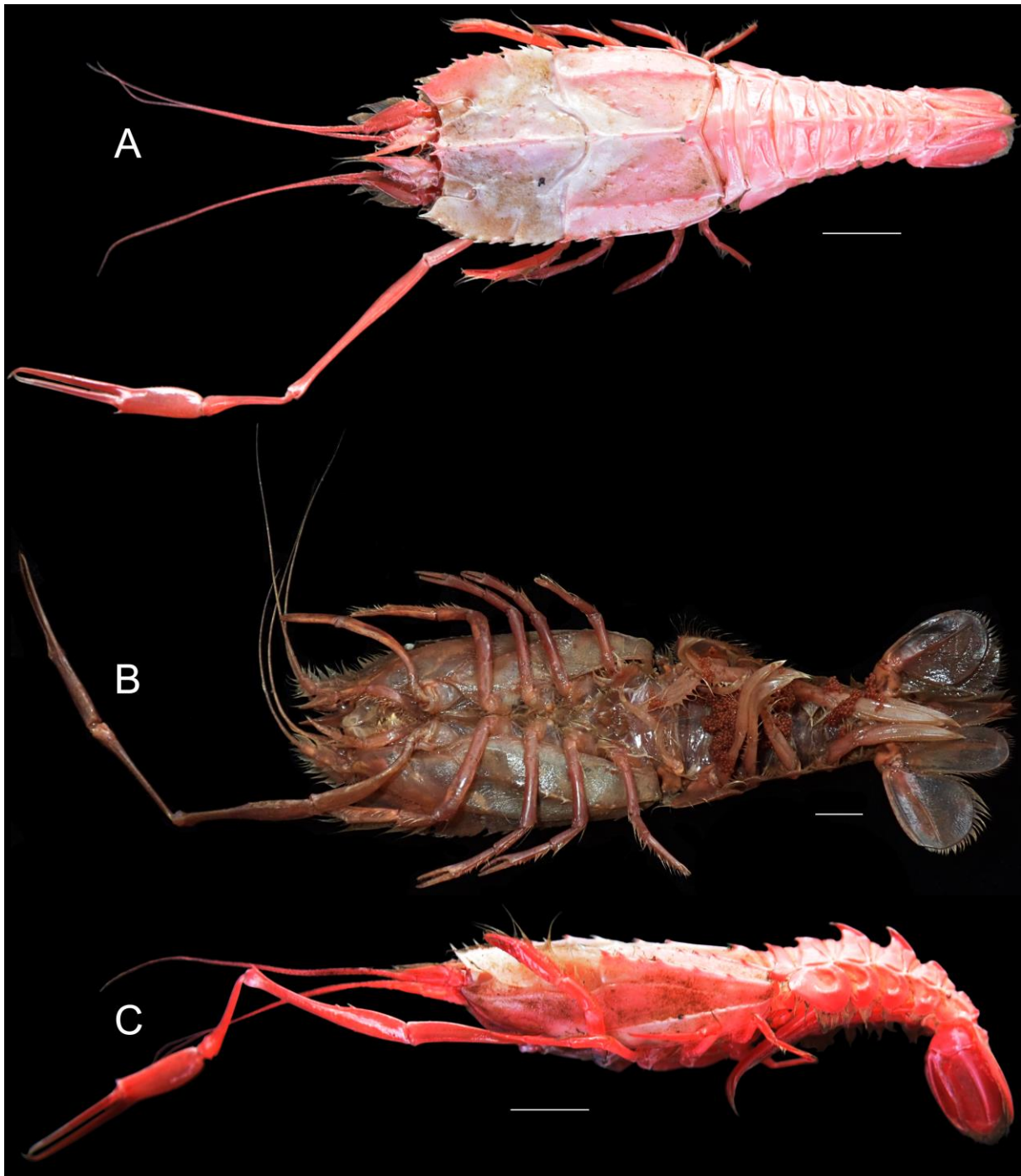


Fig. 45. *Stereomastis phosphorus* (Alcock, 1894) (eastern Arabian Sea): A) Dorsal habitus (live colouration), female, 73 mm TL; B) Ventral habitus (preserved colouration), 142 mm TL; C) Lateral habitus (live colouration), female, 73 mm TL. Scale: 10 mm. (previous page)

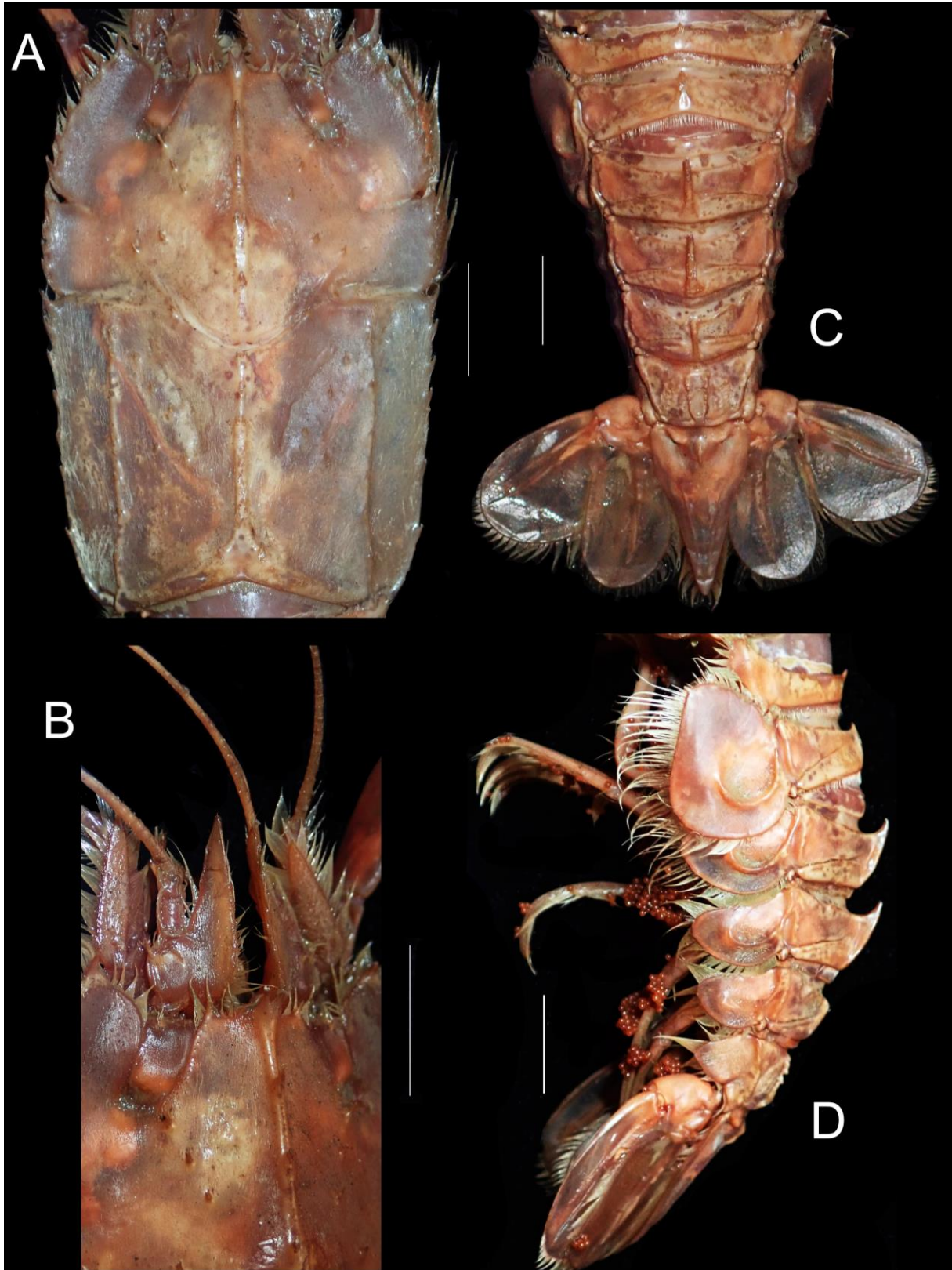




Fig. 46. *Stereomastis phosphorus* (Alcock, 1894): A) Dorsal carapace; B) Antennules and antennae; C) Dorsal pleon and telson; D) Lateral pleon and telson. Scale: 10 mm. (previous page)

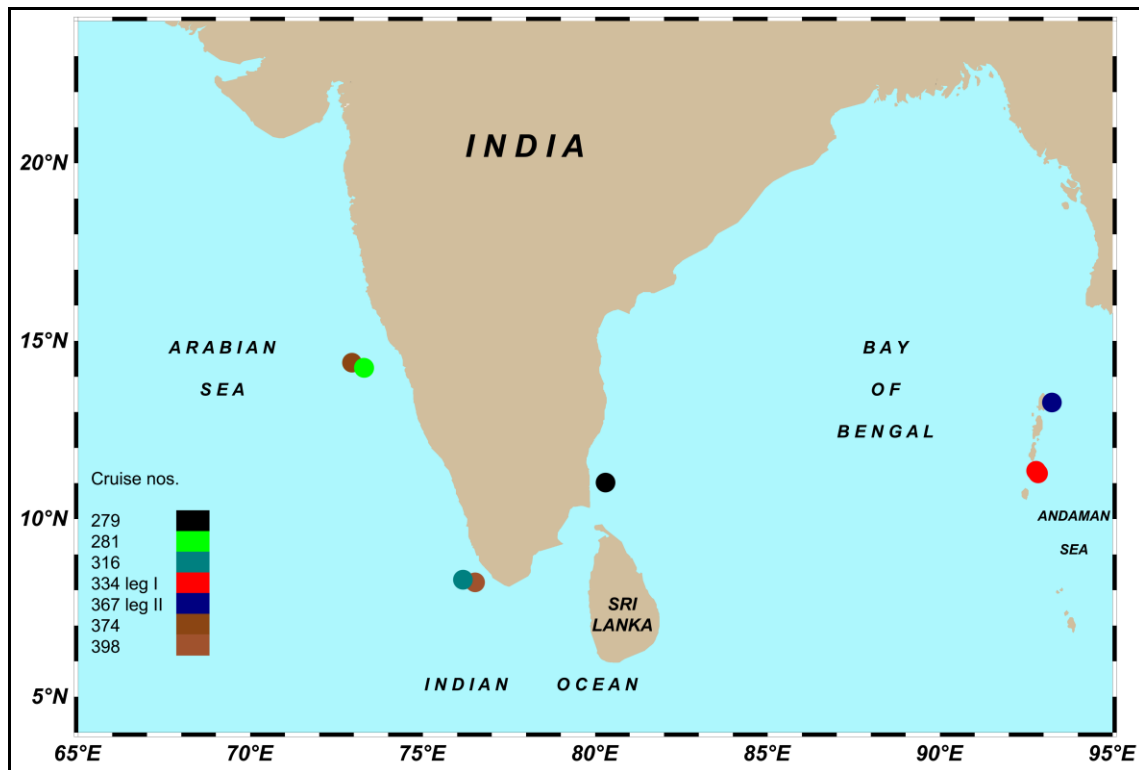


Fig. 47. Geographical locations of collection of *Stereomastis phosphorus* (Alcock, 1894).

*Stereomastis sculpta* (Smith, 1880a)

Infraorder Polychelida Scholtz & Richter, 1995

Superfamily Eryonoidea De Haan, 1841 [in De Haan, 1833-1850]

Family Polychelidae Wood-Mason, 1874b

Genus *Stereomastis* Spence Bate, 1888

*Stereomastis sculpta* (Smith, 1880a)

(Figs. 48A-C, 49A-D, 50)

**Synonymy**

*Polycheles typhlops*: Norman, 1878: 382 (p.p.); Norman, 1879: 175 (p.p.).

*Polycheles sculptus* Smith, 1880a: 346, pl. 7, figs 1-6; Smith, 1880b: 269; Faxon, 1893: 196; Faxon, 1895: 121, pl. C, fig. 2; Faxon, 1896: 155; Caullery, 1896: 385; Koehler, 1896: 721 (list); Alcock, 1901a: 170; Senna, 1902: 338; Stebbing, 1902a: 36; Bouvier,

1905a: 480; Bouvier, 1905b: 3; Joubin, 1905: 75, fig. 58; Bouvier, 1905c: 4; Hansen, 1908: 41; Stebbing, 1910: 377; Andrews, 1911: 428, figs. 11-15; Murray & Hjort, 1912: 538; Selbie, 1914: 18, pl. 2, figs. 1-9; Bouvier, 1915b: 2; Sund, 1915: 372; Williamson, 1915: 457; Bouvier, 1917: 51, pl. 3, fig. 1; Balss, 1925: 201; Bouvier, 1925: 438, fig. 11, pl. 7, fig. 1; Boone, 1930: 86, pl. 23, fig. b; Miranda & Rivera, 1933: 17; Delphy & Magne, 1938: 83 (list); Boas, 1939: 4, figs. 3, 7-8; Zariquiey-Alvarez, 1946: 99; Le Danois, 1948: 150 (list); Springer & Bullis, 1956: 14; Holthuis, 1962: 183; China, 1964: 111; Barnard, 1964: 12 (list); Peres & Picard, 1964: 105; Allen, 1967: 56; Peres, 1967: 519; Rodriguez, 1980: 194.

*Pentacheles spinosus* A. Milne Edwards, 1880: 66; Filhol, 1885: 139, fig. 44; Marshall, 1888: 267, fig. 88; Young, 1900: 442; Seeliger, 1901: 43; Bouvier, 1925: 438, figs. 11-12, pl. 7 fig. 1.

*Willemoesia leptodactyla*: Giglioli, 1881: 358; Giglioli, 1882: 5; Giglioli, 1912: 186 [non Willemoes-Suhm, 1875].

*Pentacheles sculptus*: Smith, 1882: 23, pls. 3-4; Verrill, 1882: 364; Smith, 1884: 358 (list); Verrill, 1884: 653; Verrill, 1885: 554, pl. 34, fig. 152; Smith, 1886: 188; Smith, 1887: 607 (list); Agassiz, 1888: 42, fig. 239; Alcock & Anderson, 1899: 289.

*Stereomastis sculpta*: De Man, 1916: 8; Stephensen, 1923: 66; Calman, 1925: 18; Boone, 1927: 90; Calman, 1927: 55; Barnard, 1950: 572, fig. 105d; Holthuis, 1952: 11, fig. 3; Bernard, 1953: 87; Dollfus, 1956: 135 (list); Siversten & Holthuis, 1956: 41; Holthuis, 1962: 182; Squires, 1966: 2; Kensley, 1968: 29; Zariquiey Álvarez, 1968: 210; Carpine, 1970a: 135 (list); Carpine, 1970b: 11 (list); Squires, 1970: 88, figs. 37-38; Firth & Pequegnat, 1971: 69; Relini-Orsi & Relini, 1972: 59, fig. 5; Relini-Orsi, 1973: 29; Lagardere, 1973: 93; Lagardere, 1977: 399; Thiriot, 1974: 344 (list); Williams & Wigley, 1977: 8; Beaubrun, 1978: 40, fig. 21; Baez & Andrade, 1979: 225, pl. 1 fig. 6; Pequegnat & Jeffrey, 1979: 72; Wenner, 1979: 441; Andrade & Baez, 1980: 262 (list); Kensley, 1981a: 29 (list); Kensley, 1981b: 60 (list); Burukovsky *et al.*, 1982: 523; Burukovsky, 1983: 134, fig. 179; Takeda & Okutani, 1983: 75; Holthuis, 1984: 4; Pohle, 1985: 21; Andrade, 1986: 45; Duris, 1987: 9; Holthuis, 1987: 297, fig. 2; Abello & Valladares, 1988: 98; Macpherson, 1988: 58, fig. 5b; Pequegnat *et al.*, 1990: 63; Squires, 1990: 360, figs. 190-191; Holthuis, 1991, fig. 169; Abello & Cartes, 1992: 109; Cartes & Abello, 1992: 139; Cartes & Sarda, 1992: 1315; Falciai & Minervini, 1992: 134; Cartes, 1993: 32 (list); Cartes *et al.*, 1993: 210; Emmerson, 1993: 181; Quackenbush, 1994: 85; Gonzalez Pérez, 1995: 126; Griffin & Stoddart, 1995: 248; Tiefenbacher, 1995: 8, fig. 3.

*Stereomastis sculptus*: Stebbing, 1917: 30.

*Stereomastis sculpta*: Firth & Pequegnat, 1971: 69; Wenner & Boesch, 1979: 131; Dawson, 1997: 21; Chan, 2019: 52 (list); Radhakrishnan *et al.*, 2019a: 103

*Stereomastis andamanensis*: Tung *et al.*, 1988: 45, fig. 45a-f.

not *Polycheles sculptus*: Bruun, 1950: 24, fig. 16 [= *P. talismani* Bouvier, 1917].

