

New Species and New Combination of *Oxyopes* Latreille 1804 (Araneae: Oxyopidae) Females from India

¹Souvik Sen, ²Sumana Saha and ¹Dinendra Raychaudhuri

¹Entomology Laboratory, Department of Zoology, University of Calcutta,
35, Ballygunge Circular Road, Kolkata- 700019, India

²Department of Zoology, Lady Brabourne College, Govt. of West Bengal,
P- ½, Suhrawardy Avenue, Kolkata- 700017, India

Abstract: Three lynx spider species (Oxyopidae) from India are dealt with, including a new taxa *Oxyopes gorumaraensis*. The new species can easily be diagnosed by the presence of anterior epigynal hood, triangular spermatheca, short, horn like fertilization ducts, anteromedian greyish lanceolate patch and lateral black bands running from base to apex of abdominal dorsum. New combinations, *Hamataliwa ovata* (= *Oxyopes ovatus*) and *H. reticulata* (= *O. reticulatus*) are also proposed for the two endemic oxyopids. *Hamataliwa ovata* should be characterized by the circular spermatheca, long, U shaped copulatory ducts and convergent brown marking on each lateral side of abdomen. The second named species, *H. reticulata* stands distinct by the longer than wide spermatheca, short, outwardly curved fertilization ducts and median chalk white reticulations and 2 pairs of muscular apodemes on abdominal dorsum. Females of the three lynx spider species are described and illustrated.

Key words: *Oxyopes* • *Hamataliwa* • New species • New combination • India

INTRODUCTION

Lynx spiders (Oxyopidae) are receiving serious attention because of their extreme bioresource potential. They are recognized as excellent biological pest management candidates [1-4] and their pharmacologically active venom proteins are known to block voltage sensitive calcium ion channels [5-6]. Till date 430 oxyopid species under 9 genera are known worldwide [7]. In India they are represented by 69 species distributed over 4 genera [8].

Some important revisionary works on the lynx spider taxonomy were done in the last decade [9-11]. Especially the contribution of Deeleman-Reinhold [9] is the significant milestone in the understanding of this group. Indian lynx spiders attracted the attention since 1901 [12]. Later Sherriffs [13] dealt with the taxonomy of some lynx spiders of oriental region including India. Tikader [14-16] recognized several new oxyopid taxa from different parts of India including Sikkim. Patel [17] described a new oxyopid, *Peucetia akwadaensis* from Gujarat. Tikader and Biswas [18] dealt with the lynx spiders of Calcutta. Later Biswas and Biswas [19-21] detailed out the oxyopids of

West Bengal, Manipur and Arunachal Pradesh. Since 1996, Biswas *et al.* [22] and Saha and Raychaudhuri [23-25] are involved in exploring the diversity of lynx spiders of the reserve forests of North East India. Majumder [26] provided an illustrated guide on the Sunderban (Gangetic delta) spiders including oxyopids. Recently Gajbe [27] published a monograph on the Indian lynx spider taxonomy.

While studying the lynx spiders of the reserve forests of North Bengal, India (for more about the reserve forests visit www.westbengalforest.gov.in [28]), we could find a new *Oxyopes* Latreille namely *O. gorumaraensis*, which is described and illustrated. We could also record the endemic lynx spiders, *O. ovatus* and *O. reticulatus* of Biswas *et al.* [22]. Somatic and genitalic structures of the aforesaid species are strongly coherent to the diagnosis of *Hamataliwa* Keyserling (for details of diagnosis see Deeleman-Reinhold [9]). We therefore propose a new combination *Hamataliwa* Keyserling for both *O. ovatus* and *O. reticulatus*. Precisely the species in question are now the only representatives of the Indian *Hamataliwa* Keyserling and thus demands better understanding. Accordingly they are redescribed and illustrated.

MATERIALS AND METHODS

Lynx spiders were collected and preserved in accordance with the recommendations of Tikader [29] and Barrion and Litsinger [30]. The materials were studied using Stereo Zoom Binocular Microscope, model Zeiss SV-11. The measurements indicated in the text are in millimeters, made with an eye piece graticule. Leg measurements are shown as: total length (femur, patella, tibia, metatarsus, tarsus).

