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Original Research Article

New records of spiders: Araneae, Pisauridae, Salticidae, and Theridiidae from Pakistan

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Abstract: The genus *Emertonella* Bryant, 1945, with *Emertonella taczanowskii* (Keyserling, 1886), is recorded for the first time with stable random population distribution, extension of *Chinattus mikhailovi* Logunov, 2021 towards the southern part with clump pattern of distribution of population, and *Perenethis sindica* (Simon, 1897) recorded after 127 years with stable random pattern population distribution from the subtropical to the ecotone of the North-West Hindu Kush Peshawar valley, eurytopic species *Loxosceles rufescens* (Dufour, 1820) reported extended distribution from the subtropical to the Pan Hindukush-Himalaya mountains sub-temperate regions. We observed that synanthropic pressure is due to anthropogenic extension displacing or changing the behavioural ecology of these spiders. The authors point out the adverse effects of human activities, such as habitat destruction and agriculture, which threaten local wildlife and biodiversity. They stress the urgent need for more studies on spiders in Pakistan to fill the gaps in our understanding of the distribution of species in Eurasia. The research involved actively collecting specimens and closely examining them better to understand the patterns in their distribution and ecological roles. The findings call for conservation efforts in the biodiversity-rich Hindu Kush region of Pakistan.

Keywords: Araneae, New spider records, *Emertonella* Bryant, Pisauridae, *Perenethis sindica*, Salticidae, Theridiidae.

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1. Introduction

The Hindu Kush sub-mountainous Peshawar Valley with about 8.800 km^2 is located between 71º 15' and 72º 47'E and 33º 40' and 34º 31' N (Khan *et al.*, 2016), bounded by mix dry and dry-subtemperate mountains and ecotone, while the River Indus, Swat, Panjkora, and Kabul flow in its plains and are the primary source of water for livings.

Climate change and anthropogenic pressure, such as extensive agricultural practices and habitat destruction, are causing the displacement of wild animals, synanthropic pressure, or extinction. Spiders (Arachnida: Araneae) of Pakistan require more taxonomic and validation work to fill the gaps of Eurasian species distribution in this region (Khan *et al.*, 2024; Logunov *et al.*, 2011; Li, 2020).

The current count for the country ranges from 169 to 325 species, revealing significant gaps in data on the diverse ecosystems that stretch from South to North, intersecting with the hyper-diverse Himalaya, Hindu Kush, and Karakorum mountains, which encompass numerous unexplored, biodiversity-rich valleys. The few studies provided Eurasian and African eurytopic species have extension in Pakistan (Ali, 2025; Ali *et al.*, 2018; 2016; Dyal, 1935; Logunov *et al.*, 2011).

The aim and objective of the current paper: 1) to validate *Perenethis sindica* (Simon, 1897) (Pisauridae); 2) First record of the genus *Emertonella* Bryant, 1945 with *Emertonella taczanowskii* (Keyserling, 1886) (Theridiidae); 3) *Chinattus mikhailovi* Logunov, 2021 southern extension in distribution; 4) report on *Loxosceles rufescens* (Dufour, 1820) distribution pattern and indoor findings from North-West Hindu Kush Peshawar valley.

2. Materials and methods

An active search in the Swabi district collected specimens. Preserved specimens were examined using either an OMAX stereomicroscope or a light microscope. The photographs of habitus and genetalia were captured with an OMAX camera 3MP attached to an OMAX stereomicroscope or a light microscope at the Department of Zoology. The observed specimens were preserved in 70% ethanol and deposited at the Department of Zoology, Swabi, Pakistan.

3. Results and discussion

3.1. Taxonomy

3.1.1. Family Pisauridae (Simon, 1890)

Perenethis sindica (Simon, 1897) (Figure 1)

Tetragonophthalma *sindica* Simon, 1897i: 295 (♂♀)

Perenethis sindica Pocock, 1900a: 246.

