ISSN 0375-1511

Rec. zool. Surv. India : **113**(Part-3):41-47, 2013

FIRST RECORD OF THE GENUS *NESTICODES* SIMON, 1894 FROM INDIA WITH TAXONOMIC STUDIES ON A RED COB-WEB-SPIDER *NESTICODES RUFIPES* (LUCAS, 1846) (ARANEAE : THERIDIIDAE) FROM WEST BENGAL, INDIA

S. TALUKDAR AND A.K. SANYAL
Zoological Survey of India Pranivigyan Bhavan
M-block, New Alipore, Kolkata -700053

INTRODUCTION

Araneid Taxonomy in India was initially started with Westwood (1835). Many other workers like Blackwell(1864), Stoliczka (1869), Thorell (1877), Pocock (1895), Tikader (1966, 1970, 1977, 1977, 1980, 1982 & 1987), Tikader & Biswas (1981), Tikader & Gojbe (1982). Biswas 1985, Biswas & Biswas 1992, Saha *et al.,* (1995), Majumder & Tikader (1991), Majumder (2004), Saha & Roychowdhuri (2004), Majumder & Talukdar (2006, 2008), Sebastian & Peter (2009) and many more contributed in this field of study. But the first comprehensive literature regarding the same was *The fauna of British India including Ceylon and Burma*: *Araneae* published by Pocock in 1900 and after the publication of the Hand book of Indian spiders by Tikader in 1987 studies in this group has got special impetus among the budding taxonomist in India and adjacent countries. Studies on Theridiied spiders of India also were initiated by Westwood(1835). Later Doleschall (1857), Fanfold (1867), Cambridge (1869), Thorell (1870), Simon (1895) Lerado (1902) and Patel (1973) along with some other worker made much contribution in this field. Finally extensive studies on the spider family Theridiidae from India was executed by Tikader during 1963-1977.

The genera of the family Theridiidae can be distinguished into six groups based on their habit and habitat (Murphy & Murphy, 1993). Genus *Nesticodes* are included in the group of genera which are found in the habitat like building or shrubs along with other genera namely *Achaearanea*, *Anelosimus, Enoplognatha and Theridion,* out of which only two genera (*Achaearanea and Theridion)* have yet been reported from India. Due to their identical size and appearance and due to unavailability of proper generic key of these genera these Spiders have been advised to identify on the basis of their web structure (Ganesh Kumar & Silwal , 2007).

Spider fauna of Bibhuti Bhusan Wildlife Sanctuary at Parmadan in North 24 Parganas District of West Bengal has not yet been studied in a comprehensive manner. Fauna of the order Araneae from the state of West Bengal has been described by Biswas and Biswas, 1992. Besides there are several published records from the state of West Bengal (Pocock, 1900 & 1901; Simon 1906; Gravely 1931; Sinha 1951; Tikader 1970; Tikader 1980 & 1982; Sethi & Tikader 1988; Majumder & Tikader 1991; Biswas & Biswas 1992, Talukdar & Majumder, 2007) as well as from India on taxonomy of spider fauna (Tikader, 1970, 1977, 1977, 1980 & 1982; Tikader & Biswas 1981; Tikader; Tikader & Gojbe 1982; Biswas 1985). But in these publications there is no mention of the Red Cob-Web-Spider *Nesticodes rufipes* (Lucas, 1846) from any part of India.

In recent years the authors had surveyed the whole areas of this Wildlife Sanctuary in different seasons during 2008-2010 for studying the habitats, behavior and diversity of spider along with other arthropods to prepare a faunal inventory from this environment towards the goal of conservation. During their surveys, the authors came across some 0.8cm-1cm long *Nesticodes rufipes* spiders belonging to the family Theridiidae Sundevall, 1833 under the old furniture of the Forest rest house of Parmadan at an altitude of 68ft. between the GPS co-ordinate of 23°11'18.26″ E and 88°45'53.45″N of the state of West Bengal and conducted taxonomic studies on this fauna.

