

**Original Research Article**

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DIVERSITY OF ASEMONEINAE, EUPOINAE, HISPONINAE, LYSSOMANINAE, ONOMASTINAE AND SPARTAEINAE (ARACHNIDA: ARANEAE: SALTICIDAE) IN INDIA: A CHECKLIST AND BIBLIOGRAPHY**Rajendra Singh^{1*}, Garima Singh², Bindra Bihari Singh³**

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ABSTRACT: Distribution of 6 subfamilies, viz. Asemoneinae, Eupoinae, Hisponinae, Lyssomaninae, Onomastinae, and Spartaestinae out of 7 subfamilies of Salticidae, in different states and union territories of India is presented herewith. Out of 28 states and 8 union territories in India, these spiders were recorded only from 14 states and 2 union territories. Out of 29 species under 15 genera recorded in India, 9 species (32%) are endemic and 26 of them are reported from the coastal areas. 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.

KEYWORDS: Salticidae, Asemoneinae, Eupoinae, Hisponinae, Lyssomaninae, Onomastinae, Spartaestinae, distribution, jumping spiders, India.

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1. INTRODUCTION

Spider is the common name of the members of the order Araneae of class Arachnida with 48,755 described species under 4,181 genera and 128 families [1]. Keswani *et al.* [2] updated Indian spider fauna up to 1686 species belonging to 438 genera and 60 families. However, there are likely many species that have escaped the human eyes to this day and many specimens stored in collections await description and classification. It is estimated that only one third to one fifth of existing species have been described. Recently, faunal record of mygalomorph spiders (tarantulas and their close kin), distributed in different states and union territories of India, was presented [3].

Salticidae Blackwall, 1841 (Arachnida: Araneae) includes jumping spiders and is the largest family of the order Araneae containing 646 genera and 6222 species globally [1]. Jumping spiders can easily be identified by the shape of their cephalothorax or prosoma and the pattern of their eight eyes. The faces are approximately rectangular surfaces perpendicular to their direction of motion. They have four eyes in front row, median two being very large and prominent specialized for high spatial resolution, appropriate to their predatory habits as stalker-hunters [4]. Their front 2 pairs of legs are generally larger than the rear two pairs, which are used in jumping while front legs are used in prey capture [5] and also in species recognition during courtship and mating [6]. The body length of jumping spiders generally ranges from 1 to 25 mm, largest being is *Hyllus giganteus* C.L. Koch. The silk is used for safety lines while jumping, as a tether to enable them to reach prey that otherwise would be inaccessible, and also for making “pup tents” where they rest at night and also as shelter home during bad weather [7]. In general, jumping spiders do not construct web to capture prey. However, exceptionally some species of *Portia* build unusual funnel shaped web [8]. Most of the jumping spiders have bright colours and elaborate embellishment, and display sexual colour dimorphism in that males are generally brighter than females [9]. This colourful ornamentation remains largely unanswered, but is supposed to be beneficial in sexual selection, yet they may pay costs to maintain such distinctiveness [10]. No doubt, it is attractive to conspecific females, but there is also risk of their predation [11]. The jumping spiders are master hunter, with an ability to jump vast distances. Although, most of the jumping spiders are predatory and feed a large variety of prey in the wild but few are known to consume nectar and other plant materials [12, 13]. Larger jumping spiders like *Phidippus regius* C.L. Koch is known to prey on fishes [14] and amphibians [15] while *Grammostola quirogai* Montes de Oca et al. is known to predate snakes [16]. The classification of Salticidae of the world is still unsatisfactory because of several grounds [17]. There exist three systems of subdivision of family Salticidae in literature. The traditional system is based on cheliceral dentition, arrangements of eyes, body proportions, distribution of spines and characteristic groups of setae, visible with a hand lens [18, 19]. Eventually, selection of these characters for grouping is artificial and is not related to their affinities. In this system, groups of genera are named subfamilies [19]. Later on, Maddison [20] on the basis of molecular data, especially by gene sequencing grouped the known genera of Salticidae into 7 subfamilies. However, with lack of more morphological data, it is very difficult to identify the species in nature and captivity and its grouping into suprageneric taxa. To overcome these problems, Prószyński [17] proposed a pragmatic classification based on easily noticeable and verifiable, morphological diagnostic characters, such as male palps together with internal structures of epigyne, checked for representability and stability in known species. Prószyński [17] recognized all the genera described in Salticidae following International Code of Zoological Nomenclature, into supergenera groups and genera groups rather than subfamilies, tribes, subtribes. The purpose of this article is not to discuss the relationship between different species of salticids reported from India, rather to put in order - statewise distribution. In this article, we followed the classification of Maddison [20] and also mention the genera or supergenera group of Prószyński [17] where necessary. Maddison [20] subgrouped Salticidae into 7 subfamilies, however, 9 genera (13 species) could not be placed in these subfamilies (*incertae sedis*) because of having

