

RESURRECTION OF THE ENDEMIC BIRD DUNG CRAB SPIDERS, *PHRYNARACHNE* THORELL (ARANEAE: THOMISIDAE) OF 19TH CENTURY INDIA.

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ABSTRACT: *Phrynarachne tuberosa* (Blackwall, 1864) and *P. peeliana* (Stoliczka, 1869), the only two bird dung crab spiders, known in the 19th century India, could once again be recorded in the 21st century. Both the species are resurrected and new from West Bengal, India. These are described and illustrated here.

KEY WORDS: Resurrection, Bird dung crab spiders, *Phrynarachne*, India.

Bird dung crab spiders recognized under the genus *Phrynarachne* appear to be one of the rarest group. This is well evident from the world catalogue of spiders (Platnick, 2010). Only 30 species are recognized as such spiders as against 41,253 species of spiders known globally. In India, they are known by only two endemic species namely *P. tuberosa* (Blackwall, 1864) and *P. peeliana* (Stoliczka, 1869). The former was initially described as *Thomisus tuberosus* and the latter as *T. peelianus*. Cambridge in 1884 proposed a new combination, *Ornithoscatoides* for *T. tuberosus*. Again, Simon in 1895 revised the status of both *tuberosus* and *peelianus* and placed them under the genus *Phrynarachne*.

Even though listed in the world catalogue (Platnick, 2010) and in the check lists of Indian spiders (Siliwal & Molur, 2007; Sebastian & Peter, 2009), none could record any further *Phrynarachne* since 19th century India.

We feel happy to communicate that both the species could be resurrected from the protected areas and tea ecosystem of Dooars. The outcome is the result of our effort in assessing the resource potentials of spiders, since 2006.

Both the species *Phrynarachne tuberosa* and *P. peeliana* demand contemporary taxonomic treatment and hence described and illustrated.

MATERIALS AND METHODS

Collection and preservation of the spider specimens were done following Tikader (1987). The materials were studied under Stereo Zoom Binocular Microscope, model Olympus SZX-7. The measurements indicated in the text are in millimeters, made with an eye piece graticule. Identification of the taxa was done with the help of Blackwall (1864), Stoliczka (1869), Cambridge (1884), Simon (1895). Spider specimens are in the deposition of Entomology Laboratory, Department of Zoology, University of Calcutta, Kolkata.

Abbreviations used: AME= anterior median eye, PME= posterior median eye, ALE= anterior lateral eye, PLE= posterior lateral eye, T.E. = tea estate.

TAXONOMIC ACCOUNT***Phrynarachne tuberosa* (Blackwall, 1864)**

(Figs. 1-6 & 14)

Thomisus tuberosus Blackwall, 1864, Ann. Mag. Nat. Hist. (3) 14 : 36-45.*Ornithoscatoides tuberosa* (Blackwall); Cambridge, 1884, Proc. Zool. Soc. London, 196-205.*Phrynarachne tuberosa* (Blackwall); Simon, 1895, Hist. Nat. des Araign. Paris, 1: 1045.**Description:** Female

