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Rajendra Singh

Department of Zoology,
Deendayal Upadhyay University
of Gorakhpur, Uttar Pradesh,
India

Garima Singh

Department of Zoology,
Rajasthan University, Jaipur
(Rajasthan), India

Akhilesh Sharma

Department of Zoology, S.P.P.G.
College, Shoharatgarh,
Siddharthnagar Uttar Pradesh,
India

Diversity of Yellow Sac Spiders (Cheiracanthiidae: Araneae: Arachnida) in India

Rajendra Singh, Garima Singh and Akhilesh Sharma

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Abstract

The present article deals with the distribution of one of the spider family Cheiracanthiidae (Araneae: Arachnida), commonly known as yellow sac spiders, in different Indian states and union territories and also provides an update checklist based on the literature published up to September 30, 2020. It includes total 38 species of yellow sac spiders described under only 2 genera in India. The records demonstrated that only four species of these spiders are widely distributed: *Cheiracanthium danieli* Tikader, 1975, *Cheiracanthium indicum* O. Pickard-Cambridge, 1874, *Cheiracanthium melanostomum* (Thorell, 1895) and *Cheiracanthium triviale* (Thorell, 1895). No yellow sac spider is reported from Chhattisgarh, Jharkhand, Haryana, Nagaland, Telangana and Ladakh yet. Species diversity is much more in Gujarat (14 species each) and Maharashtra (13 species) followed by Tamil Nadu (10 species), West Bengal (9 species), Madhya Pradesh and Uttarakhand (7 species in each), Kerala (6 species), and less number of species in other states. More than half (57.9%) species recorded in India are endemic. Despite their role as insect predators and being crucial to the health of terrestrial ecosystems, none of the species recorded in India is listed in IUCN Red List.

Keywords: Cheiracanthiidae, distribution, faunal diversity, India, yellow sac spiders.

Introduction

The Cheiracanthiidae Wagner, 1887 (syn. Eutichuridae Lehtinen, 1967) is one of the araneomorph (Araneomorphae: Opisthothelae: Araneae: Arachnida) spider family, the members of which are commonly known as yellow sac spiders. It includes 358 species under 13 genera globally [1]. The largest genus *Cheiracanthium* C.L. Koch, 1839 contains 218 species and has previously been placed in both the Clubionidae Wagner, 1887 and the Miturgidae Simon, 1886 [2]. They are usually pale in colour with yellow to light brown abdomen. Both sexes are small and vary from 0.5 to 1.0 cm in size. The body is often yellow and can range in color to tan, light brown, and pale green depending on location and diet. They have a brown stripe down the back of their abdomen. Their legs are long, with the first pair longer than the others. All legs have hard black hairs that make them superb climbers. A sac spider typically builds a flat silk sac as the place where it rests most of the daytime. Such silk sacs may be found in houses in the corners of walls and ceilings and outdoors under any object or in a leaf. In homes with light, neutral-coloured walls and ceilings, the silk sacs may go unnoticed, as they are small and blend in with the background colouration. The female yellow sac spiders produce about 5 silken egg sacs and lay 30-50 eggs inside it and remain nearby to guard them. The young spiderlings often remain within the silken sac for a while and come out at night in search of food. Yellow sac spiders are beneficial predators in agricultural fields, are also known to be mildly venomous to human beings. They are active foragers and they search for prey rather than capture it within a web as they never spin web. During foraging for prey at night in human dwellings, they may encounter humans and bite them. Their bite is usually very painful at the beginning, with developing redness, inflammation and itching of the skin. The burning sensation associated with the bite remains for an hour, with rash and blistering occurring during the next 1-10 hours [3].

In India, only 38 species of spiders belonging to the family Cheiracanthiidae are known described under only 2 genera: *Cheiracanthium* C.L. Koch, 1839 (37 species) and *Eutichurus* Simon, 1897 (2 species). These spiders are reported from 23 states of India and 2 union territories. Recently, the distributions of following taxa of spiders recorded from different states and union territories of India were updated: Mygalomorphae (tarantulas and their close kin) [4] and Salticidae [5, 6, 7, 8].