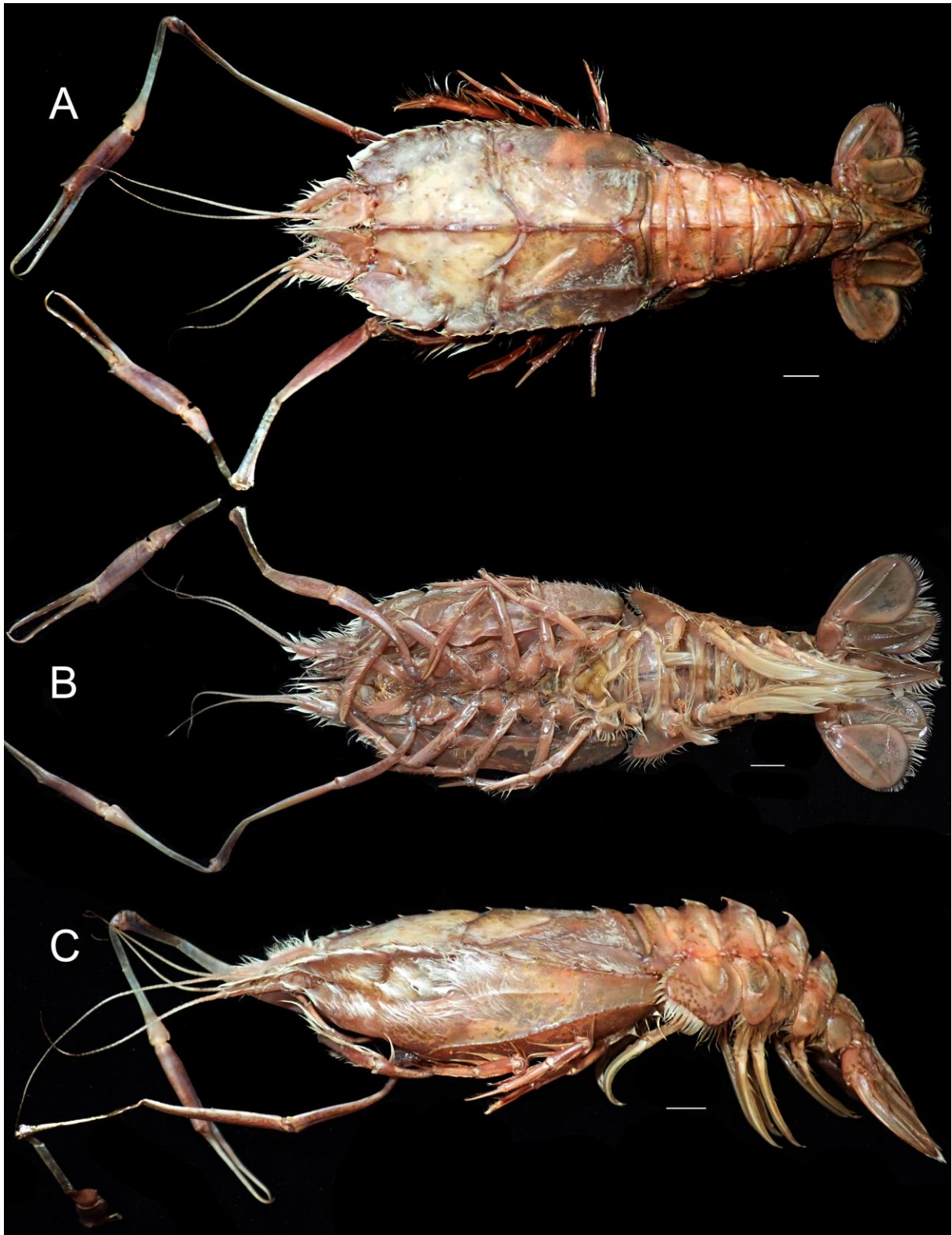
Not *Stereomastis sculpta*: Holthuis, 1952: 11; Longhurst, 1958: 32; Forest, 1963: 627; Macpherson, 1983: 48; Rucabado & Bas, 1984: 19 [= *P. talismani* Bouvier, 1917].

Not *Stereomastus sculpta*: Gauld, 1960: 63 [erroneous spelling] [= *P. talismani* Bouvier, 1917].

Not *Polycheles sculptus*: Del Solar, 1972: 11 [= *P. pacificus* Faxon, 1893].

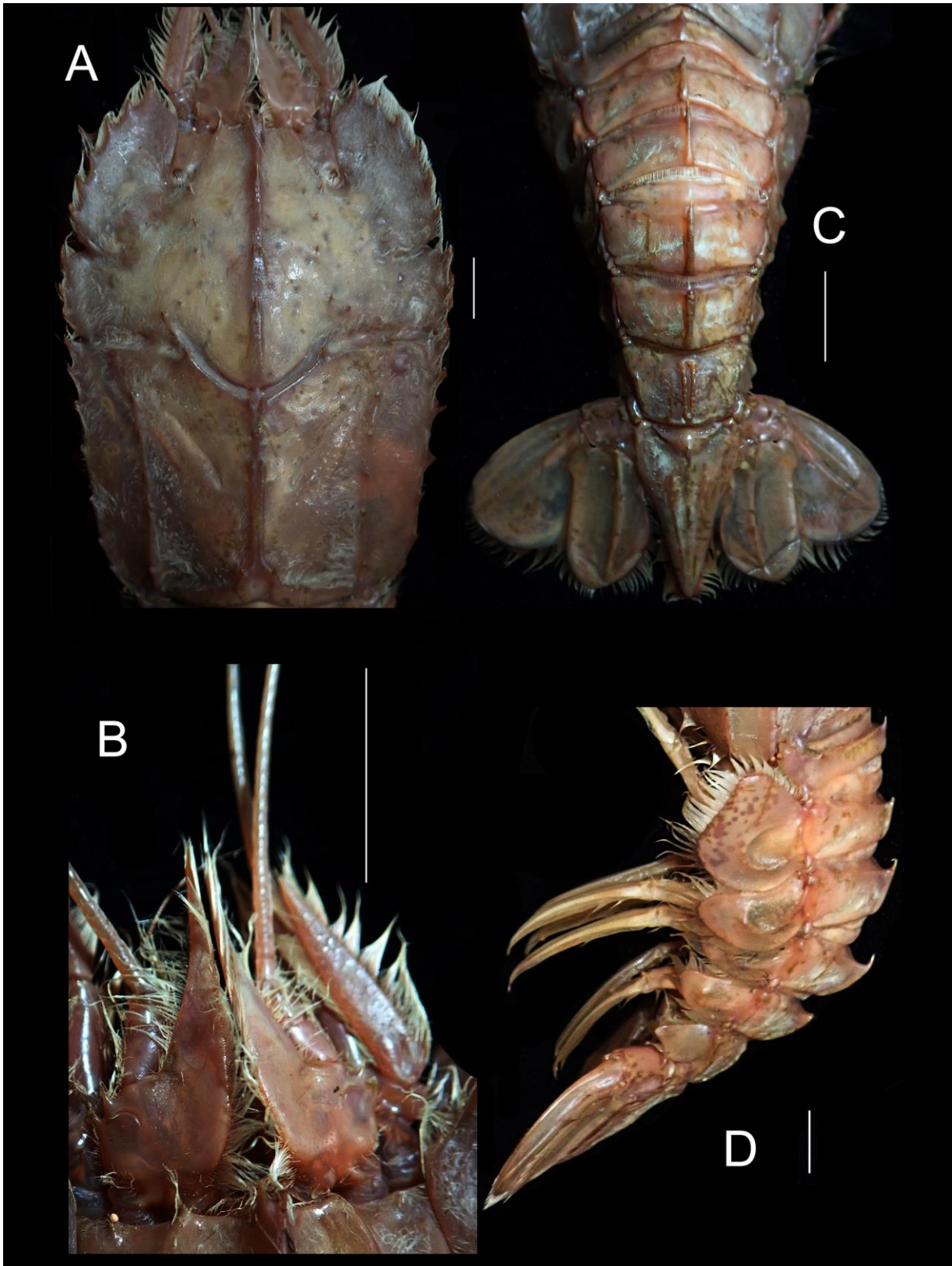
**Diagnosis (modified from Smith, 1880a):** Body dorso-ventrally compressed (Fig. 48A–C). Rostral spine bifid, antrorse. Orbital sinus U-shaped, bearing short tubercle medially, internal angle bearing spine, cornea absent. Carapace sub-quadrilateral, dorsal surface minutely granulate, densely setose; lateral spination including 6 pre-cervical + 3 between cervical and post-cervical incisions + 7 spines posterior to post-cervical incision; dorsal spination including 4 (1+2+1) on median post-rostral carina, 5 antrorse spinules arranged in arc-shaped row on gastro-orbital carinae, antrorse spinule on posterior margin of cervical groove between post-cervical and branchial carina, 2 pairs of spinules on median post-cervical carina, 5 spines on branchial carina, no spines behind unarmed oblique branchial groove between post-cervical and branchial carinae, 1 pair of antrorse spines on posterior margin (Fig. 49A). Basal antennular segment proximally rounded, produced anteriorly to sharp point, antero-lateral margin bearing 2 spines; flagellum double whip-like, inner flagellum slightly longer than outer flagellum. Scaphocerite lanceolate, setose, anterior end extending almost to base of antennal flagellum (Fig. 49B). Maxilliped III epipod rudimentary. PI largest, chelate; merus bearing 2 proximal and 1 sub-distal spinule on dorsal margin, ventral margin serrated; carpus half as long as merus, bearing subdistal spine on dorsal and ventral margins; propodus serrated on dorsal and ventral margins, subdistal spinule posterior to dactylar articulation; fingers extremely slender, smooth, bent distally, cutting edges pectinated. PII–PIV progressively shorter, slender, chelate; PV shortest, subchelate in male, chelate in female (Fig. 48A, B). Pleon widest anteriorly, tapering posteriorly; somites I–V bearing mid-dorsal longitudinal carina with antrorse spine, somite IV with largest spine, somite VI bearing pair of parallel rounded carinae confluent posteriorly; pleuron on somite I reduced, ovate; pleura II–VI with serrated margins, pleura II–V bearing curved mesial ribs, pleuron II largest, anterior margin produced, triangulate (Fig. 49C, D). Telson elongate triangular, bearing median and 1 pair of lateral oblique carinae dorsally. Uropodal exopod unicarinate ventrally (Fig. 48B). In females, thelycal plates present between bases of PIV and PV (Fig. 48B). Pleopods I of male spatuliform, those of female lamellate.

**Geographical distribution and habitat:** Atlantic and Indo-Western Pacific Ocean regions (Galil, 2000). The present specimens were collected from the southeastern Arabian Sea at 1078–1420 m depths (Fig. 50).



**Fig. 48.** *Stereomastis sculpta* (Smith, 1880) (southeastern Arabian Sea), female, 69 mm CL, 155 mm TL: A) Dorsal habitus (preserved colouration); B) Ventral habitus (preserved colouration); C) Lateral habitus (preserved colouration). Scale: 10 mm.





**Fig. 49. *Stereomastis sculpta* (Smith, 1880): A) Dorsal carapace; B) Antennules and antennae; C) Dorsal pleon and telson; D) Lateral pleon and telson. Scale: 10 mm.**



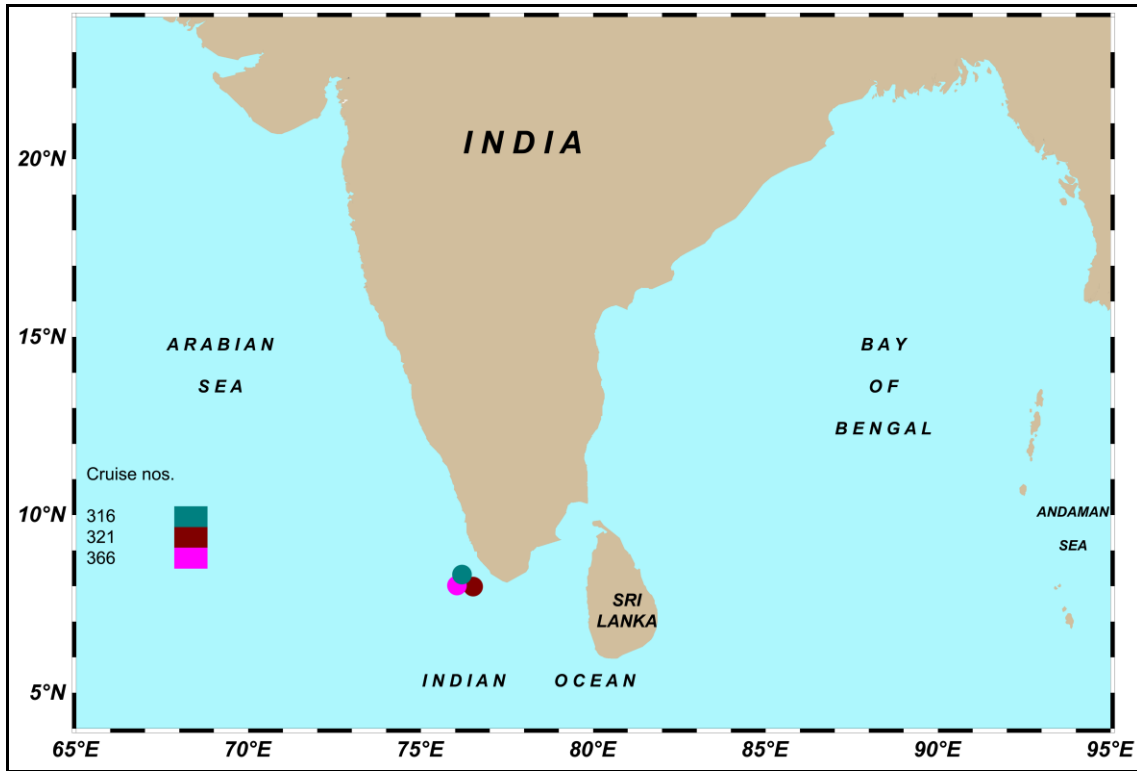


Fig. 50. Geographical locations of collection of *Stereomastis sculpta* (Smith, 1880).

## SUMMARY

The deep-water and coral reef-associated lobster fauna of India was, until recently, known to be represented by 38 species including 21 achelate lobsters (11 scyllarids and 10 palinurids), 9 chelate lobsters (7 nephropids and 2 enoplometopids) and 8 blind lobsters (Radhakrishnan *et al.*, 2019). The present document based on the documentation of samples collected on-board the FORV Sagar Sampada provides systematic classification, detailed synonymy, morphological diagnosis and notes on geographical distribution and habitat (supplemented with photographic illustrations of diagnostic morphological characters and maps indicating sampling locations) of 16 species of deep-water and coral-reef associated lobsters. Among the species reported in this study, the deep-water lobsters *Nephropsis stewarti* and *Stereomastis phosphorus* were collected from the Arabian Sea, Bay of Bengal as well as the Andaman waters; *N. carpenteri* from the Arabian Sea and Bay of Bengal; *Puerulus sewelli*, *Bathyarctus rubens* and *Polycheles typhlops* from the Arabian Sea and the Andaman waters; *Acanthacaris tenuimana*, *N. ensirostris*, *N. sulcata* and *S. sculpta* were collected only from the Arabian Sea; *Metanephrops andamanicus*, *N. rahayuae*, *Linuparus somniosus* and *P. angulatus* were reported only from the Andaman waters. The 2 reef-associated lobsters *Gibbularctus gibberosus* and *Petrarctus rugosus* were reported only from the Andaman waters. The highlights of this study are 2 new geographical records of *N. rahayuae* and *G. gibberosus* for the Indian waters.

## REFERENCES

- Abele L.G., Felgenhauer B.E. (1982) Decapoda. In: (S.P. Parker, Editor), *Synopsis and classification of living organisms. Synopsis and classification of living organisms.* (S.P. Parker, Series Editor), volume 2. McGraw-Hill Inc., New York, pp. 296–326.
- Abelló P., Cartes J.E. (1992) Population characteristics of the deep-sea lobsters *Polycheles typhlops* and *Stereomastis sculpta* (Decapoda: Polychelidae) in a bathyal mud community of the Mediterranean Sea. *Marine Biology*, **114**: 109–117.
- Abelló P., Valladares F.J. (1988) Bathyal decapod crustaceans of the Catalan Sea (Northwestern Mediterranean). *Mésogée*, **48**: 97–102.
- Abelló P., Valladares F.J., Castellón A. (1988) Analysis of the structure of decapod crustacean assemblages off the Catalan coast (North-West Mediterranean). *Marine Biology*, **98**: 39–49.
- Adensamer T. (1898) Decapoden. Gesammelt auf S.M. Schiff “Pola” in den Jahren 1890–1894, Berichte der Comisión für Erforschung des östlichen Mittelmeeres. XXII. Zoologische Ergebnisse. XI. Denkschriften der Kaiserlichen Akademie der Wissenschaften. *Mathematisch-Naturwissenschaftliche Classe*, **65**: 587–628. [in German]
- Agassiz A. (1888) Three Cruises of the United States Coast and geodetic survey Steamer “Blake” in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. *Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Massachusetts*, **15**: 1–220.
- Ahyong S.T. (2009) The Polychelidan lobsters: Phylogeny and systematics (Polychelida: Polychelidae). In: (J.W. Martin, K.A. Crandall, D.L. Felder, Editors), *Decapod Crustacean Phylogenetics. Crustacean Issues.* (S. Koenemann, Series Editor), volume 18. CRC Press, Taylor & Francis Group, Boca Raton, London, New York, pp. 369–396.
- Ahyong S.T., Brown D.E. (2002) New species and new records of Polychelidae from Australia (Crustacea: Decapoda). *The Raffles Bulletin of Zoology*, **50** (1): 53–79.
- Alcock A. (1894) Natural history notes from H.M. Indian marine survey steamer “Investigator”, Commander R.F. Hoskyn, R.N., commanding. Ser. II., No. 1. On the results of deep-sea dredging during the season 1890–91. *The Annals and Magazine of Natural History*, (6) **13**: 225–245.
- Alcock A. (1898) A summary of the deep-sea zoological work of the Royal Indian Marine Survey Ship Investigator from 1884 to 1897. In: (R. Harvey, Editor), *Scientific Memoirs by the Medical Officers of the Army of India*, **11**: 46–93.