Abbreviations Used Are as Follows: CL= Cephalothorax length, CW= Cephalothorax width, AL= Abdominal length, AW= Abdominal width, TL= Total length, AME= Anterior median eyes, ALE= Anterior lateral eyes,

PME= Posterior median eyes, PLE= Posterior lateral eyes, CO= Copulatory opening, CD= Copulatory duct, FD= Fertilization duct, S= Spermatheca; GNP= Gorumara National Park, CWLS= Chapramari Wildlife Sanctuary, WB= West Bengal.

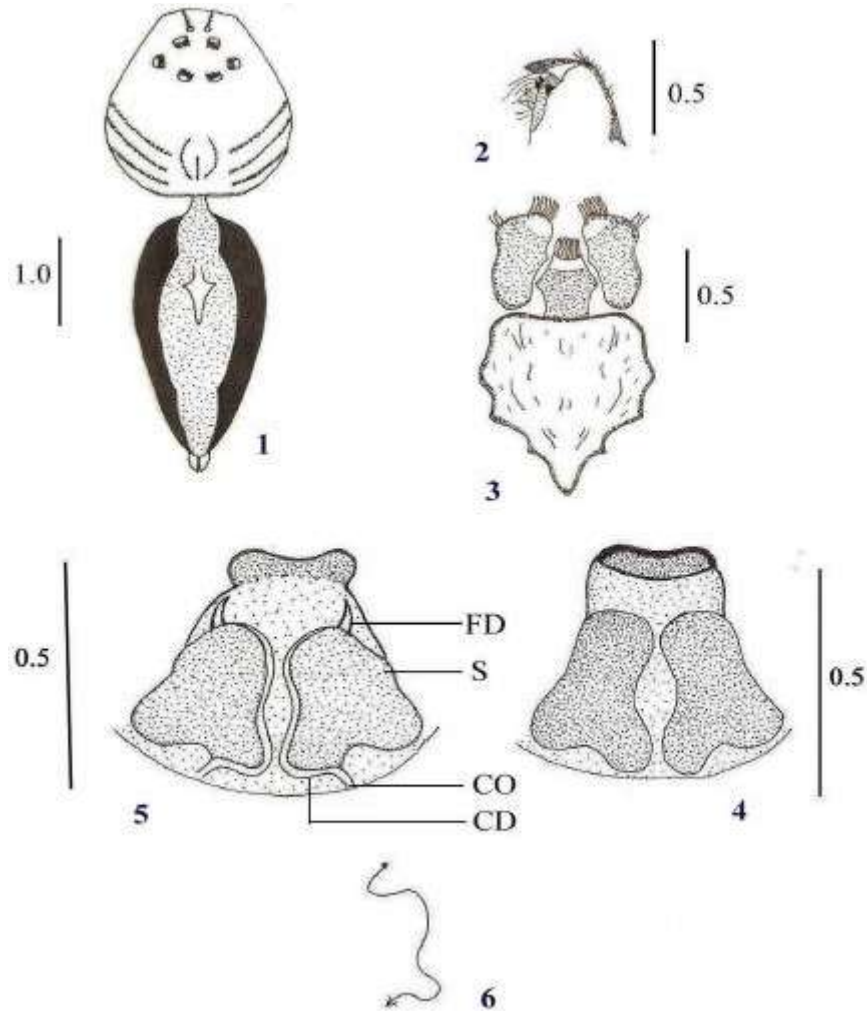
TAXONOMY

Oxyopes gorumaraensis Sp. nov.

(Figs.1-6; 19-20)

Description: Female (Holotype): CL- 2.17, CW- 1.94, AL- 2.82, AW- 1.35, TL- 4.99.