aberrant characters. These subfamilies are Asemoneinae Maddison, 2015; Eupoinae Maddison, 2015; Hisponinae Simon, 1901; Lyssomaninae Blackwall, 1877; Onomastinae Maddison, 2015; Salticinae Blackwall, 1841; and Spartaeinae Wanless, 1984. Out of all subfamilies, Salticinae comprises 93.7% of the species (5818 species, 576 genera) followed by Spartaeinae (181 species, 31 genera), Lyssomaninae (100 species under 3 genera), Asemoneinae (37 species under 5 genera), Hisponinae (36 species, 6 genera), Eupoinae (34 species, 3 genera) and Onomastinae (16 species, single genus). Detail taxonomic features of all the subfamilies/tribes/subtribes and their phylogenetic relationship were described by Maddison [20] and Maddison et al. [21, 22]. The present article deals with the distribution of all the subfamilies of Salticidae in different Indian states and union territories except the type subfamily Salticinae that will be presented later on in the series. At present, excluding Salticinae, total 404 extant species of jumping spiders were described in the world under 49 genera [1], however, in India, only 29 species under 15 genera were recorded and herewith presented. In this checklist, distribution of these jumping spiders from different states and union territories of India is presented with available references in a taxonomic order: subfamily, tribe, subtribe, genus and species.

2. MATERIALS AND METHODS

This checklist is based on the literature published in recent past books, journals and few authentic theses up to 20 August, 2020. 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 very 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. In the present compilation, attempts have been made to correct these errors in the scientific names of the spiders following WSC [1]. Only those synonymies were mentioned that were reported in India. Also, those spiders not identified up to specific level, were omitted if some species of that genus were recorded in that state. However, those were mentioned if either no species of that genus was reported or not reported in that state. The records of these jumping spiders are also presented species-wise as well as state and union territories wise for their easy access. All the endemic species are marked with (*).

3. RESULTS AND DISCUSSION

3.1. SUBFAMILY-WISE AND SPECIES-WISE DISTRIBUTION

3.1.1. Subfamily: Asemoneinae

All the species of this subfamily [20] are grouped into Asemoneines genera-group by Prószyński [17]. These spiders are usually translucent and long-legged, usually green or yellow and live on foliage, especially large leaves [23, 24]. *Asemonea tenuipes* was observed to change abdominal colour after feeding. The green abdomen changes to red with iridescent blue lines and colour gradually returns back in 3-4 days [24]. The subfamily is represented by 5 genera and 37 species in the world; however, the family is represented in India by only 6 species under 4 genera (Table 1) which are distributed in 14 states of India (Table 2). Following is the list of distribution of

Asemoneinae in India.

3.1.1.1. *Asemonea cristata* Thorell, 1895

= *Asemonea santinagarensis* (Biswas & Biswas, 1992)

= *Lyssomanes santinagarensis* Biswas & Biswas, 1992

• Kerala [25]; • Maharashtra [26]; • West Bengal [27, 28]

3.1.1.2. *Asemonea tenuipes* (Pickard-Cambridge, 1869)

= *Asemonea cingulata* Thorell, 1895

= *Lyssomanes andamanensis* Tikader, 1977

= *Lyssomanes bengalensis* Tikader & Biswas, 1978

• Andman & Nicobar [27, 29, 30, 31]; • Assam [32, 33, 34, 35, 36]; • Goa [37]; • Gujarat [38, 39, 40, 41]; • Karnataka [24, 42]; • Kerala [43, 44, 45, 46, 47, 48, 49, 50]; • Maharashtra [51, 52]; • Odisha [53]; • Rajasthan [54]; • Tamil Nadu [55]; • Uttar Pradesh [56]; • Uttarakhand [57]; • West Bengal [27, 28, 30, 31, 58, 59, 60]

3.1.1.3. *Asemonea* sp.

