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ORIGINAL ARTICLE



Description of a new species of deep-water crab of the genus *Homolodromia* A. Milne-Edwards, 1880 from the northern Indian Ocean (Crustacea: Decapoda: Brachyura: Homolodromiidae)

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ABSTRACT

Homolodromia rajeeviani, a new species of deep-water homolodromiid sponge crab, is described from the northern Indian Ocean (Arabian Sea, depth 957 m, and Bay of Bengal, 645 m), and is the first record of the genus from the area. This species resembles the western Indian Ocean species, namely, *Homolodromia bouvieri* Doflein, 1904, in having 2 terminal spines on the propodi of the last two pereopods, but can be easily distinguished from the latter species by the inflated carapace, simple long setae on carapace and appendages, slender pseudo-rostral spines separated by a U-shaped base, and a slender arched dactylus of cheliped with maximum elevation at proximal part which bears broadly circular depressions with sparse setae. The most diagnostic character is the higher number of spines on the occlusal surfaces of propodal thumbs and dactyli of the pseudochela of the last two pereopods as compared to *H. bouvieri*. A key for the identification of the species under the genus *Homolodromia* is also provided.

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Introduction

The deep-water sponge crab family Homolodromiidae Alcock, 1899, contains two genera, namely, *Dicranodromia* A. Milne-Edwards, 1880 (20 species), and *Homolodromia* A. Milne-Edwards, 1880 (5 species) (sensu Guinot 1995; Tavares and Lemaitre 2014). It is characterized by a weakly calcified branchiostegite and pterygostomial region of the carapace, vestigial lobate uropods, and coxa of the fifth pereopod with an extension enclosing the penis (Davie et al. 2015). A review of published literature of the homolodromiid crabs in the Indian Ocean revealed the occurrence of 3 species, namely, *Dicranodromia baffini* (Alcock and Anderson, 1899), from the Arabian Sea and Bay of Bengal (Alcock 1899, 1900, 1901; Trivedi et al. 2018), *Dicranodromia crosnieri* Guinot, 1995, from Madagascar (Guinot 1995), and *Homolodromia bouvieri* Doflein, 1904, from Kenya (Doflein 1904), South Africa (Kensley 1977) and Mozambique (Martin 1992).

The genus *Homolodromia* is characterized by an eye stalk with fixed basophthalmite; cheliped dactylus as long as propodus, sickle-shaped, arched; elongated second and third pereopods; cheliform process of the fourth and fifth pereopods with the formation of

the expansion of propodus (see Guinot 1995: 163 key to genera).

Recently, the first author collected 3 specimens of deep-water sponge crabs during cruises 372 and 374 of the Fisheries Oceanographic Research Vessel *Sagar Sampada* (FORVSS) in the eastern Arabian Sea (Figure 1). In addition, the authors obtained 3 specimens (from cruise 279) deposited in the Referral Centre collections of the Centre for Marine Living Resources and Ecology (CMLRE), Kochi, Kerala, India. Examination of the above material confirmed it to be *Homolodromia*, differing from the remaining congeners in its highly inflated carapace, simple setation, U-shaped base of pseudo-rostral spines, and arched cheliped dactylus as well as armature of pseudochela of last 2 pereopods. The present study reports the first record of the genus *Homolodromia* from the northern Indian Ocean.

Material and methods

The samples analysed for this study were collected onboard the FORVSS during cruises 279 (Bay of Bengal, August 2010), 372 and 374 (Arabian Sea, February 2018 and April 2018, respectively) using a High

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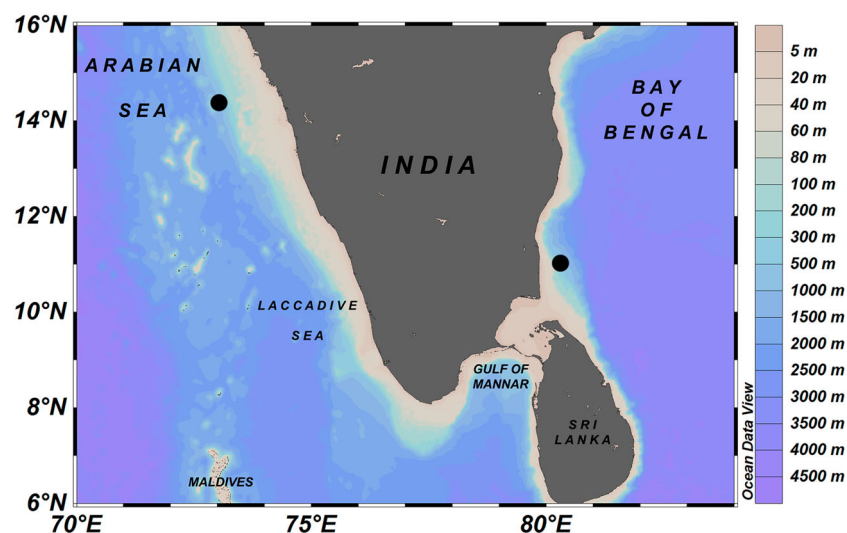


Figure 1. Map indicating the sites of collection (black dots) of *Homolodromia rajeevani* sp. nov. in the Arabian Sea and the Bay of Bengal.

Speed Demersal Trawl II net – Crustacean Version (HSDT (CV)) with cod end mesh size of 40 mm. The specimens were cleaned with a soft brush to remove mud and examined and photographed with an Olympus TG-5 underwater camera. The gonopods were photographed using a Leica M80 stereo-zoom microscope equipped with Leica MC170 HD microscope camera and Leica Application Suite imaging software. Photographic plates were made in Adobe® Photoshop CS5. Measurements of the carapace and the appendages were made with vernier caliper. Maps used in the study were plotted using ODV mapping software (Schlitzer 2018).