MATERIALS AND METHOD

A. The Study Area : The present work was initiated from Spread out over 640 hectares of forest land with a variable altitudes between 50 - 90ft. from sea label. The forest land is bounded on all its three sides by the River Ichamati while the eastern side is bounded by adjoining village areas namely Parmadan and Jhupa. The sanctuary is also known as Parmadan Deer Park and is around 150 km North-East from Kolkata between the GPS Co-Ordinates of 88° 46' 03.03″-88° 45' 13. 18 "E in East–West direction and 23° 11′ 22.62″-23° 10′ 46.87″ N in North to South. More than 65 % of the sanctuary is encircled by the River Ichhamoti along the North-West to South-East boundary. The nearest major town is Bongaon, which is around 30 kms away.

i. **Vegetation :** Main trees of the forest are arjan, shrish, minjiri, tut, shimul, shirish and bamboo trees, strew the landscape along with about 209 species of angiosperms altogether cover the floral biodiversity which contain 59 trees, 98 harbs, 34 shrubs, 15 climbers and 3 creepers.

ii. **Climate** : The climate is tropical, like the rest of the Gangetic West Bengal. The hallmark is the Monsoon, which lasts from early June to mid-September. The weather remains dry during the winter (mid of November to mid-February) and humid during summer. Annual Rainfall is 1,579 mm (Normal in Southern Bengal), Atmospheric temperature ranges between 41˚C in May (Max) and 10˚C in January (Min) and Relative Humidity Between 50% in March & 90% in July.

B. Collections : Spiders were collected from the study areas directly from the webs by hand picking method, sweeping insect net (129cm in diameter) and by beating the furniture's in to an inverted umbrella. A Sunca electronic emergency lamp was used during night collection.

C. Preservation : Collected spider specimens were anaesthetized, killed in a killing jar and finally preserved in Oudman's preservative (90 parts 70% ethanol, 5parts glycerol and 5 parts glacial acetic acid) in glass vials.

D. Identification : Well preserved spider specimens were sorted and transferred in a Petri dish containing ethyl alcohol and studied under binocular microscope. The specimens were identified up to species level. Photograph of the specimens were taken by Nikon D60 Digital SLR and Sony Mini DV DCR-HC42E.

SYSTEMATIC POSITION

Kingdom ANIMALIA
Phylum ARTHROPODA
Class ARACHNIDA
Order ARANEAE
Sub Order LABIDOGNATHA
Infraorder ARANEOMORPHAE
Family THERIDIIDAE Sundevall, 1833
Genus *Nesticodes* Archer 1950
Species *rufipes* (Lucas, 1846)

Type Species : *Theridion rufipes* Lucas 1846.

Type Locality : Oran, Algiers

Synonyms :

Theridion rufipes Lucas, H. 1846. Histoire naturalle des animauxarticulés. *Exploration Scientifique de l'Algérie. Zoologie* **1** (Arachn.) : 89–271 [263].

Nesticodes Archer 1950, p. 22; type *Theridion rufipes* Lucas, 1846; removed from the synonymy of *Theridion* Walckenaer, 1805 by Wunderlich, 1987a: 214, contra Levi, 1957a: 19.

Nesticodes rufipes. Archer, 1950: 22, pl. II, f. 7-8 (T mf from *Theridion*).

Theridion luteolum Blackwell, J. 1859. Descriptions of newly discovered spiders captured by James Yate Johnson Esq., in the Island of Madeira. *Annals and Magazine of Natural History,* **4**: 255–267 [259].

Anelosimusnelsoni Bryant, E.B. 1945.Notes on some Florida spiders. *Transactions of the Connecticut Academy of Arts and Sciences,* **36** : 199–213 [200].

Robertuspilosus Denis, J. 1956. Notes d'aranéologiemarocaine.—VI. Bibliographie des araignées du Marocet addition d'espècesnouvelles. *Bulletin de la Société des Sciences Naturelles du Maroc* **35,** : 179-207 [203].

Theridion borbonicum Vinson, A. 1863., *Aranéides des îles de la Réunion, Maurice et Madagascar*. Paris : A la Librairie Encyclopédique de Roret pp. 1–337 [318].

Theridion luteipes Cambridge, O.P.- 1869. Catalogue of a collection of Ceylon Araneidae lately received from Mr J. Nietner, with descriptions of new species and characters of a new genus. I. *Journal of the Linnean Society of London, Zoology* **10,** : 373 - 397 [382].