• Tripura [61]; • Kerala [62, 63, 64]

3.1.1.4. *Goleba puella* (Simon, 1885)

= *Asamonea puella* Simon, 1885

• Tamil Nadu [55]

3.1.1.5. *Hindumanes karnatakaensis* (Tikader & Biswas, 1978)*

= *Lyssomanes karnatakaensis* Tikader & Biswas, 1978

• Karnataka [58, 65, 66]; • Kerala [66]

3.1.1.6. *Hindumanes wayanadensis* Sudhin et al., 2017*

• Kerala [66]

3.1.1.7. *Pandisus indicus* Prószyński, 1992*

• Odisha [67]

3.1.2. Subfamily: Eupoinae

All the species of this subfamily are grouped into Eupoainae genera-group by Prószyński [17]. They are minute (≤ 2 mm) and vegetation litter dwellers. The males of *Eupoa* Żabka, 1985 have the swollen and relatively large palps for the size of the spiders [68]. The subfamily is represented by 3 genera and 34 species in the world (Table 1), of which only 1 species is known from India which is known only from Meghalaya (Table 2). The biology of this group is not understood.

3.1.2.1. *Eupoa lehtineni* Logunov & Marusik, 2014

• Meghalaya [68]

3.1.3. Subfamily: Hisponinae

All the species of this subfamily are grouped into Hisponines genera-group by Prószyński [17]. The distinctive character of this subfamily is the constriction or transverse furrow behind the small eyes in the carapace [20]. Molecular data support its monophyly [21]. The subfamily is represented by 6 genera and 36 species in the world (Table 1), of which only 2 species is known from India under a single genus which are known from only 2 states of India, Maharashtra and Tamil Nadu (Table 2). The biology of this group is not clearly understood. Only little information regarding mating

behaviour and egg development of *Jerzego sunillimaye* Sanap et al., 2019 is known [69]. Following is the list of distribution of Hisponinae in India.

3.1.3.1. *Jerzego bipartitus* (Simon, 1903)

- Tamil Nadu [70]

3.1.3.2. *Jerzego sunillimaye* Sanap et al., 2019*

- Maharashtra [69]

Table 1. Number of genera and species of different subfamilies of Salticidae described globally and recorded in different states and union territories of India.

Subfamilies	Number of genera and species				Number of states and union territories of India
	World		India		
	Genera	Species	Genera	Species	
Asemoneinae	5	37	4	6	14
Eupoinae	3	34	1	1	1
Hisponinae	6	36	1	2	2
Lyssomaninae	3	100	1	1	2
Onomastinae	1	16	1	2	3
Spartaeinae	31	181	7	17	16
Total	49	404	15	29	

3.1.4. Subfamily: Lyssomaninae

All the species of this subfamily are grouped into Asemoneines genera-group by Prószyński [17]. The lyssomanine spiders are also translucent and long-legged, usually green or yellow like Asemoneine spiders [23] and inhabit usually on large leaves. Like Hisponinae, Lyssomaninae is also a monophyletic group on the basis of molecular data [21]. The subfamily is represented by 3 genera and 100 species in the world; however, the family is represented in India by only one undetermined species (Table 1) which are reported from 2 states of India, Gujarat and Tamil Nadu only (Table 2). Following is the list of distribution of Lyssomaninae in India.

3.1.4.1. *Lyssomanes* sp.

- Gujarat [39]; • Tamil Nadu [71]

3.1.5. Subfamily: Onomastinae

The species of this subfamily are grouped into Onomastines genera-group by Prószyński [17]. These spiders, commonly called as tropical Asian jumping spider are delicate, translucent and long-legged, with highly complex palps [20]. These spiders lay eggs that are loosely covered with silk and the eggs are usually widely spaced under the silk [72]. Onomastinae, like aforementioned subfamilies, is also monophyletic [73, 74]. Single genus *Onomastus* Simon, 1900 with 16 species are known globally (Table 1), however, only 2 species were recorded from India, only from Tamil Nadu (Table 2).

3.1.5.1. *Onomastus indra* Benjamin, 2010*

- Tamil Nadu [70, 74]

3.1.5.2. *Onomastus patellaris* Simon, 1900*

- Tamil Nadu [70, 74, 75]

3.1.5.3. *Onomastus* sp.

