

# Species

## To Cite:

Mitra S. Two New Species of Rice-field Crab of the Genus *Oziotelphusa* Muller, 1887 (Decapoda: Brachyura: Gecarcinucidae) from Eastern India. *Species* 2026; 27: e23s3300  
doi:

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## Peer-Review History

Received: 05 February 2026

Reviewed & Revised: 23/February/2026 to 07/August/2026

Accepted: 25 August 2026

Published: 03 September 2026

## Peer-Review Model

External peer-review was done through double-blind method.

## Species

pISSN 2319–5746; eISSN 2319–5754



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# Two New Species of Rice-field Crab of the Genus *Oziotelphusa* Muller, 1887 (Decapoda: Brachyura: Gecarcinucidae) from Eastern India

Santanu Mitra<sup>1</sup> \*

## ABSTRACT

Freshwater crabs of the genus *Oziotelphusa* Müller, 1887, commonly referred to as rice-field crabs, typically inhabit lowland agricultural ecosystems and are widely distributed across Sri Lanka and peninsular India. To date, nine valid species of *Oziotelphusa* are recorded from India. While the majority of Indian congeners were historically described from Andhra Pradesh, Tamil Nadu, and Kerala, the freshwater decapod fauna of Eastern Indian states—specifically Bihar, Odisha, and West Bengal—remains poorly documented. The present study describes two new species: *Oziotelphusa venkataramani* sp. nov. from Bihar and *Oziotelphusa gurupadai* sp. nov. from West Bengal. Both the species are distinguished from their congeners by a suite of distinct morphological characters, including the structure of the male carapace, the shape of the first male gonopod (G1), anterolateral margin, the structure of the epistomal median tooth, and the morphology of the female gonopore. The discovery of *O. venkataramani* sp. nov. and *O. gurupadai* sp. nov. emphasize the necessity for intensive faunistic surveys in these less explored regions. These crabs are heavily exploited for local consumption as well as they serve as bio-indicators in their ecosystem; an urgent conservation strategy must be taken to safeguard their populations.

**Key words:** New species, Paddy field crab, Eastern India, Taxonomy, *Oziotelphusa*, Venkat's Paddy field crab, Gurupada's Paddy field crab.

**Zoobank registration no.** urn:lsid:zoobank.org:pub:03DF6E50-0F68-4505-96DC-3E2EB1E5E539

## 1. INTRODUCTION

The genus *Oziotelphusa* Müller, 1887, was established with *Telphusa* (*Oziotelphusa*) *hippocastanum* (Müller 1887) from Sri Lanka as the type species. This genus is geographically restricted to Sri Lanka, eastern India, and southern peninsular India (Wood-Mason, 1871; Henderson, 1893; Bahir and Yeo, 2005; Raj et al. 2017; Pati and Vargila, 2019), where all species primarily inhabit rice fields (Bahir and Yeo, 2005; Pati and Vargila, 2019). To date, nineteen species of *Oziotelphusa* have been described, of which ten species endemic to Sri Lanka and nine species restricted in India (Herbst, 1799; Wood-Mason, 1871; Henderson, 1893; Rathbun, 1904; Alcock 1909a,

1909b, 1910; Pillai, 1951; Fernando 1960; Bott 1970; Deb 1998; Ng and Tay 2001; Bahir and Yeo 2005; Pati and Sharma, 2012, 2014; Srivastava, 2013; Pati et al. 2014; Raj et al. 2017; Rajesh et al. 2017; Pati and Vargila, 2019; Lal and Gopinathan, 2024).

Previously, the Indian species of *Oziotelphusa* were recorded from only seven states/union territories: Andhra Pradesh, Tamil Nadu, Puducherry, Karnataka, Maharashtra, Kerala, and Odisha (Pati and Vargila, 2019). However, during recent faunistic surveys conducted by the Zoological Survey of India, specimens were collected from Bihar and the southern part of West Bengal. Morphological examination revealed that these specimens represent two new species. The present paper describes these two new species from eastern India, *Oziotelphusa venkataramani* sp. nov. from Bihar and *Oziotelphusa gurupadai* sp. nov. from West Bengal. Detailed diagnoses of those new species are providing here with illustrations and drawings, and a comparisons with related congeners.

## 2. MATERIALS AND METHODS

Type materials were deposited in the Zoological Survey of India, Kolkata (ZSIK). Carapace measurements were taken with a Vernier caliper. Specimens were identified under a Leica EZ-4 stereo-zoom binocular microscope, using key references (Ng 1988; Guinot et al. 2013; Davie et al. 2015; and Pati 2021). Morphological characters were photographed by Nikon p900 camera, photographs of gonopod were taken by a Celestron USB digital microscope, and drawings of gonopods were made by using of Camera Lucida.

*Abbreviations:*

|                            |                                                         |
|----------------------------|---------------------------------------------------------|
| CL                         | length of carapace                                      |
| CH                         | height of carapace                                      |
| Coll                       | collected by                                            |
| CW                         | width of carapace                                       |
| FW                         | frontal margin width                                    |
| G1                         | male first gonopod                                      |
| G2                         | male second gonopod                                     |
| p2-p5                      | ambulatory legs 2 to 5                                  |
| s1-s8                      | thoracic sternites 1 to 8, respectively                 |
| s1/s2, s2/s3, s3/s4, s4/s5 | suture between adjacent thoracic sternites respectively |
| VD                         | the shortest distance between two vulvae                |
| SW                         | maximum width of the female sternum                     |
| ca.                        | approximately                                           |

## 3. RESULTS & DISCUSSION

### Systematics

Superfamily Gecarcinucoidea Rathbun, 1904

Family Gecarcinucidae Rathbun, 1904

*Oziotelphusa* Müller, 1887

*Oziotelphusa venkataramani* sp. nov.