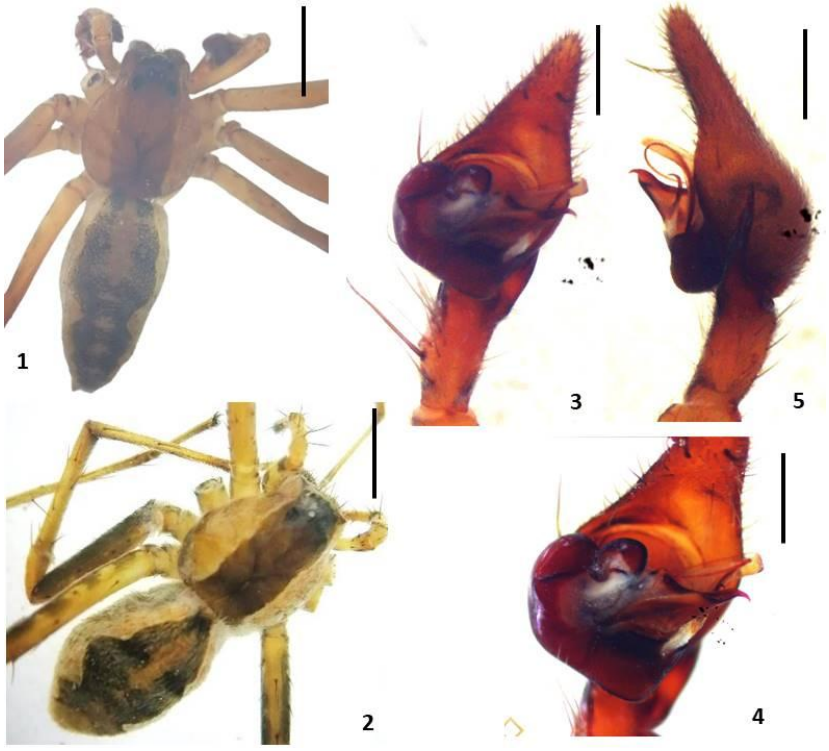
Perenethis sindica Sierwald, 1997: 395: 36-41, 59-72 (♂♀)

Perenethis sindica Zhang *et al.*, 2004d: 387.104-110 (♂♀)

Materials examined: Pakistan: Khyber Pakhtunkhwa: District Swabi (Kala), 1♂, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2022. District Swabi (Kala), 1♂, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2023. District Swabi (Kala), 1♀, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2023. District Swabi (Kala), 1♀, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2023.

Comments: This oriental eurytopic and pan-Himalaya species reported tropical and subtropical diverse habitats in China, India, Sri Lanka, and the Philippines (Sierwald, 1997; Zhang et al. 20210; WSC, 2025), features of the male palpal organ are surprisingly variable (figs. 59–72 in Sierwald 1997) (Zhang *et al.*, 20210). The species dominantly dwells in scrub mountains and is associated with dried bushes throughout the year. Eurythermal spider young and adults can be found year-round in subtropics and at all seasons.

Figure 1: *Perenethis sindica:* 1 male habitus; 1 female habitus; 3-4 ventral view of palp; 5 retrolateral view of palp. (1-2) 1mm; (3-5) 0.3mm



3.1.2. Family Salticidae (Blackwall, 1861)

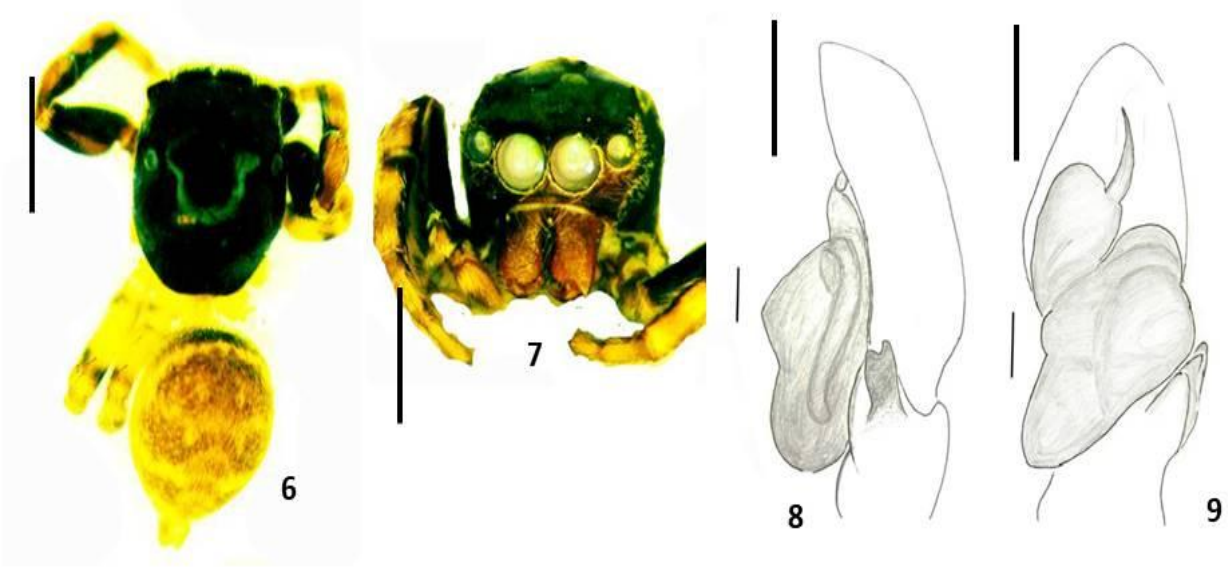
Chinattus mikhailovi Logunov, 2021 (Figure 2)

