

A new freshwater crab, *Oziotelphusa parakkai* sp. nov. from Tamil Nadu, India (Brachyura: Gecarcinucidae)

Teeni Janet Raj T.G.¹, Shyla Suganthi A.^{2*}, Tyni Joice Raj T.G.¹, Anilkumar G.³ and Neil Cumberlidge⁴

¹Department of Zoology, Holy Cross College (Autonomous), affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

²Department of Zoology, Holy Cross College (Autonomous), Tamil Nadu, India, Nagercoil 629 004.

³School of Biosciences and Technology, Vellore Institute of Technology (VIT), Vellore, Tamil Nadu, India

⁴Department of Biology, Northern Michigan University, Marquette, MI 49855, USA

(Received 8 December, 2020; accepted 18 February, 2021)

ABSTRACT

A new species of freshwater crab of the genus *Oziotelphusa* Muller, 1887, is described from a lake in Tamil Nadu, southern India. *Oziotelphusa parakkai* sp. is recognized as a new species based on a unique combination of characters of the abdomen, carapace, chelipeds, and first gonopods.

Key words : *Oziotelphusa*, *Gecarcinucidae*, *Brachyura*, *Crustaceans*, *Paratelphusa*, *Taxonomy*.

Introduction

Until recently little attention had been paid to the freshwater crabs of India (*Potamidae* and *Gecarcinucidae*), there has been an upsurge of interest in this group and a number of workers are now active in this field with the result that the number of species is increasing rapidly (Raghavan *et al.*, 2015; Kumar *et al.*, 2017; Pati *et al.*, 2017; Smrithy Raj *et al.*, 2017). Despite this increased effort, there is still a lot of species awaiting discovery.

Species of the gecarcinucid *Oziotelphusa* Müller, (1887) are generally found in rice fields, river embankments and streams in the low lying areas of Sri Lanka and southern India (Bahir and Yeo, 2005; Pati and Sharma, 2012). *Oziotelphusa* is found in both Sri Lanka (*O. hippocastanum*, *O. ceylonensis*, *O. minneriyansis*, *O. stricta*) and Southern India (*O.*

aurantia, *O. bouvieri*) (Ng and Tay, 2001). The present study describes a new species of this genus (*O. parakkai* sp. nov.) from Parakkai, Kanyakumari, Tamil Nadu, India.

Materials and Methods

Freshwater crabs (*Oziotelphusa parakkai* sp. nov.) were collected by hand at night from the channel near Lake Parakkai, Nagercoil, Kanyakumari District, Tamil Nadu, in southern India. This species hides in its burrow during day time. Live crabs were photographed and others were preserved in 70% ethanol and were either dissected or used for morphometric and molecular analyses. Specimens were deposited in Zoological Survey of India, Chennai, Tamil Nadu. The terminology and measurements for the morphological study followed Cumberlidge

¹Research Scholar

Corresponding author's email: shylasuganthi@holycrossngl.edu.in

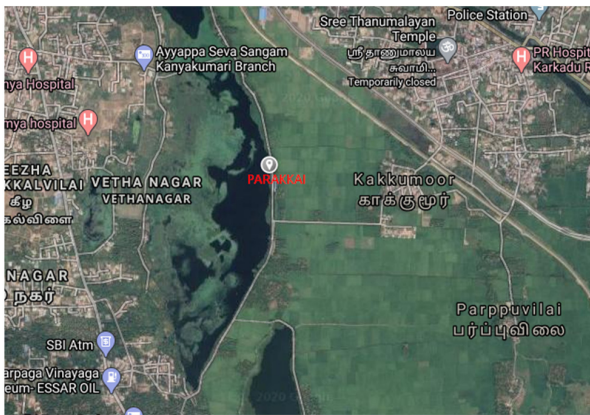


Fig. 1. Map showing the locality in Parakkai Lake, Tamil Nadu, India, where the holotype was collected.