(Figs. 1-3)

**Zoobank Registration No.** urn:lsid:zoobank.org:act:74BF9127-63BF-4174-8756-E07F96740BAE

### Material examined

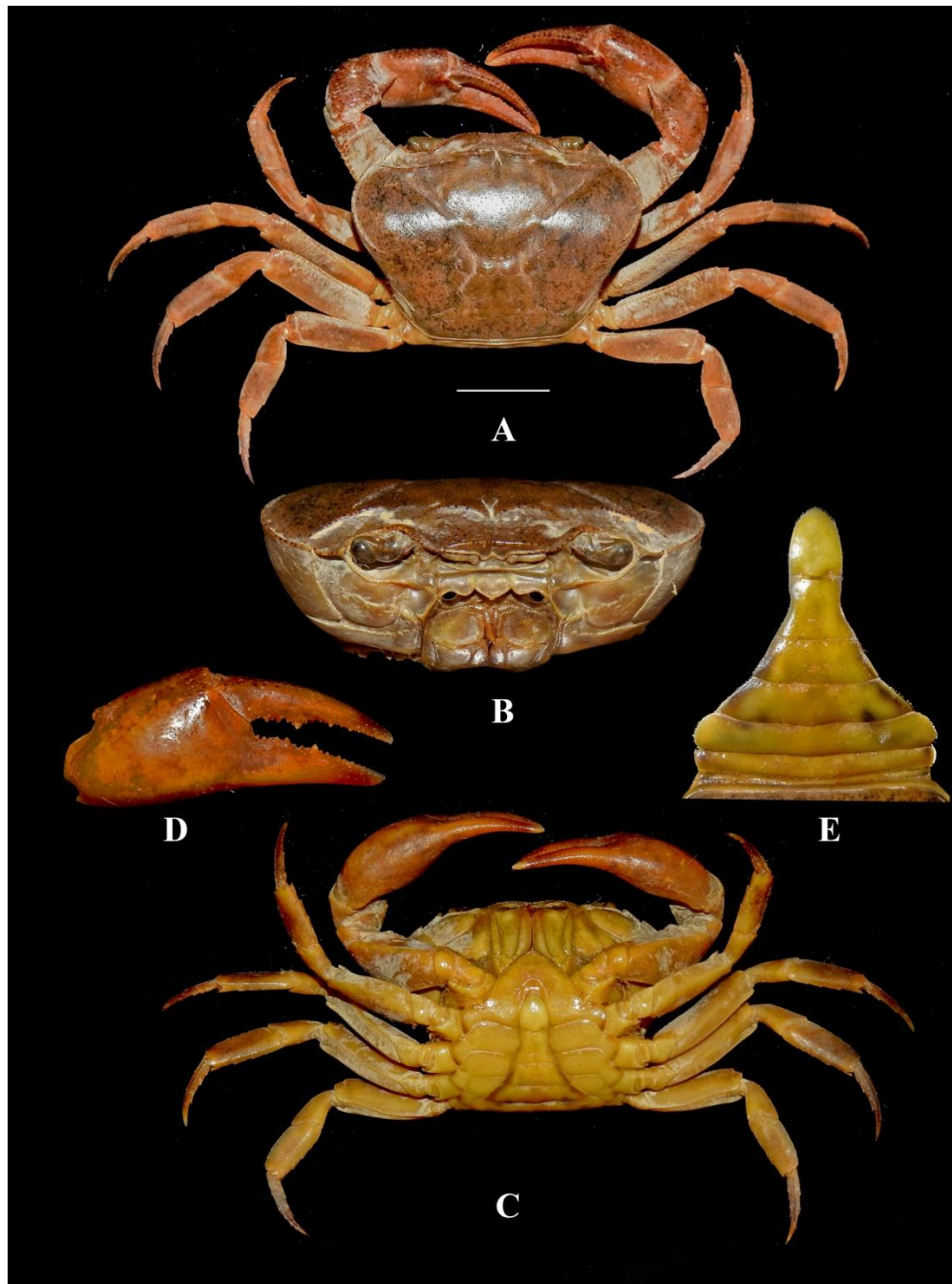
Holotype: male (CW 39.5 mm, CL 28.7 mm, FW 11.2 mm, CH 19.18 mm), India, Bihar, Banka district, near Teliakura, Maharana Dam, 02.ii.2023, coll. S. Mitra (ZSIK Reg. No. CR 1081).

Paratype: 1 male (CW 29.8 mm, CL 21.8 mm, FW 8.9 mm, CH 14.5 mm), same collection data as holotype (ZSIK Reg. No. CR 1082).

### Comparative materials

*Oziotelphusa kerala* Bahir & Yeo, 2005: Holotype: male (38.3 × 27.8 mm) (ZRC 2003.0244), India, Kerala, Kolaththuppuzha-Tenmalai Road, 08°54'12.7"N, 077°32'07.2"E, alt. 120 m, coll. M.M. Bahir, 2.iii.2001.

*Oziotelphusa biloba* Bahir & Yeo, 2005: Holotype: male (41.8 × 29.8 mm) (ZRC 2003.0246), India, Kerala, Kodagara Village, 10°21'30.7"N, 076°08'45.0"E, alt. 6 m, coll. M.M. Bahir, 2.iii.2001.