Cephalothorax (Figs.1,19) yellow, longer than wide, postero medially broad, convex, cephalic region slightly raised, thoracic region posteriorly with a longitudinal



Figs.1-6: *Oxyopes gorumaraensis* sp. nov.: Female (Holotype): 1. Cephalothorax and abdomen, dorsal view; 2. Chelicerae, ventral view; 3. Maxillae, labium and sternum, ventral view; 4. Epigynum, ventral view; 5. Internal genitalia, dorsal view; 6. Schematic course of internal duct system

brown fovea, encircled by reddish brown pubescence, appearing band like, radii distinct, marked by small black hairs. Eyes 8, pearly white, ringed with black, anterior row of eyes strongly recurved and posterior row strongly procurved, AME smallest, ocular quad longer than wide, ocular area with some white silky hairs and pubescence. Inter ocular distance: AME-AME=0.06, ALE-AME=0.05, ALE-ALE=0.23, PME-PME=0.17, PLE-PME=0.20, PLE-AME=0.76, ALE-AME=0.23, AME-PME=0.52. Clypeus yellow, height high, with a pair of black band extending from AMEs up to fang base. Chelicerae (Fig.2) yellow, promargin with 2 teeth and retromargin with a tooth, fangs small, yellowish brown. Both maxillae and labium (Fig.3) yellowish brown, longer than wide, apically scopulate, labium posteromedially constricted. Sternum (Fig.3) yellowish brown, cordate, anterior margin concave, posteriorly produced, covered with few long, black erect hairs. Legs yellow, long, tarsal claw 3, each superior claw with 6 teeth. Leg measurements: I 8.48 (0.72, 2.27, 2.36, 0.95, 2.18); II 7.79 (2.36, 0.72, 2.27, 1.90, 0.54); III 6.97 (2.36, 0.63, 1.72, 1.54, 0.72); IV 7.93 (2.18, 0.63, 2.04, 2.27, 0.81). Leg formula 1423. Leg spinations: femora I-II=0100, femora III-IV=0200, tibia I-IV=2315, metatarsi I-II=4224, metatarsi III-IV=6024.

Abdomen (Figs.1,19) yellow, oval, anteromedially wide, dorsum anteromedially with a greyish lanceolate patch, laterally with black band extending from base to apex, clothed with fine black hairs and pubescence; venter yellowish brown, with a median broad, black, longitudinal band extending from epigastric furrow to spinnerets, spinnerets yellowish brown.

Epigynum-Internal genitalia (Figs.4-6): Epigynum with an anterior hood; atrium longer than wide, spermatheca broadly triangular, copulatory ducts long, narrow, sub parallel, copulatory openings 2, small, fertilization ducts short, horn like; schematic course of internal duct system as in Fig.6.

Variation: Total length: 4.90 - 5.05.

Male: Unknown.

Type Material: Holotype: ♀, Gorumara, GNP, 26°42'N, 88°48'E, WB, India, 2.v.2008, coll. S. Sen; Paratypes: 2 ♀♀, Gorumara, GNP, 26°41'N, 88°48'E, WB, India, 24.xii.2008, coll. D. Raychaudhuri; 3 ♀♀, Bichabhanga, GNP, 26°46'N, 88°53'E, WB, India, 11.x.2009, coll. S. Sen.

Type Deposition: Entomology Laboratory, Department of Zoology, University of Calcutta, registration no. EZC 0025-11.

Distribution: India: West Bengal.

Etymology: The species name refers to the type locality.

Remarks: The species shows a close affinity to *Oxyopes tikaderi* Biswas and Majumder [31], but can be separated by i) epigynum with an anterior hood (epigynum devoid of anterior hood in *O. tikaderi*); ii) spermatheca broadly triangular (spermatheca tubular in *O. tikaderi*); iii) copulatory ducts long (copulatory ducts short in *O. tikaderi*); iv) fertilization ducts short, horn like (fertilization ducts indistinct in *O. tikaderi*); v) abdominal dorsum anteromedially with a greyish lanceolate patch and lateral black bands extending from base to apex, without any sigilla (abdomen devoid of any such patch or bands, sigilla 1 pair in *O. tikaderi*); vi) abdominal venter with a median black longitudinal band (such band absent in *O. tikaderi*). Therefore the present species is considered as new to science.