(1999), Ng (1988), Ng and Tay (2001) and Bahir and Yeo (2007). Carapace Width (CW) and Carapace Length (CL) were measured in millimeters by using vernier calipers. The abbreviations used are: coll., collected by; G1 and G2, male gonopods 1 and 2; a3 and a4, pleonal segments 3 and 4.

Results

Taxonomy

Family Gecarcinidae Rathbun, 1904

Oziotelphusa Muller, 1887

Oziotelphusa parakkai sp. nov.

(Figs. 2-6)

Material examined – Holotype: Adult male (28 x 39 mm) (Museum Number: HCZBO8), Parakkai Lake, Kanyakumari District, Tamil Nadu, India, 8°08'57" N, 77°27'26" E. coll. T.G. Teeni Janet Raj, A. Shyla Suganthi and G. Anilkumar, 05 April 2019.

Comparative material – *Oziotelphusa minneriyaensis* males (37.5 x 28.5 mm, 39.5 x 30.0 mm, 38.8 x 29.5 mm, 32.9 x 24.7 mm, 27.2 x 20.9mm) (WHT 10899), male (26.8 x 20.2 mm) (ZRC 2003.0251), Minneriya, near Polonnaruwa, 08° 04' N, 80° 54' E, alt. 40m, coll. M. M. Bahir & K. Wewelwala, 4 Apr.2003; male (30.2 x 22.7 mm), juv. 12 Feb.2000. *Oziotelphusa ravi* Holotype: male (41.5 x 30.4 mm) (ZSI), in ditches and rice field near Nagercoil, Kanyakumari district, Tamil Nadu, 8°18'51.792"N, 77°25'20.111"E, coll. R. Ravineesh & R. S. Albert, 22 March 2017. Paratypes: 1 male (45.4 x 33.5 mm), 2 females (45.0 x 34.0 mm, 44.5 x 32.8 mm) (ZRC 2017.158), 2 females (54.3 x 42.8 mm, 49.6 x 35.7 mm) (DABFUK), same data as holotype.

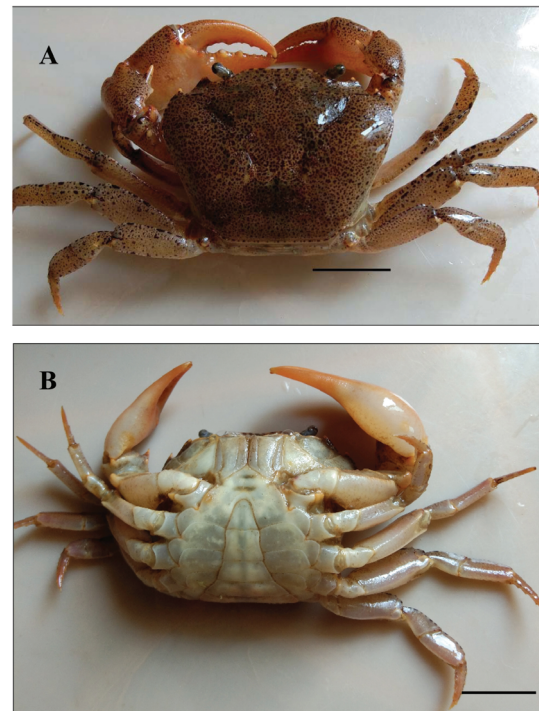


Fig. 2. *Oziotelphusa parakkai*, sp. nov., holotype, Parakkai Lake, Kanyakumari District, Tamil Nadu, India showing colour of a living specimen. A, whole animal dorsal view; B, whole animal ventral view.