Corresponding Author:**Rajendra Singh**

Department of Zoology,
Deendayal Upadhyay University
of Gorakhpur, Uttar Pradesh,
India

The present article deals with the distribution of the family Cheiracanthiidae in different Indian states and union territories and provides an update checklist.

Materials & Methods

This checklist is prepared on the basis of the literature published in recent past books, journals and few authentic theses and World Spider Catalogue (WSC) up to 30 September, 2020. Several species reported and described from India have been misidentified and seems to be reported erroneously 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, such reports need re-examination. Also, 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 [6]. In the present checklist, attempts have been made to correct the errors in the scientific names of the spiders following WSC [1]. Only those synonymies were mentioned that were reported in India, for other synonymy WSC [1] may be consulted. All the endemic species are marked with (*).

Results and Discussion

The family Cheiracanthiidae includes 38 species described under 2 genera in India reported in this article. However, only 29 species of this family are reported earlier from India [9]. The additional records may either be erroneous report, escaped to mention or very recently revalidated, e.g. *Cheiracanthium sadanai* Tikader, 1976 [1]. The records demonstrated that only four species of Cheiracanthiidae are widely distributed in India, e.g. *Cheiracanthium danieli* Tikader, 1975, *Cheiracanthium indicum* O.P.-Cambridge, 1874, *Cheiracanthium melanostomum* (Thorell, 1895) and *Cheiracanthium triviale* (Thorell, 1895). No yellow sac spider is reported from Chhattisgarh, Jharkhand, Haryana, Nagaland, Telangana and Ladakh yet. Species diversity is much more in Gujarat (14 species) and Maharashtra (13 species) followed by Tamil Nadu (10 species), West Bengal (9 species), Madhya Pradesh and Uttarakhand (7 species in each), Kerala (6 species), and less number of species in other areas (Fig. 1). Extensive survey for these spiders is required in almost all states. These species are listed below along with references. Out of 38 species of the spiders listed below, 22 species (57.9%) are endemic to India. Some species reported earlier as endemic to India [10] are reported from other countries also. Despite the spiders are most diverse group of predators and being crucial to the health of terrestrial ecosystems, none of the species recorded in India is listed in IUCN Red List.