The terminology used in the morphological description follows Guinot (1995) and Martin et al. (2001). For confirming the species status, a comparative analysis of the morphological characters of congeneric species was carried out based on published literature (Garth 1973; Báez and Martin 1989; Martin 1992; Guinot 1995; Martin et al. 2001; Tavares and Lemaitre 2014). The measurements included (in mm) are for the maximum carapace length (excluding pseudo-rostrum) and width, respectively. The abbreviations used are: C – carpus; CH – carapace height; CL – carapace length; CW – carapace width; D – dactylus; G1 – male first gonopod; G2 – male second gonopod; I – ischium; IO/SS/BRC/ – Indian Ocean/ Sagar Sampada/ Brachyura; M – merus; P – propodus; P2 to P5 – pereopods 2–5 (first to fourth ambulatory legs), respectively; RL – pseudo-rostral length. The type material is deposited in the Referral Centre collection of the Centre for Marine Living Resources and Ecology (CMLRE), Kochi, Kerala, India, and preserved in 70% ethanol.

Taxonomy

Family Homolodromiidae Alcock, 1899

Genus *Homolodromia* A. Milne-Edwards, 1880

Homolodromia A. Milne-Edwards, 1880: 32. Type species: *Homolodromia paradoxa* A. Milne-Edwards, 1880 by monotypy.

***Homolodromia rajeevani* sp. nov.**

(Figures 2A, 3–6)

Material examined

Holotype. IO/SS/BRC/00174, 30.30 mm CL, 31.00 mm CW, male, Arabian Sea, off Honnavar, India, 14.37°N, 73.03°E, 957 m, HSDT (CV), coll. FORVSS station 37410 (V.P. Padate), 9 April 2018.

Paratypes. IO/SS/BRC/00175, 28.90 mm CL, 27.60 mm CW, female, IO/SS/BRC/00176, 31.50 mm CL, 31.40 mm CW, male, Arabian Sea, off Honnavar, India, 14.39°N, 73.03°E, 957 m, HSDT (CV), coll. FORVSS station 37205 (V.P. Padate), 28 February 2018; IO/SS/BRC/00177, 35.08 mm CL, 35.04 mm CW, male, IO/SS/BRC/00178, 29.90 mm CL, 28.00 mm CW, male, IO/SS/BRC/00179, 44.00 mm CL, 51.20 mm CW, female, Bay of Bengal, off Tharangambadi (Tranquebar), India, 11.01°N, 80.30°E, 645 m, HSDT (CV), coll. FORVSS station 27901 (R. Prakash), August 2010.

Diagnosis

Carapace with posterior branchial region highly inflated; CW:CL – 1.00: 0.86–1.07, setae long, simple, scattered; cheliped dactylus 0.43–0.49 times propodal

length, arched proximally, tapering distally, with a broadly circular, sparsely setose, proximal depression; occlusal margin of pollex with 8 strong teeth, separated from proximal tooth by distinct notch; propodal thumbs of P4–P5 pseudochelae terminating in 2 strong curved terminal spines, also bearing 2 subterminal spines, 7 spines opposing dactylus; G1 tubular, distal part incompletely folded, bearing 3 distal lobes surrounding mesial aperture.

Description

Carapace of holotype (30.30 × 31.00 mm) subovate, box-like in frontal view, maximum width almost equal to length (CW:CL – 1.00: 0.98), much wider posteriorly than anteriorly (Figure 2A and Figure 3A), maximum

height at level of posterior branchial regions (CL: CH – 1.00: 0.67) (Figure 3C); cervical and branchio-cardiac grooves deep laterally, with 3 regions (Figure 3A,C); dorsal surface rough with weak tubercles, with long, flexible, scattered simple setae on anterior one-third and also along posterolateral two-thirds, median surface of posterior two-thirds with short, simple scattered setae (Figure 3A,C); gastric region moderately inflated, cardiac region depressed, branchial regions highly inflated (Figure 3A); lateral surfaces with distinct grooves demarcating sub-hepatic, pterygostomial and sub-branchial regions; sub-hepatic regions very prominent; entire pterygostomial and branchiostegite (sub-branchial) regions weakly calcified (Figure 3C); pseudo-rostral spines short, 0.16 times CL, slender, separated by U-shaped base, dorso-ventrally flattened, tips

