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Tarantulas (Arachnida: Araneae: Theraphosidae) often found in human habitats during recent summer: A Discussion and Awareness

Dhruba Chandra Dhali

Department of Zoology, Shyampur Siddheswari Mahavidyalaya, Belpukur, Ajodhya, Hworah, West Bengal, India, Pin code-711312

Email id: dhruba.83dhali@gmail.com
Orcid id: https://orcid.org/0009-0005-2386-1107

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ABSTRACT

Spiders of the order Araneae, specifically the infraorder Mygalomorphae, include the diverse family Theraphosidae (tarantulas). Despite their ecological and medicinal importance—such as pest control and antibiotic silk—these spiders face extinction due to habitat loss, climate change, and the exotic pet trade. In regions like India, they are also exploited for food and traditional medicine, often before being scientifically described.

This study examines *Chilobrachys hardwickii* (Pocock 1895), a Theraphosid species found in India. Based on specimens collected from West Bengal and Uttar Pradesh between 2019 and 2021, the paper provides a taxonomic account, distribution data, and biological characteristics. The findings underscore the critical need for conservation awareness to protect these ancient spiders from anthropogenic threats, ensuring ecosystem stability and preserving their potential for future pharmaceutical and agricultural applications.

Keywords: Araneae, Mygalomorphae, Theraphosidae, Chilobrachys hardwickii, Conservation, Biodiversity.

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1. INTRODUCTION

Spiders, belongs to the order Araneae is the largest group among the class Arachnida and is separated into two suborders: Mesothelae (segmented spiders) and Opisthothelae (includes all other spiders) (Coddington, 2005; Siliwal *et al.*, 2011). Later one is further divided into two infraorders: Mygalomorphae (ancient' spiders such as tarantulas, trapdoor, and funnel-web spiders) and Araneomorphae (modern' spiders include the vast majority of spiders) (Pérez-Miles and Perafán, 2017). The infraorder Mygalomorphae comprises about 3000 species of spiders included in 16 families (Bond *et al.*, 2012; World Spider Catalog, 2026) and distributed all over the World. Theraphosidae is one of the 16 families.

Tarantula (Araneae: Mygalomorphae: Theraphosidae) are numerous, hairy, and generally large spiders found in the southwestern United States, Mexico, tropical America, and South East Asia, including India (Bond *et al.,* 2012). However, the name tarantula was originally given to the wolf spider, *Lycosa tarentula*, of southern Europe, and was derived from the town of Taranto, Italy (Anonymous, 2009). The bite of *L. tarentula* was once thought to cause a disease known as tarantism, in which the victim wept and skipped about before going into a wild dance (Encyclopedia Britannica, 2020).

Over exploitation of natural resources increasingly threatens biodiversity, particularly organisms where our understanding of evolutionary uniqueness is poor, including many highly sought after for commercial trade (Hafernik, 1992). Consequently, excessive harvesting, habitat loss, and **climate change are of increasing** concern for the conservation of many organisms. The exotic pet trade has exacerbated threats, as species are exploited with little understanding of the **reproductive biology** of natural populations (Hafernik, 1992). To further compound matters, the evolutionary history and taxonomy of many traded organisms is poorly understood, with organisms often **collected before being scientifically described** and no **reliable knowledge to protect them** (Stuart *et al*., 2006).

When factored with other anthropogenic driven influences, extinction risk greatly increases (Cahill *et al.,* 2013). In recent years, tarantulas (Araneae: Mygalomorphae: Theraphosidae) have become a popular choice of exotic pet, and many wild caught individuals have been collected, including a large number of undescribed species (Molur, *et al.,* 2008). Furthermore, in several countries worldwide, most notably South East Asia, there are additional pressures on natural populations of tarantulas as a source of **food and/or traditional medicine** (Machkour *et al.,* 2011; Yen & Ro, 2013). In many of these areas, there has also been a historical exploitation of other taxa such as reptiles and amphibians for food and/or medicine, as well as for the pet trade – either legal or illegal (Menegon *et al.,* 2011; Phimmachak *et al.,* 2012).

There is currently little scientific understanding about many of the tarantulas actively targeted for commercial exploitation, particularly regarding their evolutionary history (i.e., species limits, population structure, and abundance of natural populations). Only recently has research begun to shed light on the natural population structure for tarantula species in the New World (Graham *et al.*, 2015; Hamilton *et al.*, 2011; Hamilton *et al.*, 2014; Hamilton *et al.*, 2016; Hendrixson *et al.*, 2013; Hendrixson *et al.*, 2015; Montes *et al.*, 2016; Perez Miles *et al.,* 2005), yet still almost nothing remains known on the sustainability threshold for any wild populations being exploited.