Theridion albonotatum Taczanowski, L. 1872.Les aranéides de la Guyanefrançaise. *Horae Societatis Entomologicae Rossicae,* **9** : 64-11 [56].

Theridion bajulans Koch, L. in Koch, L. & Keyserling, E. [1871–1883] 1875.*Die Arachniden Australiens*. Nürnberg : Bauer & Raspe pp. 1 [21].

Theridion flavoaurantiacum Simon, E. 1880.Matériaux pour servir à unefauneara-chnologique de la Nouvelle Calédonie. *Annales de la Société Royale Zoologique de Belgique,* **23** (C.R.) : 164 – 175 [171] [as *flavo-aurantiacum*].

Theridion longipes Hasselt, A.W.M. van 1882. Araneae. *In* Weth, P.J. (ed.) *Midden Sumatra IV.3de A flev. Naturlijke Historie*. Leiden, 11A: 1-56 [33].

Diagnostic Characters

Dark brown, slightly mottled, globular abdomen with red-brown legs and cephalothorax. It builds a small, tangled web in dark corners and under the furniture inside houses or under rims of garden pots and similar structures. Epigynum with a spherical sclerotized plate; a pair of openings situated anterior part of the plate. Conductor of male palpus large, nearly as high as wide, and has two basal spurs; embolus forming a stout tube; median apophysis situated behind embolus. All coxae of male legs distally with a retrolateral cone.This genus resembles *Theridion*, but is distinguished from the latter by the epigynum with a spherical plate, conductor of male palpus nearly as high as wide and the abdomen without distinct cardiac pattern.

Materials Studied :

Observed 10 specimens in the field at their original habitat measuring total length of 1cm-0.8cm long in living posture while the body length of the preserved specimen measured female: 7 mm and male: about 3 mm by S. Talukdar, 7 female and 3 male at Bibhuti Bhusan Wildlife Sanctuary, Parmadan, Bongaon, North 24 Parganas, West Bengal 26.xi.2008. coll and Examinned: S. Talukder.

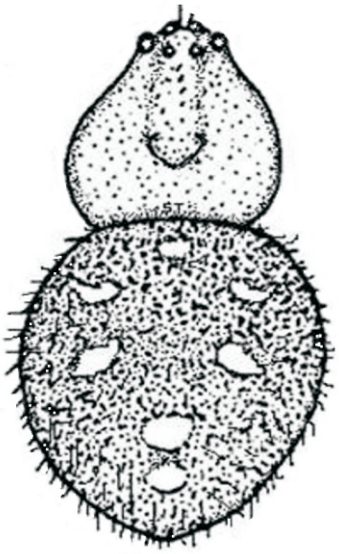
Distribution : Algiers : Oran, Japan: Amami-oshima Is., Minami-daito Is, and Iriomote Is. of the Nansei Islands. Widely distributed in tropical area of the world. India : Bibhuti Bhusan Wildlife Sanctuary, Parmadan, Bongaon, North 24 Parganas , and West Bengal (Through this text).

Habit* and *Habitat : This species builds a small, tangled web in dark corners inside a house, or under the furniture and rims of garden pots and similar structures; its round egg sac is often found nearby, the web also serving as a retreat . They are generally nocturnal hunter and found on roaming over the wall while hunting. They prey insects from nearby areas of domestic electric lamps.

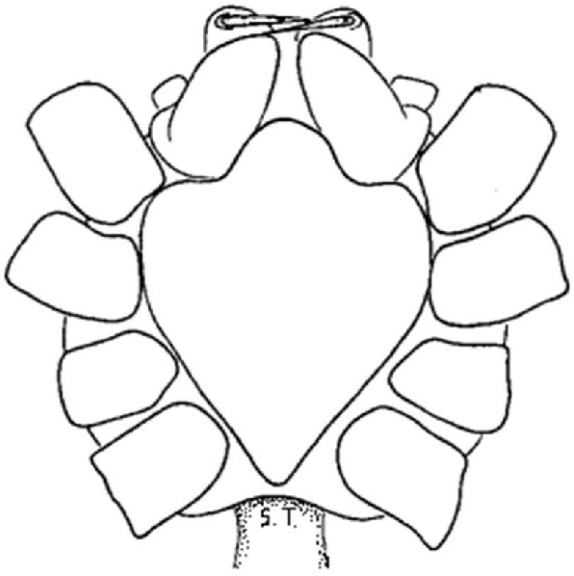
Common Name : Red Cob-Web –Spider or Red Comb Legged Spider.