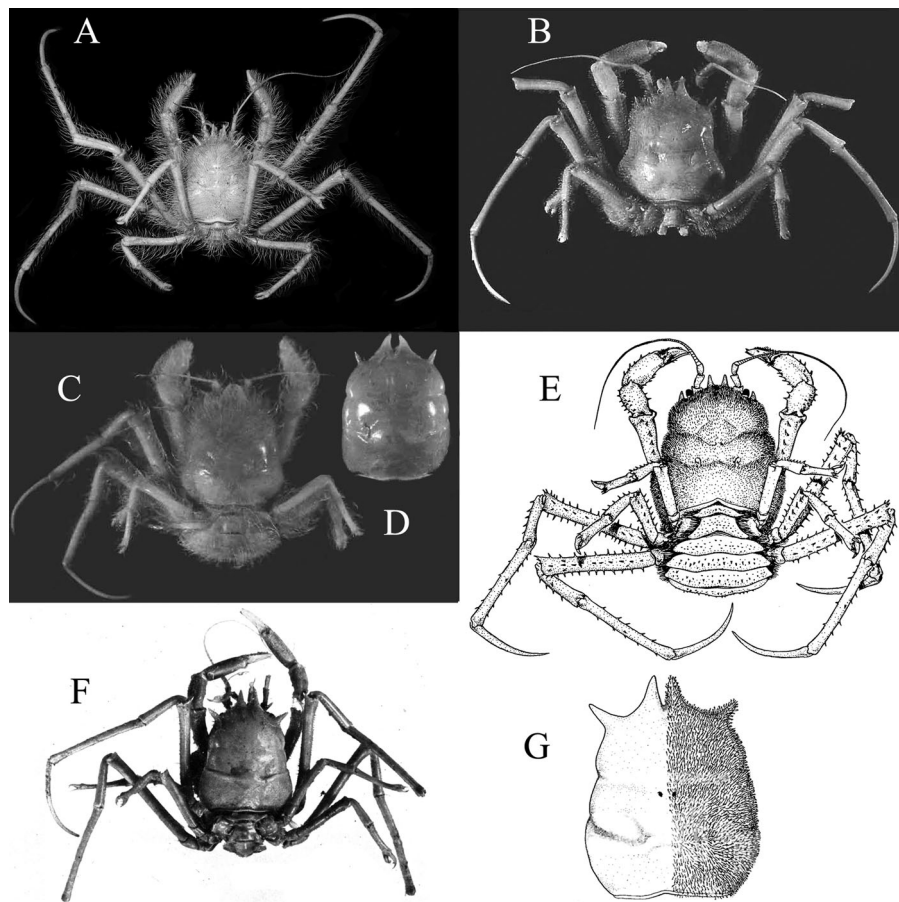


Figure 2. Dorsal view of species of *Homolodromia* A. Milne-Edwards, 1880. (A) *H. rajeevani* sp. nov., holotype male (30.3 × 31.0 mm) (IO/SS/BRC/00174); (B) *H. bouvieri* Doflein, 1904, male (29.4 × 26.3 mm) (USNM 243546) (courtesy of © Publications Scientifiques du Muséum national d'Histoire naturelle, Paris); (C) *H. kai* Guinot, 1993, holotype female (25.0 × 18.0 mm) (MNHN-B 22845) (modified, courtesy of © Publications Scientifiques du Muséum national d'Histoire naturelle, Paris); (D) *H. kai*, Guinot, 1993, carapace of paratype female (23.0 × 15.7 mm) (MNHN-B 22704) (modified, courtesy of © Publications Scientifiques du Muséum national d'Histoire naturelle, Paris); (E) *H. robertsi* Garth, 1973, holotype female (42.5 × 38.0 mm) (AHF 719) (courtesy of the Bulletin of the Southern California Academy of Sciences with permission of the Southern California Academy of Sciences); (F) *H. paradoxa* A. Milne-Edwards, 1880, holotype male (19.0 × 13.0 mm) (MCZ 6512) (courtesy of the Smithsonian Libraries); (G) *H. monstrosa* Martin, Christiansen and Trautwein, 2001, female paratype (size unknown) (USNM 310890) (courtesy of Prof. J. W. Martin, Natural History Museum, Los Angeles).

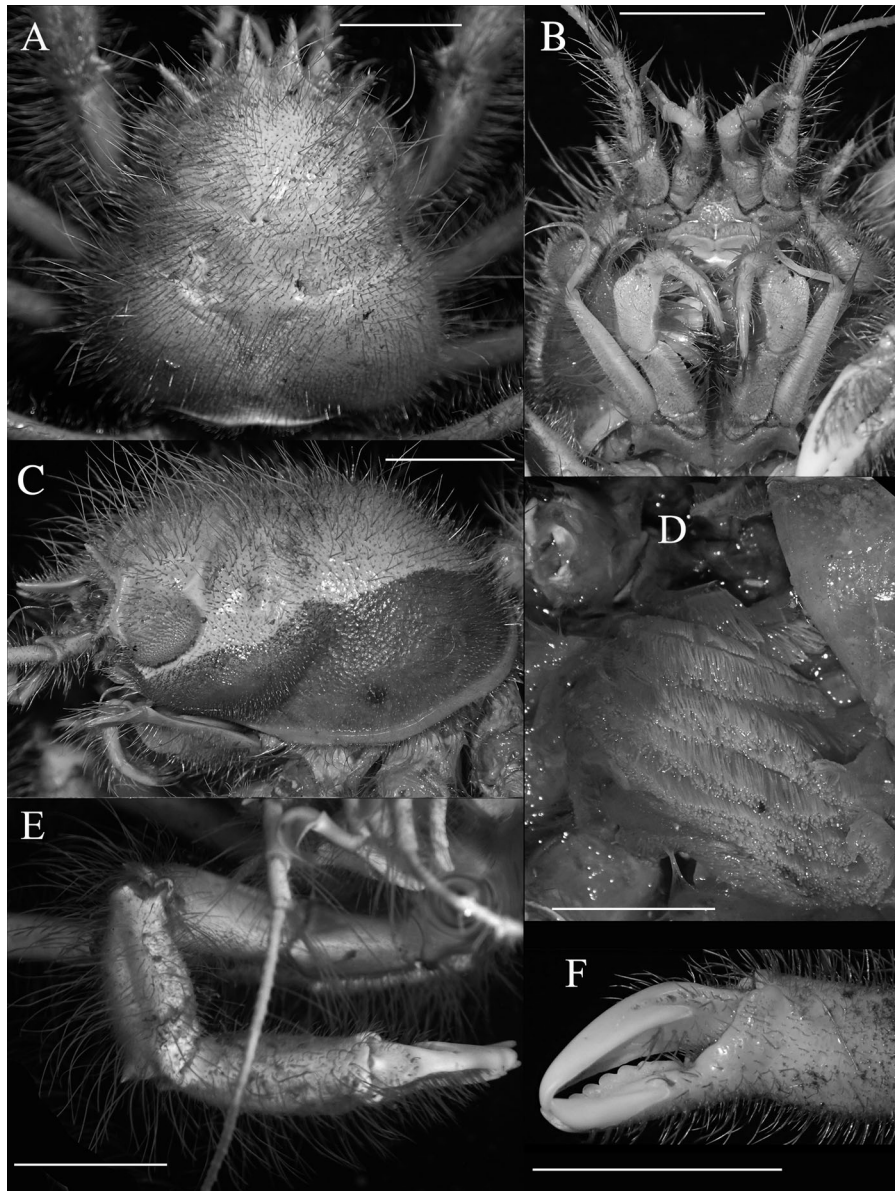


Figure 3. *Homolodromia rajeeviani* sp. nov., holotype male (IO/SS/BRC/00174). (A) dorsal view of carapace; (B) lateral view of carapace showing branchiostegite and other characters; (C) antennules, antennae, epistome and third maxillipeds; (D) branchial chamber with mastigobranchs; (E) dorsal view of cheliped showing broadly circular dactylar depression; (F) mesial view of chela showing occlusal dentition and notch. Scale bars: 10 mm.