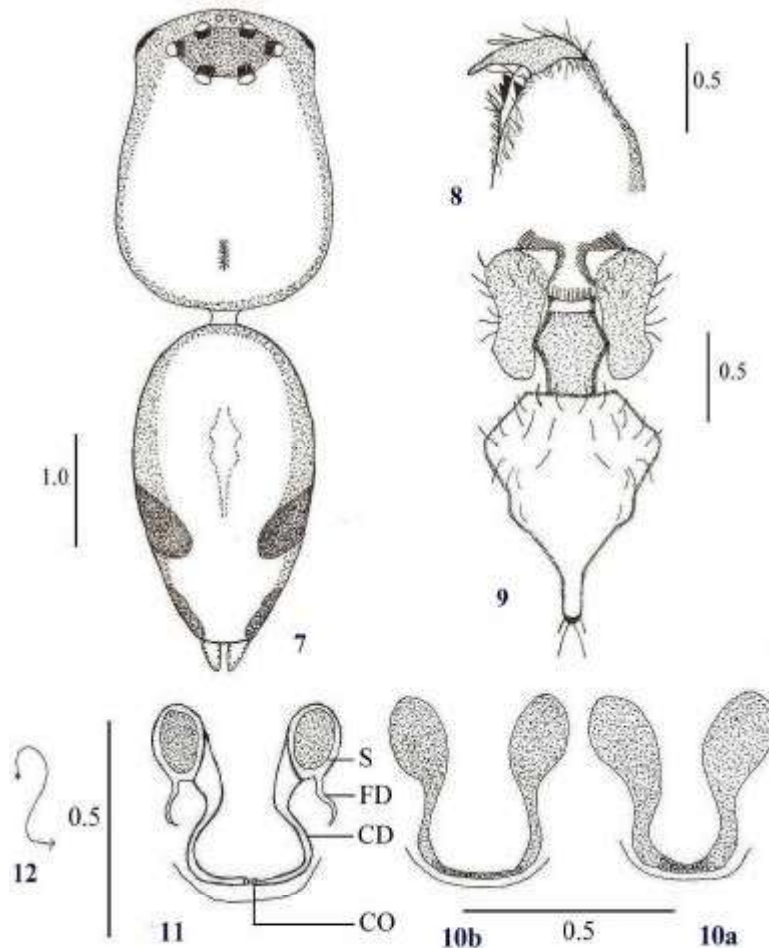
Hamataliwa ovata: (Biswas *et al.* 1996) comb. nov. (Figs.7-12; 21)

Oxyopes ovatus Biswas, Kundu, Kundu, Saha and Raychaudhuri, 1996, Acta arachnol. 45(1): 56.

Description: Female: CL- 2.69, CW- 2.04, AL- 2.91, AW- 1.69, TL- 5.60.

Cephalothorax (Figs.7, 21) yellowish brown, anterolateral angles darker, longer than wide, cephalic region little raised, thoracic fovea longitudinal. Eyes pearly white, anterior row strongly recurved and posterior row strongly procurved, AME smallest, ocular area brown. Inter ocular distance: AME-AME=0.03, ALE-AME=0.04, ALE-ALE=0.30, PME-PME= 0.26, PLE-PME=0.30, PLE-AME=0.86, ALE-AME=0.21, AME-PME=0.47. Clypeus yellowish brown, covered with white pubescence. Chelicere (Fig.8) yellow, promargin with 2 teeth and retromargin with a tooth, fangs reddish brown, basally broad. Maxillae and labium (Fig.9) reddish brown, apically scopulate, longer than wide. Sternum (Fig.9) reddish brown, anterior margin little procurved, posteriorly narrow and produced, covered with fine brown hairs. Legs yellowish brown, long, clothed with spines, tarsal claw 3, superior claw toothed. Leg measurements: I 9.97 (3.36, 0.81, 2.90, 2.27, 0.63); II 8.51 (2.81, 0.90, 2.54, 1.72, 0.54); III 6.97 (1.90, 0.63, 2.09, 1.63, 0.72); IV 4.51 (0.90, 0.72, 1.63, 0.81, 0.45). Leg formula 1234.