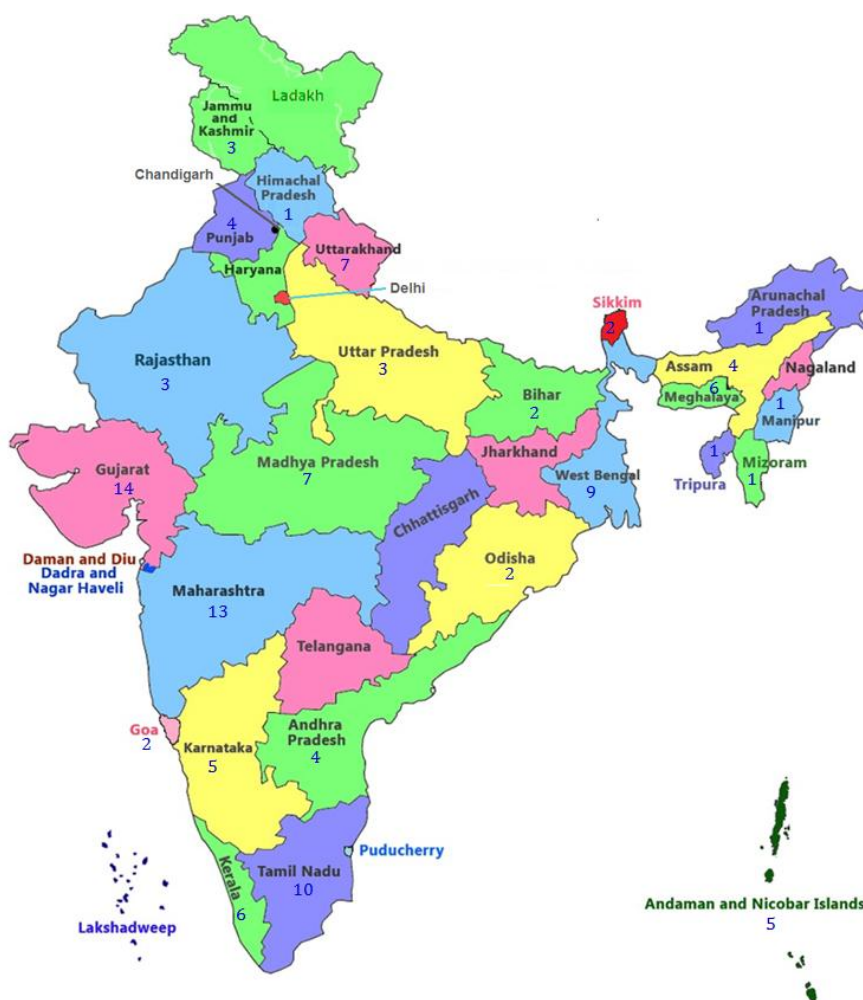


Fig 1: Number of species of yellow sac spiders (Cheiracanthiidae) in Indian states and union territories.

I. Specieswise List of Yellow Sac Spiders in Indian States and Union Territories**1. *Cheiracanthium adjacens* O. Pickard-Cambridge, 1885**

- NW Himalaya [11].
- Uttar Pradesh [12, 13, 14].

2. *Cheiracanthium aizwalense* Biswas & Biswas, 2007*

- Mizoram [15].

3. *Cheiracanthium approximatum* O. P.-Cambridge, 1885

syn. *Chiracanthium adjacens* O. Pickard-Cambridge, 1885, male only; *Cheiracanthium hugiscium* Barrion & Litsinger, 1995

- Himachal Pradesh [16].
- Jammu & Kashmir [17, 18].
- Punjab [16].

4. *Cheiracanthium conflexum* Simon, 1906*

- Kerala [19].
- Tamil Nadu [20, 21].

5. *Cheiracanthium conspersum* (Thorell, 1891)*

syn. *Eutittha conspersa* Thorell, 1891)

- Andaman & Nicobar Islands [11, 22].

6. *Cheiracanthium danieli* Tikader, 1975*

- Assam [23, 24].
- Gujarat [25].
- Karnataka [26, 27].
- Kerala [28, 29, 30].
- Maharashtra [11, 31, 32, 33, 34, 35, 36, 37].
- Odisha [38, 39, 40].
- Rajasthan [41, 42].
- Tamil Nadu [43].
- Tripura [44].
- Uttar Pradesh [45].
- Uttarakhand [46].

7. *Cheiracanthium furculatum* Karsch, 1879

- Gujarat [25, 47].

8. *Cheiracanthium himalayense* Gravely, 1931*

syn. *Cheiracanthium himalayensis* Gravely, 1931

- Maharashtra [11, 48, 49, 50, 51, 52, 53].
- Gujarat [11, 48, 49, 50, 51, 52, 53].
- Meghalaya [11, 48, 49, 50, 51, 52, 53].
- Uttarakhand [11, 52, 54].
- West Bengal [11, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58].

9. *Cheiracanthium inclusum* (Hentz, 1847)

- Maharashtra [59].

10. *Cheiracanthium incomptum* (Thorell, 1891)*

syn. *Eutittha incompta* Thorell, 1891

- Andaman & Nicobar Islands [11, 22].

11. *Cheiracanthium indicum* O. Pickard-Cambridge, 1874

- Meghalaya [11, 48, 49, 53, 60].
- Gujarat [11, 49, 53, 60].
- Kerala [19].
- Madhya Pradesh [11].
- Maharashtra [11, 33, 34, 49, 53, 60, 61, 62].
- Rajasthan [11].

- Sikkim [11, 48, 53, 60].
- Tamil Nadu [20, 55].
- West Bengal [11, 48, 49, 53, 55, 57, 60].

12. *Cheiracanthium inornatum* O. P.-Cambridge, 1874*

- Gujarat [25, 63, 64].
- Madhya Pradesh [65].
- Maharashtra [11, 32, 62, 66].

