



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2018; 6(1): 754-756

© 2018 JEZS

Received: 01-11-2017

Accepted: 02-12-2017

Ramesh Singh YadavIndependent Researcher,
Government School Dehariya,
Zamania, Ghazipur, Uttar
Pradesh, India

First report of *Nephila clavata* L. Koch, 1878 (Araneae: Araneidae) from Bihar and Uttar- Pradesh, India

Ramesh Singh Yadav**Abstract**

Spiders are notable natural enemies in terrestrial ecosystems. The present study is based on the specimens collected of the family Araneidae Simon, 1895 during the course of a field survey of the Uttar-Pradesh and eastern border area of Bihar in the month of October on October 15, 2017. The spiders were collected from the plantation of the *Tectona* by inverted umbrella method. Four female spiders' fauna have recorded and identified as *Nephila clavata* L. Koch, 1878. These fauna are the first confirmed records from the both provinces, Bihar as well as Uttar-Pradesh. The descriptions of the species have made based on the morphological characters. The identifying features of the species were elongated abdomen; cephalothorax with convex and elevated cephalic region. The Carapace provided with 'V' shaped yellow patch on the top. Morphometric measurement of the fauna was also presented in the paper.

Keywords: Bihar, araneidae, *Nephila*, spider, survey, Uttar Pradesh

Introduction

Spider belongs to the order Araneae which are the well specialized fauna in the terrestrial ecosystem. There are 46,967 species of 3988 genera from 114 families of spiders are known from throughout the world [1] and about 1685 species under 438 genera and 60 families from India [2]. Probably, the first Arachnological study was carried out in the late 19th century in the Country by Blackwall (1864) and first Indian species described as *Sphasus Lepidus* Blackwall, 1864 [3]. Some notable works were carried out by Pocock (1900) [4], Tikader (1977) [5], Tikader & Biswas (1981) [6], Tikader (1982) [7], Biswas and Majumder (1995) [8] and Biswas and Biswas (2003) [9] for Indian spiders. The credit of extensive work for Indian spiders goes to the Tikader. Thereafter, some studies came to the Indian spiders were Siliwal *et al* (2005) [3], Patel (2003) [10] and Saha *et al* (2016) [11]. There are not any consolidated reports of spiders from Bihar and Uttar Pradesh. The *Nephila clavata* L. Koch, 1878 belongs to family Araneidae Simon, 1895. The family Araneidae Simon, 1895 contains 147 species of 27 genera from India [3]. The genus *Nephila* Leach, 1815 have 4 species namely, *Nephila clavata* L. Koch, 1878, *N. kuhlii* (Doleschall, 1859), *N. pilipes* (Fabricius, 1793), *N. robusta* Tikader, 1962 and *N. pilipes jalorensis* (Simon, 1901) are recorded from India [3]. The genus *Nephila* Leach, 1815 is transferred into the family Tetragnathidae Menge, 1866 by Platnick (2005) [3] but presently species are mentioned in the family Araneidae Simon, 1895 in the world spider catalogue [1]. The genus *Nephila* is commonly called as orb weaver. They are predacious during their life to the varieties of insect pests. They are very potential predator due to their peculiar habits of prey capture. The distribution of the *Nephila* Leach, 1815 is well known from India and Japan [3]. The *Nephila clavata* L. Koch, 1878 have been recorded from Andaman and Nicobar Islands, Lakshadweep Island, Meghalaya, Shillong, Sikkim and West Bengal in India [8, 11]. The fauna are not representing to the Bihar and Uttar Pradesh. Therefore, the present investigation was carried out to explore the *Nephila* Leach, 1815 from the Bihar and Uttar-Pradesh, India.

2. Materials and Methods

(i) Study sites and collection: the surveys were made in the Nonar village of Kaimur (Bhabhua) district of Bihar and Ghazipur district the eastern Uttar-Pradesh. The districts are the border locality of both states divided by Karmanasha River.