Abdomen (Figs.7, 21) yellow, oval, dorsum with a median longitudinal brown marking, each lateral side with a converging brown marking; venter yellow, spinnerets yellowish brown.



Figs. 7-12: *Hamataliwa ovata* (Biswas *et al.*) comb. nov. : Female: 7. Cephalothorax and abdomen, dorsal view; 8. Chelicerae, ventral view; 9. Maxillae, labium and sternum, ventral view; 10. Epigynum, ventral view; 11. Internal genitalia, dorsal view; 12. Schematic course of internal duct system

Epigynum-Internal genitalia (Figs.10-12): Spermatheca circular, copulatory ducts long, broadly 'U' shaped, with arms apically outwardly curved, openings small, circular; fertilization ducts long, curved, schematic course of internal duct system as in Fig. 12.

Male: Unknown

Material Examined: 1♀, Chapramari, CWLS, 27°1'N, 88°50'E, WB, India, 3.xi.2007, coll. S. Sen; 4♀♀, Chapramari, CWLS, 27°2'N, 88°46'E, WB, India, 12.v.2009, coll. S. Sen; 2♀♀, Murti, GNP, 26°59'N, 88°51'E, WB, India, 21.ix.2009, coll. S. Saha.

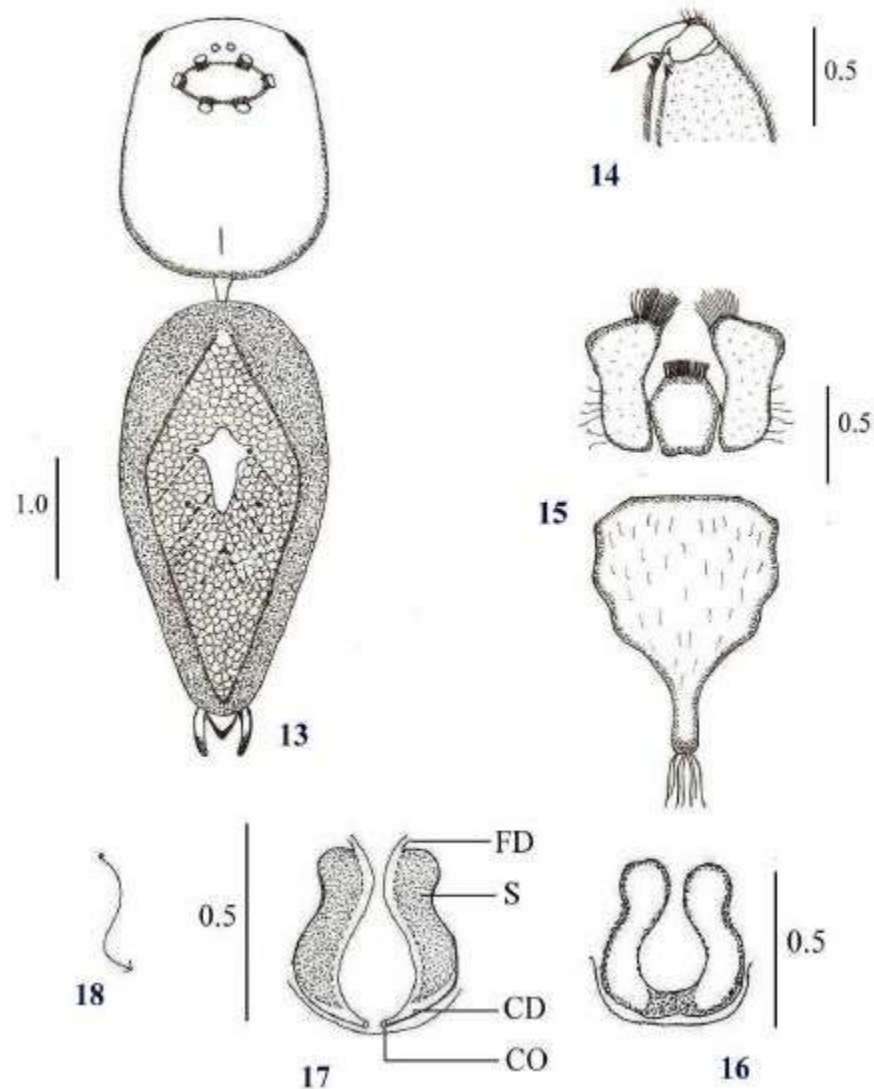
Distribution: India: West Bengal [7, 22, 27].