gently upturned, distance between tips of pseudo-rostral spines 0.12 times CL (Figure 3A,C); anterolateral teeth minutely granulated, slightly shorter than pseudo-rostral spines (0.13 times CL), obliquely oriented on the carapace; distance between tips of anterolateral teeth 0.58 times CL.

Ocular peduncle with basophthalmite fixed, podophthalmite with small cornea highly reduced to point; orbit not discernible, demarcated ventrally by infra-orbital spine at level of antenna (Figure 3C).

Basal antennular segment elongated, with short disto-lateral spine. Antennal acicle distinct; basal antennal segment with prominent outwardly-directed

disto-lateral spine; segments 2 and 3 with long setae; flagellum longer than carapace (Figure 3B).

Proepistome extremely narrow, separated from frontal margin by short gap; epistome wider than long (Figure 3B).

Third maxilliped pediform, setose, inner margins with more dense long setae (Figure 3B); ischium sub-quadrilateral, width about half length; merus subovate, slightly wider than ischium, length 0.98 times ischial length; carpus short; propodus elongated, slightly wider proximally, length 0.54 times ischial length; dactylus tubular, 0.93 times as long as propodal length.

Chelipeds almost equal, 1.94 times CL, with closely set, simple, long setae on entire surface except fingers (Figure 3E), proportions of I: M: C: P: D: Manus – 12.6: 28.5: 20.2: 38.7: 16.6: 24.6; ischium shortest; merus longer than carpus, manus and fingers, triangular in cross-section; carpus longitudinally ovate, longer than fingers, and shorter than manus, with short distolateral spine (Figure 3E); propodus subcylindrical, slightly more than 2.00 times length of fingers, height 0.25 times its length; manus little longer than fingers and subcylindrical; dactylus arched, maximum elevation at proximal part, proximal-most region with broadly circular depression with sparse setae, distal margin narrow, tapering, fitting well into cleft tip of pollex, outer surface with long flexible setae in groove extending to two-thirds proximal length, inner surface with small setose patch proximally, occlusal margin sharply ridged (Figure 3E,F); pollex slightly deflexed, inner occlusal margin ridged in proximal half, outer occlusal margin with 8 strong teeth, separated from proximal tooth by a distinct notch (Figure 3F).

P2–P5 with mastigobranchs (Figure 3D); P2 and P3 long, 3.71 and 3.89 times CL, respectively, delicate, setose, with short simple setae at anterior margin, long simple setae at posterior margin; dactyli long, sharply curved; proportions of I: M: C: P: D for P2 and P3 are 4.1: 31.6: 13.1: 26.7: 24.6 and 3.9: 31.0: 13.0: 27.8: 24.3, respectively. P4 and P5 sub-dorsal in position, shorter than preceding legs (1.88 and 1.97 times CL, respectively), with long simple sparse setae, P4 dactylus directed posteriorly, P5 dactylus directed

anteriorly; proportions of I: M: C: P: D for P4 and P5 are 6.7: 33.6: 17.4: 35.0: 7.4 and 6.4: 36.9: 19.3: 31.5: 5.9, respectively, merus overreaching branchio-cardiac groove when folded anteriorly (Figure 2A); propodal thumb of P4 forming pseudochela with dactylus, terminating in 2 stout curved distal spines, also bearing 3 shorter subdistal spines, 4 slender spines on surface opposing dactylus, 3 spines at dorso-distal end proximal to base of dactylus (Figure 4A,B); dactylus strongly curved, bearing 5 sharp spines along margin opposing propodus (Figure 4A,B); propodal thumb of P5 forming pseudochela with dactylus, terminating in 2 stout curved distal spines, also bearing 2 shorter subdistal spines, 7 slender spines on surface opposing dactylus (Figure 4C,D); 2 spines at dorso-distal end proximal to base of dactylus; dactylus strongly curved, bearing 7 sharp spines along margin opposing propodus (Figure 4C,D). P5 coxa with prominent chitinous extension enclosing penis (Figure 5C).

Pleonal somites 1–6 freely articulated (proportions 8.5: 21.8: 15.8: 17.0: 17.0: 20.0), covering entire space between coxae of ambulatory legs, pleurae free, external surface with long, stout, scattered simple long setae, free margins with short silky setae (Figure 5A); somites 1–2 bearing well-developed gonopods, somites 3–5 with short vestigial pleopods, somite 6 with small lobular uropods.