Total length- 9.07, carapace length- 3.64, carapace width- 4.71; abdominal length- 5.43, abdominal width- 6.93. Cephalothorax (Fig. 1) brown, globose, anteriorly narrowed with variably developed tubercles and abruptly depressed posteriorly. Caput strongly raised, rectangular, anteriorly broad, posteriorly narrowing, marginally marked by inward longitudinal depression, posterolateral angles strongly tuberculate, directed upward and weakly backward, anterior angles transversely tuberculate, midlongitudinally marked by black tuberculate carina, rest of the surface warty to tuberculate. Eyes 8, transparent, each ringed by black, disposed on the anterior part of caput in two recurved rows, posterior row much recurved, lateral eyes situated on tubercle, anterolaterals largest, anteromedians on either side of the down slope of the raised square area, ocular quad nearly square, eye diameter ALE>PLE>AME>PME. Inter ocular distance: AME-AME=0.57, ALE-AME=0.18, ALE-ALE=1.14, PME-PME=0.54, PLE-PME=0.43, PLE-PLE=1.60, ALE-PLE=0.29, AME-PME=0.29. Clypeus sloped, dark brown, clypeal angles obtusely produced, margin with lanceolate hairs and numerous granulations. Thoracic groove deeply distinct, radii equally so, in between with tubercles in outwardly directed series, fovea longitudinal on diffused black patch, little posterior to posterior tubercles of caput. Chelicerae (Fig. 2) dark brown, robust, rugose, strongly scopulate, retromargin with one small brown tooth and promargin with two pale rather large teeth. Fangs (Fig. 2) red brown, small, stout, strongly curved. Labium (Fig. 3) dark brown, longer than wide, anterior margin pale, basally notched, with strong long brown hairs. Maxillae (Fig. 3) brown, scopulate, with strong, long hairs, apical 1/3 yellowish brown, rest blackish, outer margin incurved near palpal base. Sternum (Fig. 4) dark brown, elongately cordate, anteriorly weakly concave, with hairs similar to maxillae. Legs brown black, dorsally marked by offwhite to yellow patches, coxae, trochanter, femur ventro- laterally with offwhite narrow to broad patch, femora with many small tubercles, tibiae and metatarsi with strong spines, tibial spines beset on small tubercles, patella triangular, femora I & II robust. Tarsi of leg I & II with 2 brown black pectinate claws with claw tuft, each with 7 teeth, 3rd one small and pale, claws of leg III & IV 2, pectinate. Leg formula 2134.

Abdomen (Fig. 1) subpentagonal, posteriorly broad, anteriorly round and straight overhanging the base of cephalothorax. Dorsum pale olive brown, with strong variably developed tubercles. Cardiac marking bar shaped, longitudinal, anteriorly marked by a muscular apodeme, posteriorly little distantly two submedian lateral broad apodeme. Either side of the cardiac bar with 3 red brown tubercles, the median largest appearing like a bivalve shell, posterior one smallest. Further laterally with two large yellow brown upwardly directed tubercles disposed obliquely to both anterior and median tubercles, two more apodemes of smaller dimension present between the median and the largest tubercles, anterior to anterior apodeme 2 more brown tubercles disposed transversely, posterior to posterior apodeme 2 such tubercles disposed transversely, further beyond in a oblique line 2 more rather large, outwardly and downwardly directed tubercles, further below with 2 smaller yellow tubercles little inwardly placed. Thus forming

3 rows of which the median one largest, the rows separated by a transverse infolding. Anterior margin with 4 moderately developed tubercles, laterally with 6 such, either side submarginally with 8 apodemes marked by black, otherwise rest of the dorsum with small to large tubercles of variable shape, marginally with 3 spiniform apophysis on either side, posterior margin wavy, marked by tubercles. Venter black with offwhite markings, these marginally broad, medially with muscular apodemes in series, medians longitudinal, rest oblique, converging towards spinnerets. The black above the epigastric furrow with arm like extension, separating the branchial lamellae, infolded further below the 2nd pair of lamellae.

Epigynum-Internal genitalia (Figs.5 & 6): Spermatheca bean shaped, copulatory duct at the micropylar region, fertilization duct distinct, atrium narrow.

Variation: Total length: Female: 8.97-9.07.

Male: Unknown.

Material Examined: 1 female, Nepuchapur T. E., Dooars, West Bengal, 18.iii.2009, Coll. D. C. Dhali; 1 female, Nagrakata T. E., Dooars, West Bengal, 22.iii.2009, Coll. T. K. Roy; 2 female (immature), Kailashpur T. E., Dooars, West Bengal, 30.i.2010, Coll. S. Saha.

Distribution: India (Platnick, 2010): West Bengal (New Record).

Remark: Both Blackwall and Cambridge indicated the record of the species from East Indies (East India). They however, did not mention other taxonomic data.

