



Research Paper

FAUNAL DIVERSITY OF OONOPIDAE (ARANEOMORPHAE: ARANEAE: ARACHNIDA) IN INDIA

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Abstract

The present article deals with the faunal diversity of the spiders belonging to the family Oonopidae. In India, the Oonopidae is represented by 52 species in 15 genera in 15 states and 2 union territories and out of them 34 species are endemic. In India, *Triaeris* Simon, 1890 is the largest genus consisting of 7 species. Maximum 13 species of these spiders were recorded in Tamil Nadu followed by 11 species in Maharashtra, 9 species in West Bengal, 8 species in Gujarat, 7 species in Meghalaya and so on. Strangely, no oonopid spiders are recorded in larger states of India like Andhra Pradesh, Bihar, Punjab, Rajasthan, Telangana and other states are very poorly represented by these spiders and need extensive research.

Key words: Oonopidae, globin spiders, faunal diversity, checklist.

INTRODUCTION

Spiders are chelicerate arthropods (Araneae: Arachnida) being highly diverse and abundant terrestrial predators. Their presence is often related to the structural quality of the ecosystems, due to their effect on biocontrol of arthropods, usually insects [1]. Despite knowing this fact, little is known about the spider fauna in agricultural areas. The order Araneae ranks seventh in global diversity (49,154 species) [2]; after the five largest insect orders (Coleoptera – ca. 4,00,000 species, Lepidoptera – ca. 1,80,000 species, Hymenoptera – ca. 1,50,000 species, Diptera – ca. 1,25,000 species, Hemiptera – ca. 50,000 species) and one arachnid order (Acari – over 50,000 species) in terms of species diversity [3,4]. Out of them, only 1855 species belonging to 477 genera in 61 families are reported in India [5]. However, several species in wild and museum collections still await description and classification. It is estimated that only 20-30% of existing species have been described. Despite recent researches on the diversity and distribution of spiders in India, their number is inadequate as compared to other parts

of the world. Recently, the distribution pattern of 26 spider families is updated in India [3, 4, 6-14].

The spiders of the family Oonopidae are also known as goblin spiders, dwarf hunting spiders, dwarf six-eyed spiders and are usually small (1-3 mm) and because of this, they are seldom seen by people. They have scuta (hardened plates) on their abdomens and have usually 6 eyes, but few members may have 2 to 4 eyes and even maybe eyeless (living in caves). They vary widely in the shape of the carapace, arrangement of eyes, and degree of body sclerotisation. The members of Oonopidae are haplogyne (lack epigynes) having high morphological diversity and are unique among spiders in having completely fused testes [15]. These spiders are either ground-dwellers (in the leaf litters and under rocks [16], arboreal (in the canopy of tropical rainforests) [17], cavernicolous [18], live in ant-nests [19] or even inside termitarium [20]. Some goblin spiders are also found in deserts, savannahs, and mangroves [21]. They actively pursue their preys which are small insects (firebrats, collembolans) and mites. Few species construct delicate silk nests for resting and moulting [22].

Our knowledge on Indian Oonopidae is insufficient and highly patchy primarily due to the unexplored diversity of these spiders and extensive surveys were done only in a few states. There are several species of goblin spiders yet to be described and several species recorded from India have also been misidentified as several species reported from India are said to be identified by using existing literature without a re-examination of the corresponding types and without consulting any spider taxonomist. Hence, these reports need re-examination. At present, a moderate amount of knowledge of Oonopidae is available in India but the pieces of literature are all scattered and so far no consolidated account is available regarding their distribution pattern across the country. Therefore, this present work was taken up to provide up-to-date information of this family in the light of modern taxonomic concept.