Chinattus mikhailovi Logunov, 2021c:112, 6-22 (♂♀)

Material examined: 2 ♂, 2♀, Mardan (Takht Bhai), 34.28 N, 71.93E, 414, 16.07. (Ali, 2017).

Comments: This species was discovered in Peshawar city (Forest College, Peshawar (Garden)) and has an unstable clump pattern of population distribution in the northern part of Peshawar Valley. To date, this species has not been found outside of Pakistan and can be considered endemic to the country.

Figure 2: *Chinattus mikhailovi*: 6 male habitus; 7 face; 8 retrolateral view of palp; 9 ventral view of palp. (6-7) 1mm; (8-9) 0.2mm



3.1.3. Family Sicariidae (Keyserling, 1880)

Loxosceles rufescens (Dufour, 1820) (Figure 3)

Scytodes rufescens Dufour, 1820c: 203, pl. 76, f. 5 (♂).

Scytodes rufescens Audouin, 1826: 379, pl. 5, f. 2 (♂ ♀).

Loxosceles citigrada Heineken & Lowe, in Lowe, 1832: 322, pl. 48, f. 1-14 (♂ ♀).

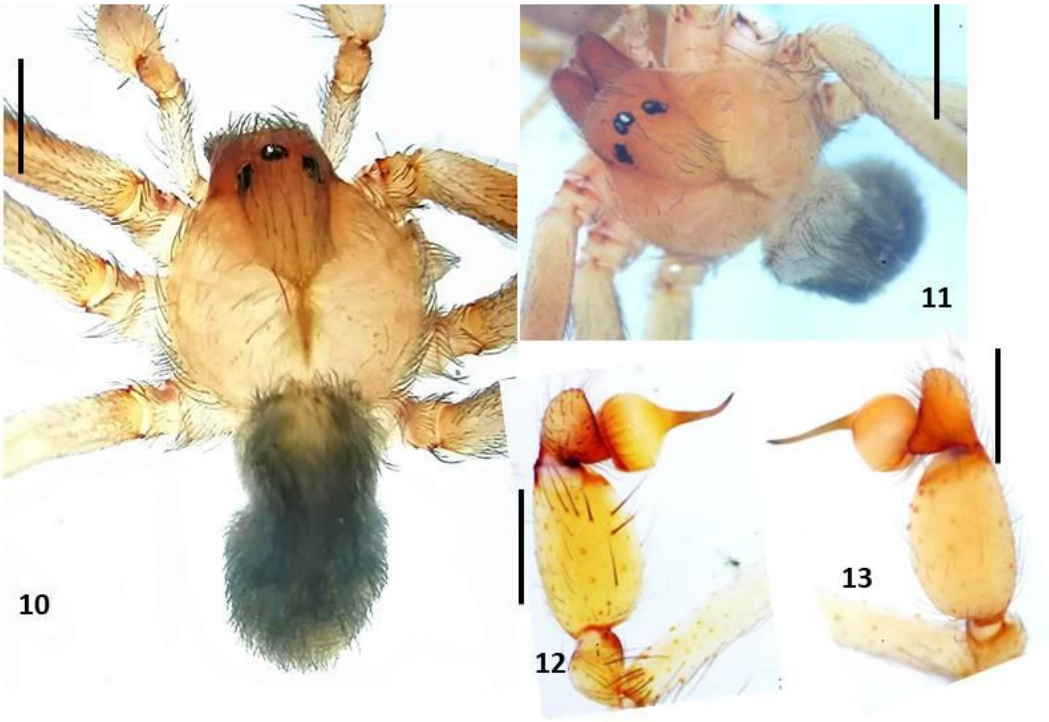
Scytodes erythrocephala C. L. Koch, 1838: 90, f. 399-400 (♂ ♀).