Phrynarachne peeliana (Stoliczka, 1869)

(Figs. 7- 13 & 15)

Thomisus peelianus Stoliczka 1869, J. Asiatic Soc. Bengal, 38: 201-251.

Phrynarachne peeliana (Stoliczka); Simon, 1895. Hist. Nat. des Araign. Paris,1: 1044.

Description: Female

Total length- 11.29, carapace length- 4.21, carapace width- 4.36; abdominal length- 6.32, abdominal width- 7.07. Cephalothorax (Fig. 7) grayish brown, margin offwhite, globose, anteriorly narrowed, truncate in front, with lanceolate hairs, surface warty, these denser anteriorly. Cephalic area raised medially, with a Y-shaped groove, arms of which extending from the area between AME and ALE converging to the base of ocular quad further extending between the PME upto anterior one-third. Eyes 8, transparent, ringed with black, arranged in two recurved rows, posterior row strongly so, lateral eyes on tubercles, such with further raised triangular tubercles, anterior row on the slope, posterior row on the edge, anterolaterals largest, ocular quad nearly square, anteriorly narrow, medially raised, this midlongitudinally grooved forming two gibbosities, each at its tip with a brown long spine like seta, eye diameter: ALE>PLE>AME>PME. Inter ocular distance: AME-AME=0.32, ALE-AME=0.21, ALE-ALE=0.94, PME-PME=0.46, PLE-PME=0.14, PLE-PLE=1.29, ALE-PLE=0.29, AME-PME=0.14. Clypeus broad, on slope, margin with ten small tubercles, each with a strong transparent lanceolate hair. Further anteromedially with a large offwhite tubercle. Cervical furrows deeply distinct, fovea marked by a shallow groove, radii distinct, with basal mid-longitudinal groove, posterolateral angles dark brown. Pedicelar node garlic like. Chelicerae (Fig. 8) brown, offwhite at base, short, stout, subtriangular, basally broad, covered with thick hairs, scopulate, each margin with two teeth, fang brown, strongly curved. Maxillae and labium (Fig. 9) offwhite, maxillae apically broad, incurved near palpal base, thickly hairy. Labium elongate, constricted basally, forming a basal stalk, strongly hairy. Sternum (Fig.

10) offwhite, marginally grey brown, basally with a small midlongitudinal black line, pitcher like, anterior margin weakly incurved, thickly hairy. Legs yellow brown basally and apically darker with offwhite patches, femora I & II ventrally with tubercles, each with a transparent lanceolate hair, tubercles on femora III & IV in decreasing number. Each leg with two brown, curved, basally pectinate claw with claw tuft. Tibia and metatarsi of all legs with two rows of spines laterally. Leg formula 1=243.

Abdomen (Fig. 7) greyish brown, margin with offwhite, this posterolaterally strongly so, pentagonal, posteriorly broad, anteriorly narrowed, both ends nearly truncate and tuberculate, surface anteriorly and laterally with small warts, this medially and posteriorly scanty. Dorsum midlongitudinally grooved, the groove medially marked by offwhite, on either side of it medially with a pair of transverse offwhite muscular apodemes, further marginally with two rows of such apodemes faintly marked by offwhite, rows apparently converging to the apodemes at tip of the longitudinal depression, again a pair of large muscular apodemes located lateral to the posteromedian longitudinal offwhite marking. Anterior margin with four tubercles leaving the median area free, each anterolateral margin with three such of smaller dimension, posterior area with four median large tubercles, anterior two largest, anterior to it two such small tubercles, two small tubercles on either side of the posteromedian, spiniform apophysis three on either side, each tubercle at its tip with a small spiny hair excepting the last pair. Venter entirely offwhite with grey brown patches medially arranged in longitudinal line, posteriorly with three triangularly arranged tubercles on either side of the spinnerets, lateral ones largest. Behind the spinnerets with a tongue shaped hairy projection (Fig. 13), surface with several muscular apodemes marked by grey brown.