Correspondence**Ramesh Singh Yadav**Independent Researcher,
Government School Dehariya,
Zamania, Ghazipur, Uttar
Pradesh, India

The survey site situated at 25.3297° N latitudes and 83.6408° E longitudes 25.4159° N latitudes and 83.5598° E longitudes in the Nonar (Bihar) and Ghazipur district (Uttar Pradesh) respectively. The Collections were made from *Tectona* plantation is situated very nearer to the bank of the river *Karmanash*. The site is moderately rich in floral diversity. The Edaphic system of locality is sandy loam soil having different grasses, pearl millet, sugarcane, Rice, *Bambusa* and forest trees. The specimens were collected by inverted umbrella method in the month of the October on October, 15, 2017 and collected specimens were killed into jars containing ethyl acetate soaked cotton and they were prepared, stretched and pinned for study. The specimens are to be deposited to the Department of Entomology and Agricultural Zoology, Faculty of Agriculture, Rajiv Gandhi South Campus, Banaras Hindu University, Mirzapur, U.P. (India).

(ii) Species identification: The adult specimens of the species were carefully studied for all details of morphological characters under high magnification hand lens. The species were separated from others with the help of available literatures and keys [7, 8]. The species was confirmed by Biswas and Biswas [9] and photographs were taken of the major parts of the identified species.

3. Results

In the present study *Nephila clavata* L. Koch, 1878 has recorded the first time from Bihar as well as Uttar-Pradesh. The details of the species are discussed below-

(i) Systematic Account

Phylum : Arthropoda
Class : Arachnida
Order : Araneae
Family : Araneidae Simon, 1895
Genus : *Nephila* Leach, 1815

(ii) *Nephila clavata* L. Koch, 1878

1878. *Nephila clavata* L. Koch, *Verh. Zool. Bot. Ges. Wien*, 27: 741.

1982. *Nephila clavata* Tikader, *Fauna of India*, Spiders: Araneae, 2 (1): 102.

1992. *Nephila clavata* Biswas and Biswas, *Fauna of West Bengal, Part III*. Araneae: Spiders. State Fauna Series No.3: 474.

(iii) Materials examined: INDIA, Uttar-Pradesh, Udharanpur (U.P.) 3♀, Nonar (Bihar) 1♀, 15.X.2017, on *Tectona*, Coll. RS Yadav.

(iv) Diagnosis and description: Female (Fig. 1-5): The body is large in size, coffee grey in colour with zigzag white lateral marking pattern. The *Nephila clavata* females were easily distinguished by their beautiful colourations on opisthosoma (when it alive). The Yellow colour 'V' shape marking on the dorsal of carapace is her distinguishing feature. The cephalic region was convex and the posterior portion of cephalothorax was greenish in colour. The antennae were hairy and about 10 segmented. The ocular quad was nearly square in shape. The legs were very long, clothed with spines, the metatarsi longer than tibiae and patella, joint of tibia and tarsus of each leg ventrally yellow in colour. The Vulva was not well developed.

Male: Male specimens of spiders were not found.



Fig (1-5): *Nephila clavata* L. Koch, 1878: 1. Habitat 2. Specimen of Bihar (dorsal view) 3. Specimen of U.P. (dorsal view) 4. Antennae and 5. Cephalothorax (dorsal view)

Table 1: Measurements of body of *Nephila clavata* L. Koch, 1878 (all measurements in mm)

S. No	Body parts	Female (♀)
1.	Length of Body	32.40
2.	Antennae	12.00
3.	Cephalothorax	7.80
4.	Length Carapace	24.60

(iv) Distribution: Andaman and Nicobar Islands, Bihar (new record), Lakshadweep Island, Meghalaya, Shillong, Sikkim, Uttar Pradesh (new record) and West Bengal in India.