Old World tarantulas come from the eastern hemisphere (the continents of Asia, Africa, and Europe, plus Australia). New World tarantulas come from the western Hemisphere (the continents of North and South America, including the Central America region). Old World tarantulas are fast and much less hairy than their New World relatives. If provoked, some can also deliver an incredibly painful bite. By comparison, New World tarantulas are slow moving, hairy, and typically have venom comparable to a bee sting.

But what they lack for in speed and venom, they make up for with some special hairs. New world tarantulas have tiny hairs covering their abdomens called urticating hairs. When threatened, they use their back legs to kick a cloud of hairs into the air. Like tiny, floating porcupine quills, they can get into the eyes, nose, or simply in contact with a potential predator's skin, causing significant irritation (Montana Public Radio, 2020).

The number of mygalomorph species recorded in the world is 2731 in 328 genera and 16 families (Siliwal *et al.*, 2013). The most diverse and dominant family is the Theraphosidae, represented by 153 genera and 1031 species (World Spider Catalog, 2021). A very small number of mygalomorphs have been reported from India, a mere 111 species in 32 genera and eight families (Dhalil *et al.*, 2016). Theraphosidae is the most dominant family, represented by 63 species and 14 genera (Dhalil *et al.*, 2016). Theraphosids are relatively easy to locate: they have burrows with open entrances, compared with the burrows of mygalomorphs of the families Atypidae, Barychelidae, Ctenizidae, and Idiopidae, which have trap doors (Siliwal *et al.*, 2013).

Chilobrachys hardwickii (Pocock 1895) had recorded, rescued, and released during last several summer (2019 and 2021). Its basic information, threats, awareness avoiding killing and awareness to save for the sustenance of ours are discussed herewith.

2. RESULT (MATERIALS AND METHODS)

Family: Theraphosidae Thorell
Chilobrachys Karsch, 1891: 271.
Type species: *Chilobrachys nitelinus* Karsch, 1891.
Distribution: South East Asia, India (Raven, 1985; Schmidt, 2003; Zhu & Zhang, 2008; Platnick, 2011)
***Chilobrachys hardwickei* (Pocock, 1895)**
Musagetes hardwickii Pocock, 1895: 174.
Chilobrachys hardwickii (Pocock), Pocock, 1900: 198.

Colour: Deep brown, hairy clothing yellowish brown.
Female- 23-34 mm. Legs with femora thickly clothed with bristles. Carapace 18, 1st leg 43, 2nd 39, 3rd 34, 4th 43.
Male- 19-27 mm. Legs with femora thickly clothed with bristles beneath. Carapace 14, palpus 23, 1st leg 46, 2nd 40, 3rd 34, 4th 44 (Pocock, 1900).
Material examined: 5♀♀, Raidighi, Bagnan, Howrah, West Bengal, India, 21. vi. 2021. coll. M. Ali. (Author collected from him as dead); 2♂♂, Baransi, Uttar Pradesh, India, 23. vi. 2021, coll. B. Kumar.

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Table 1. Recorded/encountered spider during summer (2021and 2022) in Rural South West Bengal and Uttar Pradesh, India.

Name of Spider	Male/ Female	Juvenile or Adult	Damaged and Dead Specimen	Date of Encountered	Time	Location	Person Who Saw/ Collector	Killed or Alive	Reason of Killing	Any One Bitten by Tarantula
Chilobrachys hardwickei (Pocock, 1895)	5 Female	Adult	Dead Specimen	21. vi. 2021	11.00 pm	Raididhi, Howrah, West Bengal	M. Ali	Killed	Fear	17 years old boy
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	15. vi. 2021	11.45 pm	Salukpara, Howrah, West Bengal	M. Mondal	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	17. vi. 2022	2.00 am	Naul, Howrah, West Bengal	S Samanta	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	2 Females	Adult	Dead Specimen	22. vi. 2021	12.45 am	Nuntia, Howrah, West Bengal	P Manna	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Damaged Specimen	23. vi. 2021	1.50 am	Chandrabhag, Howrah, West Bengal	C Chakraborty	Killed	Fear	No