Epigynum-Internal genitalia (Figs.11 & 12): Spermatheca oval, fertilization duct inwardly curved, copulatory duct medially produced from spermatheca, atrium distinct.

Male: Unknown

Material examined: 2 female, Buxa Tiger Reserve, Dooars, West Bengal, 11.iv.2009, Coll. D. Raychaudhuri.

Distribution: India (Platnick, 2010): Assam (Stoliczka, 1869), West Bengal (New Record).

Remark: Stoliczka (1869) provided the collection locality only. No more information is available in the original literature.

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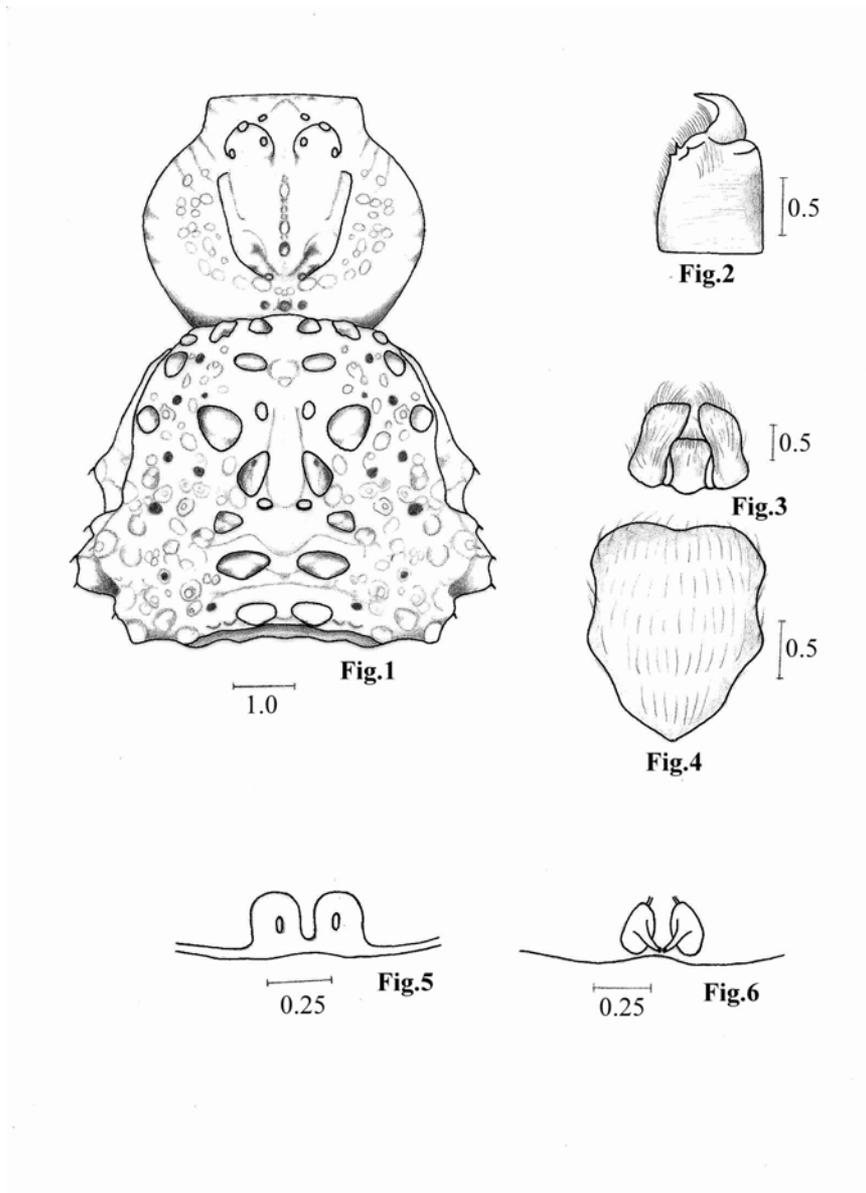
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Table 1. Length of legs of female of *Phrynarachne tuberosa* (Blackwall, 1864)

