



## New records spider species under *Wadicosa* Genus (Sub-order: Araneae; Family: Lycosidae) from Agricultural field of Sonitpur District, Assam, India

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### ABSTRACT

The genus *Wadicosa* was established by Zyuzin (1985) with *Lycosa venatrix* Lucas, 1846 as type species. The genus *Wadicosa* includes five species as *W.commoventa* Zyuzin, 1985; *W. daliensis* Yin, Peng & Zhang, 1997; *W. fidelis* O.P. Cambridge, 1872; *W. okinawensis* Tanaka, 1985 and *W. quadrifera* Gravely, 1924. The genus closely resembles with *Pardosa* but differ from the later in male Palp with an anterior retrolateral process pointing ventrad and epigyne with two more or less completely separated foveolae (pockets) in front of a posterior median cavity or atrium. The species was collected from Rice field of village Solmara, Sonitpur district of Assam, India using pitfall trap method. The newly recorded species closely resembles with *W. quadrifera* and *W. fidelis* but differs from them in the width of II-III row of eyes, colouration of the coby, shape of spermathecae, epigynal septum and foveolae.

**Key Words:** Newly recorded, *Wadicosa*, genus, Lycosidae, Rice field Sonitpur, Assam, India.

### INTRODUCTION

The genus *Wadicosa* was established by Zyuzin (1985) with *Lycosa venatrix* Lucas, 1846 as type species. At the same time Zyuzin established the monogeneric subfamily Wadicosinae. The genus *Wadicosa* includes five species as *W.commoventa* Zyuzin 1985; *W. daliensis* Yin, Peng & Zhang 1997; *W. fidelis* O.P. Cambridge 1872; *W. okinawensis* Tanaka 1985 and *W. quadrifera* Gravely 1924 (World spider catalog, ver-14.5, 2014). The wolf spider fauna of India has been taxonomically reviewed by Tikader and Malhotra (1980). Among the several species they described *Lycosa quadrifera* (Gravely 1924) which was transferred to genus *Wadicosa* Zyuzin, 1985. The

genus closely resembles with *Pardosa* but differ from the later in male palp with an anterior retrolateral process pointing ventrad and epigyne with two more or less completely separated foveolae (pockets) in front of a posterior median cavity or atrium.

The newly recorded species closely resemble with *W. quadrifera* and *W. fidelis* but differs from them in the width of II-III row of eyes, colouration of the coby, shape of spermathecae, epigynal septum and foveolae.

### MATERIALS AND METHODS

#### Study area

The District Sonitpur lies in the northern parts of the

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mighty Brahmaputra in Assam sharing border with Arunachal Pradesh. The district is on the longitude 92°20' E to 93°45' E and latitude of 26°20' N to 27°05' N. The climate of the district is warm, subtropical, the winter and summer temperature vary from 7 to 36° C. The average rainfall is 135cm to 235cm with 122 to 134 rainy days. The agro climatic zone is as Eastern Himalayan region. It is located in lower Brahmaputra valley zone.

## Methods of Study

### Field Survey

Survey of spider has been conducted in agro-ecosystem of Solmara area of Sonitpur district, Assam from July 1<sup>st</sup> to October 2013 using standard spider study methodology (Churchill and Arthur 1999). The species was collected from Rice field of village Solmara, Sonitpur district of Assam, India using pitfall trap method (Uetz and Unzicker 1976; Sutherland 1996). Specimen was preserved in 70% ethanol and were examined, illustrated, photographed and measured using a ZEISS Stemi 2000C stereo zoom microscope attached with a Axio Cam ERC 5S camera and ZEM software. The type specimen was deposited in the Biodiversity Museum, Department of Zoology and Animal Ecology and Wildlife Biology lab, Gauhati University, India. All measurements were taken using the unit of millimeters scale. The parameters used for the study of specimens were as such as anterior lateral eyes (ALE), anterior median eyes (AME), Posterior median eyes (PME) and Posterior lateral eyes (PLE).