G1 3-segmented, stout, with long, silky setae (Figure 5C); distal segment forming incompletely folded tube, both folds sharply tapering distally, with 3 distal lobes surrounding mesial aperture (Figure 5D); middle segment strongly dilated, setose;

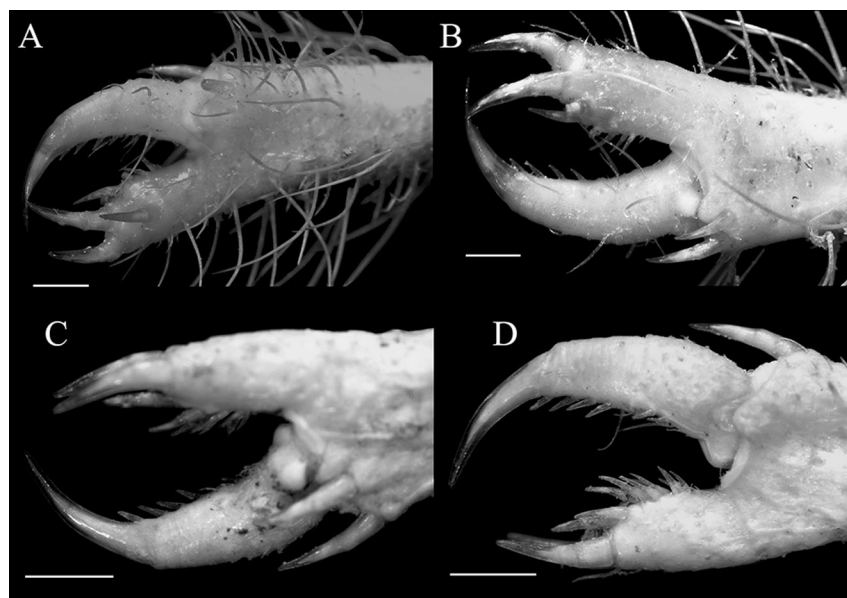


Figure 4. *Homolodromia rajeevani* sp. nov. holotype male (IO/SS/BRC/00174). (A) dorsal view of P4 pseudochela; (B) ventral view of P4 pseudochela; (C) dorsal view of P5 pseudochela; (D) ventral view of P5 pseudochela. Scale bars: 1 mm.

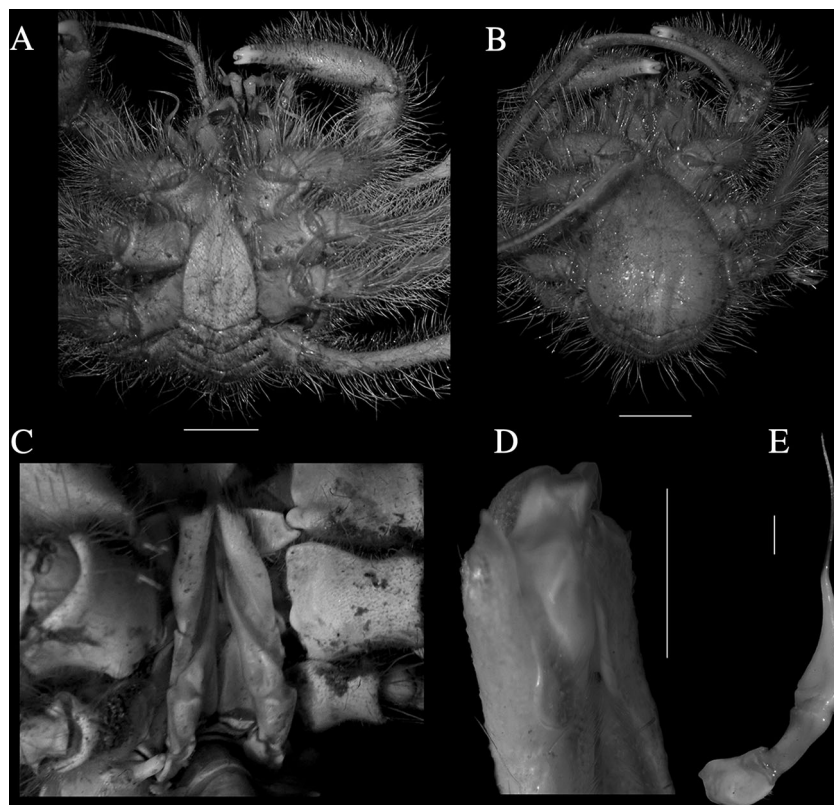


Figure 5. *Homolodromia rajeeviani* sp. nov. (A) ventral view of holotype male (IO/SS/BRC/00174) showing distal part of pleon and telson; (B) G1, G2 and P5 coxal chitinous extension enclosing penis; (C) pleonal view of distal portion of G1 (denuded); (D) sternal view of G2; (E) ventral view of paratype female (IO/SS/BRC/00175) showing distal part of pleon and telson. Scale bars: A, B, E, 10 mm; C, D, 2 mm.

basal segment short (Figure 5C). G2 3-segmented, longer than G1, 2 proximal segments short, massive, as strong peduncle (Figure 5C), distal segment long, styliform (Figure 5C,E).

Telson broadly elongated, distal tip reaching level of coxa of cheliped, length 0.55 times CL, 0.84 times pleonal length, width 0.54 times length, lateral margins gradually converging along proximal two-thirds, sharply converging along distal one-third; external surface with stout setae, lateral surface with short silky setae (Figure 5A).

Other males possess similar characters as holotype. With regards to carapace, 2 larger paratype males (31.50 × 31.40 mm, 35.08 × 35.04 mm) possess CW:CL ratio of 1.00: ≈1.00, whereas in the smallest male (29.90 × 28.0 mm), this ratio is 1.00: 1.07. Relative lengths of chelipeds are 1.93 times CL in the larger males, and 1.85 times CL in the smaller male.

Females

In the smaller paratype from the Arabian Sea (28.90 × 27.60 mm), carapace slightly longer than wide (CW:CL – 1.00: 1.05), cheliped length 1.82 times CL. Larger

female from the Bay of Bengal (44.00 × 51.20 mm) with carapace wider than long, much inflated (CW:CL – 1.00: 0.86). Relative lengths of chelipeds are 1.82 and 1.79 times CL, respectively.