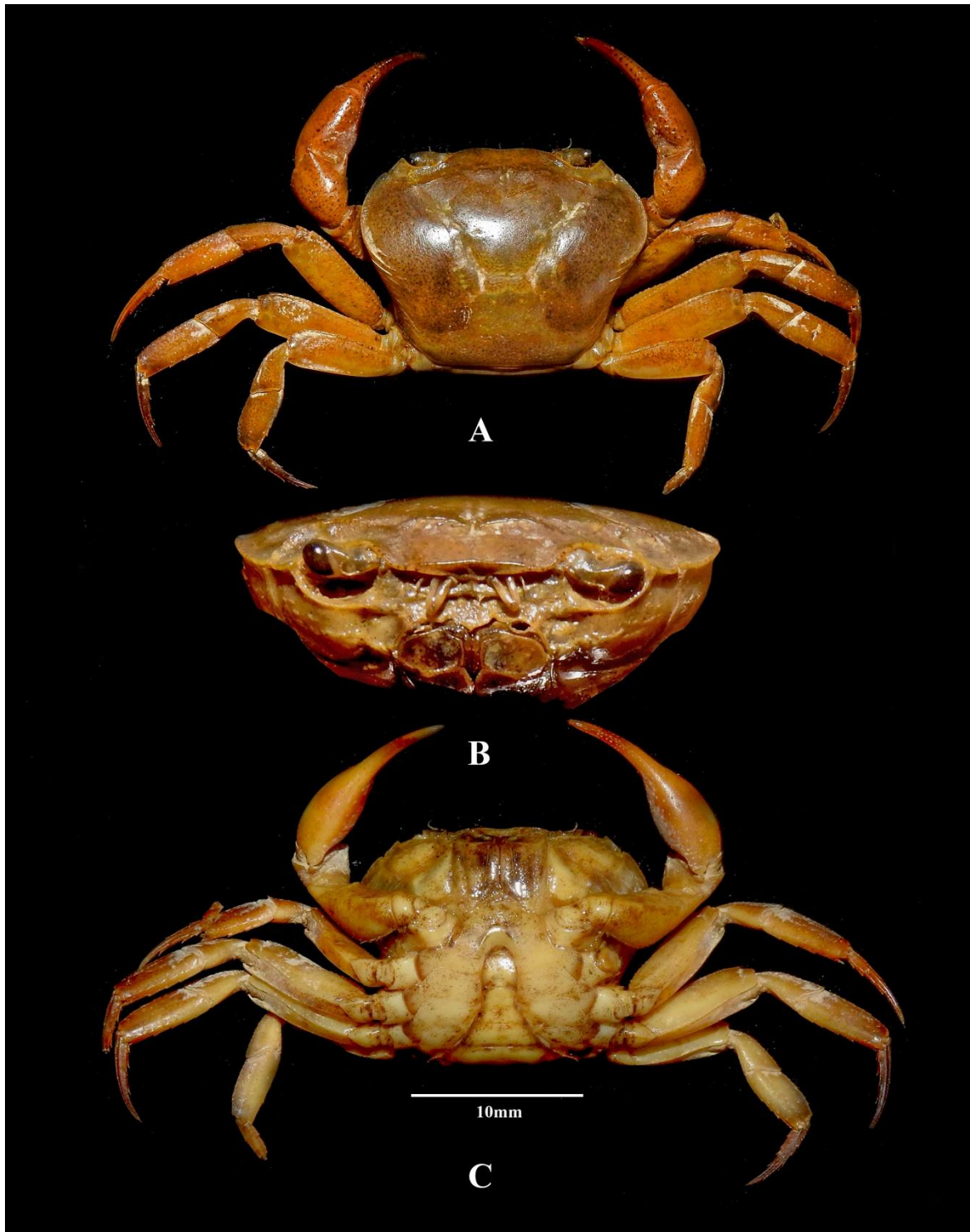


**Figure 1.** *Oziotelphusa venkatramani* sp. nov., Holotype male male (CW 39.5 mm, CL 28.7 mm) (ZSIK Reg. No. CR 1081); A. overall dorsal view, B. frontal view of cephalothorax, C. overall ventral view, D. right chela, E. pleon

### Diagnosis

Carapace ovoid, glabrous, distinctly broader than long (CW/CL = 1.4), carapace deep (CH/CL = 0.7); dorsal surface convex, glabrous, anterolateral margins raised from the general surface of carapace, strongly convex, lined by low cristae; external orbital tooth prominent, triangular, tip blunt, slightly below the line of frontal margin, clearly demarcated from epibranchial tooth by V-shaped notch, outer margin almost straight, ca. 2.5 times length of inner margin, inner margin straight (Figs. 1A; 2A); frontal median triangle complete, dorsal margin relatively long, ca. 0.8 of frontal margin, epistomal median lobe widely triangular, tip blunt, outer margin gently convex (Figs. 1B; 2B); telson tongue shaped elongated, median length 1.4 times of proximal width, with gently convex lateral margins, free end broadly triangular (Figs. 1C,E; 2C); s2/s3 as shallow depression not reaching to the lateral margin of sternite, s3/s4 short groove, not reaching lateral margins (Fig. 1C; 2C); G1 stout, bent outwards at juncture between terminal and subterminal articles;

distinct membranous suture between terminal and subterminal articles; terminal article stout, horn-like, gently bent outwards, ca. 0.4 times shorter than subterminal article (Fig. 3A, B),



**Figure 2.** *Oziotelphusa venkatramani* sp. nov., Paratype male (CW 29.5 mm, CL 22.9 mm) (ZSIK Reg. No. CR 1082): A. overall dorsal view, B. frontal view of cephalothorax, C. overall ventral view.

#### Description of the holotype male

Carapace ovoid, glabrous, distinctly broader than long (CW/CL = 1.4), carapace deep (CH/CL = 0.7); dorsal surface convex, glabrous, smooth except for epigastric cristae, postorbital cristae; anterolateral surface gently inflated in frontal view; anterolateral margins raised

from the general surface of carapace, strongly convex, lined by low cristae; posterolateral margins long, distinctly concave, joins straight posterior carapace margin, with few long oblique striae (Fig. 1A).

Front not deflexed, trapezoidal, lateral part depressed, frontal margin slightly broad (FW/CW = 0.3), slightly concave medially; epigastric cristae distinct, sharp, sloped laterally, distinctly anterior to postorbital cristae, not confluent with postorbital cristae; postorbital cristae long, inner part indistinct, outer half sharp, slightly concave on dorsal view, reaches up to the line of terminal part of outer margin of postorbital tooth, well behind from epibranchial margin; external orbital tooth prominent, triangular, tip blunt, slightly below the line of frontal margin, clearly demarcated from epibranchial tooth by V-shaped notch, outer margin almost straight, ca. 2.5 times length of inner margin, inner margin straight, joining supraorbital margin; epibranchial tooth short, sharp, well elevated from epigastric cristae, distinctly away from level of supraorbital margin; postorbital region strongly concave; branchial regions inflated; cervical grooves shallow, broad, short, discontinuous, not reaching postorbital cristae; mesogastric groove shallow, narrow, very short, bifurcated posteriorly; H-shaped groove visible (Fig. 1A); subhepatic region with some oblique striae; suborbital region rugose, glabrous; suborbital margin concave, entire, lined with very low, rounded granules; pterygostomial region smooth, glabrous; frontal median triangle complete, dorsal margin relatively long, ca. 0.8 of frontal margin, dorsal margin completely fused with lateral margins; epistomal median lobe widely triangular, tip blunt, not bilobed, outer margin gently convex (Figs 2A,B; 3A,B), outer lobes of epistome sinuate (Fig. 1B).

Eyes not filling up most of orbital space; eye stalk relatively short, narrow; cornea moderately large, pigmented (Fig. 1A, B); antennae long, reaching cornea of eyes; antennules long, folded in narrow transverse fossae (Fig. 1B); Mandibular palp 2-segmented; terminal segment bilobed, anterior lobe large, sub-equal.