## Genus *Wadicosa* Zyuzin, 1985

### Generic diagnosis

Lycosid spiders of medium size (carapace length approx 2-4mm), in general with dark coloured body. Carapace with more or less distinct median star shaped lighter field. Dorsum of abdomen with an anterior median lanceolate stripe followed rearwards by a row of transversely paired light spots, the posterior one confluent; each spot with a dark dot having a long erect dark hair.

Anterior eye row slightly procurved as seen from in front and considerably shorter than second row, which in turn is considerably shorter than third row. Anterior median eyes clearly larger than anterior lateral eyes. Retromargin of chelicerae with three teeth. Leg formula IV-I-II-III. The tegulum of male palp with anterior retrolateral process pointing ventrad. Subtegulum relatively large shifted towards

the inner side of bulbus and more or less concealed by a corrugated cuticular cover. Apical portion of bulbus with conductor of embolus. Anterior part of epigyne with two more or less separated foveolae (Kronstedt & Zyuzin, 2009).

### Recorded distribution of the genus

Turkmenistan Republic, China, Palearctic, Canary, Ryukyu, Srilanka and southern India (Platnick, 2014).

**New distribution records:** India, Sonitpur district, Assam.

### *Wadicosa prasantae* sp. nov.

**Type material. Holotype:** Female (Figures 1-12). Specimen has been collected from Rice field of village- Solmara, Sonitpur District of Assam, India, coordinates: 92°81' E and 26°68' N, on 10<sup>th</sup> October, 2013).

**Etymology.** The specific name is after the name of Prof. Prasanta Kumar Saikia, for his contribution in Wildlife Biology research.