Chilobrachys hardwickei (Pocock, 1895)	Male	Adult	Dead Specimen	25. vi. 2021	3.00 am	Mugkalyan, Howrah, West Bengal	S Bera	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Juvenile	Dead Specimen	28. vi. 2021	12.05 am	Deora, Howrah, West Bengal	N Adak	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	3 Female	Adult	Dead Specimen	18. vi. 2021	11.00 pm	Belpukur, Howrah, West Bengal	S Guria	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	20. vi. 2021	11.45 pm	Amta,Howrah, West Bengal	A Mitra	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	2 Female	Adult	Dead Specimen	23. vi. 2021	2.00 am	Benapur, Howrah, West Bengal	A Midya	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Male	Adult	Dead Specimen	21. vi. 2021	12.45 am	Amardah, Ajodhya, Howrah, West Bengal	Sudip Mal	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	2 Female	Adult	Dead Specimen	26. vi. 2021	1.50 am	Shibpur, Uluberia, Howrah, West Bengal	Ranjan Mistri	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Damaged Specimen	27. vi. 2022	3.00 am	Garbta, West Midnapur, West Bengal	Biren Barui	Alive	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	21. vi. 2021	2.45 am	Sbang, West Midnapur, West Bengal	B Bhakta	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	2 Male	Adult	Dead Specimen	23. vi. 2021	11.30 pm	Baransi, Uttar Pradesh	B. Kumar	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	23. v. 2021	12.05 am	Keshiari, West Midnapur, West Bengal	L Lodha	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Juvenile	Damaged Specimen	23. v. 2021	11.00 pm	Narayangarh, West Midnapur, West Bengal	Nayan Monda	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	4 Female	Adult	Dead Specimen	23. vi. 2021	11.45 pm	Beldah, West Midnapur, West Bengal	K Barik	Killed	Fear	No
Chilobrachys hardwickei (Pocock, 1895)	Female	Adult	Dead Specimen	15. vi. 2021	2.00 am	Karaghpur, West Midnapur, West Bengal	P Singh	Alive	Fear	No

***Chilobrachys hardwickei* (Pocock, 1895)**	Male	Adult	Damaged Specimen	23. v. 2021	12.45 am	Debra, West Midnapur, West Bengal	M Teli	Killed	Fear	No
***Chilobrachys hardwickei* (Pocock, 1895)**	Female	Adult	Dead Specimen	29. v. 2021	1.50 am	Bankura, Bankura, West Bengal	H Maji	Killed	Fear	No
***Chilobrachys hardwickei* (Pocock, 1895)**	1 Female	Adult	Dead Specimen	30 vi. 2021	11.45 pm	Bishnupur, West Midnapur, West Bengal	D Bauri	Killed	Fear	No
***Chilobrachys hardwickei* (Pocock, 1895)**	Female	Juvenile	Damaged Specimen	12. vi. 2021	2.00 am	Midnapur, West Midnapur, West Bengal	W ali	Killed	Fear	No
***Chilobrachys hardwickei* (Pocock, 1895)**	2Female	Adult	Dead Specimen	14. vi. 2021	12.45 am	Ramnagar, West Midnapur, West Bengal	S si	Killed	Fear	No

3. SPIDERS ARE USEFUL

According to Vankhere (2016), spiders play the following roles:

- Maintain ecosystem balance
- Water percolation
- Spiders protect us from Malaria
- Spiders are rich in proteins
- Spider silk is antibiotic in nature. Surgical threads and bandages can be prepared from the spider silk.
- Spider silk reflects UV rays– Spider silk covering the egg sacs of spider reflects UV rays and thus protects the tiny delicate eggs. With this property, the spider silk is now a day used to manufacture UV reflecting cloths.
- Spider venom as a drug– Spider venom is used to manufacture medicines against cancer.
- Pesticides from spider venom.

In the World as well as India, spider populations are decreasing rapidly because of the following threats:

- climate change,
- grazing,
- deforestation/ habitat loss,
- forest fires,
- scarcity of water,
- use of pesticides in agriculture
- Indian agricultural practices such as burning of litter and waste of crop remains and ploughing during late May,
- use of mosquito repellents and larvicidal pesticides to control malaria,

- urbanization,
- development of road networks
- trade and many more.

Climate change is proved to be the primary threat to spiders. Due to climate change, the seasons have become unstable. There can be rains in summer or even in winter. Most spiders require the right humidity for survival, and their life cycles are synchronized with the rainy season and winters. Most spiders lay egg sacs during September/October i.e. by the end of the rainy season. If there are heavy rains during winter or if there is global dimming, there is high mortality. Because of global warming, there is water scarcity, in turn, resulting in a less hygroscopic environment, and spiders cannot tolerate high temperatures. Streams become dry, and there is no water in downstream reservoirs. These conditions are unfavorable for the survival of spiders. The structural complexity of the environment is directly related to the spider density and diversity.

4. CONCLUSION

After the rainy season, shrubs and grasses grown on the pH-corrected (by spiders) soil on which most of the herbivores (primary consumers) depend. The primary consumers (carnivores), the secondary consumers (carnivores) and ultimately the umbrella species, the tiger, also depend on the pH-corrected soil (Vankhere, 2016).

Thus, if there were no spiders at the bottom subset of the ecosystem, tigers would not get enough food to survive. Here, it is important to say that the ecosystem in which spiders live is a subset of the ecosystem in which Tigers live. So, if spiders are conserved, Tigers are automatically conserved.

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