Pleon broad, ovate, 6 somites in proportions 9.91: 19.83: 15.95: 18.10: 18.10: 18.10, covering coxae of ambulatory legs, extending up to level of P1 coxa (Figure 5B); articulation and setation same as in male; somite 1 bearing pair of uniramous pleopods, somites 2–5 with paired well-developed biramous pleopods, somite 6 with vestigial median lobe.

Telson of smaller female broadly elongated, distal tip slightly extends to level of P1 coxa (Figure 5B), length 0.86 times CL, 1.07 times pleonal length, width 0.75 times length; setation same as male. Larger female with telson length 0.96 times CL, 1.15 times pleonal length, width 0.70 times its length.

Gonopore located ventrally on P3 coxa.

Colour (in life)

Carapace white with off-white setae; chelipeds and pereopods light brownish pink, cheliped fingers white (Figure 6A,B).

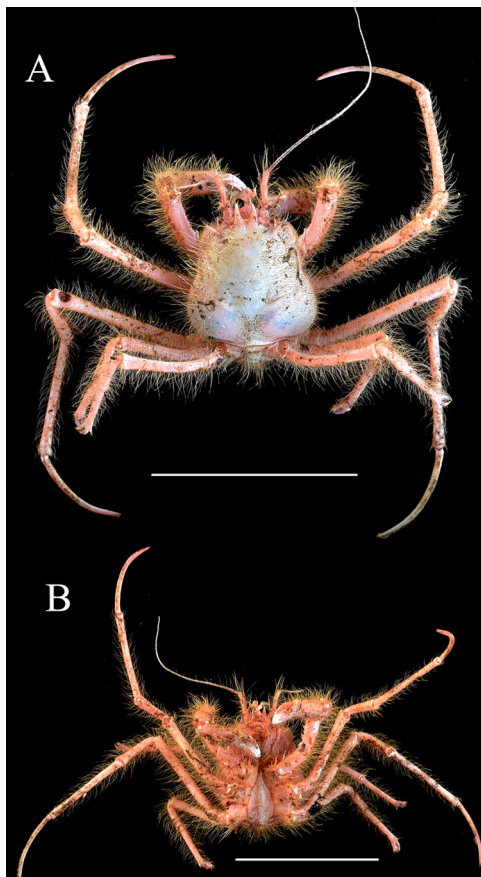


Figure 6. Colour in life. *Homolodromia rajeevani* sp. nov., holotype male (IO/SS/BRC/00174). (A) dorsal view; (B) ventral view.

Distribution

Eastern Arabian Sea – 957 m; southwestern Bay of Bengal – 645 m (figures 1, 7).

Etymology

The specific epithet *rajeevani* is in honour of the distinguished scientist and Secretary, Ministry of Earth Sciences, Government of India, Dr. Madhavan Nair Rajeevan who has been the guiding force in the deep-sea research programmes of CMLRE.

Remarks

The deep-water homolodromiid genus *Homolodromia* is represented by *H. bouvieri* Doflein, 1904 (Figure 2B), *H. kai* Guinot, 1993 (Figure 2C,D), *H. robertsi* Garth, 1973 (Figure 2E), *H. paradoxa* A. Milne-Edwards, 1880 (Figure 2F) and *H. monstrosa* Martin, Christiansen & Trautwein, 2001 (Figure 2G) (Guinot 1995; Martin et al. 2001). Tavares and Lemaitre (2014) discussed in detail the validity of *H. monstrosa* by re-assessing Martin et al.'s presumed morphological differences with *H. paradoxa*, and tentatively considered the former to be a valid species until availability of further evidence. The geographical distributions of these species are indicated in Figure 7. The present report of *Homolodromia rajeevani* sp. nov. from the Arabian Sea and the Bay of Bengal is the first record of this genus from the northern Indian Ocean (Figure 7).

Homolodromia rajeevani sp. nov., differs from its congeneric species in having the highest CW:CL ratio (1.00: 0.98–1.07 in males and 1.00: 0.86–1.05 in females); the other five species reported so far have lower CW:CL ratios of 1.00: 1.08–2.38 in males and 1.00: 0.78–1.64 in females (Table S1), and hence, the