Diagnosis- Carapace outline hexagonal, dorsal surface smooth, carapace frontal margin distinct, moderately broad, smooth, deflexed; epibranchial tooth prominent (Fig. 4A); frontal median triangle, wide (Fig. 4C); epistomial median lobe Y- shaped (Fig. 4B). Eyestalks with cornea never close to edge of carapace (Fig. 3A); absence of rhomboidal gap when the 3rd maxilliped are fully closed (Fig. 3B); 3rd maxilliped exopod long, reaching midpoint of merus, and exopod with long flagellum. The anterior pterygostomial region is smooth, lacking setae, right and left chelipeds unequal (Fig. 2A); walking legs (pereiopods p2-p5) merus sharply cylindrical in outline, dactyli with rows of stiff spines; thoracic sternum s2/s3, s3/s4 incomplete, deep in center absent at edges; sterno-pleonal cavity long (Fig. 2B); slender, male abdomen slim, triangular, a6 rectangular with indented lateral margins (Fig. 5A); a3/a4, a4/a5 sutures visible, a5/a6 laterally constricted, a1/a4 broadened laterally (Fig. 5A). G1 stout, suture between TA and SS clearly visible in ventral and dorsal views, TA angled outward, tip tapering to up-curved tip G2 terminal segment very long, flagellum-like, tip styliform (Fig. 6A, B).

Description of male – Carapace. Outline hexagonal, broader than long, medium height, dorsal surface covered with small black spots; postfrontal crest completely crossing carapace (Fig. 2A); epigastric, postorbital crests both distinct; cervical groove deep, short, H-shaped groove distinct, shallow, hepatic region flat; carapace wall suborbital region, anterior pterygostomial region both smooth (Fig. 2A, B). External orbital tooth triangular, low (Fig. 4A); subhepatic region smooth; epibranchial tooth sharp, intermediate tooth absent (Fig. 4A); short, anterolateral margin slightly convex, smooth, posterolateral margin straight, frontal margin moderately broad, smooth, slightly deflexed, lacking notch; frontal median triangle broad (Fig. 3B). Eyes stalked, cornea never close to edge of carapace (Fig. 3A, B).

Mouthparts. Epistomial median lobe margin Y-shaped, straight (Fig. 3B, 4B); 3rd maxillipeds meeting along midline; ischium as wide as merus (Fig. 3B); suture between ischium, merus not constricted; exopod long, reaching only half way along merus, with long flagellum; anterolateral border of merus rounded, palp articulating at disto-lateral angle (Fig. 5C). Thoracic sternum. Broadly dome-shaped, anterior sternum broad, sutures s2/s3, s3/s4 broad, deep in middle, sides missing; episternite e4 broad (Fig. 2B). Sterno-abdominal cavity long, deep, abdominal locking facets on 6th abdominal segment.

Chelipeds and walking legs. Right, left chelipeds

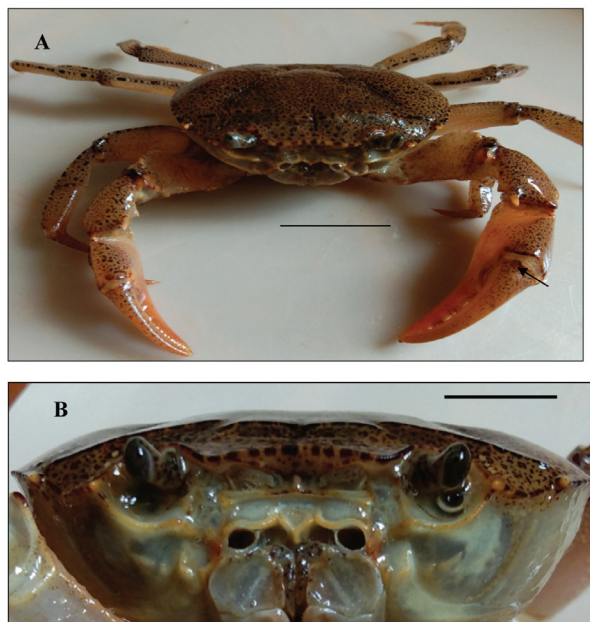


Fig. 3. *Oziotelphusa parakkai* sp. nov., holotype male, A, ventral view of whole animal; B, frontal region.