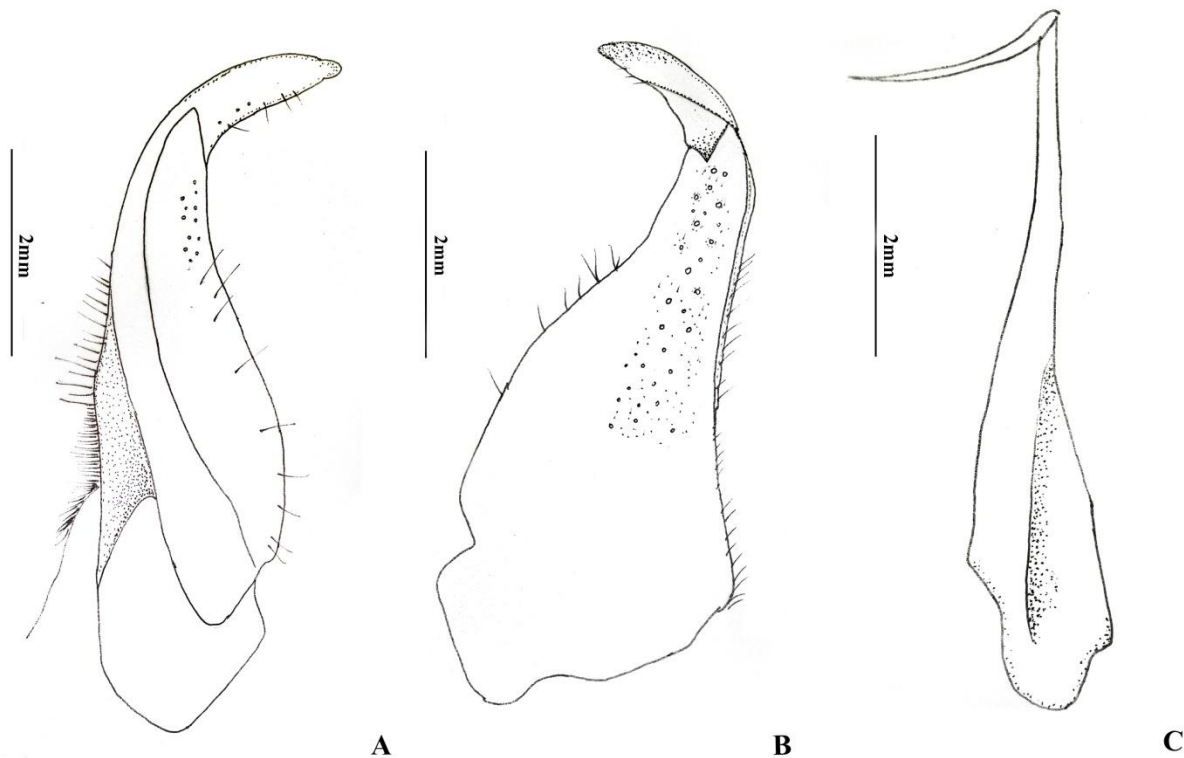


Figure 3. *Oziotelphusa venkatramani* sp. nov., Holotype male male (CW 39.5 mm, CL 28.7 mm) (ZSIK Reg. No. CR 1081); Line drawing of left G1 and G2; A. ventral view of left G1, B. dorsal view of left G1, C. left G2.

Third maxillipeds cover most of the buccal cavity when closed; ischium sub-rectangular, longer than broad, with a distinct, deep, oblique sub-median groove; merus sub-rectangular, broader than long; exopod slender, narrower in the terminal end, longer than the ischium, reaching half the length of merus, with a distinct long flagellum, reaching almost the entire width of the merus (Fig. 1C).

Chelipeds smooth, subequal; right chela larger (Fig. 1A, C). Major cheliped dactylus cutting edge with large triangular sub-basal tooth, 4 medium triangular teeth, 18–20 low, truncated, blunt distal teeth; fixed finger cutting edge with 2 large, 15 small triangular teeth, terminal portion with 4–5 low, truncated teeth (Fig. 1D). Fingers meeting with narrow gape; dactylus curved, length equal to palm, smooth; palm longer than high, inner and outer surfaces smooth. Carpus outer surface slightly rugose; inner distal major tooth prominent, long, slender, sharp; sub-basal granule distinct, slightly sharp. Merus outer surface slightly rugose, dorsal ridge granulated (Fig. 1A, C, D).

Ambulatory legs stout, shorter than chelipeds, p3 longest, merus 3 times longer than broad, p5 shortest; merus (p2–p5) dorso lateral part slightly rugose, lower part smooth, lacking subdistal spine; propodus (p3) 2.5 times as long as broad; p1 propodus upper and lower margin broadly serrated with 3 to 4 teeth, (p3–p5) propodus lower ventral margin only serrate; p2–p5 dactylus equal in length to propodus, with short, sharp chitinous spines on lateral margins (Fig. 1A,C).

Thoracic sternites smooth, glabrous; suture between thoracic sternites s1/s2 smallest, indistinct; s2/s3 as shallow depression not reaching to the lateral margin of sternites, s3/s4 short groove, not reaching lateral margins; suture between thoracic sternites s4/s5, s5/s6, s6/ s7 shallow, narrow, medially interrupted; suture between thoracic sternites s7/s8 very shallow, narrow, complete (Figs 1C). The pleonal locking mechanism consists of a prominent tubercle situated on the distal third of thoracic sternite 5, with the apex directed dorsally.

Sternopleonal cavity deep, long, reaching imaginary line joining submedian part of cheliped coxae (Fig. 1C). Pleon almost T-shaped, lateral margins distinctly concave; pleonal somites 1, narrowest, pleonal somite 2 rectangular, slightly shorter than pleonal somite 3, lateral margin straight; pleonal somite 3 trapezoidal, with highly convex lateral margins; pleonal somites 4, 5 trapezoidal, with straight lateral margins, somite 5 with lower margin convex; pleonal somite 6 narrowly trapezoidal, lower two third of lateral margin convergent towards telson, upper third straight to slightly convex; slightly broader than long, distinctly longer than preceding somites, shorter than telson, with gently concave lateral margins; telson tongue shaped elongated, median length 1.4 times of proximal width, with gently convex lateral margins, free end broadly triangular (Fig. 1C, E).