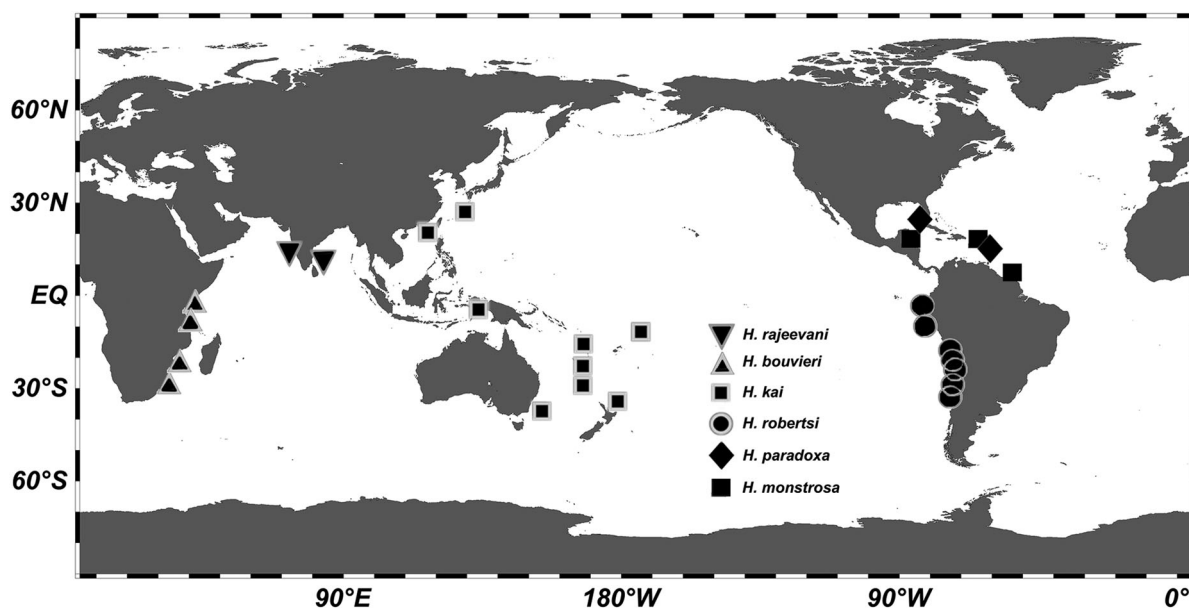


Figure 7. Geographical distribution of the extant species of the genus *Homolodromia* (distribution data courtesy of Doflein (1904), Garth (1973), Guinot (1995), Martin et al. (2001), Ahyong et al. (2009)).

new species (Figure 3A) possesses the maximum inflation of the posterior carapace among all the congeneric species (see Rathbun 1937: Plate 14, figure 1; Garth 1973: figure 1A; Guinot 1995: figures 7a, 9a,c,d; Martin et al. 2001: figures 2a, 5a).

Carapace proportions (CW:CL ratio) of all the extant *Homolodromia* species based on the present observations (new species) and published data (Doflein 1904; Báez and Martin 1989; Martin 1992; Guinot 1993, 1995; Martin et al. 2001; Tavares and Lemaitre 2014) are provided in Table S2. An assessment of the species-specificity of the CW:CL ratio was carried out by comparing the ratios among similar-sized specimens. In this regard, the available data were categorized into 7 CL size classes, namely < 20.0 mm, 20.1–25.0 mm, 25.1–30.0 mm, 30.1–35.0 mm, 35.1–40.0 mm, 40.1–45.0 mm and 45.1–50.0 mm. In the 25.1–30.0 mm CL size class for males, *H. rajeevani* possessed the lowest CW:CL ratio of 1.00: 1.07 as compared to *H. robertsi* (1.00: 1.08–1.18), *H. bouvieri* (1.00: 1.12), *H. monstrosa* (1.00: 1.26–1.36), *H. paradoxa* (1.00: 1.29) and *H. kai* (1.00: 1.42). In the 30.1–35.0 mm CL size class for males, *H. rajeevani* possessed the lowest ratio of 1.00: 0.98–1.00 as compared to *H. robertsi* (1.00: 1.25), *H. monstrosa* (1.00: 1.22–1.31) and *H. paradoxa* (1.00: 1.29). In the 25.1–30.0 mm CL size class for females, *H. rajeevani* possessed the lowest CW:CL ratio of 1.00: 1.05 as compared to *H. monstrosa* (1.00: 1.19–1.33), *H. robertsi* (1.00: 1.20) and *H. kai* (1.00: 1.39–1.47). In the 40.1–45.0 mm CL size class, *H. rajeevani* possessed the lowest ratio of 1.00: 0.859 as compared to *H. robertsi* (1.00: 1.12–1.18) and *H. paradoxa* (1.00: 1.24–1.31). There was no female *H. bouvieri* specimen for comparison.

With respect to the nature of setae and setation, both *H. rajeevani* (Figures 2A, 3A–F) and *H. paradoxa* (see Martin et al. 2001: figures 2a, 3b–g) possess simple setae. On the other hand, *H. bouvieri*, *H. monstrosa* and *H. robertsi* possess densely distributed plumose setae on the carapace and the proximal portions (merus, carpus and propodus) of the appendages; their dactyli are covered with simple setae (see Báez and Martin 1989: figure 2a–f; Martin 1992: figures, 2a–g; Martin et al. 2001: figure 5a–e). *Homolodromia kai* is hairy in appearance and differs region-wise, wherein the Indonesian specimens possess barb-like (plumose), flexible setae (see Guinot 1995: figure 9a), whereas the Taiwanese specimens possess relatively stiff, coarse setae (Ho and Ng 1999; see Ah Yong et al. 2009: figures 95–97). It is pertinent to note here that only *H. robertsi* possesses short blunt spines in addition to the setae (see Báez and Martin 1989: figure 2a,b).

The pseudo-rostral horns exhibit marked differences among the species of this genus. The horns appear V-shaped in *H. bouvieri*, *H. monstrosa* and *H. paradoxa* (see Martin 1992: figure 2a; Martin et al. 2001: figures 2a, 5a), whereas they are U-shaped in *H. robertsi* (see Báez and Martin 1989: figure 2a), *H. kai* (see Guinot 1995: figures 9a, 10a,b) and *H. rajeevani* (Figure 3A). Among the latter 3 species, the horns converge medially in *H. kai*, whereas they are subparallel in *H. robertsi* and the new species. However, the new species clearly differs from *H. robertsi* in lacking spinules on the surface of the pseudo-rostral horns (Figure 3A). Moreover, in the present species, the horns are slender, more depressed, gently upturned with slight dorsal concavity observed in lateral view (Figure 3C); in *H. robertsi*, the teeth are tubular (see Báez and Martin 1989: figure 2a).

The anterolateral teeth are obliquely oriented in all *Homolodromia* species (see Martin 1992: figure 2a; Guinot 1995: figure 10a,b; Martin et al. 2001: figures 2a, 5a; present study: Figure 3A) except *H. robertsi* (see Garth 1973: Figure 1A). With regard to their position on the carapace, these teeth are closer to the pseudo-rostral teeth in *H. rajeevani* (Figure 3A), whereas in the other congeners they originate closer to the pterygostomial angle (see Garth 1973: Figure 1A; Martin 1992: figure 2a; Guinot 1995: figure 10a,b; Martin et al. 2001: figures 2a, 5a).