- Alcock A. (1901a) *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*. Trustees of the Indian Museum, Calcutta, iv + 286 pp., pls. 1–3.
- Alcock A. (1901b) Zoological Gleanings from the Royal Indian Marine Survey Ship “Investigator”. *Scientific memoirs by medical officers of the Army of India*, **12**: 35–76.
- Alcock A. (1901c) *Catalogue of the Indian Decapod Crustacea in the collection of the Indian Museum. Part 1. Brachyura. Fasciculus 1. Introduction and Dromides or Dromiacea (Brachyura Primigenia)*. Trustees of the Indian Museum, Calcutta, 80 pp, pls. A, I–VII.
- Alcock A. (1902) *A naturalist in Indian seas; or, Four years with the Royal Indian marine survey ship “Investigator”*. J. Murray, London, xxiv + 328 pp., figs. 1–98.
- Alcock A., Anderson A.R.S. (1894) An account of a recent collection of deep-sea Crustacea from the Bay of Bengal and Laccadive Sea. Natural history notes from H.M. Royal Indian Marine Survey Steamer “Investigator”, commander C.F. Oldham, R.N., commanding. – Series II, No. 14. *Journal of the Asiatic Society of Bengal*, **63** (3): 141–185, pl. 9.
- Alcock A., Anderson A.R.S. (1895) *Illustrations of the Zoology of the Royal Indian Marine Surveying Ship Investigator, under the command of Commander A. Carpenter, R.N., D.S.O., of the late Commander R. F. Hoskyn, R.N., and of Commander C. F. Oldham, R.N. Crustacea. Part III*. Published under the Authority of Captain J. Hert, R.N., C.I.E., Director of the Royal Indian Marine Office of the Superintendent of Government Printing, Calcutta, Plates IX–XV. [Seven unnumbered pages of explanation of crustacean Plates IX–XV]
- Alcock A., Anderson A.R.S. (1896) *Illustrations of the Zoology of the Royal Indian Marine Surveying Ship Investigator, under the command of Commander C.F. Oldham, R.N. Crustacea. Part IV*. Published under the Authority of Captain J. Hert, R.N., C.I.E., Director of the Royal Indian Marine. Office of the Superintendent of Government Printing, Calcutta, Plates XVI–XXVII. [Twelve unnumbered pages of explanation of crustacean Plates XVI–XXVII]
- Alcock A., Anderson A.R.S. (1899) Natural history notes from H.M. Royal Indian Marine Survey Ship ‘Investigator,’ Commander T.H. Heming, R.N., commanding. – Series III., No. 2. An account of the deep-sea Crustacea dredged during the surveying-season of 1897–98. *The Annals and Magazine of Natural History, series 7*, **3**: 1–27, 278–292.
- Alcock A., McArdle A.F. (1901) *Illustrations of the Zoology of the Royal Indian Marine Surveying Ship Investigator, under the command of Commander T.H. Heming, R.N.* Published under the Authority of Captain W. S. Goodridge, R.N., Director of the Royal Indian Marine. Office of the Superintendent of Government Printing,

- Calcutta, Crustacea. – Part IX, Plates XLIX–LV. Mollusca. – Part III, Plates IX–XIII. [Seven unnumbered pages of explanation of crustacean Plates XLIX–LV]
- Alcock A., McArdle A.F. (1903) Illustrations of the Zoology of the Royal Indian Marine Surveying Ship Investigator, under the command of Commander T.H. Heming, R.N. Published under the Authority of Captain W. S. Goodridge, R.N., Director of the Royal Indian Marine Office of the Superintendent of Government Printing, Calcutta. Crustacea. – Part X, Plates LVI–LXVII. Mollusca. – Part III, Plates IX–XIII. [Twelve unnumbered pages of explanation of crustacean plates LVI–LXVII]
- Allen J.A. (1967) *The fauna of the Clyde Sea Area. Crustacea: Euphausiacea and Decapoda with an illustrated key to the British species*. Scottish Marine Biological Association, Millport, 116 pp.
- Anderson A.R.S. (1896) An account of the deep-sea Crustacea from the Bay of Bengal and Laccadive Sea. *Journal of the Asiatic Society of Bengal, (2) (Natural History)*, **65**: 88–106.
- Andrade H. (1986) Observaciones bioecológicas sobre invertebrados demersales de la zona central de Chile. In: (P. Arana, Editor), *La Pesca en Chile*. Escuela de Ciencias del Mar, Valparaiso, pp. 41–56. [in Spanish]
- Andrade H., Baez P. (1980) Crustáceos decápodos asociados a la pesquería de *Heterocarpus reedi* Bahamonde 1955 en la zona central de Chile. *Boletín del Museo Nacional de Historia Natural de Chile*, **37**: 261–267. [in Spanish]
- Andrews E.A. (1911) Sperm transfer in certain Decapods. *Proceedings of the United States National Museum, Washington*, **39**: 419–434, figs 1–15.
- Anonymous (1954) *Illustrated Encyclopedia of the Fauna of Japan (exclusive of insects)*. Revised Edition: 1–4, 1, 2, 1–10, 1–1898, 1–18, 1–20, 1–108, 1–89, figs. 1–5213, pls. 1–12. The Hokoryukan Co., Tokyo.
- Anonymous (1981) Lobster, shrimp and crab catch records for 1979–1980–1981 and analysis. In: Biological observations and analysis during the survey period 1979–1981. Offshore trawling Survey. Govt. Kenya, Work Report no. 5, annexure 3: 1–28.
- Anrose A., Sivaraj P., Dhas J.C., Prasad G.V.A., Babu C. (2010) Distribution and abundance of deep sea spiny lobster *Puerulus sewelli* in the Indian Exclusive Economic Zone. *Journal of the Marine Biological Association of India*, **52** (2): 162–165.
- Arena P., Greci F.L. (1973) Indagine sulle condizioni faunistiche e sui rendimenti di pesca dei fondali batiali della Sicilia occidentale e della bordura settentrionale dei banchi della soglia Sicula-Tunisina. *Quaderni del Laboratorio di Tecnologia della Pesca*, **1** (5): 157–201. [in Italian]



- Artüz, M., Kubanç, C. Kubanç, S.N. (2014) *Stereomastis artuzi* sp. nov., a new species of Polychelidae (Decapoda, Polychelida) described from the Sea of Marmara, Turkey. *Crustaceana*, **87** (10): 1243–1257.
- Baba K. (1986) Reptantia, Macrura, Anomura and Brachyura. In: (K. Baba, K.-I. Hayashi, M. Toriyama, Editors), *Decapod crustaceans from continental shelf and slope around Japan: The intensive research of unexploited fishery resources on continental slopes*. Japan Fisheries Resource Conservation Association, Tokyo, pp. 1–336, 1–22, figs. 1–176. [in Japanese and English]
- Baez P.R., Andrade H.V. (1979) Crustaceos Decapodos arquibentonicos frecuentes frente a la costa de Chile Central. *Anales del Museo de Historia Natural de Valparaiso*, **12**: 216–229, 1 pl. [in Spanish]
- Balss H. (1914a) Beiträge zur Naturgeschichte Ostasiens. Herausgegeben von Dr. F. Doflein. Ostasiatische Decapoden II. Die Natantia und Reptantia. *Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Bayerischen Akademie der Wissenschaften*, **10** (Supplement 2): 1–101, pl. 1. [in German]
- Balss H. (1914b) Diagnosen neuer Macruren der Valdivia expedition. *Zoologischer Anzeiger*, **44**: 592–599. [in German]
- Balss H. (1924) Studien an fossilen Decapoden II. *Palaeontologische Zeitschrift, Berlin*, **6**: 174–184. [in German]
- Balss H. (1925) Macrura der deutschen Tiefsee-Expedition. 1. Palinura, Astacura und Thalassinidea. In: (C. Chun, Editor), *Wissenschaftliche Ergebnisse der deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898–1899*, **20** (4–5): 189–216. [in German]
- Barnard K.H. (1925) Report on a collection of Crustacea from Portuguese East Africa. *Transactions of the Royal Society of South Africa*, **13**: 119–129, pls. 1–2.
- Barnard K.H. (1950) Descriptive catalogue of South African decapod Crustacea (crabs and shrimps). *Annals of the South African Museum*, **38**: 1–837.
- Barnard K.H. (1964) The work of the S. S. Pieter Faure in Natal waters, with special reference to the Crustacea and Mollusca; with descriptions of new species of Mollusca from Natal. *Annals of the Natal Museum*, **16**: 9–29, figs. 1–6.
- Barnett B.M. (1989) Final-stage phyllosoma larvae of *Scyllarus* species (Crustacea: Decapoda: Scyllaridae) from shelf waters of the Great Barrier Reef. *Invertebrate Taxonomy*, **3**: 123–134.
- Beaubrun P.C. (1978) Crustacés décapodes marcheurs des côtes marocaines (sections des Astacidea, Eryonidea, Palinura, Thalassinidea). *Bulletin de l'Institut Scientifique, Rabat. Section des Sciences de la Vie*, **3**: 1–110. [in French]
- Belloc G. (1959) Note sur un Phyllamphion de la Mer des Antilles. *Bulletin de l'Institut océanographique de Monaco*, **1154**: 1–10, figs. 1–7. [in French]
- Bernard F. (1953) Decapoda Eryonidae (*Eryoneicus* et *Willemoesia*). *Dana-Report*, **37**: 1–93. [in French]

- Berry P.F. (1969a) The biology of *Nephrops andamanicus* Wood-Mason (Decapoda, Reptantia). *South African Association for Marine Biological Research, Investigational Report*, **22**: 1–55.
- Berry P.F. (1969b) Rediscovery of the spiny lobster *Puerulus carinatus* Borradaile (Decapoda, Palinuridae). *Crustaceana*, **17** (3): 239–252, pls. 1–3.
- Berry P.F. (1974) Palinurid and Scyllarid Lobster Larvae of the Natal Coast, South Africa. *Oceanographic Research Institute, Investigational Report*, **34**: 3–44.
- Berry P.F., George R.W. (1972) A new species of the genus *Linuparus* (Crustacea, Palinuridae) from south-east Africa. *Zoologische Mededelingen, Leiden*, **46** (2): 17–23, pls. 1–2.
- Bezerra L.E.A., Ribeiro F.B. (2015) Primitive decapods from the deep sea: first record of blind lobsters (Crustacea: Decapoda: Polychelidae) in northeastern Brazil. *Nauplius*, **23** (2): 125–131.
- Biffar T.A. (1971) The genus *Callianassa* (Crustacea, Decapoda, Thalassinidea) in south Florida, with keys to the Western Atlantic species. *Bulletin of Marine Science*, **21** (3): 637–715.
- Boas J.E.V. (1939) Die Gattung *Polycheles*, ihre verwandtschaftliche Stellung und ihre postembryonale Entwicklung. *Biologiske Meddelelser. Kgl. Danske Videnskabernes Selskab, Kjobenhavn*, **14** (7): 1–32. [in German]
- Bolivar C. (1930) *La Vida de los Crustaceos*. Espas-Calpe, Madrid, 93 pp., 4 pls. [in Spanish]
- Bombace G. (1968) Sul rinvenimento di *Modiolus politus* (Verrill & Smith) al largo dell'Isolla di Marettimo (Egadi). *Natura, Milano*, **69**: 107–114. [in Italian]
- Bonde C. von (1932) Report no. 9 for the year ending December 1931. Rapport no. 9 vir die jaar eindigende Desember 1931. *Report Fisheries and Marine Biology Survey, South Africa*, **9**: 4–128.
- Bonde C. von, Marchand J.M. (1935) The Natural History and Utilization of the Cape Crawfish, Kreef, or Spiny Lobster, *Jasus (Palinurus) lalandii* (Milne Edwards) Ortmann. *Report Fisheries and Marine Biology Survey, South Africa*, **1**: 1–55, pls. 1–8, charts 1–9.
- Boone L. (1927) Crustacea from tropical east American seas. Scientific results of the first oceanographic expedition of the Pawnee 1925. *Bulletin of the Bingham Oceanographic Collection*, **1**: 1–147.
- Boone L. (1930) Scientific results of the cruises of the Yachts “Eagle” and “Ara”, 1921–1928, William K. Vanderbilt, commanding. Crustacea: Anomura, Macrura, Schizopoda, Isopoda, Amphipoda, Mysidacea, Cirripedia, and Copepoda. *Bulletin of the Vanderbilt Marine Museum (Huntington Museum)*, **3**: 1–121.

- Boudreau S.A., Worm B. (2010) Top-down control of lobster in the Gulf of Maine: insights from local ecological knowledge and research surveys. *Marine Ecology Progress Series*, **403**: 181–191.
- Bouvier E.-L. (1905a) Palinurides et Eryonides recueillis dans l'Atlantique oriental pendant les campagnes de l'Hirondelle et de la Princesse-Alice. *Bulletin du Musée Océanographique de Monaco*, **28**: 479–482. [in French]
- Bouvier E.-L. (1905b) Palinurides et Eryonides recueillis dans l'Atlantique oriental pendant les campagnes de "Hirondelle" et de la "Princesse-Alice". *Bulletin du Musée Océanographique de Monaco*, **28**: 1–7. [in French]
- Bouvier E.-L. (1905c) Sur les Crustacés Décapodes (abstraction faite des Carides) recueillis par le yacht "Princesse-Alice" au cours de la campagne de 1905. *Bulletin du Musée Océanographique de Monaco*, (**55**): 1–4. [in French]
- Bouvier E.-L. (1913) Le stade "Natant" ou "Puerulus" des Palinurides. *Transactions of the second entomological Congress*: 78–89. [in French]
- Bouvier E.-L. (1914) Sur la faune carcinologique de l'île Maurice. *Comptes rendus hebdomadaires des séances de l'Académie des sciences*, **159**: 698–704. [in French]
- Bouvier E.-L. (1915a) Décapodes marcheurs (Reptantia) et stomatopods recueillis à l'île Maurice par M. Paul Carie. *Bulletin Scientifique de la France et de la Belgique*, **48** (3): 178–318, pls 12–17. [in French]
- Bouvier E.-L. (1915b) Observations nouvelles sur le genre *Eryoneicus*. *Bulletin de l'Institut océanographique*, **309**: 1–8. [in French]
- Bouvier E.-L. (1917) Crustacés décapodes (Macroures marcheurs) provenant des campagnes des yachts "Hirondelle" et "Princesse Alice" (1885–1915). *Résultats des Campagnes Scientifiques accomplies sur son Yacht par Albert Ier Prince Souverain de Monaco*, **50**: 1–140, pls. 1–11. [in French]
- Bouvier E.-L. (1925) Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877–78), in the Caribbean Sea (1878–79), and along the Atlantic coast of the United States (1880), by the U. S. Coast Survey steamer "Blake," Lieut.-Com. C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett, U.S.N., commanding. XLVIII: Les Macroures marcheurs. *Memoirs of the Museum of Comparative Zoölogy at Harvard College*, **47** (5): 401–472.
- Bouvier E.-L. (1940) Décapodes marcheurs. *Faune de France*, **37**: 1–404. [in French]
- Bremner H.A (1985) CSIRO food researchers look at scampi. *Australian Fisheries*, **44** (3): 39–43.
- Bruce A.J. (1966) *Hymenopenaeus halli* sp. nov., a new species of penaeid prawn from the South China Sea (Decapoda, Penaeidae). *Crustaceana*, **11**: 216–224.
- Bruce A.J. (1974) The occurrence of the Nephropid lobster *Acanthacaris tenuimanus* Bate, in the southern South China Sea. *Crustaceana*, **27** (3): 303–305, figs. 1–2.