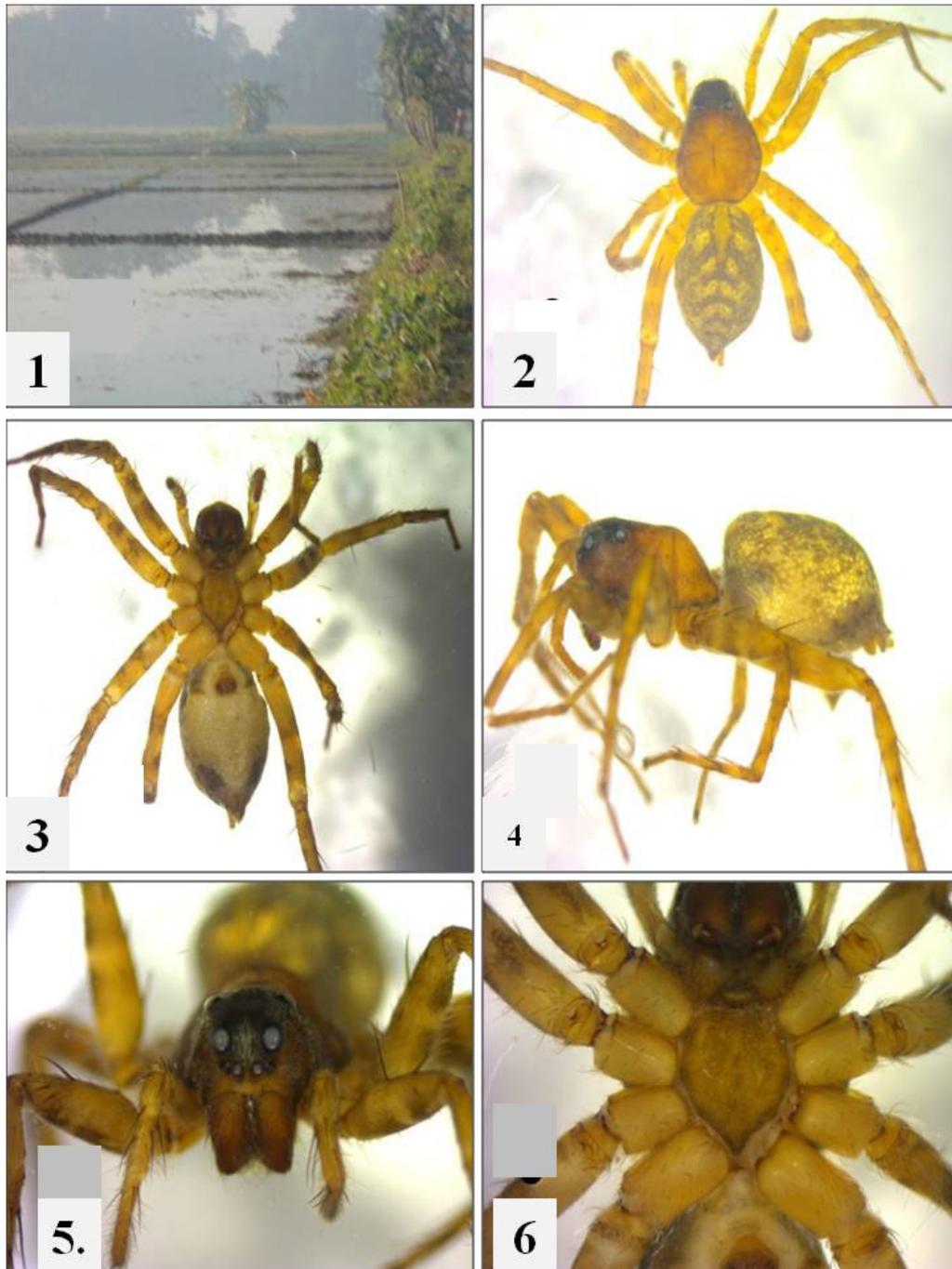
### Diagnosis

The female of the new species is similar to *Wadicosa quadrifera* (see Kronstedt, 2007) and *Wadicosa fidelis* (see Kronstedt & Zyuzin, 2009) but differs from the former two by the width of II-III row of eyes, colour of body, sternum, shape of spermathecae, epigynal septum, and the shape of epigynal foveolae. Leg formula 4123.