- Karnataka [76]; • Uttarakhand [57]

Table 2. Distribution of different subfamilies of Salticidae in different states and union territories of India.

Subfamilies	Indian states & Union Territories
Asemoneinae	Andman & Nicobar, Assam, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal
Eupoinae	Meghalaya
Hisponinae	Maharashtra, Tamil Nadu
Lyssomaninae	Gujarat, Tamil Nadu
Onomastinae	Karnataka, Tamil Nadu, Uttarakhand
Spartaeinae	Assam, Goa, Gujarat, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Manipur, Odisha, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal

3.1.6. Subfamily: *Spartaeinae*

Spartaeinae is considered basal to the phylogenetic tree of jumping spiders and usually have large posterior median eyes. The subfamily is palaeotropical in distribution, with an exceptional diversity in the Malaysian and Indonesian archipelagos [77]. Its phylogenetic relationship has earlier been described in detail [20, 21]. Biology of only few species of these spiders is known. Jackson & Blest [78] studied the biology of web-building spider, *Portia fimbriata* (Doleschall) and reported that this spider constructs two types of web, one is used as resting site and second one is used for reproduction. Jackson & Hallas [79] described the utilisation of webs, predatory versatility, and intraspecific interactions of different species of *Portia*. Similarly, Guseinov et al. [80] studied the predatory strategy, natural diet, and life cycle of *Cyrba algerina*. Most of the spartaeine are araneophagic and web-building jumping spiders. *Spartaeinae* is subdivided into tribes and subtribes. All species recorded from India belong to tribe *Spartaeini* and subtribe *Spartaeina*. The species of this subfamily, tribe and subtribe [20] are grouped into *Spartaeines* genera-group by Prószyński [17]. The subfamily is represented by 30 genera and 173 species in the world; however, the family is represented in India by only 17 species under 6 genera (Table 1) which are distributed in 15 states of India (Table 2). Following is the list of distribution of *Spartaeinae* in India.

3.1.6.1. *Brettus adonis* Simon, 1900

- Tamil Nadu [81]

3.1.6.2. *Brettus anchorum* Wanless, 1979

- Manipur [82]; • Rajasthan [83]; • Tamil Nadu [70, 84, 85]; • Uttarakhand [57, 86]; • West Bengal [85, 87]

3.1.6.3. *Brettus cingulatus* Thorell, 1895

= *Brettus albolimbatus* Simon, 1900

= *Brettus semifimbriatus* Simon, 1900

= *Brettus serratopalpis* Samson, 2014 (unpublished thesis)

= *Portia semifimbriata* (Simon, 1900)]

• Assam [31, 32, 36, 85, 87]; • Goa [37]; • Gujarat [88]; • Karnataka [42, 89, 90, 91, 92, 93]; • Kerala [31, 48, 85, 87, 94, 95, 96]; • Maharashtra [26, 51, 52, 97, 98]; • Rajasthan [83]; • Tamil Nadu [70, 71, 75, 84, 99]; • West Bengal [31, 85, 87, 100]

3.1.6.4. *Brettus* sp.

• Assam [101]; • Goa [37]; • Gujarat [40, 102]; • Karnataka [42]; • Kerala [62, 64]; • Tamil Nadu [98]; • Tripura [61]

3.1.6.5. *Cocalus lacinia* Sudhin et al., 2019*

• Kerala [103]

3.1.6.6. *Cocalus murinus* Simon, 1899

• West Bengal [31]

3.1.6.7. *Cocalus zedeskae* Samson, 2014*

• Kerala [96]

3.1.6.8. *Cocalus* sp.

• Karnataka [104, 105]; • Tamil Nadu [106]

3.1.6.9. *Cyrba algerina* (Lucas, 1846)

• Jammu & Kashmir [107]; • Karnataka [55]

3.1.6.10. *Cyrba ocellata* (Kroneberg, 1875)

= *Cyrba micans* Simon, 1885)

• Goa [108]; • Karnataka [76, 109, 110]; • Maharashtra [111]; • Tamil Nadu [70, 81, 112, 113]

3.1.6.11. *Cyrba* sp.