- Bruun A.F. (1950) Scientific Results of the Danish Expedition to the Coasts of Tropical West Africa. *Atlantide Report, Copenhagen*, **1**: 1-247, 16 pls.
- Bullis H.R., Thompson J.R. (1965) Collection by the exploratory fishing vessels Oregon, Silver Bay, Combat, and Pelican made during 1956-1960 in the southwestern North Atlantic. *United States Fish and Wildlife Service, Special Scientific Report – Fisheries*, **510**: 1-130.
- Burkenroad M.D. (1963) The evolution of the Eucarida, (Crustacea, Eumalacostraca), in relation to the fossil record. *Tulane Studies in Geology*, **2** (1): 3-17.
- Burkenroad M.D. (1981) The higher taxonomy and evolution of Decapoda (Crustacea). *Transactions of the San Diego Society of Natural History*, **19**: 251-268.
- Burukovsky R.N. (1974) *Opredelitel krevetok, langustov i omarov*. Pischevaja promichlennost, Moskva, 124 pp., figs. 1-189. [in Russian]
- Burukovsky R.N. (1983) *Key to Shrimps and Lobsters. Russian Translation*. Balkema, Rotterdam, 174 pp., figs. 1-189.
- Burukovsky R.N., Ckreko B.T. (1986) Arcaic lobsters. *Nature, Moscow*, **12**: 93-95, figs. 1-3. [in Russian]
- Burukovsky R.N., Musij Y.I. (1976) *Acanthacaris opipara* Burukovsky et Musij, sp. n., a new abyssal lobster (Crustacea, Decapoda, Neophoberinae). *Zoologicheskij Zhurnal*, **55** (12): 1811-1815. [in Russian]
- Burukovsky R.N., Rabanova E.P., Makarova L.M. (1982) Trophic relationships between three species of shrimps on the continental slope of south-east Atlantic. *Zoologicheskij Zhurnal*, **61** (4): 515-526.
- Calman W.T. (1909) The genus *Puerulus*, Ortmann, and the post-larval development of the spiny lobsters (Palinuridae). *The Annals and Magazine of Natural History, series 8*, **3**: 441-446.
- Calman W.T. (1910) *Guide to the Crustacea, Arachnida, Onychophora and Myriopoda exhibited in the Department of Zoology, British Museum (Natural History), Cromwell Road, London, S.W.* Trustees of the British Museum, London, 133 pp.
- Calman W.T. (1911) *The life of Crustacea*. Macmillan, New York, 289 pp., 32 pls.
- Calman W.T. (1925) On macrurous decapod Crustacea collected in South African waters by the S.S. "Pickle". *Reports of the Fisheries and Marine Biological Surveys, South Africa*, **4**: 1-26.
- Calman W.T. (1927) *Guide to the Crustacea Exhibited in the Department of Zoology. British Museum (Natural History), London*, pp. 1-81.
- Carpenter W.B., Jeffreys J.G. (1870) Report on deep-sea researches carried on during the months of July, August, and September 1870, in H.M. Surveying-Ship "Porcupine". *Proceedings of the Royal Society of London*, **19**: 146-220.
- Carpine C. (1970a) Écologie de l'étage bathyal dans la Méditerranée occidentale. *Mémoires de l'Institut Océanographique, Monaco*, **2**: 1-146. [in French]

- Carpine C. (1970b) Une experience de chalutage profond (recherche de la "Caravelle" engloutie au large de Nice). *Bulletin de l'Institut Oceanographique, Monaco*, **69** (1408): 1–16. [in French]
- Carter D., Maxwell J.G.H., Bowtell C. (1983) 'Cautious optimism' over potential for scampi fishery on NW shelf. *Australian Fisheries*, **42** (11): 2–12.
- Cartes J.E. (1993) Deep-sea decapod fauna of the western Mediterranean: bathymetric distribution and biogeographic aspects. *Crustaceana*, **65** (1): 29–40.
- Cartes J.E., Abelló P. (1990) Comparative size distribution and feeding ecology of *Polycheles typhlops* and *Stereomastis sculpta* (Decapoda, Polychelidae). *Rapports et Proces-Verbaux des Reunions de la Commission Internationale pour l'Exploration scientifique de la Mer Mediterranee, Paris*, **32** (1): 35.
- Cartes J.E., Abelló P. (1992) Comparative feeding habits of polychelid lobsters in the Western Mediterranean deep-sea communities. *Marine Ecology Progress Series*, **84** (2): 139150, figs 1–4, tabs. 1–6.
- Cartes, J.E., Sardà F. (1992) Abundance and diversity of decapod crustaceans in the deep-Catalan Sea (Western Mediterranean). *Journal of Natural History*, **26**: 1305–1323.
- Cartes J.E., Sardà F., Abelló P. (1993) Decapod crustaceans collected by deep-water trawls (between 1000 and 2200 m) in the Catalan area (North-western Mediterranean). *Bios (Thessaloniki)*, **1**: 207–213.
- Carus J.V. (1885) *Prodromus Faunae Mediterraneae. (Decapoda)*. Schweizerbart, Stuttgart, 524 pp. [in Latin]
- Caullery M. (1896) Crustacés Schizopodes et Décapodes. In: (R. Koehler, Editor), Résultats Scientifiques de la Campagne du "Caudan" dans le Golfe de Gascogne, Aout-Septembre, 1895. *Annales de l'Université de Lyon*, **2**: 365–419, pls. 13–17. [in French]
- Chan T.-Y. (1997) Crustacea Decapoda: Palinuridae, Scyllaridae and Nephropsidae collected in Indonesia by the KARUBAR Cruise, with an identification key for the species of *Metanephrops*. In: (A. Crosnier, P. Bouchet, Editors), Resultats des Campagnes MUSORSTOM, 16. *Memoires du Museum National d'Histoire Naturelle*, **172**: 409–431.
- Chan T.-Y. (1998) Lobsters. In: (K.E. Carpenter, V.H. Niem, Editors), *The living resources of the western central Pacific, volume 2. Cephalopods, crustaceans, holothurians and sharks*. Food and Agricultural Organization of the United Nations, Rome, pp. 973–1043.
- Chan T.-Y. (2010) Annotated checklist of the world's marine lobsters (Crustacea: Decapoda: Astacidea, Glypheidea, Achelata, Polychelida). *The Raffles Bulletin of Zoology, Supplement* **23**: 153–181.



- Chan T.-Y. (2019) Updated Checklist of the World's Marine Lobsters. In: (E.V. Radhakrishnan, B.F. Phillips, A. Gopalakrishnan, Editors), *Lobsters: Biology, Fisheries and Aquaculture*. Springer Nature, Singapore, pp. 35–64.
- Chan T.-Y., Yu H.-P. (1986) A report on the *Scyllarus* Lobsters (Crustacea: Decapoda: Scyllaridae) from Taiwan. *Journal Taiwan Museum*, **39** (2): 147–174, text figs. 1, 2, pls. 1–10.
- Chan T.-Y., Yu H.-P. (1987) *Metanephrops formosanus* sp. nov., a new species of lobsters (Decapoda, Nephropidae) from Taiwan. *Crustaceana*, **52** (2): 172–186, fig. 1, pls. 1–2.
- Chan T.-Y., Yu H.-P. (1988) Clawed lobsters (Crustacea: Decapoda: Nephropidae) of Taiwan. *Bulletin of the Institute of Zoology, Academia Sinica*, **27** (1): 7–12.
- Chan, T.-Y., Yu H.-P. (1989a) A deep-sea lobster of the genus *Puerulus* (Crustacea: Decapoda: Palinuridae) from Taiwan. *Bulletin, Institute of Zoology, Academia Sinica*, **28** (1): 1–6.
- Chan T.-Y., Yu H.-P. (1989b) Two blind lobsters of the genus *Polycheles* (Crustacea: Decapoda: Eryonoidea) from Taiwan. *Bulletin of the Institute of Zoology, Academia Sinica*, **28** (3): 165–170.
- Chan T.-Y., Yu H.-P. (1991) Studies on the *Metanephrops japonicus* group (Decapoda, Nephropidae), with descriptions of two new species. *Crustaceana*, **60** (1): 18–51.
- Chan T.-Y., Yu H.-P. (1993) *The illustrated lobsters of Taiwan*. SMC Publishing, Taipei, 247 pp.
- Chang S.-C., Ahyong S.T., Chan T.-Y. (2013) New records of deep-sea blind lobsters (Crustacea: Decapoda: Polychelidae) from Taiwan. *Journal of Marine Science and Technology*, **21**, **Supplement**: 8–14.
- Chang S.-C., Chan T.-Y. (2019) On the clawed lobsters of the genus *Nephropsis* Wood-Mason, 1872 recently collected from deep-sea cruises off Taiwan and the South China Sea (Crustacea, Decapoda, Nephropidae). *ZooKeys*, **833**: 41–58.
- Chang S.-C., Chan T.-Y., Kumar A.B. (2020a) A new clawed lobster of the genus *Nephropsis* Wood-Mason, 1872 (Crustacea: Decapoda: Nephropidae) from the Indonesian deep-sea cruise, SJADES 2018. *Raffles Bulletin of Zoology*, **68**: 50–55.
- Chang S.-C., Chan T.-Y., Kumar A. B. (2020b) Deep-sea clawed lobster *Nephropsis stewarti* Wood-Mason, 1872 species complex in the Indo-West Pacific (Crustacea, Decapoda, Nephropidae), with description of a new species. *ZooKeys*, **1008**: 37–60.
- China W.E. (1964) Opinion 702. *Stereomastis* Bate, 1888 (Crustacea, Decapoda): validated under the plenary powers. *Bulletin of Zoological nomenclature, London*, **21**: 111.

- Chou C.L., Paon L.A., Moffatt J.D., King T. (2003) Selection of bioindicators for monitoring marine environmental quality in the Bay of Fundy, Atlantic Canada. *Marine Pollution Bulletin*, **46** (6): 756–762.
- Chun C. (1900) *Aus den Tiefen des Weltmeeres*. Edition 2, i–xi, 592 pp., unnumbered figs. and pls., 1 map. [in German]
- Chun C. (1903) Schilderungen von der Deutschen Tiefsee-Expedition. In: *Aus den Tiefen des Weltmeeres*. G. Fischer, Jena, pp. i–vi, 1–551, unnumbered figs., and pls., 1 map. [in German]
- Cosel R. von (1987) Campagne expérimentale de pêche à la crevette en eau profonde dans le Sud-Ouest de Madagascar. *Rapport ORSTOM, Paris*: 1–23, figs. 1–9, pls. 1–3, tabl. 1–6. [in French]
- Crosnier A., Jouannic C. (1973) Note d’information sur les prospections de la pente continentale malgache effectuées par le N.O. ‘Vauban’. *Documents Scientifiques du Centre ORSTOM de Nosy-Be*, **42**: 1–18, fig. 1, pls. 1–4, tabl. 1–2, charts 1–8. [in French]
- Dahl E. (1954) The distribution of deep-sea Crustacea. In “On the distribution and Origin of the deep sea bottom fauna”. *International Union of Biological Science, series B*, **16**: 43–46.
- Dana J.D. (1852 [preprint of 1854 publication]) *Conspectus Crustaceorum, &c. Conspectus of the Crustacea of the Exploring Expedition under Capt. Wilkes, U.S.N. Macroura. Proceedings of the Academy of Natural Sciences of Philadelphia*, **6**: 10–28.
- Danois, E. Le (1948) *Les profondeurs de la mer*. Payot, Paris, 303 pp., 8 pls. [in French]
- Davie PJF (2002) Crustacea: Malacostraca: Phyllocarida, Hoplocarida, Eucarida (part 1). In: (A. Wells, W.W.K. Houston, Editors), *Zoological Catalogue of Australia, volume 193a*. CSIRO Press, Australia, pp. 1–551.
- Davis T.L.O., Ward T.J. (1984) CSIRO finds two new scampi grounds off the North West Shelf. *Australian Fisheries*, **43** (8): 41–45.
- Dawson C.E. (1965) *Museum Report 1963–1964. Gulf Research Laboratory*. Ocean Springs, Mississippi: 1–57.
- Dawson C.E. (1997) The deep-sea ‘blind’ lobsters (Crustacea: Polychelidae) – a species list and bibliographic index. *Occasional papers of the Hutton Foundation, Wallypug Press, Eastbourne, New Zealand*, (8): 1–78.
- Dawydoff C. (1952) Contribution à l’étude des Invertébrés de la faune marine benthique de l’Indochine. *Bulletin biologique de la France et de la Belgique (supplement)*, **37**: 1–158, charts 1, 2. [in French]
- Delphy J., Magne A. (1938) Révision de la faune Girondine: “crustacés décapodes”. *Bulletin de la Station Biologique d’ Arcachon*, **35**: 77–101. [in French]
- Dieuzeide R. (1929) Sur un Crustacé abyssal, *Polycheles typhlops* C. Heller. *Bulletin de la Station d’Aquiculture et de Peche de Castiglione, Alger*, **1**: 103–108. [in French]

- Dieuzeide R. (1950) La faune du fond chalutable de la Baie de Castiglione. *Bulletin de la Station d'Aquiculture et de Peche de Castiglione, Alger*, **2**: 9–86. [in French]
- Dieuzeide R. (1960) Le fond chalutable a 600 metres par le travers de Castiglione. Le facies a *Isidella elongata* Esper. *Bulletin de la Station d'Aquiculture et de Peche de Castiglione, Alger*, **10**: 61–106. [in French]
- Dieuzeide R., Roland J. (1957) Operations de dragages et de chalutages effectuees au large des cotes algeriennes au cours des annees 1954 et 1955. *Bulletin de la Station d'Aquiculture et de Peche de Castiglione, Alger*, **8**: 9–27. [in French]
- Dieuzeide R., Roland J. (1958) Prospections des fonds chalutables des cotes algeriennes. Recherches de Nouvelles zones (annee 1956–1957). *Bulletin des de la Station d'Aquiculture et de Peche de Castiglione, Alger*, **9**: 10–69. [in French]
- Dineshbabu A.P. (2008) Morphometric relationship and fishery of Indian Ocean lobsterette, *Nephropsis stewarti* Wood-Mason, 1873 along the southwest coast of India. *Journal of the Marine Biological Association of India*, **50** (1): 111–116.
- Doflein F. (1900) Weitere Mitteilungen über dekapode Crustaceen der K. Bayerischen Staatssammlungen. *Sitzungsberichte der Bayerischen Akademie der Wissenschaften*, **30**: 125–145, figs 1–3. [in German]
- Dollfus R.P. (1956) Decapoda Macrura. *Comptes Rendus des Seances mensuelles de la Societe des Sciences naturelles et physiques du Maroc, Rabat*, **22** (7): 134–135. [in French]
- Dragovich A. (1969) Review studies of tuna food in the Atlantic ocean. *Fishery Bulletin of the Fish and Wildlife Service United states, Special scientific Report*, **593**: 1–21.
- Duncan F.M. (1948) *Wonders Neptune's kingdom*. S. Low & Marston, London, xvi + 159 pp., 34 pls.
- Duris Z. (1987) Analysis of the Zoogeography of the Decapod Crustaceans of the Mediterranean. *Okeanologia, Moscow*, **27**: 1–22. [in Russian]
- Eddy T.D., Pitcher T.J., MacDiarmid A.B., Byfield T.T., Tam J.C., Jones T.T., Bell J.J., Gardner J.P.A. (2014) Lobsters as keystone: only in unfished ecosystems? *Ecological Modelling*, **275**: 48–72.
- Emmerson W.D. (1993) A comparison between decapod species common to both Mediterranean and southern waters. *Bios, Greece*, **1** (1): 177–191.
- Estampador E.P. (1937) A check list of Philippine crustacean decapods. *The Philippine Journal of Science*, **62** (4): 465–559.
- Falciai L., Minervini R. (1992) *Guida dei Crostacei Decapodi d'Europa*. F. Muzzio. Padua, 282 pp., 600 figs., 67 pls. [in Italian]
- Faxon W. (1893) Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U.S. Fish Commission steamer "Albatross," during 1891, Lieut.-Commander Z.L.

- Tanner, U.S.N., commanding. VI. Preliminary descriptions of new species of Crustacea. *Bulletin of the Museum of Comparative Zoölogy at Harvard College*, **24** (7): 149–220.
- Faxon W. (1895) Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, in charge of Alexander Agassiz, by the U.S. Fish Commission steamer “Albatross,” during 1891, Lieut.-Commander Z.L. Tanner, U.S.N. commanding. XV. The stalk-eyed Crustacea. *Memoirs of the Museum of Comparative Zoölogy at Harvard College*, **18**: 1–292, pls. A–H, J–K, I–LVI, 1 chart.
- Faxon W. (1896) Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico and the Caribbean Sea, and on the east coast of the United States, 1877 to 1880, by the U. S. Coast Survey Steamer ‘Blake’, Lieut.-Commander C.D. Sigsbee, U.S.N., and Commander J. Bartlett, U.S.N., commanding. XXXVII: Supplementary notes on the Crustacea. *Bulletin of the Museum of Comparative Zoölogy at Harvard College*, **30** (3): 153–166.
- Filhol H. (1885) *La vie au fond des mers. Les exploration sous-marines et les voyages du Travailleur et du Talisman*. *Bibliothèque de la Nature*. Masson, Paris, 303 pp. [in French]
- Firth R.W. Jr., Pequegnat W.E. (1971) Deep-sea Lobsters of the Families Polychelidae and Nephropidae (Crustacea, Decapoda) in the Gulf of Mexico and Caribbean Sea. In: Texas A & M University Department of Oceanography. Research Conducted through the Texas A & M Research Foundation, Collège Station, Texas. Reference 71-11T: i–vii, 1–106, figs. 1–14.
- Fischer W., Bianchi G. (eds.) (1984) Lobsters. P. 1–6. In: *Western Indian Ocean (Fishing Area 51). Prepared and printed with the support of the Danish International Development Agency (DANIDA)*. Food and Agricultural Organization of the United Nations, Rome, volumes 1–6, pag. var.
- Follesa M.C., Cannas R., Gastoni A., Cabiddu S., Deiana A.M., Cau A. (2008) Abnormal rostrum in *Polycheles typhlops* (Decapoda: Polychelidae) from the central western Mediterranean. *Journal of Crustacean Biology*, **28** (4): 731–734.
- Forest J. (1963) Sur une crevette recueillie au cours de la Campagne de Chalutage dans le Golfe de Guinée *Plesionika williamsi* sp. nov. *Bulletin du Muséum national d’Histoire naturelle, Paris, 2e série*, **35** (6): 620–629. [in French]
- Forest J. (1965) Campagnes du «Professeur Lacaze-Duthiers» aux Baleares: juin 1953 et août 1954. Crustacés décapodes. *Vie et Milieu*, **16** (1B): 325–413. [in French]
- Forest J., Gantès H. (1960) Sur une collection de crustacés décapodes marcheurs du Maroc. *Bulletin du Muséum national d’Histoire naturelle, Paris, 2e série*, **32** (4): 346–358. [in French]