G1 stout, bent outwardly at juncture between terminal and sub-terminal articles; suture between articles distinct, membranous. Terminal article stout, horn-like, gently curved ectally, ca. 0.4 times length of sub-terminal article; tip blunt. Subterminal article directed distolaterally; proximal half distinctly stout, dilated; distal half gradually narrowing; outer margin convex; inner margin almost straight in ventral view; basal part with distinct notch on lateral margin visible in dorsal view (Fig. 3A, B). G2 longer than G1; distal segment relatively short, ca. 0.3 times longer than basal segment (Fig. 3C).

### Paratype male

Male paratype is distinctly smaller than the holotype, this specimen is morphologically similar with the holotype (Fig. 2A–C). Carapace distinctly wider than long (CW/CL=1.4), male pleon, sternum, and gonopods are very similar with the holotype male.

### Etymology

The species is named after Dr. Krishnamoorthy Venkataraman, Former Director, Zoological Survey of India, for honoring his substantial contributions on the exploration and conservation of Indian Faunal Diversity. The proposed common name for the new species is - “Venkat’s Paddy field crab”.

### Ecological notes

The specimens were collected from a burrow excavated within the hard, muddy soil of a dam embankment, adjacent to a paddy field. This deeply constructed burrow likely serves an ecological function, providing a suitable microhabitat that retains essential moisture. It is hypothesized that these deep burrow enable the crab to survive prolonged drought conditions by preventing desiccation when surface water is unavailable.

### Type locality

Maharana dam, near Teliakura, Banka district, Bihar state, India.

### Geographic distribution

*Oziotelphusa venkataramani* sp. nov. is currently known exclusively from its type locality at the Maharana Dam, situated near Teliakura in the Banka District of Bihar State. Geographically this area is considered as a part of Gangetic plains, in India.

### Remarks

Among the congeners, the new species is closely related to *Oziotelphusa biloba* Bahir & Yeo, 2005 in having a similar-looking carapace, and gonopod structure. But the new species differs from the *O. biloba* in several morphological characters; i.e. epistomal median teeth bilobed in *O. biloba* (see Bahir & Yeo 2005: figs. 29b, 30b) (vs. epistomal median teeth blunt, not bilobed, Fig. 1B, 2B); male telson lateral margin gently concave, free end rounded (see Bahir & Yeo 2005: figs. 29c, 30a) (vs. male telson lateral margin gently convex, free end broadly triangular, Fig. 1E); somite 6 of male pleon distinctly broader than long (see Bahir & Yeo 2005: figs. 29c, 30a) (vs. somite 6 of male pleon slightly broader than long, Fig. 1E); lower margin of somite 5 of male pleon distinctly straight (see Bahir & Yeo 2005: figs. 29c, 30a) (vs. lower margin of somite 5 of male pleon gently convex, Fig. 1E); Post orbital cristae straight (see Bahir & Yeo 2005: figs. 29a, d) (vs. Post orbital cristae sinuate, Fig. 1A, 2A); frontal margin straight in dorsal view (see Bahir & Yeo 2005: figs. 29a, d) (vs. frontal margin medially concave, Fig. 1A, 2A); G1 subterminal article basal part 2 times wider than the terminal width (see Bahir & Yeo 2005: figs. 30c-h) (G1 subterminal article basal part more than 3 times wider than the terminal width, Fig. 3A, B).

The new species has some superficial affinities with *O. wagrakarowensis* (Rathbun, 1904), but they are distinctly different from each other in several morphological characters. Epistomal median lobe with distinct pointed teeth in *O. wagrakarowensis* (see Pati et al. 2019: fig. 1b) (vs. epistomal median lobe with blunt teeth in the new species, Fig. 1B, 2B); Epibranchial tooth slightly above the line of post orbital cristae (see Pati et al. 2019: fig. 1a) (vs. epibranchial tooth distinctly above the line of postorbital cristae, Fig. 1A, 2A); postorbital cristae sharp in all the course (see Pati et al. 2019: fig. 1a,b) (vs. postorbital cristae sharp in outer part only in the new species, Fig. 1A, 2A); suture between s2/s3 not discernible (see Pati et al. 2019: fig. 1c) (vs. s2/s3 is visible as a shallow horizontal groove, not reaching up to the lateral margin of the sternite, Fig. 1C, 2C); length of pleonal somite 6 as long as or slightly longer than telson (see Bahir & Yeo, 2005: fig. 12a; Pati et al. 2019: fig. 1c) (vs. length of somite 6 distinctly shorter than telson, Fig. 1C, E); G1 terminal part bent, tip pointed, downwardly curved (see Bahir & Yeo, 2005: fig. 12b, c, d; Pati et al. 2019: fig. 1d) (vs. G1 terminal part bent outwardly, tip not pointed, curved laterally, Fig. 3A, B).

### *Oziotelphusa gurupadai* sp. nov.

(Figs. 4-6)

**Zoobank Registration No.:** urn:lsid:zoobank.org:act:92588C08-6E25-42C6-BD9B-C88250C2B373

### Material examined

**Holotype** 1 male (CW 26.5 mm, CL 20.7 mm, FW 7.3 mm, CH 13.1 mm), a cultivated paddy field, near Begunkodar village, District Purulia, West Bengal, India (23°21'14"N, 86°03'09"E), 7<sup>th</sup> August 2024, collected by- S. Mitra (ZSIK Reg. No. CR 1083).

### Diagnosis

Carapace squarish, glabrous, broader than long (CW/CL= 1.3), carapace moderately deep (CH/CL= 0.6); postorbital tooth outer margin gently convex, ca. 3 times length of inner margin (Fig. 4A); frontal median triangle complete, relatively shorter, not as broad as frontal margin, dorsal margin of frontal median triangle ca.0.6 of frontal margin (Fig. 4B, C); s2/s3 and s3/s4 has short, shallow groove, not reaching to lateral margins of sternum; pleonal somite 6 trapezoidal, lateral margins lower half convergent towards telson, upper half parallel, straight; distinctly broader than long, shorter than telson, with gently concave lateral margins; telson tongue shaped, elongated, median length 1.4 times of proximal width, with gently convex lateral margins, apex narrowly round ( Fig. 4C); G1 terminal article relatively slender, horn-like, long, ca. 0.4 times length of subterminal article, directed laterally outwards, slightly narrowed in terminal end, tip pointed, up-curved ( Figs. 5A, B; 6A, C).

