First report of the brown widow spider, *Latrodectus geometricus* C. L. Koch (Araneae: Theridiidae) from India

The Theridiids or comb-footed spiders comprise a large and diverse family. They are nocturnal and web-living. Spiders of the Theridiidae family build irregular snare from the threads of which they suspend themselves in an inverted position waiting for their prey. They are distinguished from other spiders by the presence of a distinct comb on the tarsus of the fourth pair of legs, consisting of a row of strong curved and toothed setae, bristles of which are longer than those on the dorsal side of tarsus IV, and their labium is not rebordered. The family is best known due to the notoriety of its genus *Latrodectus*, also called widow spider.

The widow spider genus *Latrodectus* Walckenaer, 1805, shows a worldwide distribution, occurring across multiple continents and oceanic islands. Several species of *Latrodectus* are found across the world. These include *Latrodectus geometricus* (brown widow) and *L. indis- nitectus* in Africa, *L. mactana* (black widow) in the West Indies and North America, *L. tredecimguttatus* (Karakurt or black wolf) in South Europe, *L. bishopi* (red widow spider), *L. variolus* (northern widow spider) in the United States and *L. hasselti* (red-back spider) in the Australian continent, Japan and India. Members of this genus are notorious due to the highly potent neurotoxin. The black widow venom, which contains α-latrotoxin, triggers massive neurotransmitter release upon injection in vertebrates, and is known to form pores in cell membranes. *Latrodectus* species are generalist in their predation and are known to feed on a wide array of organisms such as insects, crustaceans, other arachnids, and on small vertebrates, including lizards and geckos. This broad diet may in part explain the presence of toxins in their venom that are known to affect vertebrates. *Latrodectus* species are known to have an affinity for disturbed habitats. *Latrodectus hasselti* is the only reported species of the genus *Latrodectus* from India so far. In 1900, Pocock reported *L. geometricus* from what was then British India. His specimen was collected from only one location: Karachi (below 10 m asl), which is now in Pakistan. In 1902, Cambridge revised the genus *Latrodectus*, according to which Karachi and Manora (near Karachi, in Pakistan) were the only two locations in the Indian subcontinent where *L. geometricus* was known to occur. Later Levi and Garb et al. too included India in the species distribution range, citing Pocock and Cambridge. However, the reports of Pocock and Cambridge pertain to Pakistan. No subsequent reports of this species were found from present-day Indian territory, including Tikader and Siliwal. Thus, this report is the first formal record of occurrence of the species *L. geometricus* C. L. Koch, 1841 from India.

*L. geometricus* has a cosmopolitan distribution ranging from United States, South America, South Africa, and other parts of Africa. *L. geometricus* is considered to have been introduced into many parts of America, Japan and Australia, as it was detected relatively recently in each of these locations and in association with urban environments. Despite its broad geographical range, *L. geometricus* may be native to parts of Africa as it appears to be extremely widespread there, but in isolated and narrow ranges elsewhere.

We collected the specimen (single adult female) of *L. geometricus* on the forest floor. Therefore, details of the spider's web structure and microhabitat preference could not be recorded. However, the webbing has been reported to be dirty and unkempt, and egg sacs are covered with little pulpules on their outer surface, often in well-illuminated places. The web consists of a small retreat (approx. 1.5 m above the ground) which opens to a dome-shaped sheet that leads down close to the ground. The sheet then turns into a characteristic cobweb mesh, with gumfoot lines leading to the ground.

We confirmed the genus of our specimen by comparing the following characters from Levi, and Levi and Randolph. The following diagnostic characters characterize the genus *Latrodectus*. Carapace, normal in form, with clypeus equal in height to the ocular area, and the lateral eyes being widely separated. The chelicerae are without teeth. Legs are long, first pair of legs longer than the fourth pair, superior claws are toothed almost to apex, have a large globular abdomen, and a large colulus; males are much smaller than females and the female genitalia has dumb-bell-shaped seminal receptacles.