***Hamataliwa reticulata*:** (Biswas *et al.* 1996) comb. nov. (Figs.13-18; 22)

Oxyopes reticulatus Biswas, Kundu, Kundu, Saha and Raychaudhuri, 1996, Acta arachnol. 45(1): 57.

Description: Female: CL- 2.13, CW- 1.73, AL- 3.34, AW- 1.73, TL- 5.47.

Cephalothorax (Figs.13, 22) brown, longer than wide, cephalic region little raised, thoracic fovea longitudinal. Eyes pearly white, anterior row strongly recurved and posterior row strongly procurved, AME smallest, ocular area pale brown. Inter ocular distance: AME-AME=0.04, ALE-AME=0.04, ALE-ALE=0.26, PME-PME=0.19, PLE-PME=0.23, PLE- PLE=0.69, ALE- PLE= 0.17, AME-PME=0.43. Clypeus yellowish brown. Chelicere (Fig.14) brown, promargin with 2 teeth and retromargin with a tooth, fangs reddish brown, short. Maxillae and labium (Fig.15) yellowish brown, apically scopulate, longer than wide. Sternum (Fig.15) brown, anterior margin straight,



Figs.13-18: *Hamataliwa reticulata* (Biswas *et al.*) comb. nov. : Female: 13. Cephalothorax and abdomen, dorsal view; 14. Chelicerae, ventral view; 15. Maxillae, labium and sternum, ventral view; 16. Epigynum, ventral view; 17. Internal genitalia, dorsal view; 18. Schematic course of internal duct system

posteriorly narrow, produced and tip with long, brown, tuft hairs. Legs yellowish brown, long, clothed with spines, tarsal claw 3, superior claw toothed. Leg measurements: I 9.70 (3.0, 0.63, 3.36, 1.81, 0.90); II 8.6 (2.72, 0.63, 2.81, 1.63, 0.81); III 5.75 (1.81, 0.54, 1.72, 1.36, 0.32); IV 5.6 (1.81, 0.63, 1.81, 0.90, 0.45). Leg formula 1234.

Abdomen (Figs.13, 22) brownish black, oval, dorsum with median chalk white reticulations, enclosing a median white area, muscular apodemes 2 pairs; venter with white pubescence, spinnerets brown.

Epigynum-Internal genitalia (Figs.16-18): Spermatheca longer than wide, medially incurved;

copulatory ducts short, opening small, circular; fertilization ducts short and outwardly curved, schematic course of internal duct system as in Fig. 18.

Male: Unknown.

Material Examined: 2 ♀♀, Bichabhanga, GNP, 26°46'N, 88°53'E, WB, India, 28.x.2007, coll. D. Raychaudhuri; 2 ♀♀, Gorumara, GNP, 26°41'N, 88°48'E, WB, India, 02.v.2008, coll. S. Sen; 2 ♀♀, Chapramari, CWLS, 27°2'N, 88°46'E, WB, India, 01.ix.2009, coll. S. Sen.

Distribution: India: West Bengal [7, 22, 27].



Fig. 19-22: Photographic Images: *Oxyopes gorumaraensis* sp. nov.: Female (Holotype): 19. General habitus; 20. Frontal view of cephalothorax; 21. General habitus of *Hamataliwa ovata* (Biswas *et al.*) comb. nov. (female); 22. General habitus of *Hamataliwa reticulata* (Biswas *et al.*) comb. nov. (female).

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