The merus of the endopod of the third maxilliped is as long as the ischium (see Doflein 1904: plate 5, Figure 2) in *H. bouvieri*. However, it is shorter, wider than the ischium in *H. paradoxa*, *H. monstrosa* (see Martin et al. 2001: figures 3a, 6b), *H. robertsi* (see Garth 1973: Figure 1E) and *H. rajeevani* (Figure 3B). No published information is available about *H. kai* to compare this character.

The cheliped dactyli are arched in all *Homolodromia* species, but the peculiar elevation reported in *H. bouvieri* (see Martin 1992: figure 2c) and *H. rajeevani* sp. nov. (Figure 3F) needs special discussion for use in separating the two species. In *H. bouvieri*, the proportion of the dactylus in relation to the manus is much lower when compared to the new species (Table S1). In addition, the proximal depression is triangular in *H. bouvieri* (see Martin 1992: figure 2d), whereas in the new species, it is broadly circular (Figure 3E). In *H. bouvieri*, the tip of the dactylus does not extend up to the clefted tip of the pollex (see Martin 1992: figure 2c), whereas in all the remaining species including *H. rajeevani*, the tip of the dactylus exceeds the clefted tip of the pollex such that the dactylar tip fits well into it (see Báez and Martin 1989: figure 2c; Martin et al. 2001: figures

3c, 5c; Ah Yong et al. 2009: figure 98; present study: Figure 3E,F). Additionally, *H. bouvieri* has the dorsal surface of the cheliped dactylus more ridged and the distal half widened (see Martin 1992: figure 2d), whereas in the new species the dorsal surface is flat and distal half tapering (Figure 3E).

The cheliped pollex in *H. bouvieri* (see Martin 1992: figure 2c) and *H. rajeevani* (Figure 3F) possesses a notch separating the proximal-most tooth from the other teeth, whereas the remaining 4 species possess continuous series of occlusal teeth without any notch (see Báez and Martin 1989: figure 2c; Martin et al. 2001: figures 3c, 5c; Ah Yong et al. 2009: figure 98a).

The P4–P5 pseudochelae of the Indian Ocean species differ clearly from species from the Atlantic and Pacific Ocean. The thumbs of the pseudochelae in the Indian Ocean species terminate in 2 strong sharp curved distal spines (see Martin 1992: figure 2f, g; present study: Figure 4A–D). In the remaining species, the thumbs terminate in a cluster of spines (see Báez and Martin 1989: figure 2e,f; Martin et al. 2001: figures 3f,g, 5d,e; Ah Yong et al. 2009: figure 98b). Therefore, the new species displays clear morphological affinity to *H. bouvieri*. However, the two can be separated based on the presence and number of spines on the occlusal margins of the P4–P5 pseudochelae. The P4 thumb in *H. rajeevani* possesses 3 subdistal spines and 4 spines opposing dactylus (Figure 4A,B; Table S1), in contrast to only 2 subdistal spines in *H. bouvieri* (see Martin 1992: figure 2f). In addition, the P5 thumb in the new species possesses 2 subdistal spines and 7 spines opposing the dactylus (Figure 4C,D; Table S1), whereas these spines are absent in *H. bouvieri* (see Martin 1992: figure 2g; Table S1). Moreover, the P5 dactylus in the new species possesses 6 or 7 sharp spines along margin opposing the thumb (Figure 4C,D; Table S1), whereas these spines are absent in *H. bouvieri* (see Martin 1992: figure 2g; Table S1).

The characters observed during the present study argue for recognizing the present material as a new species. The following key is modified from Guinot (1995), and also takes into account the recent discussion by Tavares and Lemaitre (2014).

Key for identification of the species of the genus *Homolodromia* A. Milne-Edwards, 1880 (based on Guinot (1995) and Tavares and Lemaitre (2014)).

- 1 Propodal thumbs of P4–P5 pseudochelae terminating in 2 curved sharp spines. Pollex of cheliped with

- notch separating proximal-most tooth and remaining teeth; dactylus with proximal elevation 2
- Propodal thumbs of P4–P5 pseudochelae terminating in more than 2 curved distal spines. Pollex of cheliped without occlusal notch; dactylus without proximal elevation 3
- 2 Posterior carapace highly inflated, maximum CW:CL ratio 1.00: 0.86–1.07. Cheliped dactylus 0.48–0.49 times propodus length, dorsal surface flat, distal half tapering, distal tip exceeding clefted tip of pollex, fitting well into latter, proximal part elevated, with broadly circular depression bearing sparse setae ***H. rajeevani* sp. nov.**
- Posterior carapace moderately inflated, maximum CW:CL ratio 1.00: 1.12–1.80. Cheliped dactylus 0.35 times propodus length, dorsal surface more ridged, distal half widened, distal tip not exceeding clefted tip of pollex, proximal part highly elevated, with triangular depression bearing setae. ***H. bouvieri***
- 3 Carapace, margins of chelipeds (merus, carpus and manus) and pereopods spinose; anterolateral teeth oriented anteriorly. ***H. robertsi***
- Carapace and pereopods smooth, carpus of cheliped bearing short disto-lateral spine; anterolateral teeth oriented obliquely. 4
- 4 Carapace and appendages covered with long, silky setae; pseudo-rostral horns separated by U-shaped gap ***H. kai***
- Carapace and appendages covered with short, stiff setae; pseudo-rostral horns separated by V-shaped gap. 5
- 5 Males having distinct supraorbital spine; antennal spine bifurcated. Mature females with relatively short P5, P5 meri not reaching the level of gastric pits on carapace in longitudinal position ***H. paradoxa***
- Males lacking supraorbital spine; antennal spine undivided. Mature females with relatively short P5, P5 meri the overreaching the level of gastric pits in folded position ***H. monstrosa***

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No potential conflict of interest was reported by the author(s).

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