• Kerala [45]

3.1.6.12. *Megaepoia gravelyi* (Caleb, 2018)*

= *Brettus gravelyi* Caleb, 2018

• West Bengal [114]

3.1.6.13. *Neobrettus tibialis* (Prószyński, 1978)

• West Bengal [115]

3.1.6.14. *Neobrettus* sp.

• West Bengal [116]

3.1.6.15. *Phaeacius fimbriatus* Simon, 1900

• West Bengal [31]

3.1.6.16. *Phaeacius lancearius* (Thorell, 1855)

• Karnataka [105, 117]; • Kerala [118]

3.1.6.17. *Phaeacius wanlessi* Wijesinghe, 1991

• Kerala [119]

3.1.6.18. *Phaeacius* sp.

• Andman & Nicobar [120]; • Assam [121]; • Karnataka [117]

3.1.6.19. *Portia albimana* (Simon, 1900)

= *Linus albimanus* Simon, 1900)

- Goa [122]; • Karnataka [123]; • Maharashtra [124]; • Tamil Nadu [125]; • Uttar Pradesh [126, 127]; • Uttarakhand [43, 75, 128]

3.1.6.20. *Portia assamensis* Wanless, 1978

- Assam [32, 128]; • Rajasthan [54, 129]; • Uttar Pradesh [56, 130, 131, 132]

3.1.6.21. *Portia fimbriata* (Doleschall, 1859)

= *Linus fimbriatus* (Doleschall, 1859)

- Assam [36]; • Karnataka [43]; • Kerala [48, 85, 87, 118, 133, 134]; • Maharashtra [51, 135, 136]; • Tamil Nadu [98]; • West Bengal [85, 87, 137]

3.1.6.22. *Portia labiata* (Thorell, 1887)

- Tamil Nadu [112, 128]; • Tripura [61]

3.1.6.23. *Portia* sp.

- Gujarat [40, 102]; • Odisha [138, 139, 140, 141, 142]; • Rajasthan [54]; • Tamil Nadu [71]; • Uttar Pradesh [56, 129, 131, 132, 143]; • Uttarakhand [57]

3.2. STATE-WISE AND SUBFAMILY-WISE DISTRIBUTION**3.2.1. Andman & Nicobar**

- **Asemoneinae:** *Asemonea tenuipes*; • **Spartaeinae:** *Phaeacius* sp.

3.2.2. Assam

- **Asemoneinae:** *Asemonea tenuipes*; • **Spartaeinae:** *Brettus cingulatus*, *Brettus* sp., *Phaeacius* sp., *Portia assamensis*, *Portia fimbriata*

3.2.3. Goa

- **Asemoneinae:** *Asemonea tenuipes*; • **Spartaeinae:** *Brettus cingulatus*, *Brettus* sp., *Cyrba ocellata*, *Portia albimana*

3.2.4. Gujarat

- **Asemoneinae:** *Asemonea tenuipes*; • **Lyssomaninae:** *Lyssomanes* sp.; • **Spartaeinae:** *Brettus cingulatus*, *Brettus* sp., *Portia* sp.

3.2.5. Jammu & Kashmir

- **Spartaeinae:** *Cyrba algerina*

3.2.6. Karnataka

- **Asemoneinae:** *Asemonea tenuipes*, *Hindumanes karnatakaensis*; • **Onomastinae:** *Onomastus* sp.; • **Spartaeinae:** *Brettus cingulatus*, *Brettus* sp., *Cocalus* sp., *Cyrba algerina*, *Cyrba ocellata*, *Phaeacius lancearius*, *Phaeacius* sp., *Portia albimana*, *Portia fimbriata*

3.2.7. Kerala

- **Asemoneinae:** *Asemonea cristata*, *Asemonea tenuipes*, *Asemonea* sp., *Hindumanes karnatakaensis*, *Hindumanes wayanadensis*; • **Spartaeinae:** *Brettus cingulatus*, *Brettus* sp., *Cocalus lacinia*, *Cyrba* sp., *Phaeacius lancearius*, *Phaeacius wanlessi*, *Portia fimbriata*

3.2.8. Maharashtra

- **Asemoneinae:** *Asemonea cristata*, *Asemonea tenuipes*; • **Hisponinae:** *Jerzego sunillimaye*; • **Spartaeinae:** *Brettus cingulatus*, *Cyrba ocellata*, *Portia albimana*, *Portia fimbriata*

3.2.9. Manipur

- **Spartaeinae:** *Brettus anchorum*

3.2.10. Meghalaya

- **Eupoinae:** *Eupoa lehtineni*

3.2.11. Odisha

- **Asemoneinae:** *Asemonea tenuipes*, *Pandisus indicus*; • **Spartaeinae:** *Portia* sp.