Economic Importance : Like all other spiders (Except Spiders of family Uloboridae) particularly the Theridiied spiders *Nesticodes rufipes* (Lucas, 1846) also have neurotoxin poisons in their lively uses and are considered to be

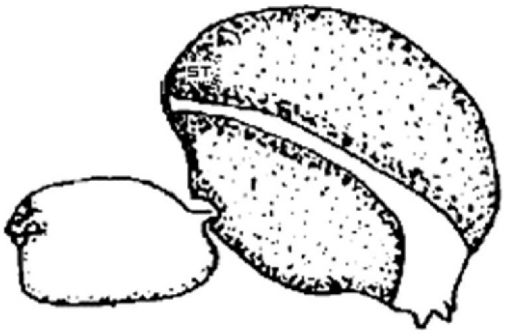
External Morphology of *Nesticodes rufipes*



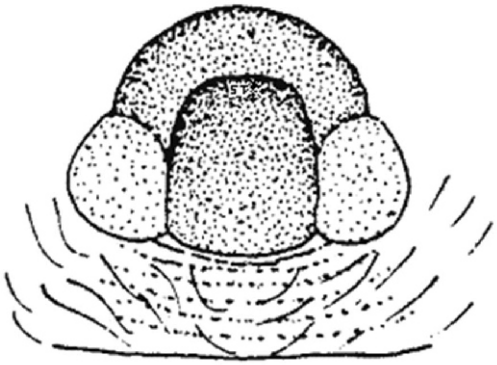
DORSAL VIEW



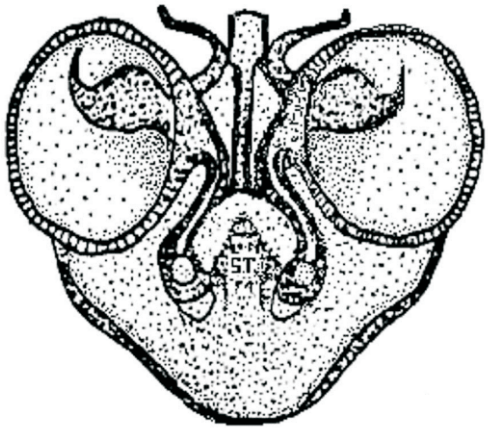
STERNUM



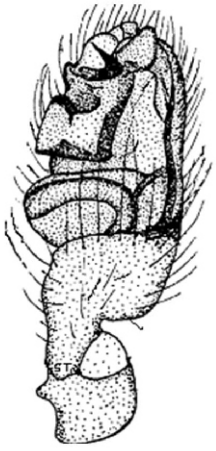
LATERAL VIEW



EPIGYNE



LATERAL VIEW



PEDIPALP

Dorsal View

Dorso - Lateral View

Mother with Egg Sacs

Ventral View

Ventro - Lateral View

medicinally important to human being. As comb-legged Spiders are used by the tribals of rural areas of the hills as drug for the treatment of Dysmenorrhoea and pain removing purposes as their traditional medicines significance of the poisons of *Nesticodes rufipes* towards ethno and modern medicinal use is noteworthy. The absolute insect predating feeding behavior of this group of animal naturally controls the pest insects and play causative function in agriculture and domestic hygiene.

DISCUSSION AND CONCLUSION

As spider from this genus *Nesticodes* have never been collected or reported from India as well as from the sub-continent, the present study was proved to be significant from the zoo-geographical point of view. Discovery of the habitat of this spider in the particular study area i.e. Gangetic Plane-ecosystem in this Subcontinent also noteworthy . Description and taxonomic record of this spider species have been highlighted in this paper as database for future study. Occurrence of this spider is significant from the viewpoint of biodiversity and distributional pattern as hither to unrecorded from the same habitat of this geographical area. Socio-Economic importance and possibilities as a bio-medicinal resource for exploitation enlighten the importance of conservation of this Biodiversity.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. K. Venkataraman, Director, Zoological Survey of India for kind permission to carry out the work. The Author express their indebtedness to the Forest department of West Bengal for providing facilities and necessary permission to conduct this study into the conservation area. Thanks are due to all supporting technical and scientific staff of Zoological Survey of India for their support to materialize the work without which the work could not have been completed.