MATERIALS AND METHODS

This checklist is based on the literature published in recent past books, journals and few authentic theses and World Species Catalogue up to 8 February, 2021 [2]. In most of the literature, published earlier, several errors crept in their scientific names even in the recent ones. It happened because such contents become outdated quickly and, due to their perceived comprehensiveness, readers sometimes overlook newer sources of data. Additionally, the researches on spider taxonomy are continued with the description of new taxa, their modified status, and the publication of other nomenclatural decisions [14]. If a spider species is identified only up to generic level, it was considered as species if no other species of that genus is reported within the state. In the present checklist, attempts have been made to correct the errors in the scientific names of the spiders following WSC [2]. Only those synonymies were mentioned that were reported in India, for other synonymies World Spider Catalogue may be consulted [2]. All the endemic species are marked with (*).

RESULTS AND DISCUSSION

In India, Simon [23] was the first to describe an oonopid spider, *Gamasomorpha clypeolaria* from Puducherry. Later on, Tikader [24, 25] described two species, *Triaeris khashiensis* Tikader, 1966 and *Ischnothyreus shillongensis* Tikader, 1968, both from Meghalaya. Thereafter, Tikader and Malhotra [26] described 4 species of *Triaeris* Simon,

1890 and one species of *Ischnothyreus* Simon, 1893 from Maharashtra. Thereafter, several species of these spiders were either described or recorded from many states in India. At present, 52 species are described or recorded under 15 genera in 15 Indian states and 2 union territories (Jammu & Kashmir and Puducherry, one species in each) and about two-thirds of the species (34 species) are endemic. However, Caleb and Sankaran [5] enlisted only 46 species of Oonopidae described under 13 genera. Indian record is only 2.8% of the world oonopid fauna (114 genera and 1872 species) [2], and most of the species are described or reported during the last two decades. None of the species of these spiders are described during the last 6 years.

In India, *Triaeris* Simon, 1890 is the largest genus consisting of 7 species. Maximum 13 species of these spiders were recorded in Tamil Nadu followed by 11 species in Maharashtra, 9 species in West Bengal, 8 species in Gujarat, 7 species in Meghalaya and so on. Strangely, no oonopid spiders are recorded in larger states of India like Andhra Pradesh, Bihar, Punjab, Rajasthan, Telangana and other states are very poorly represented by these spiders and need extensive research.

Following is the detailed list of these spiders distributed in Indian states and union territories and Elsewhere.

I. Specieswise check-list and distribution of oonopid spiders in India

1. *Aprusia kerala* Grismado & Deeleman, 2011*

- Kerala [27]

2. *Brignolia assam* Platnick et al., 2011

- Assam [28]

Elsewhere: Nepal

3. *Brignolia bengal* Platnick et al., 2011*

- West Bengal [28]

4. *Brignolia cardamom* Platnick et al., 2011*

- Kerala [28]
- Tamil Nadu [28, 29]

5. *Brignolia carlmulleri* Ranasinghe & Benjamin, 2016

- Gujarat [30]

Elsewhere: Sri Lanka

6. *Brignolia jog* Platnick et al., 2011*

- Karnataka [28, 31]

7. *Brignolia kaikatty* Platnick et al., 2011*

- Kerala [28]

8. *Brignolia karnataka* Platnick et al., 2011*

- Karnataka [28]

9. *Brignolia kodaik* Platnick et al., 2011*

- Tamil Nadu [28, 29]

10. *Brignolia kumily* Platnick et al., 2011*

- Kerala [28]
- Tamil Nadu [28, 29]

11. *Brignolia meemure* Ranasinghe & Benjamin, 2016

- Gujarat [30]

Elsewhere: Sri Lanka

12. *Brignolia nigripalpis* (Simon, 1893)

syn. *Gamasomorpha nigripalpis* Simon, 1893

- Maharashtra [32]
- Puducherry [28, 33]
- Tamil Nadu [31]

Elsewhere: Sri Lanka

13. *Brignolia nilgiri* Platnick et al., 2011*

- Tamil Nadu [28, 29]

14. *Brignolia parumpunctata* (Simon, 1893)

- Tamil Nadu [28, 29]

Elsewhere: Australia, Gambia, Indonesia, Pacific Is., Pakistan, Philippines, Seychelles, Sierra Leone, South America, Sri Lanka, Yemen

15. *Brignolia rothorum* Platnick et al., 2011

- Tamil Nadu [28, 29]

16. *Brignolia sukna* Platnick et al., 2011*

- West Bengal [28]

17. *Brignolia valparai* Platnick et al., 2011*

- Tamil Nadu [28, 29]

18. *Brignolia* sp.