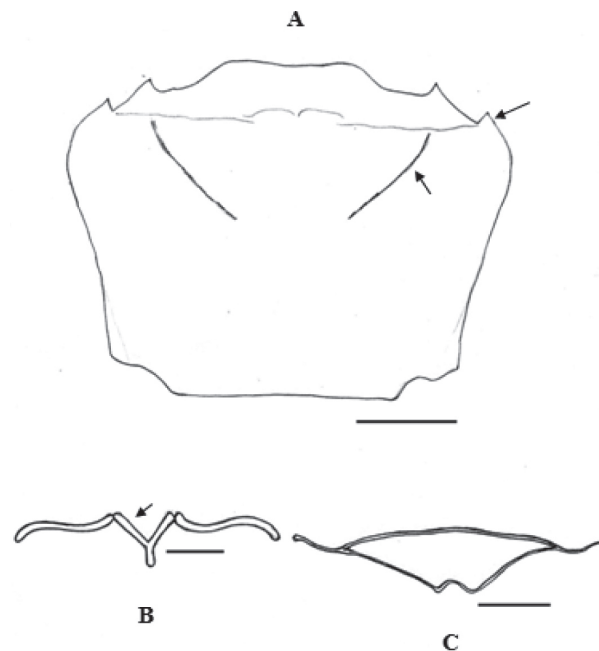


Fig. 4. *Oziotelphusa parakkai* sp. nov., line diagram showing A, carapace dorsal view; B, epistomial median lobe, C, frontal median triangle.

asymmetrical (Fig. 2A); right cheliped longer, broader than left, dorsal, ventral, lateral margins of cheliped merus weakly serrated, distal cheliped carpal tooth short, sharp, proximal tooth blunt; right cheliped propodus wider, higher than left (Fig. 2A); cheliped dactylus dorsal margin smooth, right cheliped dactylus highly arched (Fig. 3A); midpoint with prominent tooth, tip curving inward; left dactylus only slightly arched. Pereiopods p2-p5 slender, p2 longest, p5 shortest, p2-p5 meri cylindrical, dorsal margin of weakly serrated, ventral smooth; p2-p5 dactyli with rows of small spines (Fig. 2A, B).

Pleon. Male slender, funnel shaped, a6 rectangular with distinctly indented sides (Fig. 5A); a3, a4 freely articulating, suture a3/a4 clear; a4, a5 freely articulating, suture a4/a5 visible, a3-a5 sides convex, a5/a6 slim, with constricted lateral margins. (Fig. 2B)

Gonopods. G1 stout, suture between TA and SS clearly visible in ventral and dorsal views, TA angled outward, tip tapering to up-curved tip (Fig. 6A). G2 terminal segment very long, flagellum-like, tip styliform (Fig. 6B).

Colour in life – The dorsal carapace surface of males is pale / dark brown with black spots throughout the carapace and appendages; the ventral surface of the cephalothorax is yellowish-white and