13. *Cheiracanthium insigne* O. Pickard-Cambridge, 1874

- Assam [11, 51, 53, 55, 67].
- Bihar [11, 51, 53, 55, 67].
- Maharashtra [11, 53, 59, 62].
- Tamil Nadu [11, 21, 51, 55, 53, 67].
- West Bengal [11, 48, 51, 57, 53, 67].

14. *Cheiracanthium insulanum* (Thorell, 1878)

- =*Eutittha insulana* Thorell, 1878)
- Tamil Nadu [11, 21, 68].

15. *Cheiracanthium jabalpureense* Majumder & Tikader, 1991

- Madhya Pradesh [11].
- Maharashtra [69].

16. *Cheiracanthium kashmireense* Majumder & Tikader, 1991

- Jammu & Kashmir [11].

17. *Cheiracanthium melanostomum* (Thorell, 1895)

- Andaman & Nicobar Islands [11, 50, 51].
- Assam [24, 53].
- Bihar [11, 49, 50, 51, 55].
- Goa [11, 50, 51].
- Gujarat [11, 25, 49, 50, 51, 63, 70, 71, 72, 73, 74, 75].
- Karnataka [11, 26, 49, 50, 51, 55, 76].
- Kerala [28, 29, 30, 77, 78, 79, 80].
- Madhya Pradesh [11].
- Maharashtra [11, 49, 50, 51, 53, 60].
- Meghalaya [49].
- Odisha [11, 49, 50, 51, 55, 81].
- Punjab [11, 82].
- Rajasthan [11, 42, 49, 50, 51, 83, 84].
- Tamil Nadu [11, 43, 55].
- Uttarakhand [54, 85].
- West Bengal [11, 48, 49, 50, 51, 55, 57, 60, 67, 86].

18. *Cheiracanthium mildei* L. Koch, 1864

- Karnataka [87].

19. *Cheiracanthium murinum* (Thorell, 1895)

syn. *Cheiracanthium murina* (Thorell, 1895)

- Kerala [79, 80].
- Maharashtra [11, 48, 53, 60].
- West Bengal [11, 48, 53, 55, 60].

20. *Cheiracanthium mysoreense* Majumder & Tikader, 1991*

syn. *Cheiracanthium mysorensis* Majumder & Tikader, 1991

- Gujarat [11, 48, 50, 51].
- Karnataka [11, 48, 50, 51].
- Madhya Pradesh [11, 48, 50, 51].
- West Bengal [11, 48, 50, 51, 56, 57].

21. *Cheiracanthium nalsaroverense* Patel & Patel, 1973*syn. *Cheiracanthium nalsaroverensis* Patel & Patel, 1973

- Gujarat [11, 25, 70, 88, 89, 90].

22. *Cheiracanthium pauriense* Majumder & Tikader, 1991*syn. *Cheiracanthium pauriensis* Majumder & Tikader, 1991

- Uttarakhand [11, 54].
- West Bengal [11, 48, 57].

23. *Cheiracanthium poonaense* Majumder & Tikader, 1991*syn. *Cheiracanthium poonaensis* Majumder & Tikader, 1991

- Gujarat [25, 91, 92].
- Maharashtra [11, 61, 69, 93].

24. *Cheiracanthium punctorium* (Villers, 1789)syn. *Clubiona nutrix* (Walckenaer, 1805)

- Andaman & Nicobar Islands [22].
- Gujarat [94].

25. *Cheiracanthium punjabense* Sadana & Bajaj, 1980*syn. *Cheiracanthium punjabensis* Sadana & Bajaj, 1980

- Punjab [95, 96].

26. *Cheiracanthium rupicola* (Thorell, 1897)syn. *Cheiracanthium gyirongense* Hu & Li, 1987

- Gujarat [25, 63].
- Uttarakhand [97].

27. *Cheiracanthium sadanai* Tikader, 1976*

- Gujarat [11, 71].
- Punjab [11, 82].
- Uttarakhand [54].

28. *Cheiracanthium sambii* Patel & Reddy, 1991*

- Andhra Pradesh [98].