- Froggia C. (1976) Preliminary report on the Crustacea Decapoda of Adriatic deep waters. *Thalassia Jugoslavica*, **8**: 75–79.
- Galil B. (2000) Crustacea Decapoda: Review of the genera and species of the family Polychelidae Wood-Mason, 1874. In: (A. Crosnier, Editor), Résultats des Campagnes MUSORSTOM, volume 20. *Mémoires du Museum national d'Histoire naturelle*, 184: 285–387.
- Galil B., Goren M. (1994) The deep sea levantine fauna. New records and rare occurrences. *Senckenbergiana maritima*, **25** (1–3): 41–52.
- Gamo S. (1980) Deep-sea crustaceans. *Aquabiology, Tokyo*, **2** (2): 88–98.
- Garcia Socias L.L., Massuti C.J. (1987) Inventari bibliogràfic dels Crustacis Decapodes de les Balears (Crustacea Decapoda). *Boletín de la Sociedad de Historia Natural de Baleares*, Palma de Mallorca, **31**: 67–92. [in Spanish]
- Gauld D.T. (1960) An annotated check-list of the Crustacea of Ghana. II. Macrura Reptantia. *Journal of the West African Science Association, Achimota*, **6** (1): 63.
- George M.J. (1967) Two new records of scyllarid lobsters from the Arabian Sea. *Journal of the Marine Biological Association of India*, **9**: 433–435.
- George M.J., Rao P.V. (1965) On some decapod crustaceans from the south-west coast of India. In: Proceedings of the Symposium on Crustacea Ernakulam, Jan. 12–15, 1965. Part II, Mandapam Camp., Marine Biological Association, 1: 327–336, pls. 1–2.
- George R.W. (1983) New finds of deepwater “lobsters” on the Northwest Shelf. *FINS (Fisheries News), Perth*, **16** (1): 16–20.
- Giglioli E.H. (1881) Italian Deep-sea exploration in the Mediterranean. *Nature, London*, **24**: 358.
- Giglioli E.H. (1882) Rapport préliminaire sur les recherches relatives a la faune sous-marine de la Méditerranée. *Annales des Sciences naturelles, Zoologie, Paris*, (6) **13**: 1–28. [in French]
- Giglioli E.H. (1912) *Studii Talassografici*. Annali di Agricoltura, Roma, 339 pp. [in Italian]
- Gilchrist J.D.F. (1918) The Cape Lobster and the Cape Crawfish or Spiny Lobster. *Report of the marine biologist South Africa*, **4**: 44–53, pls. 1–2.
- Gilchrist J.D.F. (1921) Fisheries and Marine Biological Survey. *Report no. 1 (1920)*. *Union of South Africa*: 1–111, pls. 1–9, charts 1–4.
- Gilchrist J.D.F. (1922) Fisheries and Marine Biological Survey. *Report no. 2 (1921)*. *Union of South Africa*: 1–84, pls. 1–4, charts 1–4.
- Gilchrist J.D.F. (1925) Report of Director of Survey. *Report Fisheries and Marine Biological Survey of South Africa*, **4**: 19–60.
- Glaessner M.F. (1969) Decapoda. In: (R.C. Moore, Editor), *Part R Arthropoda 4(2)*. *Treatise on Invertebrate Paleontology*. (R.C. Moore, Series Editor). The University

- of Kansas Press and The Geological Society of America, Lawrence, Kansas, pp. R399–R533, R626–R628, figs. 217–340.
- Gonzalez J.A., Lozano I.J., Caldentey I.J., Santana M.A., Gomez J.I., Castello R., (1988) Resultados de la campaña de prospección pesquera “Canarias 85”. *Informes técnicos Instituto Español de Oceanografía, Barcelona*, **57**: 1–93. [in Spanish]
- González-Gurriarán E., Olaso I. (1987) Cambios espaciales y temporales de los Crustaceos Decapodos de la plataforma continental de Galicia (NW de España). *Investigacion Pesquera, Barcelona*, **51** (supplement 1): 323–341. [in Spanish]
- González Pérez J.A. (1995) *Crustáceos decápodos de las islas Canarias*. Turquesa, Santa Cruz de Tenerife, 282 pp. [in Spanish]
- Griffin D.J.G., Stoddart H.E. (1995) Deep-water decapod Crustacea from eastern Australia: lobsters of the families Nephropidae, Palinuridae, Polychelidae and Scyllaridae. *Records of the Australian Museum*, **47**: 231–263.
- Grindley J.R., Penrith M.J. (1965) Notes on the bathypelagic fauna of the seas around south Africa. *Zoologica Africana, Cape Town*, **1** (1): 275–295.
- Gruvel A. (1911) Contribution a l'étude systematique des Palinuridae. *Comptes rendus de l'Académie des Sciences, Paris*, **152**: 1350–1352. [in French]
- Gruvel A. (1911b) Contribution a l'étude generate systematique et economique des Palinuridae. Mission Gruvel sur la cöte occidentale d'Afrique (1909–1910). Resultats scientifiques et economiques. *Annales de l'Institut océanographique, Paris*, **3** (4): 5–56, text-figs. 1–22, pls. 1–6. [in French]
- Haan, W. de (1833–1850) Crustacea. In: (P.F. von Siebold, Editor), *Fauna Japonica sive Descriptio Animalium, Quae in Itinere per Japoniam, Jussu et Auspiciis Superiorum, qui Summum in India Batava Imperium Tenent, Suscepto, Annis 1823–1830 Collegit, Noitis, Observationibus et Adumbrationibus Illustravit*. Lugduni-Batavorum, Leiden, pp. i–xvii, i–xxxii, ix–xvi, 1–243, pls. A–J, L–Q, 1–55, circ. tab. 2. [in Latin]
- Hansen H.J. (1908) Crustacea Malacostraca. I. *Danish Ingolf-Expedition*, **3** (2): 1–120, pls. 1–5.
- Hansen H.J. (1925) On the comparative morphology of the appendages in the Arthropoda A. Crustacea. In: *Studies on Arthropoda*, volume 2. Gyldendalske Boghandel, Kjöbenhavn, pp. 1–176.
- Harada E. (1962) On the genus *Scyllarus* (Crustacea Decapoda: Reptantia) from Japan. *Publications of the Seto Marine Biological Laboratory*, **10** (1): 109–139.
- Harada E. (1965) Zoogeographical aspects of *Palinura* collected in the Kii district. *Nankiseibutu*, **7** (2): 35–42, figs 1–3. [in Japanese]
- Harada E. (1980) *Puerulus angulatus* from the waters of Kii Peninsula, Japan. *Publications of the Seto Marine Biological Laboratory*, **25**: 243–251.

- Hayashi K.I., Ogawa Y. (1987) A New Record of *Acanthacaris tenuimana* Bate (Decapoda, Nephropidae) from the Japanese Waters. *Crustaceana*, **49** (2): 220–223.
- Heller C. (1862) Beiträge zur näheren Kenntniss der Macrouren. *Sitzungsberichte der Mathematisch-Naturwissenschaftlichen Klasse der Kaiserlichen Akademie der Wissenschaften, Wien*, **45** (1): 389–426, pls. 1–2. [in German]
- Heller C. (1863) *Die Crustaceen des südlichen Europa. Crustacea Podophthalmia. Mit einer Übersicht über die horizontale Verbreitung sämtlicher europäischer Arten.* Wilhem Braumüller, Wien, 336 pp. [in German]
- Hemming A.F. (1958) Opinion 519. Addition to the Official List of Generic Names in Zoology of the names of twenty three genera of Macrura Reptantia (Class Crustacea) and use of Plenary Powers in regard to three matters connected therewith. *Opinions and Declarations rendered by the International Commission on Zoological Nomenclature, London*, **19**: 133–168.
- Hemming A.F. (1959) Opinion 359. Determination of the gender to be attributed to six generic names in the Class Crustacea (Order Decapoda) and addition of the names concerned to the “Official List of Generic Names in Zoology”. *Opinion Declaration of the International Commission On Zoological Nomenclature*, **1** (20): 283–292.
- Henderson J.R. (1893) A contribution to Indian carcinology. *Transactions of the Linnean Society of London, series 2, Zoology*, **5** (10): 325–458, pls. 36–40.
- Holthuis L.B. (1946) Biological results of the Snellius Expedition XIV. The Decapoda Macrura of the Snellius Expedition. I. The Stenopodidae, Nephropsidae, Scyllaridae and Palinuridae. *Temminckia*, **7**: 1–178, pls. 1–11.
- Holthuis L.B. (1952) Crustacés Décapodes, Macrures. Expédition Océanographique Belge dans les Eaux Côtières Africaines de L’Atlantique Sud (1948–1949). *Résultats Scientifiques*, **3** (2): 1–88. [in French]
- Holthuis L.B. (1956) Proposed Addition to the “Official List of Generic Names in Zoology” of the Names of twenty-five Genera of Macrourea Reptantia (Cl. Crustacea, Or. Decapoda), including Proposals for the use of the plenary powers, (a), to validate the spelling for the generic Name published as “*Cherax*” and “*Cheraps*” by Ericson in 1846, (b), to suppress the specific Name “*goudotii*” Guérin-Méneville, 1839, as published in the combination “*Astacoides goudotii*”, and (c), to validate the Emendation to “*Palinurus*” of the generic Name “*Pallinurus*” Weber, 1795. *The Bulletin of zoological nomenclature*, **12**: 107–119.
- Holthuis L.B. (1962) *Stereomastis* Bate, 1888 (Crustacea, Decapoda), proposed validation under the plenary powers. Z.N.(S.) 1497. *Bulletin of Zoological Nomenclature, London*, **19** (3): 182–183.
- Holthuis L.B. (1964) On some species of the genus *Nephrops* (Crustacea Decapoda). *Zoologische Mededelingen, Leiden*, **39**: 71–78.

- Holthuis L.B. (1966) On spiny lobsters of the genera *Palinurellus*, *Linuparus* and *Puerulus* (Crustacea Decapoda, Palinuridae). *Proceedings of Symposium on Crustacea*, **1966**: 260–278.
- Holthuis L.B. (1968) The second Israel South Red Sea Expedition, 1965, report No. 7. The Palinuridae and Scyllaridae of the Red Sea. *Zoologische Mededelingen, Leiden*, **42** (26): 281–301.
- Holthuis L.B. (1974) Biological results of the University of Miami Deep-Sea Expeditions. 106. The lobsters of the superfamily Nephropidea of the Atlantic Ocean (Crustacea: Decapoda). *Bulletin of Marine Science*, **24** (4): 723–884.
- Holthuis L.B. (1984) Lobsters. *FAO Species Identification Sheets, Western Indian Ocean (Fishery Area 51)*, **5**, 62 pp., unnumbered figs.
- Holthuis L.B. (1987) Homards, langoustines, langoustes et cigales. In: (W. Fisher, M. Schneider, M.L. Bauchot, Editors), *Fishes FAO identification des especes pour les besoins de la peche, Mediterranee et Mer Noire (zone de Peche 37)*. Food and Agricultural Organization of the United Nations, Rome, 1: 293–319. [in French]
- Holthuis L.B. (1991) *FAO species catalog. volume 13. Marine lobsters of the world. An annotated and illustrated catalogue of species of interest to fisheries known to date*. FAO Fisheries Synopsis, **125**. Food and Agriculture Organization of the United Nations, Rome, 292 pp.
- Holthuis L.B. (2002) The Indo-Pacific scyllarine lobsters (Crustacea, Decapoda, Scyllaridae). *Zoosystema*, **24** (3): 499–683.
- Holthuis L.B., Gottlieb E. (1958) An annotated list of the decapod Crustacea of the Mediterranean coast of Israel, with an appendix listing the Decapoda of the eastern Mediterranean. *Bulletin of the Research Council of Israel Section B: Zoology*, **7B** (1-2): 1-126.
- Hu C.-H., Tao H.-J. (1996) *Crustacean fossils of Taiwan*. Ta-jen Printers Ltd., Taipei, Taiwan, 228 pp., pls. 1–68.
- Huang Z.-G. (1994) *Marine Species and their Distributions in China's Seas*. China Ocean Press, Beijing, 11 + 141 pp. [in Chinese and English]
- Hwang J.-J., Yu H.-P. (1983) Report on the scyllarid lobsters (Crustacea: Decapoda: Scyllaridae) from Taiwan. *Bulletin of the Institute of Zoology, Academia Sinica*, **22** (2): 261–267.
- Intès A., Bach P. (1989) *La campagne "CEPROS" du N.O. Alis sur les accores du plateau seychellois*. Convention France/Seychelles no. 87/206/01, Report, Paris, 119 pp. [in French]
- Ivanov B.G., Kuylov V.V. (1980) Length-weight relationship in some common prawns and lobsters (Macrura, Natantia, and Reptantia) from the western Indian Ocean. *Crustaceana*, **38** (3): 279–289.
- Jacques F. (1989) The setal system of crustaceans: types of setae, groupings, and functional morphology. In: (B.E. Felgenhauer, L. Watling, A.B. Thistle, Editors),



- Functional Morphology of Feeding and Grooming in Crustacea. Crustacean Issues.* (F.R. Schram, Series Editor), volume 6. A.A. Balkema, Rotterdam, pp. 1–13.
- Jayaprakash A.A., Madhusoodana Kurup B., Sreedhar U., Venu S., Thankappan D., Manjebayakath H., Pachu V.A., Thampy P., Sudhakar S. (2006) Distribution, diversity, length-weight relationship and recruitment pattern of deep-sea finfishes and shellfishes in the shelf-break area off southwest Indian EEZ. *Journal of the Marine Biological Association of India*, **48** (1): 56–67.
- Jenkins R.J.F. (1972) *Metanephrops*, a new genus of late Pliocene to Recent lobsters, (Decapoda, Nephropidae). *Crustaceana*, **22** (2): 161–177.
- Joubin L. (1905) Cours d’Oceanographie. *Bulletin du Musee oceanographique de Monaco*, **45**: 1–185. [in French]
- Jones D.S., Morgan G.J. (2002) *A Field Guide to Crustaceans of Australian Waters.* Reed New Holland Publisher, Australia, 224 pp.
- Jones S. (1965) The crustacean fishery resources of India. *Proceedings of Symposium Crustacea*, Part IV, Series 2: 1328–1341.
- Kathirvel M., James D.B. (1990) The phyllosoma larvae from Andaman and Nicobar Islands. *Proceedings of First Workshop on Scientific results of FORV Sagar Sampada*, DOD, CMFRI, CIFT, Cochin: 147–150.
- Kemp S.W. (1905) On the occurrence of the genus *Acantheephyra* in deep water off the west coast of Ireland. *Fisheries, Ireland, Scientific Investigation*, **1** (Appendix 1): 3–28.
- Kemp S.W. (1910) The Decapoda collected by the “Huxley” from the north side of the Bay of Biscay in August, 1906. *Journal of the Marine Biological Association of the United Kingdom*, **8** (5): 407–420.
- Kemp S., Sewell R.B.S. (1912) Notes on Decapoda in the Indian Museum. III. The species obtained by R.I.M.S.S. ‘Investigator’ during the survey season 1910–11. *Records of the Indian Museum*, **7**: 15–32.
- Kensley B. (1968) Deep sea decapod Crustacea from west of Cape Point, South Africa. *Annals of the South African Museum*, **50** (12): 283–323.
- Kensley B. (1981a) On the zoogeography of southern African decapod Crustacea, with distributional checklist of the species. *Smithsonian Contributions to Zoology*, **338**: 1–64.
- Kensley B. (1981b) The South African Museum’s Meiring Naude cruises. Part 12. Crustacea Decapoda of the 1977, 1978, 1979 cruises. *Annals of the South African Museum*, **83** (4): 49–78.
- King M.G. (1988) Deep-water benthic organisms caught near Madang, Papua New Guinea. *Science in New Guinea*, **14** (2): 107–110.
- Kizhakudan J.K., Thirumilu P. (2006) Note on the blunthorn lobsters from Chennai. *Journal of the Marine Biological Association of India*, **48** (2): 260–262.