The body measurements of the single adult female of *L. geometricus* are given in Table 1. The specimen is described as follows. Carapace is brown, covered with fine hair. Eyes in two distinct rows, both slightly recurved. Eyes of anterior lines subsequently spaced, and the median a little larger than laterals. Abdomen is globular, slightly compressed laterally, light to golden brown. Dorsally, symmetrical markings consisting of dark brown spots with brown loop-like markings on the sides (Figure 1). Each marking con-

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<th>Table 1. Body measurement of an adult female <em>Latrodectus geometricus</em></th>
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<td>Total body length</td>
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Figure 1. *Latrodectus geometricus*, dorsal view.
sists of a brown centre and a light brown to yellow periphery that is bordered dark brown. Longitudinally, dorsum with 3–4 similar markings in the centre, anteriormost being circular, proceeding ones somewhat triangular. Spinnerets clustered in a striated ring-like form, slightly on the ventral side. Distinct bright orange hourglass marking on the ventral surface present (Figure 2a). Laterally, abdomen shows loop-like markings extending towards the hourglass markings (Figure 2b). All legs faint, with patella and tip of their tibia darker.

Epigynum with lower lip projecting on the sides beyond the upper lip of the opening. Spermathecae paired, copulatory ducts coiled (Figure 2c). The species-level identity of the specimen was established by comparing its genital structure to that described by Levi15, and Levy and Amitai16. D. B. Bastawade (Zoological Survey of India, Pune) confirmed the species identity.

The spider was collected by S.S. in a patch of deciduous forest (18°22′N, 73°46′E), at an elevation of 800 m amsl, approximately 20 km southwest of Pune city on 29 August 2004 in the afternoon. The site is a part of one of the Westerly spurs of the Western Ghat, having a maximum altitude of about 1300 m and an average annual rainfall of 1050 mm. The vegetation in the region is dominated by Tectona grandis, Terminalia crenulata and Anogeissus latifolia. The valley has many seasonal streams flowing only during the monsoons, when it harbours rich seasonal herbs. The area has a dry period length of seven to eight months. The vegetation is degraded, secondary deciduous type, with planted teak and poor undergrowth. The forest composition consisted mainly of fire-resistant species, with mature trees observed rarely. Grazing and human settlements were observed, with agriculture at the periphery.

Compared to other Latrodectus species like the American black widow spiders, whose envenomation is often referred to as ‘latrodection’, similar effects are less common from L. geometricus bites17. However, according to a study in South Africa, L. geometricus bites in humans cause localized pain and cramps with profuse sweating and increased blood pressure18. In addition, females may be more venomous and intensity of the bite may depend on the size of the spider inflicting the bite17,19. Though non-aggressive, these spiders bite only when handled or trapped, preferring to retreat most of the times when simply threatened17.

In captivity, the spider maintained an inverted position in the container. It mostly maintained a constricted position with its legs pulled inwards, and spun a few irregular strands on the lower surface of the lid that extended down up to the inner walls of the container. Cockroaches of Blatella sp., measuring 1 cm in length, were placed as food in the container. The spider preferred to eat in privacy. The intact remains of the cockroach’s exoskeleton were always observed after feeding. The spider was often seen putting her first pair of legs near her fangs, especially before feeding and when aggravated.

L. geometricus is among those spiders that have been reported from Pakistan, but have not yet been reported from India. The distribution of many species from Pakistan may extend up to India9. Further studies are needed to discover such spe-

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**Figure 2.** Identification characters of L. geometricus. a. Ventral view of abdomen of L. geometricus showing orange hourglass marking. b. Lateral view. c. Dorsal view of spermathecae.
cies. Also, further studies are needed to explore the spider diversity of the Western Ghats and other parts of India. Since this spider species has medical significance, a study on the effect of spider bites and their antidote, pertaining to the Indian context is necessary.


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