4. Discussion

The genus *Nephila clavata* L. Koch, 1878 comes under the family Araneidae Simon, 1895. The family Araneidae Simon, 1895 have 147 species of 27 genera are known from India [3]. Leach, 1815 has firstly described the genus *Nephila*. Presently, the genus *Nephila* Leach, 1815 has 4 species namely, *Nephila clavata* L. Koch, 1878, *N. kuhlii* (Doleschall, 1859), *N. pilipes* (Fabricius, 1793), *N. robusta* Tikader, 1962 and *N. pilipes jalorensis* (Simon, 1901) are recorded from India and the genus *Nephila* Leach, 1815 is transferred into the family Tetragnathidae Menge, 1866 by Platnick (2005) [3] but presently species is mentioned in the family Araneidae Simon, 1895 in the world spider catalogue [1]. Biswas and Majumder (1995) stated that the genus *Nephila* Leach, 1815 are distributed in tropical countries and rarely sub-tropical countries of the world [8]. The species, *Nephila clavata* L. Koch, 1878 is previously recorded from Andaman and Nicobar Islands, Lakshadweep Island, Meghalaya, Shillong, Sikkim and West Bengal in India [8, 11]. The identifying features are mostly similar with the Tikader, Biswas and Majumder [7, 8]. The literatures reveal that the species is not known from Bihar and Uttar-Pradesh till date. In the present study, 5 female individuals have recorded from the *Tectona* orchard from Nonar (Bihar) and Ghazipur (Uttar Pradesh) on the bank of the river Karmanasa who dividing the both states and fauna identified as *Nephila clavata* L. Koch, 1878. This is the first record from the Bihar and Uttar-Pradesh. The morphological descriptions and measurements of the relevant body parts are provided.

5. Conclusion

The aim of the present study is to provide Information regarding The *Nephila clavata* L. Koch, 1878 of the family

Araneidae Simon, 1895 from the Bihar and Uttar-Pradesh. The *Nephila clavata* L. Koch, 1878 is confirmedly first record from the Bihar and Uttar-Pradesh. However, several survey works have been made on this group of Arthropoda but *Nephila clavata* L. Koch, 1878 fauna was neglected so far by zoologist from the both provinces, Bihar and Uttar-Pradesh.

6. References

1. World spider catalog. World spider catalog. Natural History Museum Bern, online at <http://wsc.nmbe.ch>, version 18.5, accessed on, 2017. Doi: 10.24436/2.
2. Keswani SP, Hadole P, Rajoria A. Indian journal of Arachnology. 2012; 1(1):1-129.
3. Saliwal M, Molur S, Biswas BK. Indian spiders (Arachnida: Araneae): updated checklist 2005. Zoos' Print Journal. 2005; 20(10):1999-2049.
4. Pocock RI. Fauna of British India, Arachnida. Taylor & Francis, London. 1900, 279.
5. Tikader BK. Studies on spider fauna of Andaman and Nicobar Islands, Indian Ocean. Rec. Zoology Survey of India. 1977; 72:153-212.
6. Tikader BK, Biswas B. Spider fauna of Calcutta and vicinity: Part-1. Record of the Zoological survey of India, Occasional paper. 1981; 30:1-149.
7. Tikader BK. Fauna of India, Araneae Spiders, Zoology Survey of India, Kolkata. 1982; 2:536.
8. Biswas B, Majumder SC. Araneae: Spider. State Fauna Series 4: Fauna of Meghalaya, Zoological Survey of India. 1995; 2:93-128.
9. Biswas B, Biswas K. Araneae: Spiders. State Fauna Series 9: Fauna of Sikkim, Zoological Survey of India. 2003; (2):67-100.
10. Patel BH. Fauna of Protected Area 2: A preliminary list of spiders with description of three new species from Prambikulam Wildlife Sanctuary, Kerala. Zoos' Print Journal. 2003; 18(10):1207-1212.
11. Saha S, Roy TK, Raychaudhuri D. Survey on spider faunal diversity of Darjeeling tea plantations. Mun. Ent. Zool. 2016; 11(2):622-635.