- Kizhakudan J.K., Radhakrishnan E.V., Lakshmi Pillai S. (2019) Reproductive Biology of Spiny and Slipper Lobster. In: (E.V. Radhakrishnan, B.F. Phillips, A. Gopalakrishnan, Editors), *Lobsters: Biology, Fisheries and Aquaculture*. Springer Nature, Singapore, pp. 363–408.
- Kocatas A., Katagan T. (1993) Decapod Crustacean fauna of the Sea of Marmara. International Symposium on Crustacea Decapoda, Senckenberg Museum, Frankfurt, abstract volume 35.
- Koehler R. (1896) Liste par stations de dragage des animaux recueillis pendant la campagne du “Caudan”. *Annales de l’Université de Lyon*, **26**: 711–740. [in French]
- Koukouras A. (1973) A contribution to the study of decapod Crustacea of Greece. *Hellenic Oceanology and Limnology*, **11**: 745–779.
- Kotthaus A. (1966) Erstnachweis von *Polycheles typhlops* (Decapoda Reptantia) fur islandische Gewasser. *Helgoländer Wissenschaftliche Meeresuntersuchungen, Helgoland*, **13** (4): 348–353. [in German]
- Kubo L. (1939) A new spiny lobster, *Puerulus gracilis*. *Bulletin of the Japanese Society of Scientific Fisheries*, **7** (6): 316–318.
- Kubo L. (1965) Decapoda, Macrura. In: (Y.K. Okada, S. Uchida, T. Uchida, Editors), *New illustrated Encyclopedia of the fauna of Japan*. Hokuryukan, Tokyo, **2**: 591–629. [in Japanese]
- Lagardère J.-P. (1972) Recherches sur l’alimentation des crevettes de la pente continentale marocaine. *Tethys, Marseille*, **3** (3): 655–675. [in French]
- Lagardère J.-P. (1973) Distribution des décapodes dans le sud du golfe de Gascogne. *Revue des Travaux de l’Office des Pêches Maritimes, Paris*, **37** (1): 77–95. [in French]
- Lagardère J.-P. (1977) Recherches sur le régime alimentaire et le comportement prédateur des décapodes benthiques de la pente continentale de l’Atlantique nord oriental (Golfe de Gascogne et Maroc). In: (B.F. Keegan, P. O’Ceidigh, P.J.S. Boaden, Editors), *Biology of Benthic Organisms*. Proceeding of the 11<sup>th</sup> European Marine Biology Symposium, Galway. Pergamon Press, New York, pp. 397–408. [in French]
- Lanchester W.F. (1901) On the Crustacea collected during the “Skeat” Expedition to the Malay Peninsula, together with a note on the genus *Actaeopsis*. Part I. Brachyura, Stomatopoda, and Macrura. *Proceedings of the General Meetings for Scientific Business of the Zoological Society of London*, **1901** (2): 534–574, pls. 33–34.
- Latreille P.A. (1802) *Histoire naturelle, générale et particulière des Crustacés et des Insectes. Ouvrage faisant suite à l’histoire naturelle générale et particulière, composée par Leclerc de Buffon, et rédigée par C.S. Sonnini, membre de plusieurs sociétés savantes. Familles naturelles des genres. volume 3*. F. DuFart, Paris, 467 pp. [in French]

- Latreille P.A. (1825) Familles naturelles du règne animal, exposées succinctement et dans un ordre analytique, avec l'indication de leurs genres. J.-B. Baillière, Paris, 570 pp. [in French]
- Lemaitre R. (1984) Decapod crustaceans from Cay Sal Bank, Bahamas, with notes on their zoogeographic affinities. *Journal of Crustacean Biology*, **4** (3): 425–447.
- Lewinsohn C., Holthuis L.B. (1964) Decapoda from the Mediterranean coast of Israel. *Zoologische Mededelingen, Leiden*, **40**: 45–64.
- Linnaeus C. (1758) *Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis Locis*. Edition 10, volume 1. Laurentius Salvius, Holmiae, iii + 824 pp. [in Latin]
- Longhurst A.R. (1958) An ecological survey of the west African marine benthos. *Colonial Office Fishery Publications*, **11**: 1–102.
- Longhurst A.R. (1970) Crustacean Resources. In: (J.A. Gulland, Editor), The fish resources of the oceans. *FAO Fisheries Technical Report*, **97**: 252–305, 1 map.
- Lloyd R.E. (1907) Contributions to the fauna of the Arabian Sea, with descriptions of new fishes and Crustacea. *Records of the Indian Museum*, **1** (1): 1–12.
- Lo Bianco S. (1903) Le pesche abissali eseguite da F.A. Krupp col yacht Puritan nelle adiacenze di Capri ed in altre localita del Mediterraneo. *Mitteilungen aus der Zoologischen Station Neapel*, **16**: 109–279, pls. 7–9. [in Italian]
- Macarthur L.D., Hyndes G.A., Hanson C., Phillips D.L., Vanderklift M.A. (2011) Habitat surrounding patch reefs influences the diet and nutrition of the western rock lobster. *Marine Ecology Progress Series*, **436**: 191–205.
- Macpherson E. (1983) Crustáceos Decápodos capturados en las costas de Namibia. Resultados Expediciones Cientificas, **11**: 3–80. [in Spanish]
- Macpherson E. (1988) New records of Decapods Crustaceans from the coast off Namibia, South West Africa, with the descriptions of two new species. *Investigacion Pesquera, Barcelona*, **52** (1): 51–66.
- Macpherson E. (1990) Crustacea Decapoda: on a collection of Nephropidae from the Indian Ocean and Western Pacific. *Mémoires du Muséum national d'Histoire naturelle. Nouvelle Série. Série A, Zoologie*, **145**: 289–328.
- Macpherson E. (1993) New records for the genus *Nephropsis* Wood-Mason (Crustacea, Decapoda; Nephropidae) from northern Australia, with description of two species. *Beagle*, **10** (I): 55–66.
- Magri F. (1904) Primo contributo alla conoscenza dei Crostacei decapodi abissali del Compartimento marittimo di Catania. *Atti dell'Accademia gioenia di scienze naturali, Catania*, **17** (14): 1–15. [in Italian]
- Magri F. (1911) I Crostacei decapodi del Compartimento marittimo di Catania. *Atti dell'Accademia gioenia di scienze naturali, Catania*, **4** (14): 1–46. [in Italian]

- Man J.G. de (1905) Diagnoses of new species of macrurous decapod Crustacea from the "Siboga-Expedition". *Tijdschrift der Nederlandsche Dierkundige Vereeniging*, **9** (3/4): 587-614.
- Man J.G. de (1916) Eryonidae, Palinuridae, Scyllaridae and Nephropsidae. *Siboga Expéditie*, **23** (A2): 1-122.
- Man J.G. de (1924) On a collection of macrurous decapod Crustacea, chiefly Penaeidae and Alpheidae from the Indian Archipelago. *Archiv für Naturgeschichte*, **90**: 1-60.
- Manning R.B., Froggia C. (1982) On a collection of decapod Crustacea from southern Sardinia. *Quaderni del Laboratorio di Tecnologia della Pesca*, **3** (2-5): 319-334.
- Marshall N.B. (1954) *Aspects of Deep Sea Biology*. Hutchinson & Co, London, 380 pp., 4 pls.
- Marshall W. (1888) *Die Tiefsee und ihr Leben*. A. Twietmeyer, Leipzig, 343 pp., 114 figs. [in German]
- Massuti M. (1968) Las gambas de interés comercial en España. *FAO Fisheries Reports, Rome*, **57** (2): 303-307. [in Spanish]
- Maurin C. (1962) Etude des fonds chalutables de la Méditerranée occidentale (Ecologie et pêche). Résultats des campagnes des navires océanographiques "President Theodore Tissier" 1957 à 1960 et "Thalassa" 1960 à 1961. *Revue des Travaux de l'Institut des Pêches maritimes, Paris*, **26** (2): 163-218. [in French]
- Maurin C. (1968a) Ecologie ichthyologique des fonds atlantiques (de la Baie Ibéro-Marocaine à la Mauritanie) et de la Méditerranée occidentale. *Revue des Travaux de l'Institut des Pêches maritimes, Paris*, **32** (1): 1-147. [in French]
- Maurin C. (1968b) Les crustacés capturés par la "Thalassa" au large des côtes nord-ouest africaines. *Revue Roumaine de Biologie (Série de Zoologie)*, **13**: 479-493. [in French]
- McNeill F.A. (1968) Crustacea, Decapoda & Stomatopoda. *Great Barrier Reef Expedition 1928-29 Scientific Reports*, **7** (1): 1-98.
- McWilliam P.S., Phillips B.F., Kelly S. (1995) Phyllosoma larvae of *Scyllarus* species (Decapoda, Scyllaridae) from the shelf waters of Australia. *Crustaceana*, **68** (5): 537-566, figs. 1-11.
- Michel C. (1974) Notes on marine biology studies made in Mauritius. *Mauritius Institute Bulletin*, **7**: 1-287.
- Milne-Edwards A. (1874) Note sur le *Nephropsis Stewartii* W. Mason. *Annales des sciences naturelles-zoologie et biologie animale*, (5) **19**, (7): 1-2, pl. 20. [in French]
- Milne-Edwards A. (1880) Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico, and in the Caribbean Sea, 1877, '78, '79, by the United States Coast Survey Steamer "Blake," Lieut.-Commander C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett, U.S.N.,



- commanding. VIII. Études préliminaires sur les Crustacés. *Bulletin of the Museum of Comparative Zoölogy at Harvard College*, **8** (1): 1–68, pls. 1–2.
- Milne Edwards H. (1837) *Histoire naturelle des Crustacés, comprenant l'Anatomie, la Physiologie et la Classification de ces Animaux* 2. Librairie encyclopédique de Roret, Paris, 532 pp. [in French]
- Milne Edwards H. (1838) Mémoire sur la distribution géographique des crustacés. *Annales des Sciences naturelles, Paris (Zoology)*, **2** (10): 129–174. [in French]
- Miranda Y., De Rivera A. (1921) Algunos Crustaceos de la Coleccion del Laboratorio Biologico de Malaga. *Boletin de Pesca. Instituto espanol de Oceanografia, Madrid*, **6**: 179–205. [in Spanish]
- Miranda Y. & De Rivera A. (1933) Ensayo de un catalogo de los Crustaceos decapodos marinos de Espana y Marruecos espanol. Notas y resúmenes. *Instituto espanol de Oceanografia. Madrid, serie 2*, **67**: 1–72. [in Spanish]
- Miyake, S. (1975) Macrura. In: (H. Utinomi, Editor), *Gakken Illustrated nature Encyclopedia. The Aquatic Lower Animals of Japan*, 9: 99–109. [in Japanese]
- Miyake S. (1982) *Japanese crustacean decapods and stomatopods in color. 1. Macrura, Anomura and Stomatopoda*. Hoikusha, Osaka, 261 pp. [in Japanese]
- Mohammed K.H., Vedavyasa Rao P., Suseelan C. (1971) The first phyllosoma stage of the Indian deep sea spiny lobster *Puerulus sewelli* Ramadan. *Proceedings of the Indian Academy of Sciences Part A*, **74**: 208–215.
- Moncharmont U. (1981) Notizie biologiche e faunistiche sui Crostacei Decapodi del Golfo di Napoli. *Annuario dell'Istituto e Museo di Zoologia dell'Università di Napoli*, **23**: 33–132. [in Italian]
- Monod T. (1973) Sur quelques crustacés Néo-Calédoniens de profondeur. *Cahiers de l'Office de Recherches Scientifiques et Techniques Outre-Mer, série Océanographique*, **11** (2): 117–131. [in French]
- Morgan G.J., Jones D.S. (1988) More deepwater crustaceans found off NW Australia. *Fins (The Fishing Industry News Service, Fisheries Department, Western Australia)*, **20** (6): 13–15.
- Morice A. (1875) Coup d'oeil sur la faune de la Cochinchine française. *Compte-Rendu de l'Association lyonnaise des Amis des Sciences naturelles*, **1874**: 25–121. [in French]
- Murray J., Hjort J. (1912) *The depths of the ocean*. Macmillan, London, xx + 821 pp., 9 pls.
- Mutchacheep S. (1992) *Marine Benthic Animals from Thai Waters*. Phraephitaya, Thailand, 152 pp.
- Naiyanetr P. (1963) Scyllarid lobsters and their phyllosoma larvae in the Gulf of Thailand. *Journal of the National Research Council of Thailand*, **4**: 63–72, 1 pl.
- Naiyanetr P. (1980) *Crustacean Fauna of Thailand (Decapoda and Stomatopoda)*. Department of Biology, Chulalongkorn University, Bangkok, iv + 73 pp.

- Naiyanetr P. (1998) Checklist of Crustacean fauna in Thailand (Decapoda and Stomatopoda). *OEPP Biodiversity Series*, **5**: 1–161, 21 figs.
- Neves A.M. (1974) Crustáceos decápodes marinhos de Portugal continental existentes no Museu Bocage. II. Macrura reptantia. *Estudos sobre a Fauna Portuguesa (Museu Bocage, Faculdade Ciências de Lisboa)*, **3**: 1–20. [in Portuguese]
- Ng P.K.L. (1992) New records of the spear lobsters *Linuparus somniosus* Berry and George, 1972, and *L. trigonus* (Von Siebold, 1824) (Crustacea: Decapoda: Palinuridae) from the Straits of Malacca and Vietnam respectively. *Raffles Bulletin of Zoology*, **40**: 179–185.
- Nguyễn Văn Chung, Phạm Thị Du (1995) *Danh Mục Tôm Biền Việt Nam. Check List of Marine Shrimps and Lobster in Vietnam*. Science and Technics Publishing House, Vietnam, 170 pp.
- Nishimura S., Suzuki K. (1971) *Common seashore animals of Japan in color*. Hoikusha, Osaka, xii + 196 pp., unnumbered figs., pls. 1–84, maps 1–2. [in Japanese]
- Nobili G. (1903) Crostacei di Singapore. *Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino*, **18** (455): 1–39. [in Italian]
- Nobili G. (1905a) Décapodes nouveaux des côtes d'Arabie et du Golfe Persique (Diagnoses préliminaires). *Bulletin du Muséum d'Histoire naturelle, Paris [1er série]*, **11** (3): 158–164. [in French]
- Nobili G. (1905b) Diagnoses préliminaires de 34 espèces et variétés nouvelles, et de 2 genres nouveaux de décapodes de la Mer Rouge. *Bulletin du Muséum d'Histoire naturelle, Paris [1er série]*, **11**: 393–411. [in French]
- Nobili G. (1906a) Faune carcinologique de la Mer Rouge. Décapodes et stomatopodes. *Annales des Sciences Naturelles, 9e série*, **4**: 1–347. [in French]
- Nobili G. (1906b) Mission J. Bonnier et Ch. Pérez (Golfe Persique 1901). Crustacés Décapodes et Stomatopodes. *Bulletin Scientifique de la France et de la Belgique*, **40**: 13–159. [in French]
- Nobre A. (1931) *Crustáceos Decápodes e Stomatópodes marinhos de Portugal*. Instituto de Zoologie, Universidad de Porto, Pôrto, 307 pp. [in Portuguese]
- Nobre A. (1936) *Fauna marinha de Portugal. IV. Crustáceos decápodos e stomatópodos marinhos de Portugal*. Porto, 213 pp. [in Portuguese]
- Norman A.M. (1878) On the *Willemoesia* group of Crustacea. *The Annals and Magazine of Natural History, London*, (5) **2**: 382–385.
- Norman A.M. (1879) Remarks on the recent Eryontidae. *The Annals and Magazine of Natural History, London*, (5) **4**: 173–182.
- Norman A.M. (1886) *Museum Normanianum. A Catalogue of the Invertebrata of Europe, the Arctic and North Atlantic Oceans, contained in the collections of the Rev. Canon A.M. Norman. Part III. Crustacea*. Houghton-le-Spring, Morton, 26 pp.

- Ohta S. (1983) Photographic census of large sized benthic organisms in the bathyal zone of Suruga Bay, Central Japan. *Bulletin of the Ocean Research Institute, University of Tokyo*, 15: 1-244, pls. 1-59.
- Omori M. (1985) *Natural History of Crustaceans on Postage Stamps*. Koseisha-Koseikaku, Tokyo, 145 pp., pls. 1-4. [in Japanese]
- Oommen V.P., Philip K.P. (1974) Observations on the fishery and biology of the deep sea spiny lobster *Puerulus Sewelli* Ramadan. *Indian Journal of Fisheries*, **21** (2): 369-385.
- O'Riordan C.E. (1984) Some interesting fishes and other marine fauna from the Porcupine Bank. *Irish Naturalist's Journal, Belfast*, **21** (7): 321-323.
- Ortmann A.E. (1891) Die Decapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und den Liu-Kiu-Inseln gesammelten und z. Z. im Strassburger Museum aufbewahrten Formen. III. Theil. Die Abteilungen der Reptantia Boas: Homaridea, Loricata und Thalassinidea. *Zoologische Jahrbücher Abtheilung für Systematik, Geographie und Biologie der Thiere*, **6** (1): 1-58, pl. 1. [in German]
- Ortmann A.E. (1897a) Carcinologische Studien. *Zoologische Jahrbücher. Abteilung für Systematik, Geographie und Biologie der Thiere*, **10** (3): 258-372, pl. 17. [in German]
- Ortmann A.E. (1897b) On a new species of the panulirid-genus *Linuparus* found in the Upper Cretaceous of Dakota. *American Journal of Science, series 4*, **4**: 290-297.
- Parenzan P. (1940) Biocenologia bentonica dei fondi marini a fango. *Bollettino di Idrobiologia, Caccia e Pesca dell Africa Orientale Italiana, Addis Abeba*, **1**: 117-142. [in Italian]
- Pastore M.A. (1976) Decapoda Crustacea in the Gulf of Taranto and the Gulf of Catania with a discussion of a new species of Dromidae (Decapoda Brachyoura) in the Mediterranean Sea. *Thalassia Jugoslavica, Zagreb*, **8** (1): 105-117.
- Paulson O. (1875) *Issledovanija Rakoobraznyh Krasnago Morja s zametkami otnocitelno Rakoobraznyh drugih Morei. [Investigations on the Crustacea of the Red Sea with Notes on Crustacea of the Adjacent Seas]. Part I. Podophthalmata and Edriophthalmata (Cumacea)*. Typografia S.V. Kulzhenko, Kiev, xiv + 144 pp., 21 pls. [in Russian]
- Paulson O. (1961) *Studies on Crustacea of the Red Sea with Notes regarding Other Seas. Part I. Podophthalmata and Edriophthalmata (Cumacea)*. Israel Program for scientific translations, Jerusalem, 10 + 164 pp., 21 pls. (translations of Paulson 1875)
- Pearson J. (1905) Report on the Macrura collected by Professor Herdman at Ceylon in 1902. *Report to the Government of Ceylon on the Pearl Oyster Fisheries of the Gulf of Manaar, Supplementary Report*, **4**: 65-92.