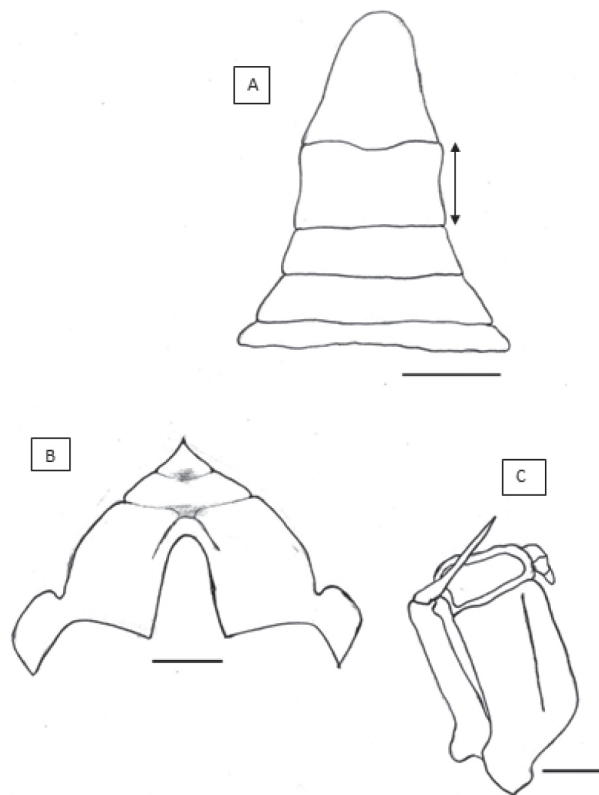


Fig. 5. *Oziotelphusa parakkai* sp. nov., A, abdominal segments; B, anterior thoracic sternum; C, left 3rd maxilliped dorsal view.

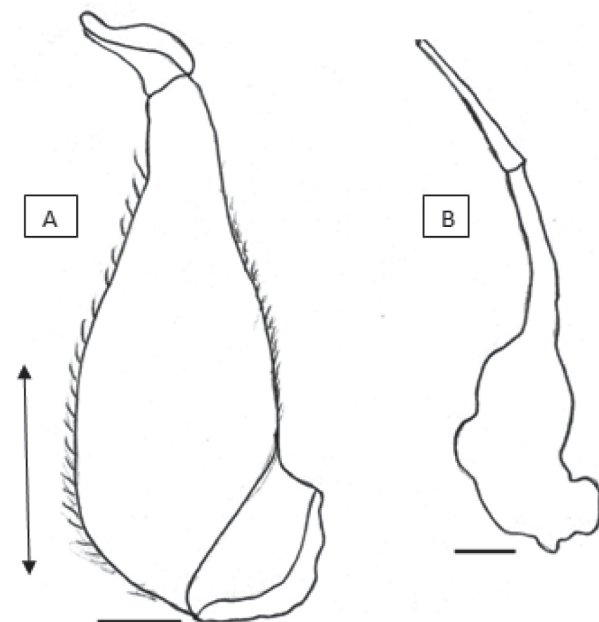


Fig. 6. *Oziotelphusa parakkai* sp. nov. A, Gonopod 1 dorsal view B, Gonopod 2 dorsal view.

lacks black spots. The cheliped dactylus is light brown with black spots.

Distribution– This species is distributed in Parakkai, Kanyakumari District, Tamil Nadu, India. (Fig. 1).

Etymology – Place where new species has been spotted for the first time.

Ecology. *Oziotelphusa parakkai*, sp. nov. is a semi – terrestrial burrowing crab found along the river banks and freshwater streams of Parakkai (8°08'57"N; 77°27'26"E) Kanyakumari District, Tamil Nadu, India. This species are abundant throughout (June – August) the Southwest and Northeast monsoon period, during which they migrate to the nearby land. The members of this species are fast mover, active during day time and cannibalistic; also feeds on small fishes and insects.

Discussion

Oziotelphusa parakkai sp. nov. is similar to *O. minneriyaensis* and *O. ravi* based on carapace morphology (Ng and Tay, 2001; Bahir and Yeo, 2005). The 6th abdominal segment is rectangular with concave sides in *O. parakkai* sp. nov. whereas that of *O. ravi* is trapezoidal (Smrithy Raj *et al.* 2017). The epibranchial tooth is large and pointed in *O. parakkai* sp. nov. whereas this tooth is of moderate size in *O. minneriyaensis*, and blunt in *O. ravi*. The cervical groove is very deep and short in *O. parakkai* sp. nov. whereas this groove is long and deep in the other two species. The right cheliped dactylus is highly arched in *O. parakkai* sp. nov. whereas this structure is only slightly arched in *O. ravi* and *O. minneriyaensis*. The lateral margin of the epistomial median lobe of *O. parakkai* sp. nov. is Y-shaped and straight, whereas this is concave and broad in *O. ravi* and *O. minneriyaensis*. Finally, the basal part of the subterminal segment of G1 is slightly swollen in *O. parakkai* sp. nov. while this is convex in *O. ravi* and *O. minneriyaensis*.