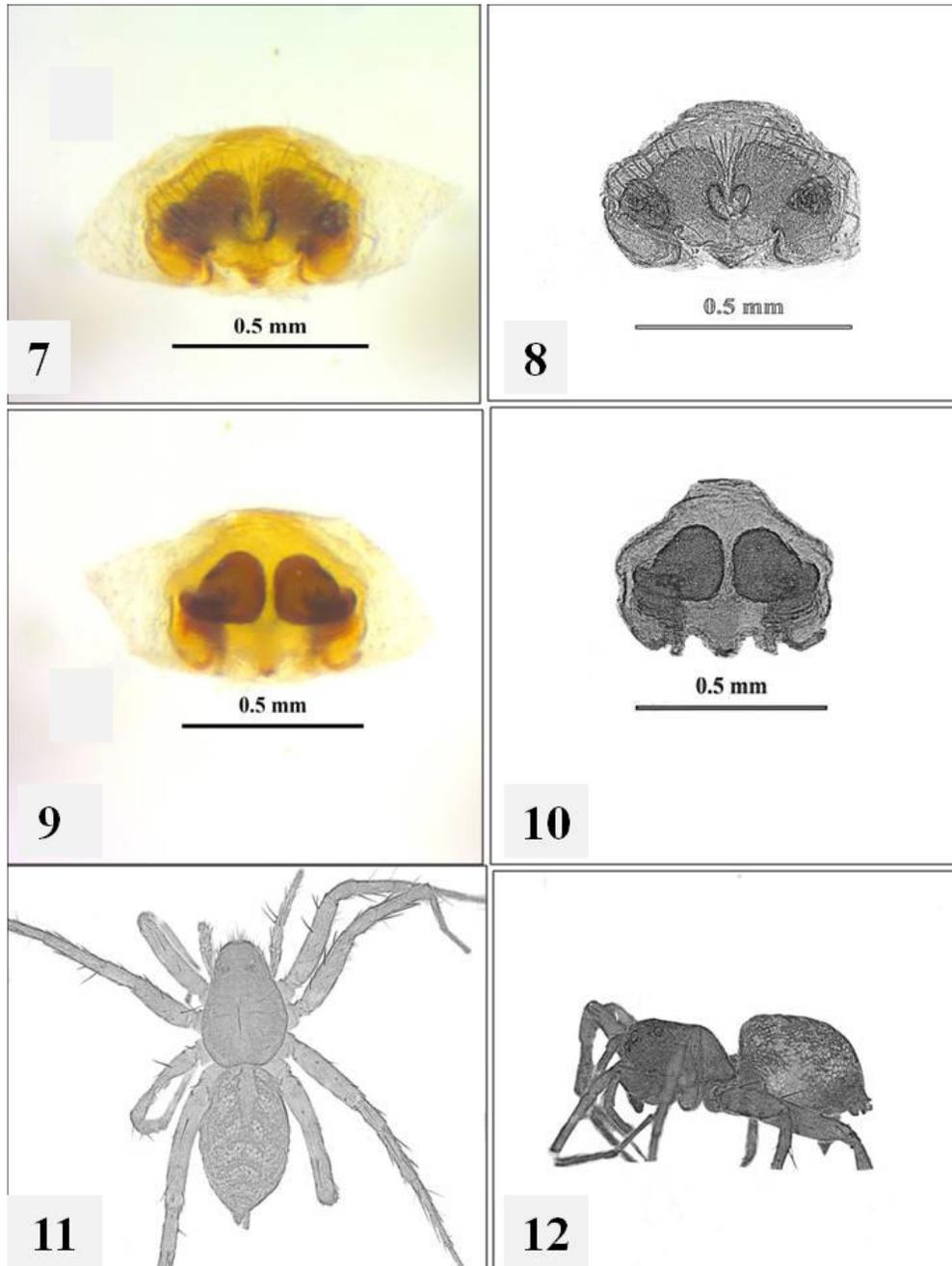
### Description

**Adult Female:** Total length- 5.77 Carapace 2.55 long and 2.03 wide. Opisthosoma 3.23 long and 2.05 wide.

**Carapace:** Carapace grayish brown to yellowish brown. Cephalic part grayish brown, median field in thoracic part lighter grayish brown to yellowish brown, wide around fovea and not extending behind its rear end. Edges of light field jagged but indistinct. The lighter field is roughly star shaped. Sides of thoracic part with short, black recumbent hairs and light recumbent hairs, median field with light recumbent hairs. Clypeus yellowish brown. Sternum yellowish brown with white and dark pubescence, labium small, two times wider than long. Chelicerae brown with whitish and dark erect pubescence and few long dark hairs.



**Figs 1-6.** *Wadicosa prasantae* sp. nov. 1. Habitat; 2. Dorsal view (Preserved specimen); 3. Ventral view; 4. Lateral view; 5. Eye pattern (frontal view); 6. Sternum with labium and mandite.



**Figs. 7-12.** *Wadicosa prasantae* sp. nov. 7. Epigyne (dorsal view); 8. Epigyne (sketch of dorsal view) ; 9. Epigyne (ventral view);10. Epigyne ( sketch of ventral view) 11. Habitus (Dorsal view); 12. Habitus (lateral view)

**Eye size and mutual distance between eyes:**

Width of row I 0.35, row II 0.63, row III 0.80, row II-III 0.13, row IV 1.04. AME-0.16, ALE- 0.10, PME-0.23, PLE-0.22; AME: AME-0.13, AME: ALE-0.02, ALE: PME-0.12, PME: PLE-0.30. Clypeus height 0.19. Ocular quadrangle covers with long white recumbent hairs. First row of eye is slightly procurved. Posterior eye quadrangle trapezoid, second eye row shorter than third row. Posterior median eyes are largest and anterior lateral eyes smallest. Width of II-III row of eyes is roughly half the diameter of PME.

**Abdomen:** Dorsum with alternate blackish and yellowish pattern of bands. Lanceolate stripe light grayish and distinct. The anterior light patch on each side of lanceolate stripe is not larger. Two rows of alternate dark and light patches starting at each side of lanceolate stripe continue backwards. These light patches are transversely more or less confluent at midline behind lanceolate stripe. Dorsum with light and dark recumbent hairs, sides with numerous long light hairs. Venter pale yellowish with numerous whitish granules scattered throughout the venter. Sides of the venter are grayish with long recumbent hairs. Numerous short, light recumbent hairs are present on the venter.