- Pequegnat W.E., Gallaway B.J., Pequegnat L.H. (1990) Aspects of the Ecology of the deep-water fauna of the Gulf of Mexico. *American Zoologist, Utica, N.Y.*, **30**: 45-64.
- Pequegnat W.E., Jeffrey L.M. (1979) Petroleum in deep benthic ecosystems of the Gulf of Mexico and Caribbean Sea. *Contributions in marine Science. University of Texas, Port Aransas*, (22): 63-75.
- Pequegnat W.E., Pequegnat L.H., Firth R.W., James B.M., Roberts T.W. (1971) Gulf of Mexico Deep Sea Fauna. Decapoda and Euphausiacea. *Serial Atlas of marine environment, New York*, **fol. 20**: 1-12, pls. 1-6.
- Pérès J.M. (1964) XX. Campagne de la "Calypso" en mer d'Alboran et dans la baie Ibéro-Marocaine (1958). 4. Contribution a l'étude des peuplements benthiques du golfe Ibéro-Marocain. *Annales de l'Institut océanographique, Monaco*, **41**: 3-30. [in French]
- Pérès J.M. (1967) The Mediterranean benthos. *Oceanography and Marine Biology, London*, **5**: 449-533.
- Pérès J.M., Picard J. (1955) Biotopes et biocoenoses de la Méditerranée occidentale comparées à ceux de la Manche et de l'Atlantique nord-oriental. *Archives de Zoologie Experimental et Generale, Paris*, **92**: 1-72. [in French]
- Pérès J.M., Picard J. (1964) Nouveau manuel de bionomie benthique de la Mer Méditerranée. *Recueil des Travaux de la Station Marine d'Endoume*, **31** (47): 5-137. [in French]
- Pesta O. (1912) Die Dekapoden-Krebse der Adria in Bestimmungstabellen zusammengestellt. *Archiv für Naturgeschichte*, **78**: 93-126. [in German]
- Pesta O. (1918) *Die Decapodenfauna der Adria. Versuch einer Monographie*. Franz Deuticke, Leipzig und Wien, 500 pp. [in German]
- Pfeffer G. (1881) Die Panzerkrebse des Hamburger Museums. *Verhandlungen des naturwissenschaftlichen Vereins in Hamburg*, **5**: 22-55. [in German]
- Phillips B.F., Cobb J.S., George R.W. (1980) General biology. In: (J.S. Cobb, B.F. Phillips, Editors), *The biology and management of lobsters, volume 1*. Academic Press, New York, pp. 2-89.
- Pipitone C., Tumbiolo M.L. (1993) Decapod and stomatopod crustaceans from the trawlable bottoms of the Sicilian Channel (central Mediterranean Sea). *Crustaceana*, **65** (3): 358-364.
- Pohle G. (1985) A guide to the deep-sea shrimp and shrimp-like decapod Crustacea of Atlantic Canada. *Canadian Technical Report of Fisheries and Aquatic Sciences*, (1657): 1-30.
- Poore G.C.B. (2004) *Marine Decapod Crustacea of Southern Australia: A Guide to Identification*. CSIRO, Australia, 624 pp.



- Prasad R.R. (1983) Distribution and growth. Studies on the phyllosoma larvae from the Indian Ocean: I. *Journal of the Marine Biological Association of India*, **20**: 143–156, figs. 1–13.
- Prasad R.R., Tampi P.R.S. (1959) On a collection of palinurid phyllosomas from the Laccadive seas. *Journal of the Marine Biological Association of India*, **1** (2): 143–164.
- Prasad R.R., Tampi P.R.S. (1966) Note on the phyllosoma of *Puerulus sewelli* Ramadan. *Journal of the Marine Biological Association of India*, **8** (2): 339–341.
- Prasad R.R., Tampi P.R.S. (1968) Nistos of two species of *Scyllarus*. *Journal of the Marine Biological Association of India*, **9**: 116–120, figs 1, 2.
- Prasad R.R., Tampi P.R.S. (1969) On the distribution of Palinurid and Scyllarid lobsters in the Indian Ocean. *Journal of the Marine Biological Association of India*, **10**: 78–87, figs. 1, 2.
- Prasad R.R., Tampi P.R.S., George M.J. (1980) Phyllosoma larvae from the Indian Ocean collected by the Dana Expedition 1928–1930. *Journal of the Marine Biological Association of India*, **17** (2): 56–107, figs. 1–17.
- Quackenbush L.S. (1994) Lobster reproduction: a review. *Crustaceana*, **67** (1): 82–94.
- Radhakrishnan E.V., Kizhakudan J.K., Lakshmi Pillai S., Jeena N.S. (2019a) Lobster fauna of India. In: (E.V. Radhakrishnan, B.F. Phillips, A. Gopalakrishnan, Editors), *Lobsters: Biology, Fisheries and Aquaculture*. Springer Nature, Singapore, pp. 65–124.
- Radhakrishnan E.V., Phillips B.F., Lakshmi Pillai S., Padua S. (2019b) Ecology and Global Distribution Pattern of Lobsters. In: (E.V. Radhakrishnan, B.F. Phillips, A. Gopalakrishnan, Editors), *Lobsters: Biology, Fisheries and Aquaculture*. Springer Nature, Singapore, pp. 151–176.
- Radhakrishnan E.V., Pillai S.L., Rajool Shanis C P., Radhakrishnan M. (2011) First record of the reef lobster *Enoplometopus macrodontus* Chan and Ng, 2008 from Indian waters. *Journal of the Marine Biological Association of India*, **53** (2): 264–267.
- Ramadan M.M. (1938) Crustacea: the Astacura and Palinura. *The John Murray Expedition 1933–34 Scientific Reports*, **5** (3): 123–136, figs. 1–7.
- Rao P.V., George M.J. (1973) Deep sea spiny lobster, *Puerulus sewelli* Ramadan: Its commercial potentialities. In: Proceedings of symposium on living resources of the seas around India. CMFRI, Mandapam Camp, pp. 634–640.
- Rathbun M.J. (1906) The Brachyura and Macrura of the Hawaiian Islands. *Bulletin of the Bureau of Fisheries*, **23** (3): 827–930, pls. 1–24.
- Relini G., Peirano A., Tunesi L. (1986) Osservazioni sulle comunita dei fondi strascicabili del Mar Ligure Centro-Orientale. *Bollettino dei Musei e degli Istituti biologici della Universita di Genova*, **52** (Supplement): 139–161. [in Italian]
- Relini Orsi L. (1973) I Crostacei batiali del Golfo di Genova nelle osservazioni di Alessandro Brian e nelle condizioni attuali. *Atti del Congresso nazionale della Societa italiana di Biologia marina*: 25–40. [in Italian]

- Relini-Orsi L., Relini G. (1972) Note sui Crostacei Decapodi batiali del Mar Ligure. *Bollettino degli Istituti di Biologia della R. Università di Genova*, **40**: 47–73. [in Italian]
- Richard J. (1907) *L'Océanographie*. Vuibert & Nony, Paris, 398 pp. [in French]
- Richer de Forges B., Laboute P. (1996) Langoustes, langoustines et cigales de mer de Nouvelle-Calédonie. In: (B. Richer de Forges, Editor), *Les fonds meubles des lagons de Nouvelle-Calédonie (sédimentologie, benthos)*. volume 2. ORSTOM Editions, Paris, pp. 45–82. [in French]
- Riedl R. (1983) *Fauna und Flora des Mittelmeeres*. Paul Parey, Hamburg. 836 pp., 298 pls. [in German]
- Riggio G. (1885) Appunti di Carcinologia Siciliana. Sul *Polycheles doderleini* Riggio ex Heller (*Polycheles typhlops*, Heller). *Naturalista Siciliano*, **4**: 99–104, 140–146, pl. 3. [in Italian]
- Rodríguez G. (1980) *Crustáceos Decápodos de Venezuela*. Instituto Venezolano de Investigaciones Científicas, Caracas, 494 pp. [in Spanish]
- Rodríguez-Marí E. (1993) Biometry of decapod crustaceans in the Cantabrian Sea. *Crustaceana*, **65** (2): 192–203.
- Rossi L. (1958) Contributo alio studio della fauna di profundita vivente presso le Riviera Ligure di Levante. *Doriana, Genova*, **2** (92): 1–13. [in Italian]
- Rubio Lois M. (1971) *Contribución al estudio de la fauna bentónica del litoral de Blanes*. Resúmen de la tesis presentada para aspirar al grado de Doctor en Ciencias. Universidad de Barcelona, 21 pp. [in Spanish]
- Rucabado J.A., Bas C. (1984) Resultados de las expediciones oceanografico-pesqueras “Benguela I” (1979) y “Benguela II” (1980) realizadas en el Atlantico Sudoriental (Namibia). Datos Informativos. *Instituto de Investigaciones Pesqueras de Barcelona*, **9**: 1–248. [in Spanish]
- Russell E.S. (1962) The diversity of Animals. An evolutionary study. *Acta Biotheoretica, Leiden*, **1** (supplement): i–xi, 1–151.
- Sakai K., Yamashita H. (1968) Some Corneae of Decapod Crustacea. *Journal of Seika Women's Junior College*, **1**: 43–44, fig. 1.
- Sakai T. (1978) On ‘Akaza-ebi’ (*Nephrops* species) from Sagami-Bay and ‘Scampo’. *Kanagawa Nature Conservancy*, (33): 7–9, figs. 1–3.
- Sankarankutty C., Subramanian S. (1976) Taxonomic notes on Crustacea Decapoda collected by Deep Sea trawling off Dar es Salaam. *University Science Journal Dar es Salaam*, **2** (2): 17–24, 1 map.
- Santucci R. (1931) La biologia del fondo a “Scampi” nel mare Ligure, *Polycheles typhlops* Heller, decapodo erionide. *Bollettino dei Musei e Laboratori di Zoologia e Anatomia comparata della Università di Genova*, **11** (44): 1–5. [in Italian]
- Santucci R. (1932) La biologia del fondo a “Scampi” nel mare Ligure 7. Per la conoscenza del *Polycheles typhlops* Heller del Mediterraneo. *Bollettino dei Musei e*

- Laboratori di Zoologia e Anatomia comparata della Universita di Genova*, **12** (56): 1–4. [in Italian]
- Santucci, R., (1933) Biologia del fondo a “Scampi” nel mare Ligure, I. *Polycheles typhlops* Heller. *Memorie Comitato talassografico Italiano, Venezia*, **199**: 1–48, 1 pl. [in Italian]
- Schmitt W.L. (1935) Crustacea Macrura and Anomura of Porto Rico and the Virgin Islands. *Scientific Survey of Porto Rico and the Virgin Islands*, **15** (2): 125–227.
- Scholtz G., Richter S. (1995) Phylogenetic systematics of the reptantian Decapoda (Crustacea, Malacostraca). *Zoological Journal of the Linnean Society*, **113**: 289–328.
- Seeliger O. (1901) *Tierleben der Tiefsee*. W. Engelmann, Leipzig, 49 pp., 1 pl. [in German]
- Sekiguchi H. (1986a) Identification of late-stage phyllosoma larvae of the scyllarid and palinurid lobsters in the Japanese waters. *Bulletin of the Japanese Society of Scientific Fisheries*, **52** (8): 1289–1294.
- Sekiguchi H. (1986b) Life histories of the scyllarid and palinurid lobsters - 1. *Aquabiology, Tokyo*, **8** (1): 13–18, figs. 1–4.
- Sekiguchi H. (1987a) Life histories of the scyllarid and palinurid lobsters - 11. *Aquabiology, Tokyo*, **9** (5): 330–335, figs. 46, 47.
- Sekiguchi H. (1987b) Life histories of the scyllarid and palinurid lobsters - 12. *Aquabiology, Tokyo*, **9** (6): 415–419, figs. 48–50.
- Sekiguchi H. (1988) Taxonomical and ecological problems associated with phyllosoma larvae. Benthos Research, *Bulletin of the Japanese Association of Benthology*, **33/34**: 1–16, figs. 1–9. [in Japanese]
- Sekiguchi H. (1989) Life histories of the scyllarid and palinurid lobsters - 24. *Aquabiology, Tokyo*, **11** (6): 454–460, fig. 92.
- Selbie C.M. (1914) The Decapoda Reptantia of the coasts of Ireland. Part 1. Palinura, Astacura and Anomura (except Paguridea). *Fisheries Ireland Scientific Investigations*, **1**: 1–116, pls. 1–15.
- Senna A. (1902) Nota sui Crostacei. Le esplorazioni abissali nel Mediterraneo del R. Piroscapo “Washington” nel 1881. II. *Bulletin de la Societa Entomologica Italiana*, **34**: 235–367, pls. 4–18. [in Italian]
- Seurat L.G. (1930) Exploration zoologique des cotes de l’Algerie de 1724 a 1930. *Bulletin des Travaux de la Station d’Agriculture et de Peche de Castiglione, Alger*, **1929** (3): 13–41. [in French]
- Seurat L.G. (1940) La repartition actuelle et passee des organismes de la zone neritique de la Mediterranee nordafricaine (Algerie–Tunisie). *Memoires de la Societe de Biogeographie, Paris*, **7**: 139–179. [in French]
- Sewell R.B.S. (1913) Notes on the biological work of the R.I.M.S.S. “Investigator” during survey seasons 1910–1911 and 1911–1912. *Journal and Proceedings of the Asiatic Society of Bengal*, **9**: 329–390, figs. 1–6. 1 map.

- Sewell R.B.S. (1955) A study of the Sea Coast of southern Arabia. *Proceedings of the Linnean Society of London*, **1952-1953**: 188-210, figs. 1-10.
- Silas E.G. (1965) On The Taxonomy, Biology And Fishery of the Spiny Lobster *Jasus Lalandei frontalis* (H. Milne-Edwards) from St. Paul and New Amsterdam Islands in the Southern Indian Ocean, with an annotated bibliography on species of the genus *Jasus* Parker. *Proceedings of the Symposium on Crustacea held at Ernakulam from January 12-15, 1965, Part IV*. Marine Biological Association of India, Mandapam Camp, pp. 1467-1520.
- Sivertsen E., Holthuis L.B. (1956) Crustacea Decapoda (the Penaeidea and Stenopodidea excepted). *Report on the Scientific Results of the "Michael Sars" North Atlantic Deep-Sea Expedition 1910*, **5** (12): 1-54.
- Smith S.I. (1880a) Notice of a new species of the "*Willemoesia* Group of Crustacea", recent Eryontidae. *Proceedings of the United States National Museum, Washington*, **2**: 345-353, pl. 7.
- Smith S.I. (1880b) On some points in the structure of a species of the "*Willemoesia* Group of Crustacea". *The Annals and Magazine of Natural History, London*, (5) **5**: 269-273.
- Smith S.I. (1882) Reports on the results of dredging, under the supervision of Alexander Agassiz, on the East Coast of the United States, during the summer of 1880, by the U. S. Coast Survey Steamer "Blake," Commander J.R. Bartlett, U.S.N., Commanding. XVII. - Report on the Crustacea. Part I. Decapoda. *Bulletin of the Museum of Comparative Zoölogy at Harvard College* 10(1): 1-104, pls. 1-14.
- Smith S.I. (1884) Report on the decapod Crustacea of the Albatross dredgings off the east coast of the United States in 1883. *Report of the United States Commission of Fish and Fisheries*, **10 [for 1882]**: 345-426, pls. I-X.
- Smith S.I. (1886) The abyssal Decapod Crustacea of the "Albatross" Dredgings in the North Atlantic. *The Annals and Magazine of Natural History, London*, (5) **17**: 187-198.
- Smith S.I. (1887) Report on the decapod Crustacea of the Albatross dredgings off the east coast of the United States during the summer and autumn of 1884. *Report of the United States Commission of Fish and Fisheries*, **13 [for 1885]**: 605-705, pls. I-XX.
- Solar del E.M. (1972) Addenda al catálogo de crustáceos del Perú. *Informes Instituto del Mar del Perú*, **38**: 1-21. [in Spanish]
- Soto A. (1980) Decapod Crustacea shelf-fauna of the northeastern Gulf of Mexico. *Anales del Centro de Ciencias del Mar y Limnología, Mexico*, **7**: 79-110. [in Spanish]
- Spence Bate C. (1878a) XXXII. On the *Willemoesia* group of Crustacea. *The Annals and Magazine of Natural History, series 5*, **2**: 273-283, pl. 13.