### Description of holotype

Carapace squarish, glabrous, broader than long (CW/CL = 1.3), carapace moderately deep (CH/CL= 0.6); dorsal surface convex, glabrous, smooth except for epigastric cristae, postorbital cristae; anterolateral surface distinctly inflated in frontal view; anterolateral margins sharp, strongly convex; posterolateral margin as long as anterolateral margin, oblique, convergent towards posterior margin,

with few long oblique striae; frontal margin slight concave in dorsal view, front not deflexed, trapezoidal, lateral part depressed, frontal margin broad (FW/CL = 0.4); epigastric cristae distinct, sharp, sloped laterally, distinctly anterior to postorbital cristae, not confluent with postorbital cristae (Fig. 4A). Postorbital cristae long, distinctly sinuate, reaches up to the line of terminal part of outer margin of postorbital tooth, well behind of epibranchial margin; external orbital tooth prominent, triangular, tip pointed, distinctly not reaches the line of frontal margin, clearly demarcated from epibranchial tooth by V-shaped notch, outer margin gently convex, ca. 3 times length of inner margin, inner margin gently curved, joining supraorbital margin; epibranchial tooth short, sharp, well elevated from epigastric cristae, distinctly behind from the level of supraorbital margin; postorbital region slightly concave; branchial regions inflated; cervical grooves shallow, broad, short, discontinuous, not reaching to postorbital cristae; mesogastric groove, narrow, very short, not bifurcated posteriorly; H-shaped groove visible (Fig. 4A); subhepatic region with some oblique striae; suborbital region rugose, glabrous; suborbital margin concave, entire, lined with very low, rounded granules; pterygostomial region smooth, glabrous; frontal median triangle complete, relatively shorter, not as broad as frontal margin, dorsal margin of frontal median triangle ca. 0.6 of frontal margin, dorsal margin completely fused with lateral margins; epistomal median lobe triangular, tip pointed, outer margin gently convex, outer lobes of epistome sinuate (Fig. 4B, C).

Eyes not filling up most of orbital space; eye stalk relatively short, narrow; cornea moderately large, pigmented (Fig. 4B). Antennae long, reaching cornea of eyes; antennules long, folded in narrow transverse fossae (Fig. 4B); Mandibular palp 2-segmented; terminal segment bilobed, anterior lobe large, subequal; first, second maxillipeds each with long flagellum on exopod. Third maxillipeds cover most of buccal cavity when closed; ischium subrectangular, longer than broad, with distinct, deep, oblique longitudinal submedian groove; merus subpentagonal, wider than long; exopod slender, narrower in the terminal end, longer than the ischium, reaching half the length of merus, with a distinct long flagellum, reaching almost entire width of the merus (Fig. 4B, C).

Chelipeds smooth, subequal, right chela larger, major cheliped dactylus cutting edge with a large triangular sub-basal tooth along with 4-6 medium triangular teeth, followed by a series of low truncated blunt teeth, a narrow gap when finger tips in contact; dactylus curved, equal in length to palm, smooth; palm longer than high, inner and outer surfaces smooth; carpus slightly rugose on outer surface, inner distal major tooth prominent, long, slender, sharp, subbasal granule distinct, slightly sharp; merus slightly rugose on outer surface, dorsal ridge granulated (Fig. 4A,C).

Ambulatory legs stout, shorter than chelipeds, p3 longest, merus ca. 4 times longer than broad, p5 shortest; p2-p5 merus dorsolateral part slightly rugose, lower part smooth, lacking subdistal spine, merus elongated, p4 merus 3.5 times as long as broad; length of p3 propodus almost twice as long as broad; p1 propodus upper and lower margin broadly serrate, p3-p5 propodus lower ventral margin only serrate; p2-p5 dactylus equal in length to propodus, with short, sharp chitinous spines on lateral margins (Fig. 4A, C).

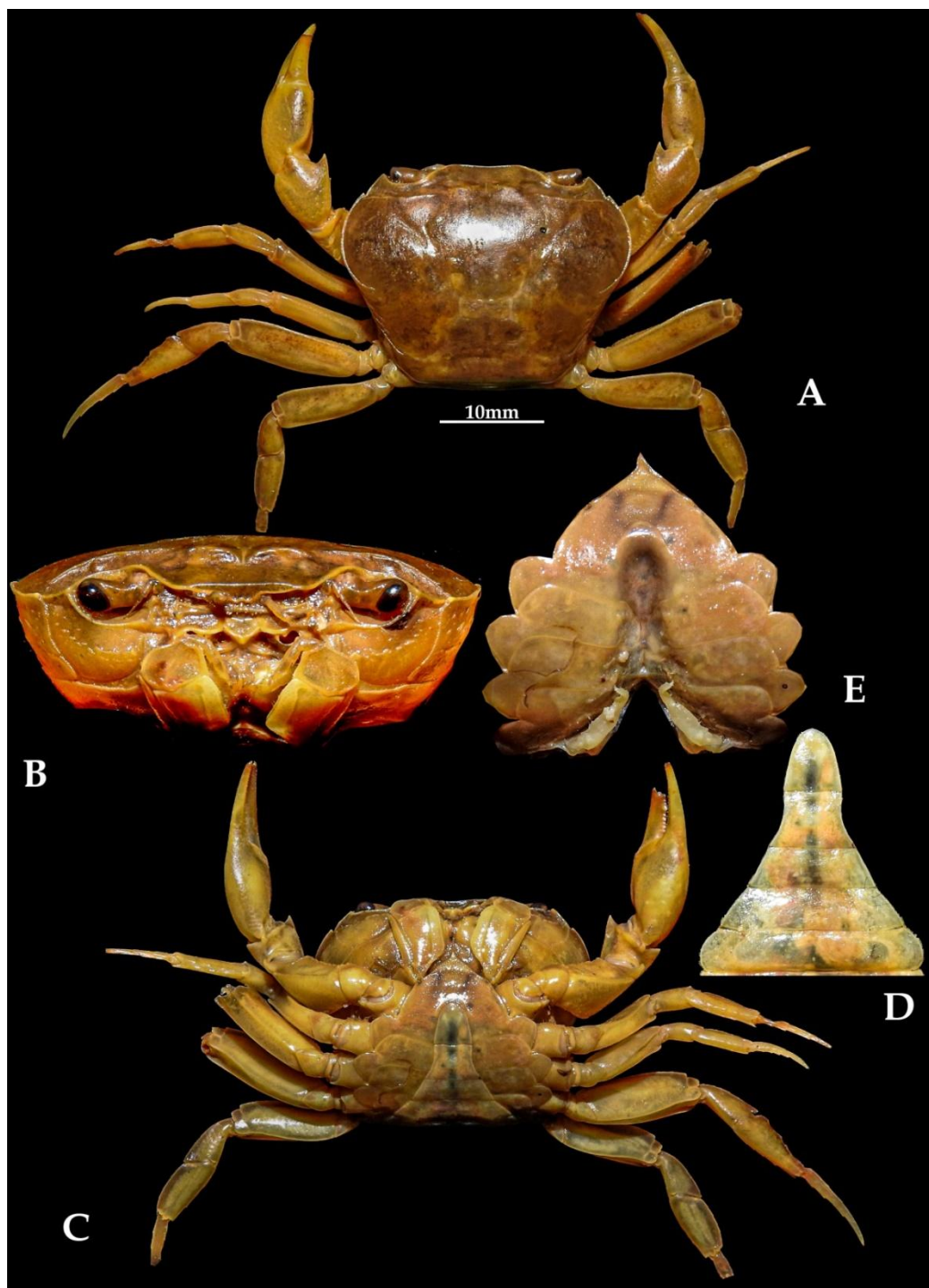
Thoracic sternites smooth, glabrous; suture between thoracic sternites s1/s2 smallest, indistinct; s2/s3 and s3/s4 has short, shallow groove, not reaching to lateral margins of sternum; suture between thoracic sternites s4/s5, s5/s6 and s6/s7 shallow, narrow, medially interrupted; suture between thoracic sternites s7/s8 very shallow, narrow, complete (Fig. 4C). Pleonal locking mechanism situated on the distal third of thoracic sternite 5, with a prominent, upward-directed tubercle (Fig. 4E).