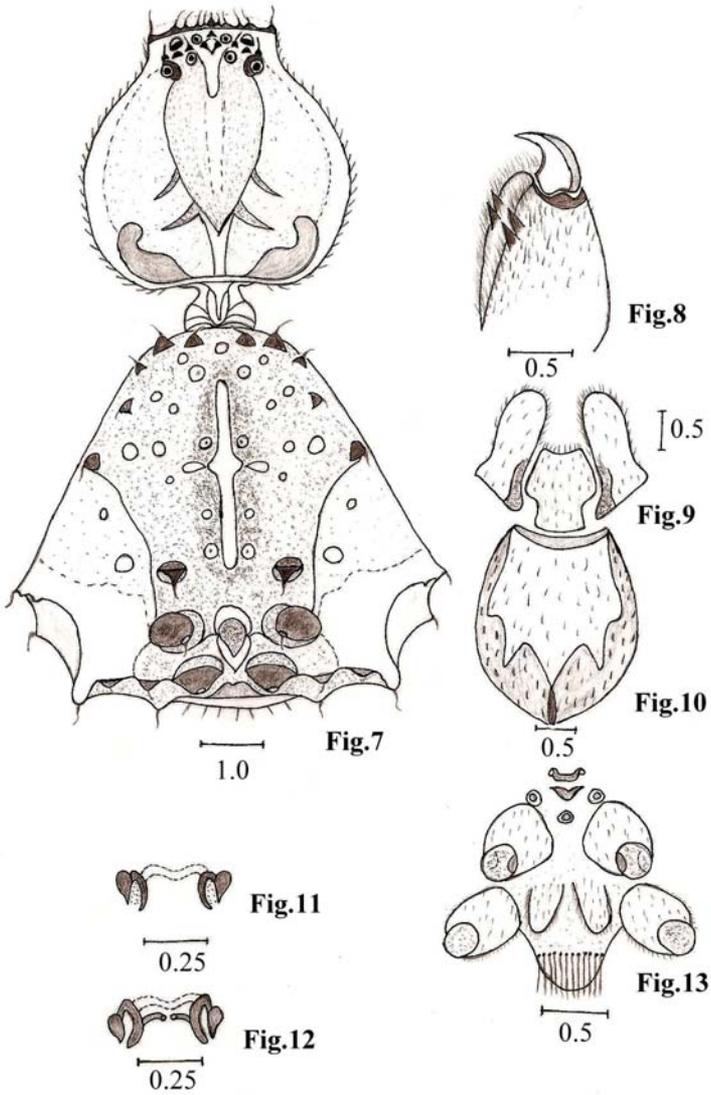
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	3.23	1.93	2.16	1.81	1.25	10.38
II	3.18	1.93	2.16	1.93	1.25	10.45
III	2.05	1.25	1.36	1.02	0.90	6.58
IV	1.36	1.31	1.36	0.85	0.68	5.56

Table 2. Length of legs of female of *Phrynarachne peeliana* (Stoliczka, 1869)

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	4.11	1.89	2.89	3.44	1.56	13.89
II	4.11	1.89	3.00	3.22	1.67	13.89
III	2.44	0.56	1.78	1.00	1.00	6.78
IV	2.78	0.89	2.78	1.00	1.11	8.56



Figures 1-6. *Phrynarachne tuberosa* (Blackwall): Female: 1. Whole body, 2. Chelicerae, 3. Maxillae and Labium, 4. Sternum, 5. Epigynum, 6. Internal genitalia.



Figures 7-13. *Phrynarachne peeliana* (Stoliczka): Female: 7. Whole body, 8. Chelicerae, 9. Maxillae and Labium, 10. Sternum, 11. Epigynum, 12. Internal genitalia, 13. Spinnerets.



Figures 14-15. 14. *Phrynarachne tuberosa* (Blackwall): Photograph, 15. *Phrynarachne peeliana* (Stoliczka): Photograph.