- Gujarat [34, 35]
- Odisha [36]

19. *Camptoscaphiella fulva* Caporiacco, 1935

- Himachal Pradesh [37]
- Jammu & Kashmir [38]
- Uttarakhand [37]

Elsewhere: Pakistan

20. *Camptoscaphiella glenniei* (Fage, 1946)*

syn. *Triaeris glenniei* Fage 1946

- Uttarakhand [39, 40]

21. *Camptoscaphiella gunsa* Baehr, 2010

- Himachal Pradesh [37]

Elsewhere: Nepal

22. *Camptoscaphiella loebli* Baehr, 2010*

- West Bengal [37]

23. *Diblemma* sp.

- West Bengal [41]

24. *Dysderoides synrang* Grismado & Deeleman, 2014*

- Meghalaya [40]

25. *Dysderoides typhlos* Fage, 1946*

- Uttarakhand [39, 40]

26. *Gamasomorpha clypeolaria* Simon, 1907*

- Puducherry [23]
- Uttar Pradesh [42, 43]
- Tamil Nadu [29, 31]

27. *Gamasomorpha taprobanica* Simon, 1893

- Maharashtra [32]
- Tamil Nadu [33]

Elsewhere: Sri Lanka

28. *Gamasomorpha* sp.

- Odisha [36]
- Uttar Pradesh [43]

29. *Himalayana andreae* Grismado, 2014*

- West Bengal [40]

30. *Himalayana siliwalae* Grismado, 2014*

- West Bengal [40]

31. *Ischnothyreus deccanensis* Tikader & Malhotra, 1974*

- Maharashtra [26, 44]

32. *Ischnothyreus shillongensis* Tikader, 1968

- Meghalaya [25, 45]

Elsewhere: Bhutan

33. *Ischnothyreus* sp.

- Gujarat [35]

34. *Opopaea apicalis* (Simon, 1893)

syn. *Opopaea lena* (Suman, 1965)

- Arunchal Pradesh [46]

Elsewhere: Ecuador, Indonesia, Mexico, Pacific Is., Panama, Philippines, Seychelles, Thailand, USA

35. *Opopaea* sp.

- Gujarat [30]
- Kerala [47]
- Tamil Nadu [48]

36. *Orchestina* sp.

- Gujarat [35]
- Maharashtra [49]

37. *Orchestina truncatula* Tong & Li, 2011

- Maharashtra [50]

Elsewhere: China

38. *Pelcinus lachivala* Platnick et al., 2012*

- Uttarakhand [51]

39. *Pelcinus madurai* Platnick et al., 2012*

- Karnataka [51]
- Tamil Nadu [29, 51]

40. *Prethopalpus khasi* Baehr, 2012*

- Meghalaya [52]

41. *Prethopalpus madurai* Baehr, 2012*

- Tamil Nadu [29, 52]

42. *Prethopalpus mahanadi* Baehr, 2012*

- West Bengal [52]

43. *Prethopalpus meghalaya* Baehr, 2012*

- Assam [52]
- Meghalaya [52]

44. *Triaeris barela* Gajbe, 2004*

- Chhattisgarh [53]
- Madhya Pradesh [54, 55]

45. *Triaeris khashiensis* Tikader, 1966*

- Meghalaya [24, 45]

46. *Triaeris manii* Tikader & Malhotra, 1974*

- Gujarat [35, 56]
- Maharashtra [26]

47. *Triaeris melghaticus* Bastawade, 2005*

- Maharashtra [44, 57]

48. *Triaeris nagarensis* Tikader & Malhotra, 1974*

- Maharashtra [26, 44, 58]

49. *Triaeris nagpurensis* Tikader & Malhotra, 1974*

- Maharashtra [26]

50. *Triaeris poonaensis* Tikader & Malhotra, 1974*

- Gujarat [35, 56, 59, 60]
- Maharashtra [26, 44, 61]

51. *Triaeris* sp.