29. *Cheiracanthium saraswatii* Tikader, 1962*

- Andhra Pradesh [99].
- Karnataka [27].
- Meghalaya [11, 49, 100, 101].
- Gujarat [11, 25, 49, 71, 102].
- Madhya Pradesh [49].
- Maharashtra [61].

30. *Cheiracanthium seshii* Patel & Reddy, 1991*

- Andhra Pradesh [98].

31. *Cheiracanthium sikkimense* Majumder & Tikader, 1991*

- Sikkim [11, 53].
- West Bengal [53].

32. *Cheiracanthium tanmoyi* Biswas & Roy, 2005*

- Kerala [103].

33. *Cheiracanthium triviale* (Thorell, 1895)syn. *Cheiracanthium trivalis* (Thorell, 1895)

- Andhra Pradesh [52].
- Arunachal Pradesh [104].
- Goa [11, 49, 52, 104, 105].

- Gujarat [25, 64].
- Jammu & Kashmir [106].
- Madhya Pradesh [11, 49, 50, 51, 52, 53, 105, 104, 107].
- Maharashtra [11, 49, 50, 51, 53, 104, 105].
- Manipur [52, 53, 105, 108].
- Meghalaya [49].
- Tamil Nadu [11, 21, 49, 50, 51, 52, 53, 67, 104, 105].
- Uttar Pradesh [52].
- Uttarakhand [11, 54].
- West Bengal [48, 50, 51, 52, 55, 56, 57, 67, 86, 105, 104, 109].

34. *Cheiracanthium trivittatum* Simon, 1906 *

- Tamil Nadu [11, 20, 21].

35. *Cheiracanthium turiae* Strand, 1917syn. *Clubiona andamanensis* Tikader, 1977

- Andaman & Nicobar Islands [11, 110].

36. *Cheiracanthium vorax* O. Pickard-Cambridge, 1874*

- Maharashtra [11, 62].

37. *Cheiracanthium* sp.

- Goa [111].
- Gujarat [47, 74, 90, 64, 112, 113].
- Jammu & Kashmir [114, 115, 116, 117].
- Karnataka [27].
- Kerala [118, 119, 120, 121].
- Rajasthan [122, 123].
- Tamil Nadu [124, 43, 125].
- Uttar Pradesh [126].
- Uttarakhand [85, 97, 127].
- West Bengal [86].

38. *Eutichurus chingliputensis* Majumder & Tikader, 1991*

- Tamil Nadu [11, 21].

39. *Eutichurus tezpurenensis* Biswas, 1991*

- Assam [128].
- Tamil Nadu [128].

II. Distribution of Yellow Sac Spiders in Different States of India**1. Andhra Pradesh**

- *Cheiracanthium sambii*
- *Cheiracanthium saraswatii*
- *Cheiracanthium seshii*
- *Cheiracanthium triviale*

2. Arunachal Pradesh

- *Cheiracanthium triviale*

3. Assam

- *Cheiracanthium danieli*
- *Cheiracanthium insigne*
- *Cheiracanthium melanostomum*
- *Eutichurus tezpurenensis*

4. Bihar

- *Cheiracanthium insigne*
- *Cheiracanthium melanostomum*

5. Goa

- *Cheiracanthium melanostomum*
- *Cheiracanthium triviale*

6. Gujarat

- *Cheiracanthium danieli*
- *Cheiracanthium furculatum*
- *Cheiracanthium himalayense*
- *Cheiracanthium indicum*
- *Cheiracanthium inornatum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium mysorensense*
- *Cheiracanthium nalsaroverense*
- *Cheiracanthium poonaense*
- *Cheiracanthium punctorium*
- *Cheiracanthium rupicola*
- *Cheiracanthium sadanai*
- *Cheiracanthium saraswatii*
- *Cheiracanthium triviale*

7. Himachal Pradesh

- *Cheiracanthium approximatum*

8. Karnataka

- *Cheiracanthium danieli*
- *Cheiracanthium melanostomum*
- *Cheiracanthium mildei*
- *Cheiracanthium mysorensense*
- *Cheiracanthium saraswatii*