Sternopleonal cavity deep, long, reaching imaginary line joining submedian part of cheliped coxae (Fig. 4E). Pleon almost T-shaped, lateral margins concave medially; pleonal somite 3 trapezoidal, with highly convex lateral margins; pleonal somites 4, 5 trapezoidal, with straight lateral margins; pleonal somite 6 trapezoidal, lateral margins lower half convergent towards telson, upper half parallel, straight; distinctly broader than long, shorter than telson, with gently concave lateral margins; telson tongue shaped, elongated, median length 1.4 times of proximal width, with gently convex lateral margins, apex narrowly round (Fig. 4D).

G1 moderately stout, bent outwards at juncture between terminal and subterminal articles; terminal and subterminal articles clearly demarcated by distinct membranous suture; terminal article relatively slender, horn-like, long, ca. 0.4 times length of subterminal article, directed laterally outwards, slightly narrowed in terminal end, tip pointed, up-curved, visible in dorsal view; subterminal segment stout, distinctly broad basally, distal half straight, not bent outwards, distinctly narrower than proximal half, lateral margins parallel, (Fig. 5A, B; 6A, C). G2 longer than G1, distal segment relatively short, ca. 0.3 times longer than basal segment (Fig. 5C, 6B).

### Etymology

The species is named after honoring of Dr. Gurupada Mandal, Scientist-E, Zoological Survey of India, for his outstanding contributions in the exploration and conservation of Indian Faunal Diversity, particularly in the field of 'Apterygota'. The proposed common name for the new species is "Gurupada's Paddy field crab".



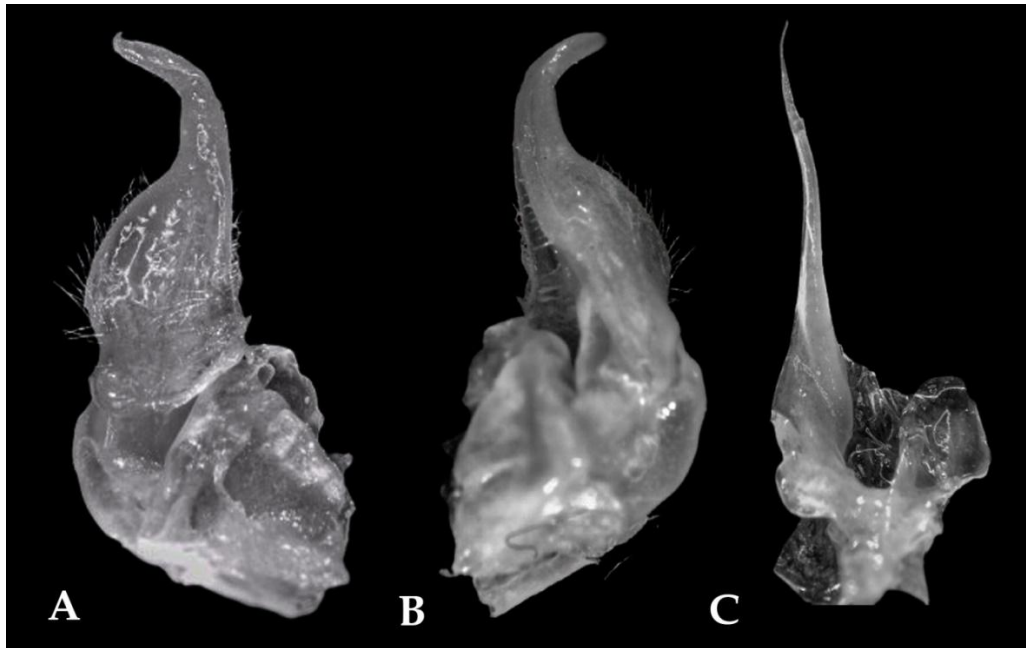
**Figure 4.** *Oziotelphusa gurupadai* sp. nov. Holotype: male (CW 26.5 mm, CL 20.7 mm) (ZSIK Reg. No. CR 1083); A. overall dorsal view, B. frontal view of cephalothorax, C. overall ventral view, D. pleon, E. G1 and G2 in situ in sterno-pleonal cavity.