- Spence Bate C. (1878b) On the *Willemoesia* group of Crustacea. *Report of the British Association for the Advancement of Science, London*, **48**: 561–564.
- Spence Bate C. (1888) Report on the Crustacea Macrura collected by H.M.S. Challenger during the Years 1873–76. In: (J. Murray, Editor), *Zoology. Report on the Scientific Results of the Voyage of H.M.S. Challenger During the Years 1873–76 Under the Command of Captain George S. Nares, R.N., F.R.S. and the Late Captain Frank Tourle Thomson, R.N.*. (C. Wyville Thomson, J. Murray, Series Editors), volume 24. Neill and Company, Edinburgh, pp. i–xc, 1–942, pls. 1–157.
- Springer S., Bullis H.R. (1956) Collections by the Oregon in the Gulf of Mexico. List of Crustaceans, Molluscs, and Fishes identified from collections made by the exploratory fishing vessel “Oregon” in the Gulf of Mexico and Adjacent Seas 1950 through 1955. *Special scientific Report-Fisheries, U.S. Fish and Wildlife Service, Washington*, (196): 1–134.
- Squires H.J. (1966) *Distribution of Decapod Crustacea in the northwestern Atlantic. Serial Atlas of the Marine Environment*. American Geographical Society, New York, fol. 12, 4 pp., pls. 1–4.
- Squires H.J. (1970) Decapod crustaceans of Newfoundland, Labrador and the Canadian Eastern Arctic. *Fisheries Research Board of Canada, Manuscript Report Series (Biological)*, **810**: 1–180.
- Squires H.J. (1990) Decapod Crustacea of the Atlantic coast of Canada. *Canadian Bulletin of Fisheries and Aquatic Sciences*, **221**: 1–532.
- Stebbing T.R.R. (1893) A History of Crustacea. Recent Malacostraca. Kegan Paul, Trench, Trübner and Co., London, xvii + 466 pp.
- Stebbing T.R.R. (1902a) South African Crustacea. Part II. Marine Investigations in South Africa. *Department of Agriculture, Cape Town*: 1–92.
- Stebbing T.R.R. (1902b) South African Crustacea. Part II. *Report of the Government Biologist, Cape of Good Hope*, **1902**: 88–195.
- Stebbing T.R.R. (1910) General catalogue of South African Crustacea (Part V. of S.A. Crustacea, for the Marine Investigations in South Africa). *Annals of the South African Museum*, **6**: 281–593.
- Stebbing T.R.R. (1917) South African Crustacea (Part IX. Of S.A. Crustacea, for the Marine Investigations in South Africa). *Annals of the South African Museum*, **17** (1): 23–43, pls. I–VIII.
- Steindachner F. (1891) Vorläufiger Bericht über die zoologischen Arbeiten im Sommer 1891. *Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften, Wien*, **100**: 435–447. [in German]
- Stephensen K. (1923) Decapoda-Macrura excl. Sergestidae. (Penaeidae, Pasiphaeidae, Holophoridae, Nematocarcinidae, Scyllaridae, Eryonidae, Nephropsidae, Appendix). *Report on the Danish Oceanographical Expeditions 1908 – 10 to the Mediterranean and Adjacent Seas*, **2**: 1–85.

- Stephenson W., Williams W.T., Lance G.N. (1970) The macrobenthos of Moreton Bay. *Ecological Monographs*, **40**: 459–494, figs. 1–9.
- Štević Z. (1969) Lista desetonožnih rakova Jadrana. *Biološki Vestnik, Ljubljana*, **17**: 125–134. [in Croatian]
- Štević Z. (1990) Check-list of the Adriatic decapod Crustacea. *Acta Adriatica*, **31** (1/2): 183–274.
- Sund O. (1915) *Eryoneicus-Polycheles*. *Nature, London*, **95**: 372.
- Takeda M. (1982) *Keys to the Japanese and foreign crustaceans fully illustrated in colors*. The Hokuryukan Co., Tokyo, 284 pp. [in Japanese]
- Takeda M., Hanamura Y. (1994) Deep-sea shrimps and lobsters from the Flores Sea collected by the R.V. Hakuho-Maru during KH-85-1 cruise. *Bulletin of the National Science Museum, Tokyo, series A (Zoology)*, **20** (1): 1–37.
- Takeda M., Nagai S. (2004) Four species of giant crustaceans from the Indonesian depths, with description of a new species of the family Lithodidae. *Bulletin of the National Science Museum Series A (Zoology)*, **30** (1): 9–21.
- Takeda M., Okutani T. (1983) *Crustaceans and mollusks trawled off Suriname and French Guiana*. Japan Marine Fishery Resource Research Center, Tokyo, 354 pp.
- Tampi P.R.S., George M.J. (1975) Phyllosoma larvae in the IIOE (1960–65) collections – Systematics. *Mahasagar*, **8** (1, 2): 15–44, figs. 1–45.
- Thiriot A. (1974) Larves de Decapodes Macrura et Anomura, especes europeennes; Caracteres morphologiques et observations ecologiques. *Thalassia Jugoslavia, Zagreb*, **10**: 341–378. [in French]
- Thomas M.M. (1979) On a collection of deep sea decapod crustaceans from the Gulf of Mannar. *Journal of the Marine Biological Association of India*, **21**: 41–44.
- Thompson D.A.W. (1901) *A catalogue of Crustacea and of Pycnogonida contained in the Museum of University College, Dundee*. University of St. Andrews, Scotland, v + 56 pp.
- Tiefenbacher L. (1995) Polychelidae aus dem Ostatlantik und dem Arabischen Meer (Crustacea, Decapoda, Reptantia, Polychelidae). *Spixiana, München*, **18** (1): 1–9. [in German]
- Torchio M. (1964) *Biologia Marina*. A. Martello, Milano, 128 pp. [in Italian]
- Torchio M. (1967) *La Vita nel Mare, Meraviglie della natura*. Istituto geographico de Agostii, Novara, 144 pp. [in Italian]
- Tortonese E. (1951) I caratteri biologici del Mediterraneo Irienteale e i problem relativi. *Attualita Zoologische, Torino*, **7**: 207–251. [in Italian]
- Tortonese E. (1958) Bionomia marina della regione costiera fra punta della Chiappa e Portofino (Riviera Ligure di Levante). *Archivio di Oceanografia e Limnologia, Venezia*, **11**: 167–210. [in Italian]
- Tortonese E. (1959) La vita animale nel mare. *La Fauna. Conosci l'Italia*, **5**: 203–225, pls. 77, 78, 84–96. [in Italian]

- Tortonese E. (1962) Recenti ricerche sul bentos in ambienti litorali del mare Ligure. *Publicazioni della Stazione zoologica di Napoli*, **32** (supplement): 99–116. [in Italian]
- Tortonese E. (1965) I Gamberi dei Mari Italiani. *Natura e Montagna, Bologna*, **5** (2): 82–89. [in Italian]
- Tsoi K.H., Chan T.-Y., Chu K.H. (2011) Phylogenetic and biogeographic analysis of the spear lobsters *Linuparus* (Decapoda: Palinuridae), with the description of a new species. *Zoologischer Anzeiger*, **250**: 302–315.
- Tung Y., Chen Y., Wang F., Wang B., Li Z. (1988) *Report on crustaceans of the deep East China Sea*. Zhejiang Scientific Publications, Zhejiang, 132 pp.
- Tung Y.-M., Wang B.-Y., Li Z.-C. (1985) A new species of Nephropsidea from the deep water of East China Sea. *Acta Zootaxonomica Sinica*, **10** (4): 379–380. [in Chinese]
- Türkay M. (1976) Decapoda Reptantia von der portugiesischen und marokkanischen Küste Auswertung der Fahrten 8, 9c (1967), 19 (1970), 23 (1971) und 36 (1975) von F.S. Meteor. “Meteor” Forschungs-Ergebnisse, Reihe, D 23: 23–44, figs 1–35. [in German]
- Türkay M. (1993) Aus den Forschungsabteilungen. Meteor-Expedition zum östlichen Mittelmeer. *Natur und Museum, Frankfurt*, **123** (9): 283–284. [in German]
- Utinomi H. (1983) *Gakken illustrated Nature Encyclopedia. The Aquatic lower animals of Japan*. Gakken, Tokyo, 342 pp. [in Japanese]
- Van Straelen V. (1925) Contribution à l'étude des Crustacés décapodes de la période Jurassique. *Mémoires de la Classe des Sciences de l'Académie Royale de Belgique, (series 2)*, **7** (1): 1–462, pls 1–10. [in French]
- Vaso A., Gjiknuri L. (1993) Decapod crustaceans of the Albanian coast. *Crustaceana*, **65** (3): 390–407.
- Verrill A.E. (1882) Notice of the remarkable marine fauna occupying the outer banks off the Southern Coast of New England, No. 7, and of some additions to the fauna of Vineyard Sound. *American Journal of Science*, (3) **3**: 360–371.
- Verrill A.E. (1884) XX. Notice of the remarkable marine fauna occupying the outer banks off the Southern Coast of New England, and some additions to the fauna of Vineyard Sound. *Report of the United States Fish Commission, Washington*, **10**: 641–669.
- Verrill A.E. (1885) Results of the explorations made by the steamer “Albatross,” off the northern coast of the United States, in 1883. *Report of the United States Commission of Fish and Fisheries*, **11** [for 1883]: 503–699, pls. I–XLIV.
- Vilela H. (1936) Coleção oceanográfica de D. Carlos I. Catálogo dos Crustáceos Decápodes e Estomatópodes. *Bulletin de la Société Portugaise des Sciences Naturelles*, **12** (27): 215–242. [in Portuguese]
- Vine P. (1986) *Red Sea Invertebrates*. Immel Publishing, London, 224 p., figs.

- Voss-Fouchart M.F., Jeuniaux C. (1978) Etude verano de la couche principale et de la couche membraneuse de la cuticule chez six especes de Crustaces Decapodes. *Archives de Zoologie experimentale et generale, Paris*, **119**: 127–142. [in French]
- Wadley V., Evans D. (1991) *Crustaceans from the deep water trawl fisheries of Western Australia*. CSIRO Division of Fisheries, Hobart, 44 pp.
- Wallner B., Phillips B. (1988) From scampi to deepwater prawns: developments in the North West Shelf deepwater trawl fishery. *Australian Fisheries*, **47** (9): 34–38.
- Ward T.J., Davis T.L.O. (1987) Diel periodicity of *Metanephrops australiensis* and other deep-water crustaceans of northwest Australia. *Fisheries Research*, **5**: 91–97.
- Wear R.G. (1976) Studies on the larval development of *Metanephrops challengeri* (Balss, 1914) (Decapoda, Nephropidae). *Crustaceana*, **30** (2): 113–122, figs. 1–3.
- Wenner E.L. (1979) Some aspects of the biology of deep-sea lobsters of the family Polychelidae (Crustacea, Decapoda) from the western North Atlantic. *Fishery Bulletin*, **77**: 435–444.
- Wenner E.L., Boesch D.F. (1979) Distribution patterns of epibenthic decapod Crustacea along the shelf-slope coenocline, Middle Atlantic Bight, USA. *Bulletin of the Biological Society of Washington*, **3**: 106–133.
- White A. (1847) *List of the specimens in the collection of the British Museum*. British Museum, London, viii + 143 pp.
- Williams A.B. (1986) Lobsters – Identification, world distribution, and U.S. trade. *Marine Fisheries Review*, **48** (2): 1–36, figs. 1–80.
- Williams A.B. (1988a) *Lobsters of the World-An Illustrated Guide. Lobsters of the World in U.S. Trade*. Osprey Books, Huntington, New York, 186 pp.
- Williams A.B. (1988b) Indo-Pacific spiny lobsters in the U.S. National Museum of Natural History collected from 1963 to 1981 (Decapoda, Palinuridea). *Crustaceana*, **55** (3):313–316.
- Williams A.B., Wigley R.L. (1977) Distribution of Decapod Crustacea off Northeastern United States based on specimens at the Northeast Fisheries Center, Woods Hole, Massachusetts. *National Oceanic and Atmospheric Administration Technical Report, National Marine Fisheries Service Circular*, **407**: iv, 44.
- Williamson H.C. (1915) Crustacea Decapoda. Larven. *Nordisches Plankton, Kiel*, **6**: 315–588.
- Wood-Mason J. (1872) On *Nephropsis stewarti*, a new genus and species of macrourus crustaceans, dredged in deep water off the eastern coast of the Andaman Islands. *Proceedings of the Asiatic Society of Bengal*, **1872**: e151.



- Wood-Mason J. (1873) On *Nephropsis stewarti*, a new genus and species of macrourus crustaceans, dredged in deep water off the eastern coast of the Andaman Islands. *Annals and Magazine of Natural History, series 4*, **12**: 59–64.
- Wood-Mason J. (1874a) On *Nephropsis stewarti*, a new genus and species of macrourus crustaceans, dredged in deep water off the eastern coast of the Andaman Islands. *Journal of the Asiatic Society of Bengal*, **42** (2): 39–44, pl. 4.
- Wood-Mason J. (1874b) Blind Crustacea. *Proceedings of the Asiatic Society of Bengal*, **1874**: 180–181.
- Wood-Mason J. (1875) On the genus *Deidamia* Willemoes-Suhm. *The Annals and Magazine of Natural History, series 4*, **15**: 131–135.
- Wood-Mason J. (1876) On new or little known crustaceans. *Proceedings of the Asiatic Society of Bengal*, **1875 (1876)**: 230–232.
- Wood-Mason J. (1885) Natural history zoological notes from H.M.S. Indian Marine Survey Steamer “Investigator”, Commander A. Carpenter, R. N. commanding. *Proceedings of the Asiatic Society of Bengal*, **1885**: 70–72.
- Wood-Mason J. (1891) List of the deep-sea crustaceans collected during the year ending 1<sup>st</sup> March 1891. Appendix No XIII. Administration Report of the Indian Marine for the official year 1890–91. Indian Government, Bombay, pp. 52–57.
- Wood-Mason J. (1892) *Illustrations of the Zoology of H.M. Indian Marine Surveying Steamer Investigator, under the command of Commander A. Carpenter, R.N., D.S.O., and of Commander R. F. Hoskyn, R.N. Part I. Crustaceans*. Published under the Authority of the Director of the Royal Indian Marine. Superintendent of Government Printing, Calcutta, V pls. [Five unnumbered pages of explanation of plates].
- Wood-Mason J., Alcock A. (1891) Natural History Notes from H.M. Indian Marine Survey Steamer ‘Investigator,’ Commander R. F. Hoskyn, R. N., commanding. – No. 21. Note on the results of the last season’s deep-sea dredging. *The Annals and Magazine of Natural History, series 6, 7*: 1–19, 186–202, 258–272.
- Wood-Mason J., Alcock A. (1894) *Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer Investigator, under the command of Commander A. Carpenter, R.N., D.S.O., of the late Commander R. F. Hoskyn, R.N., and of Commander C. F. Oldham, R.N.*. Published under the Authority of the Director of the Royal Indian Marine. Superintendent of Government Printing, Calcutta. Fishes, Part II, pls. VIII–XIII. Crustacea, Part II, pls. VI–VIII. Echinoderma, Part I, pls. I–III. [Three unnumbered pages of explanation of crustacean Plates VI–VIII]
- Wowor D. (1999) The spear lobster, *Linuparus somniosus* Berry and George, 1972 (Decapod, Palinuridae) in Indonesia. *Crustaceana*, **72**: 673–684.

- Yang C.-H., Chan T.-Y. (2020) A new slipper lobster of the genus *Galearctus* Holthuis, 2002 (Decapoda, Scyllaridae) from Madagascar. *Crustaceana*, **93** (11–12): 1461–1470.
- Yang C.-H., Kumar A.B., Chan T.-Y. (2017) A new slipper lobster of the genus *Petrarctus* Holthuis, 2002 (Crustacea, Decapoda, Scyllaridae) from Southwest coast of India. *Zootaxa*, **4329** (5): 477–486.
- Yokoya Y. (1933) On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S. S. Sôyô-Marû, during the year 1923–1930. *Journal of the College of Agriculture, Tokyo Imperial University*, **12** (1): 1–226.
- Young C.G. (1900) *The stalk-eyed Crustacea of British Guiana, West Indies, and Bermuda*. J.M. Watkins, London, 514 pp.
- Zarenkov N.A. (1971) K vidovomu sostavu I ekologii desjatinogih rakoobraznyh Krasnogo Morja [On the species composition and ecology of the Decapod Crustacea of the Red Sea]. In: Bentos shelfa Krasnogo Morja [Benthos of the shelf of the Red Sea]. *Naukova Dumka, Kiev*: 155–203, figs. 63–88. [in Russian]
- Zariquiey Alvarez R. (1946) *Crustáceos Decápodos Mediterraneos*. Publicaciones del Instituto de Biología Espana, Estacione Mediterranea, **2**: 1–181. [in Spanish]
- Zariquiey Álvarez R. (1955) Crustáceos decápodos de la verano de Cadaqués (España). *Vie et Milieu*, **6** (2): 397–409. [in Spanish]
- Zariquiey Álvarez R. (1962) Campaña carcinológica del verano de 1960. *Investigación Pesquera*, **21**: 29–37. [in Spanish]
- Zariquiey Álvarez R. (1968) Crustáceos Decápodos Ibéricos. *Investigación Pesquera*, **32**: 1–510. [in Spanish]
- Zariquiey Cénarro R. (1935) Adiciones al “Ensayo de un Catálogo de los Crustáceos Decápodos Marinos de Espana y Marruecos Espanol” de D. Ivaro de Miranda y Rivera, publicado en 20 de septiembre de 1933. *Buttleti de la Institucio Catalana d’Historia Natural, Barcelona*, **35**: 92–98. [in Spanish]