9. Kerala

- *Cheiracanthium conflexum*
- *Cheiracanthium danieli*
- *Cheiracanthium indicum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium murinum*
- *Cheiracanthium tanmoyi*

10. Madhya Pradesh

- *Cheiracanthium indicum*
- *Cheiracanthium inornatum*
- *Cheiracanthium jabalpurensense*
- *Cheiracanthium melanostomum*
- *Cheiracanthium mysorensense*
- *Cheiracanthium saraswatii*
- *Cheiracanthium triviale*

11. Maharashtra

- *Cheiracanthium danieli*
- *Cheiracanthium himalayense*
- *Cheiracanthium inclusum*
- *Cheiracanthium indicum*
- *Cheiracanthium inornatum*
- *Cheiracanthium insigne*
- *Cheiracanthium jabalpurensense*
- *Cheiracanthium melanostomum*
- *Cheiracanthium murinum*
- *Cheiracanthium poonaense*
- *Cheiracanthium saraswatii*
- *Cheiracanthium triviale*
- *Cheiracanthium vorax*

12. Manipur

- *Cheiracanthium triviale*

13. Meghalaya

- *Cheiracanthium himalayense*
- *Cheiracanthium indicum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium saraswatii*
- *Cheiracanthium triviale*

14. Mizoram

- *Cheiracanthium aizwalense*

15. Odisha

- *Cheiracanthium danieli*
- *Cheiracanthium melanostomum*

16. Punjab

- *Cheiracanthium approximatum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium punjabense*
- *Cheiracanthium sadanai*

17. Rajasthan

- *Cheiracanthium danieli*
- *Cheiracanthium indicum*
- *Cheiracanthium melanostomum*

18. Sikkim

- *Cheiracanthium indicum*
- *Cheiracanthium sikkimense*

19. Tamil Nadu

- *Cheiracanthium conflexum*
- *Cheiracanthium danieli*
- *Cheiracanthium indicum*
- *Cheiracanthium insigne*
- *Cheiracanthium insulanum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium triviale*
- *Cheiracanthium trivittatum*
- *Eutichurus chingliputensis*
- *Eutichurus tezpurensis*

20. Tripura

- *Cheiracanthium danieli*

21. Uttar Pradesh

- *Cheiracanthium adjacens*
- *Cheiracanthium danieli*
- *Cheiracanthium triviale*

22. Uttarakhand

- *Cheiracanthium danieli*
- *Cheiracanthium himalayense*
- *Cheiracanthium melanostomum*
- *Cheiracanthium pauriense*
- *Cheiracanthium rupicola*
- *Cheiracanthium sadanai*
- *Cheiracanthium triviale*

23. West Bengal

- *Cheiracanthium himalayense*
- *Cheiracanthium indicum*
- *Cheiracanthium insigne*
- *Cheiracanthium melanostomum*
- *Cheiracanthium murinum*

- *Cheiracanthium mysorensense*
- *Cheiracanthium pauriense*
- *Cheiracanthium sikkimense*
- *Cheiracanthium triviale*

III. Distribution of Yellow Sac Spiders in Different Union Territories of India

Andaman & Nicobar Islands

- *Cheiracanthium conspersum*
- *Cheiracanthium incomptum*
- *Cheiracanthium melanostomum*
- *Cheiracanthium punctorium*
- *Cheiracanthium turiae*

Jammu & Kashmir

- *Cheiracanthium approximatum*
- *Cheiracanthium kashmirensense*
- *Cheiracanthium triviale*

Conclusion

A total of only 38 species under 2 genera of yellow sac spiders belonging to the family Cheiracanthiidae were recorded in almost all states except Chhattisgarh, Jharkhand, Haryana, Nagaland, Telangana and Ladakh. Maximum species of these spiders were recorded from Gujarat (14 species) and Maharashtra (13 species) followed by Tamil Nadu (10 species), West Bengal (9 species), Madhya Pradesh and Uttarakhand (7 species in each), Kerala (6 species), and less number of species in other areas. Extensive survey for these spiders is required in almost all states.

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