#### Ecological notes

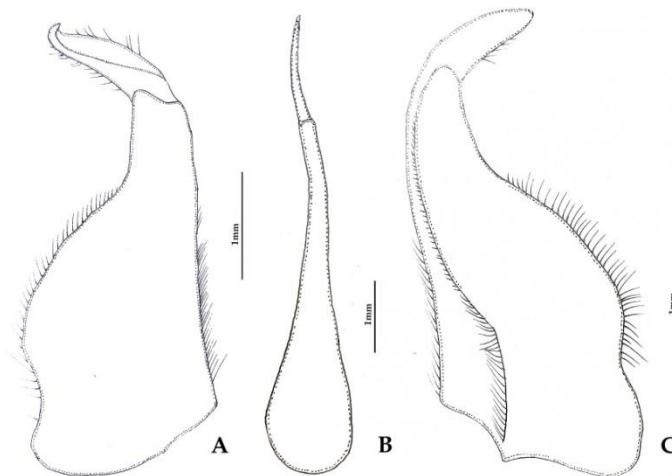
The species inhabits simple burrows, approximately 20-30 cm deep, within lowland paddy fields. These seasonal wetlands undergo severe desiccation during the dry season. The species can survive in extreme drought in summer and winter season.

#### Type locality

Begunkodar village, District Purulia, West Bengal, India, Latitude. 23.353889° N, Longitude. 86.052500° E.



**Figure 5.** *Oziotelphusa gurupadai* sp. nov. Holotype: male (CW 26.5 mm, CL 20.7 mm) (ZSIK Reg. No. CR 1083); Photograph of Left G1 and G2: A. dorsal view of left G1, B. ventral view of left G1, C. left G2.



**Figure 6.** *Oziotelphusa gurupadai* sp. nov. Holotype: male (CW 26.5 mm, CL 20.7 mm) (ZSIK Reg. No. CR 1083); line drawing of Left G1 and G2: A. dorsal view of left G1, B. ventral view of left G1, C. left G2.

#### Geographic distribution

*Oziotelphusa gurupadai* sp. nov. is currently known exclusively from its type locality at Begunkodar village, Purulia District, West Bengal, India. Based on regional habitat continuity, the species is hypothesized to be distributed across adjacent ecologically similar geographical zones of south-western West Bengal, particularly within the Purulia, Jhargram, Bankura, Birbhum, and Paschim Medinipur (West Midnapore) districts.

## Remarks

Among the congeners, *Oziotelphusa gurupadai* **sp. nov.** is morphologically most similar to *O. ganjamensis* Pati & Sharma, 2012 from India. However, the new species differs strikingly from *O. ganjamensis* by the following combination of morphological characters: the frontal margin is medially concave in dorsal view (Fig. 4A) (vs. straight to slightly convex in *O. ganjamensis*; see Pati & Sharma 2012: fig. 2a); the epibranchial tooth is well-marked, separated from the outer margin of the postorbital tooth by a distinct, V-shaped notch (Fig. 4A) (vs. epibranchial tooth very short, lacking a distinct notch between the outer margin of the postorbital tooth and the epibranchial tooth; see Pati & Sharma, 2012: fig. 2a); postorbital cristae straight (see Pati & Sharma, 2012: fig. 2a) (vs. postorbital cristae sinuate (Fig. 4A); ambulatory legs lower parts of propodus and dactylus smooth (see Pati & Sharma, 2012: fig. 2a,c) (vs. ambulatory legs lower parts of propodus and dactylus serrated in new species) (Fig. 4A, C); G2 distal segment relatively longer, 0.4 times of basal segment (see Pati & Sharma, 2012: fig. 3d) (vs. G2 distal segment relatively short, ca. 0.3 times length of basal segment) (Fig. 5C, 6B); G1 terminal article abruptly narrowed towards the tip, subterminal article distal half gently bent outwards, upturned tip of the terminal article visible on ventral view (see Pati & Sharma, 2012: fig. 3a, b) (vs. G1 terminal article relatively broad towards the tip, subterminal article distal half gently almost straight, upturned tip of the terminal article not visible on ventral view (Fig. 5A, B; 6A, C).

*Oziotelphusa gurupadai* **sp. nov.** also differs from the *O. venkataramani* **sp. nov.** by several morphological characters, such as, in *O. venkataramani* **sp. nov.**, mesogastric groove short, bifurcated posteriorly (vs. mesogastric groove relatively long, indistinctly bifurcated posteriorly); dorsal margin of frontal median triangle relatively broader, ca. 0.8 times of frontal margin (vs. frontal median triangle relatively less broad, ca. 0.6 times of frontal margin); pleonal somite 5, lower margin convex (vs. lower margin straight in pleonal somite 5); telson 1.4 times longer than wide, free end broadly triangular (vs. pleonal somite 1.1 times as long as broad, free end rounded); G1 terminal article tip blunt, relatively broad, turned laterally (vs. G1 terminal article tip pointed, upturned).

## 4. CONCLUSION

Two new species of Gecarcinucid crab, *Oziotelphusa gurupadai* **sp. nov.** and *O. venkataramani* **sp. nov.** are described here from eastern India, are morphologically distinct from all known congeners and clearly differentiated from each other by many stable morphological characters. These discoveries enhance our knowledge of Indian freshwater crab diversity, elevating the Indian freshwater crab fauna to a total of 186 species belongs to 51 genera and two families. Theses discovery also suggests the necessity for more faunistic surveys to uncover the true species diversity.

## Acknowledgement

I am deeply grateful to Dr. Dhriti Banerjee, Director, Zoological Survey of India (ZSI), Kolkata, for providing the necessary research facilities for the present study. I express my sincere thanks to Dr. Gopal Sharma, former ZSI scientist and Project Coordinator of the ZSI programme on "Faunal Diversity of Bihar", as well as Dr. Gurupada Mandal, Scientist-F and Project Coordinator of "Dry Deciduous Forests of West Bengal", ZSI, for permitting me to participate in their respective surveys.

## Author contributions

SM collected and identified the specimens and finalizes the manuscript with supportive drawings and photographs.

## Funding

This research did not receive any external funding like a specific grant from funding agencies in the public, commercial, or nonprofit sectors.

## Conflict of Interest

The authors declare that they have no conflicts of interest, competing financial interest or personal relationship that could have influenced the work reported in this paper.

## Informed consent

Not applicable.

### Ethical approval & declaration

In this article, the animal regulations are followed as per the ethical committee guidelines of Crustacea Division, Zoological Survey of India, Fire Proof Spirit Building, 27 J. L. Nehru Road, Kolkata 700016, West Bengal, India; the authors observed the two New Species of Rice-field Crab of the Genus *Oziotelphusa* Muller, 1887 (Decapoda: Brachyura: Gecarcinucidae) from Eastern India. The Animal ethical guidelines are followed in the study for species observation, identification & experimentation.

### Data and materials availability

Data that support the findings of this study are embedded within the manuscript.

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