3.2.12. Rajasthan

- **Asemoneinae:** *Asemonea tenuipes*; • **Spartaeinae:** *Brettus anchorum*, *Brettus cingulatus*, *Portia assamensis*, *Portia* sp.

3.2.13. Tamil Nadu

- **Asemoneinae:** *Asemonea tenuipes*, *Goleba puella*; • **Hisponinae:** *Jerzego bipartitus*; • **Lyssomaninae:** *Lyssomanes* sp.; • **Onomastinae:** *Onomastus indra*, *Onomastus patellaris*; • **Spartaeinae:** *Brettus Adonis*, *Brettus anchorum*, *Brettus cingulatus*, *Brettus* sp., *Cocalus* sp., *Cyrba ocellata*, *Portia fimbriata*, *Portia labiata*, *Portia* sp.

3.2.14. Tripura

- **Asemoneinae:** *Asemonea* sp.; • **Spartaeinae:** *Brettus* sp., *Portia labiata*

3.2.15. Uttar Pradesh

- **Asemoneinae:** *Asemonea tenuipes*; • **Spartaeinae:** *Portia albimana*, *Portia assamensis*, *Portia* sp.

3.2.16. Uttarakhand

- **Asemoneinae:** *Asemonea tenuipes*; • **Onomastinae:** *Onomastus* sp.; • **Spartaeinae:** *Brettus anchorum*, *Portia albimana*, *Portia* sp.

3.2.17. West Bengal

- **Asemoneinae:** *Asemonea cristata*, *Asemonea tenuipes*; • **Spartaeinae:** *Brettus anchorum*, *Brettus cingulatus*, *Cocalus murinus*, *Megaepoa gravely*, *Neobrettus tibialis*, *Phaeacius fimbriatus*, *Portia fimbriata*

4. DISCUSSION

The family Salticidae is subgrouped into 7 subfamilies: Asemoneinae, Eupoinae, Hisponinae, Lyssomaninae, Onomastinae, Spartaeinae and Salticinae [20], and all the subfamilies are recorded from India. However, out of 404 species described globally (Table 1) in first 6 subfamilies, only 29 species (only 7%) are known from India. Out of 28 states and 8 union territories in India, these spiders were recorded only from 15 states and 2 union territories (Figure 1). Maximum 5 subfamilies are represented in Tamil Nadu followed by Karnataka, Maharashtra and Uttarakhand (each 3 subfamilies). These jumping spiders are still to be recorded from Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Ladakh, Madhya Pradesh, Mizoram, Nagaland, Punjab, Sikkim and Telangana. Out of 29 species recorded in India, 9 species (32%) are endemic and 24 species are reported from coastal area of India.



Figure 1. Distribution of spiders belonging to different subfamilies of Salticidae in Indian states and union territories. A-Asemoneinae, E-Eupoinae, H-Hisponinae, L-Lyssomaninae, O-Onomastinae and S-Spartaeinae. Numerals indicate the number of species in that subfamily.

Despite the spiders are most diverse group of predators with almost 48700 described extant species, and being crucial to the health of terrestrial ecosystems, to date, the IUCN Red List provides information on only 328 species of spiders that are red-listed [144]. However, none of the species recorded in India is listed in IUCN Red List. Only one species of Asemoneinae (*Goleba pallens*) and 2 species of Hisponinae (*Hispo alboctypha*, *Hispo striolata*) are listed as threatened species [145].

5. CONCLUSION

A total of 29 species under 15 genera belonging to 6 subfamilies of Salticidae were recorded in 15

states and 2 union territories of India. About one-third of known jumping spiders except Salticinae from India are endemic and more than 82% of the species were reported from coastal states and union territories. Strangely, no such spiders were reported from Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Ladakh, Madhya Pradesh, Mizoram, Nagaland, Punjab, Sikkim and Telangana where the presence of these spiders are expected, and hence needs future extensive exploration of these areas along with other states and union territories from where these spiders are recorded or poorly recorded.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The author confirms that the data supporting the findings of this research are available within the article.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of the present paper.

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