- Madhya Pradesh [62, 63]

52. *Trilacuna bangla* Grismado & Piacentini, 2014

- West Bengal [40]

Elsewhere: Nepal

53. *Trilacuna besucheti* Grismado & Piacentini, 2014

- Meghalaya [40]

Elsewhere: Myanmar

54. *Trilacuna loebli* Grismado & Piacentini, 2014

- Assam [40]

Elsewhere: Myanmar

55. *Trilacuna mahanadi* Grismado & Piacentini, 2014*

- West Bengal [40]

56. *Trilacuna meghalaya* Grismado & Piacentini, 2014*

- Assam [40]
- Meghalaya [40]

57. *Xyphinus baehrae* Kranz-Baltensperger, 2014

- West Bengal [64]

Elsewhere: Australia, Cambodia, Indonesia, Laos, Malaysia, Singapore, Sri Lanka, Thailand

II. Distribution of oonopid spiders in different states and union territories of India

A. Indian states

1. **Arunchal Pradesh:** *Opopaea apicalis*

2. **Assam:** *Brignolia assam*, *Prethopalpus meghalaya*, *Trilacuna loebli*, *Trilacuna meghalaya*

3. **Chhattisgarh:** *Triaeris barela*

4. **Gujarat:** *Brignolia carlmulleri*, *Brignolia meemure*, *Ischnothyreus*, *Opopaea* sp., *Orchestina* sp., *Triaeris manii*, *Triaeris poonaensis*
 5. **Himachal Pradesh:** *Camptoscaphiella fulva*, *Camptoscaphiella gunsa*
 6. **Karnataka:** *Brignolia jog*, *Brignolia karnataka*, *Pelcinus madurai*
 7. **Kerala:** *Aprusia kerala*, *Brignolia cardamom*, *Brignolia kaikatty*, *Brignolia kumily*, *Opopaea* sp.
 8. **Madhya Pradesh:** *Triaeris barela*
 9. **Maharashtra:** *Brignolia nigripalpis*, *Gamasomorpha taprobanica*, *Ischnothyreus deccanensis*, *Orchestina truncatula*, *Triaeris manii*, *Triaeris melghaticus*, *Triaeris nagarensis*, *Triaeris nagarensis*, *Triaeris nagpurensis*, *Triaeris poonaensis*
 10. **Meghalaya:** *Dysderoides synrang*, *Ischnothyreus shillongensis*, *Prethopalpus khasi*, *Prethopalpus meghalaya*, *Triaeris khashiensis*, *Trilacuna besucheti*, *Trilacuna meghalaya*
 11. **Odisha:** *Brignolia* sp., *Gamasomorpha* sp.
 12. **Tamil Nadu:** *Brignolia cardamom*, *Brignolia kodaik*, *Brignolia kumily*, *Brignolia nigripalpis*, *Brignolia nilgiri*, *Brignolia parumpunctata*, *Brignolia rothorum*, *Brignolia valparai*, *Gamasomorpha clypeolaria*, *Gamasomorpha taprobanica*, *Opopaea* sp., *Pelcinus madurai*, *Prethopalpus madurai*
 13. **Uttar Pradesh:** *Gamasomorpha clypeolaria*, *Gamasomorpha* sp.
 14. **Uttarakhand:** *Camptoscaphiella fulva*, *Camptoscaphiella glenniei*, *Dysderoides typhlos*, *Pelcinus lachivala*
 15. **West Bengal:** *Brignolia bengal*, *Brignolia sukna*, *Camptoscaphiella loebli*, *Diblemma* sp., *Himalayana andreae*, *Himalayana siliwalae*, *Prethopalpus mahanadi*, *Trilacuna bangla*, *Trilacuna mahanadi*, *Xyphinus baehrae*
- B. Union territories**
1. **Jammu & Kashmir:** *Camptoscaphiella fulva*
 2. **Puducherry:** *Brignolia nigripalpis*, *Gamasomorpha clypeolaria*

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