REFERENCES

Biswas, B.K. and K. Biswas. 1992 *Fauna of West Bengal* : Araneae : Spiders, *State Fauna Seris,* **3** : 357-500.

Gravely, F.H. (1931) Some Indian spiders of the families Ctenidae, Sparassidae, Selenopidae and Clubionidae. *Rec. Ind. Mus. Calcutta,* **33:** 211-282.

Blackwell, J. (1864] Description of seven new species of East Indian spiders received from the Rev. O.P. Cambridge. *Annals and Magazine of Natural History,* (3) **14** : 36-45.

Blackwell, J. (1867] Description of several species of East Indian spiders, apparently to be new or little known to arachnologists. *Annals and Magazine of Natural History,* (3) **19** : 387-394.

Ganesh Kumar, M and Silwal, M., 2007. First record of *Achaearane abrookesiana* Barrion & Litsinger, 1995 (Araneae: Theridiidae) from main land India, *Zoo's Print Journal,* **22**(12): 2926-2928.

Majumder, S.C. and Talukdar, S. (in press) Studies on Taxonomy and Diversity of spiders from Darjeeling hills (with special reference to family Clubionidae in light of conservation along with new Geographical records of 21 species, 6 genera and 4 families) : Occ. pap. 340: 1-96 with colour plate in *Rec. zool. Surv, India.*

Majumder, S. C. and B. K. Tikader, 1991. Studies on some spiders of the family Clubionidae from India, *Rec. zool. Surv. India*, Occ. Pap. **102** : 1 –175.

Pocock, R. 1899. Diagnoses of some new Indian Arachnida. *J. Bombay nat. Hist. Soc.*, **12**:744-753.

Pocock, R. 1900. *The Fauna of British India, Arachnida*, London: 1-279.

Pocock, R. 1901. Description of some new species of spiders from British India, *J. Bombay nat. Hist. Soc.*,**13** : 478-498.

Saha, S. & D. Raychaudhuri. (2004). A survey of spiders (Araneae: Araneidae) of Jaldapara Wildlife Sanctuary, West Bengal, with description of a new *Zilla* species. *Entomon,* **29:** 245-252.

Sebastian, P.A. and K.V. Peter, 2009. *Spiders of India*. Universities Press, Hyderabad, India : 614pp with 82 figures and 170 color pictures.

Sethi, V. D. and B. K. Tikader. 1988. Studies on some giant crab spiders of the family Heteropodidae from India, *Rec. zool. Surv. India,* Occ. pap. **93** : 1 –94.

Silwal, M. and Molur, S. 2006. Updated Checklist of Indian Spiders (Arachnida: Araneae) *Zoos's Print Journal*. **22**(2) **:** 2551-2597.

Simon, E. (1897). Mataeriaux pour servirae la faunearachnologique de l'Asiemaeridionale. V. Arachnides recueillisae Dehru-Dun (N. W. Prov.) et dans le Dekken par M. A. Smythies. *Maem. Soc. zool. France,* **10:** 252-262.

Sinha, T.B. 1951. Some Indian spiders of the family Argiopidae. *Rec. Indian Mus*., **49**: 67-88.

Talukdar, S. & Majumder, S.C. (2008) Diversity of spider fauna of Bortibeel, North 24 Parganas, West Bengal, their possible utilities as significant Biological pestcontrol in the paddy field ecosystem, *Rec. zool. Surv, India* : **108**(Part-2) : 39-45.

Tikader, B. K. 1987. Handbook *of India* Spiders, Zoological Survey of India, 1 – 251.

Tikader, B. K. (1962). Studies on some Indian spiders (Araneae: Arachnida). *J. Linn. Soc.* (Zool.) **44:** 561-584.

Tikader, B. K. 1970. Spider Fauna of Sikkim, *Rec. zool. Surv. India*, **64**(1-4) : 1-82.

Tikader, B. K. (1977). Studies on Spider Fauna of Andaman and Nicobar islands, Indian ocean. *Rec. zool. Surv. India*, **72**: 153-212.

Manuscript received : 21-05-2010; *Accepted* : 20-09-2012