Acknowledgements

The authors gratefully acknowledge the receipt of the grant from SERB-DST, Government of India (EMR/2016/007215).

References

Bahir, M. M. and Yeo, D. C. J. 2005. A revision of the ge-

- nus *Oziotelphusa* Müller, 1887 (Crustacea: Decapoda: Brachyura: *Parathelphusidae*), with description of eight new species. *Raffles Bulletin of Zoology*. 12 (Supplement) : 77–120.
- Bahir, M. M. and Yeo, D. C. J. 2007. The gecarcinucid freshwater crabs of Southern India (Crustacea: Decapoda: Brachyura). *Raffles Bulletin of Zoology*. 16 (Supplement), 309–354.
- Cumberlidge, N. 1999. The Freshwater Crabs of West Africa. *Potamonautidae*. *Faune Tropicale* 35. I.R.D., Paris, pp. 1–382.
- Kumar, A. B., Raj, S. and Ng, P. K. L. 2017. Description of a new genus and new species of a completely arboreal crab (Decapoda: Brachyura: *Gecarcinucidae*) from the Western Ghats in India, with notes on the ecology of arboreal crabs. *Journal of Crustacean Biology*. 37 (2) : 157–167. <https://doi.org/10.1093/jcbiol/rux012>
- Müller, F. 1887. Zur Crustaceen fauna von Trincomali. *Verhandlung Natulforschenden Gesellschaft, Basel*. 8 : 470–485.
- Ng, P. K. L. 1988. The Freshwater Crabs of Peninsular Malaysia and Singapore. Department of Zoology, National University of Singapore, *Shinglee Press*. pp. I–viii, 1–156, 4 color plates.
- Ng, P. K. L. and Tay, F. W. M. 2001. The freshwater crabs of Sri Lanka (Decapoda: Brachyura: *Parathelphusidae*). *Zeylanica*. 6 : 113–199.
- Pati, S. K. and Sharma, R. M. 2012. *Oziotelphusa ganjamensis*, a new species of freshwater crab (Brachyura: Gecarcinucidae) from south Odisha (Orissa) state, eastern India. *Zootaxa*. 3528 : 49–56.
- Pati, S. K., Rajesh, L., Raj, R., Sheeja, V. U., Kumar, A. B. and Sureshan, P. M. 2017. *Karkata*, a new genus of gecarcinucid freshwater crab with two new species, and four new species of *Pilarta* Bahir and Yeo, 2007 and *Cylindrotelphusa* Alcock, 1909 (Decapoda: Brachyura) from Kerala, India. *Journal of Natural History*. 51 (23–24) : 1295–1330. <https://doi.org/10.1080/00222933.2017.1324054>
- Raghavan, R., Dahanukar, N., Philip, S., Iyer, P., Kumar, B., Daniel, B. A. and Molur, S. 2015. Conservation status of freshwater decapod crustaceans in the Western Ghats of India: an exceptional region of freshwater biodiversity. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 25 : 259–275.
- Rathbun, M. J. 1904. Les crabes d'eau douce (*Potamonidae*). *Nouvelles Archives du Muséum d'Histoire Naturelle, Paris, Series*. 4(6) : 225–312.
- Raj, S., Bijukumar, A. and Ng, P. K. L. 2017. A new species of freshwater crab of the genus *Oziotelphusa* Müller, 1887 (Crustacea: Decapoda: Brachyura: *Gecarcinucidae*) from Tamil Nadu, Southern India. *Zootaxa*. 4363 (2) : 225–236.