For a complete list of taxonomic references, see World Spider Catalog (2025)

Material examined: Pakistan: Khyber Pakhtunkhwa: District Swabi, 1♂., Swabi town, 34°10'N 72°45"E, 640 m, indoors 21. 08.2022. District Swabi, 1♂., Swabi town, 34°10'N 72°45"E, 640 m, indoors 21. 08.2023.

Comments: The family is represented in the adjacent countries by 04 species of the genus *Loxosceles* Heineken & Lowe, 1832 in China and Iran. Single species Loxosceles rufescens (Dufour, 1820) has been reported in India and Afghanistan. *Loxosceles rufescens* (Dufour, 1820) earlier reported (Ullah *et al.*, 2024) from dry sub-temperate Himalaya region of district Battagram, Khyber Pakhtunkhwa this species is cosmopolitan species that occurs around the entire Mediterranean region, southern Europe, northern Africa to Iran, introduced to the USA, Mexico, Macaronesia, South Africa, India, China, Japan, Korea, Laos, Thailand, Australia, Hawaii (WSC, 2025).

Figure 3: *Loxosceles rufescens*: 10-11 male habitus; 12 prolateral view of palp; 13 retrolateral view of palp. (14-11) 1mm; (12-13) 0.3mm



3.1.4. Family Theridiidae

Emertinella taczanowskii (Keyserling, 1886) (Figs. 14-15)

Euryopis flioricola Keyserling, 1886: 261, pl. 21, 309 (♀)

Euryopis niggripes Banks, 1929: 47, pl.4, 60 (♀)

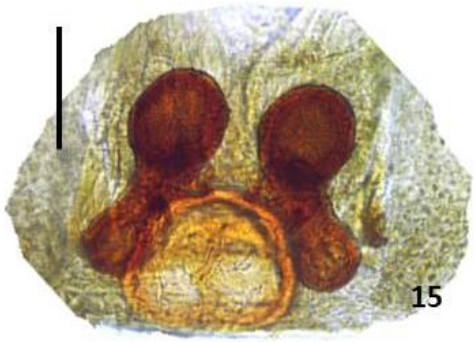
Euryopis dentate Gertsch&Mulaik, 1963b: 6, 10-11 (♂♀)

For complete list of taxonomic references see World Spider Catalog (2025)

Material examined: Pakistan: Khyber Pakhtunkhwa: District Swabi (Kala), 1♂, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2022. District Swabi (Kala), 1♂, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2023. District Swabi (Kala), 1♂, Swabi town, 34°11'N 72°45"E, 640 m, hills 16. 08.2023.

Comments: *Emertinella taczanowskii* (Keyserling, 1886) subtropical distribution in Peshawar Valley. The species distribution ranges from USA to Argentina, introduced to India, Sri Lanka, China, Japan (Ryukyu Is.), New Guinea.

Figures: Emertinella taczanowskii: 14 male habitus; 15 endogyne. Scale bar, (14) 1mm; (15) 0.2mm



4. Conclusion

In conclusion, this study of spider species in the Hindu Kush region of Pakistan has greatly enhanced our knowledge of the area's biodiversity. By carefully collecting and identifying various spider specimens, we have documented a range of species, some of which hadn't been seen in recent years. This study emphasizes the importance of continuing to explore and document the variety of life in different ecosystems. Our research has provided valuable insights into the roles that spiders play in their environments. By observing their hunting behaviours and interactions with prey and other species, we have demonstrated that spiders play a crucial role in natural pest control. Additionally, mapping the locations of different spider species has revealed how environmental factors like climate and habitat impact their populations.

We also examined how human activities, such as habitat destruction and agricultural expansion, affect spider diversity. This aspect of our research highlights the urgent need for conservation efforts to protect spider populations and maintain a balanced ecosystem. Overall, our findings encourage further research on spiders in Pakistan and similar regions. As global biodiversity continues to decline, studies like this are crucial for developing conservation strategies and raising awareness about the importance of ecological balance. By enhancing our understanding of spider diversity and its significance, we can better appreciate the complex relationships within ecosystems and take steps to protect these vital components of nature. Ongoing research and conservation of spider diversity in Pakistan are essential for preserving ecological health in the face of growing human impacts.

Declaration of conflict of interest

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