**Legs:** Legs yellowish, femur with two dark rings. Small black hairs present. Dorsal side of leg bears spines. Ventral erect lighter hairs scattered throughout the legs. Metatarsus of 4th leg is longest. Femur of 4<sup>th</sup> legs is longer than the other. Leg measurements are provided below

**Epigyne:** Epigynal cavity wider than long, posteriorly open to its entire width. Copulatory openings concealed within each epigynal corner. Spermathecae large and prominent, somewhat triangular, situated close to midline. Central part of epigynal cavity occupied by elevated, rather wrinkled, more or less funnel shaped septum tapering backwards. Anterior to this funnel shaped septum two incomplete elongated foveolae are situated which are confluent posteriorly and open anteriorly (fig 7-10).

**Remarks:** the newly recorded species is closely resemble with the *W. quadrifera* and *W. fidelis* but differ from the former two in the following characters. In the former two the width of II- III row of eyes is almost same as the width of II row of eyes. But in the new species it is much less than that of II row of eyes. The width of II-III row of eyes is much smaller in the recorded species in comparison to former two species. It is almost half the diameter of PME but in other species it is roughly three times the diameter of PME. In other two species the sternum dark grey but in the recorded specimen it is yellowish brown. In *W. fidelis* the spermathecae roughly spherical but in the recorded species it is triangular. In the former species the epigyne bears more or less triangular septum but in the new species it is funnel shaped. In the former species two elongated foveolae are situated which are more or less confluent and open posteriorly. But in the new species the two foveolae confluent posteriorly and open anteriorly. Hence due to the above differences it can be concluded that the recorded specimen is a new species.

**Distribution:** India (Rice field (agricultural field) of Sonitpur District, Assam).

**Table 1:** Leg measurements of female *Wadicosa prasanti* sp. nov.

Leg	Coxa (mm)	Trochanter (mm)	Femur (mm)	Patella (mm)	Tibia (mm)	Metatarsus (mm)	Tarsus (mm)	Total (mm)
I	0.70	0.27	1.42	0.71	1.42	1.40	1.06	6.98
II	0.68	0.29	1.20	0.50	1.37	1.20	0.65	5.89
III	0.72	0.19	1.55	0.46	1.16	0.85	0.70	5.63
IV	0.95	0.25	2.27	0.62	1.99	3.35	1.30	10.73

**Leg formula:** 4123.

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## REFERENCES

- Churchill TB and Arthur JM. 1999. Measuring spider richness: effects of different sampling methods and spatial and temporal scales. *J Insect Conservation* 3: 287-295.
- Gravely FH. 1924. Some Indian spiders of the family Lycosidae. *Records of the Indian Museum* 26: 587-613.
- Kronstedt T. 1993. Species of *Wadicosa* (Araneae: Lycosidae): revised generic allocation of *Lycosa quadrifera* Gravely from Sri Lanka and India. *J Natural History* 27: 313-321.
- Kronstedt T and Zyuzin AA. 2009. Fixation of *Lycosa fidelis* O. Pickard Cambridge, 1872 as the type species for the genus *Wadicosa* Zyuzin, 1985. (Araneae: Lycosidae): with a redescription of the species. *Contributions to Natural History* 12: 813-828.
- Platnick NI. 2014. The world spider catalog, version 14.5. American Museum of Natural History, Online at <http://research.amnh.org/entomology/spiders/catalog/index.html> (accessed at 13<sup>th</sup> March, 2014).
- Sutherland WJ. 1996. Ecological census techniques. A handbook. Cambridge, Cambridge University Press.
- Tikader BK and Malhotra MS. 1980. Lycosidae (wolf-spiders), The Fauna of India. Araneae. Vol-1, Part 2 (Delhi: Manager of Publications, Government of India), pp. 249-446.
- Uetz GW and Unzicker JD. 1976. Pitfall trapping in ecological studies of wandering spiders. *J Arachnology* 3: 101-111.
- Yin C, Peng X and Zhang Y. 1997. One new species of the genus *Wadicosa* (Araneae: Lycosidae) from China. *Acta Arachnologica Sinica* 6 (2): 99-101.
- Zyuzin AA. 1985. Generic and subfamilial criteria in the systematic of the spider family Lycosidae (Aranei), with the description of a new genus and two new subfamilies. *Trudy Zoologicheskogo Instituta, Leningrad* 139: 40-51. [In Russian with English abstract.]