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NOTE

First records of the black widow spider *Latrodectus elegans* Thorell, 1898 (Araneae: Theridiidae) from Nepal

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The black widow spiders of the genus *Latrodectus* Walckenaer, 1805 (32 species) have a nearly worldwide distribution and are among the medically most significant spiders, with the bites of some species (particularly *L. mactans* (Fabricius, 1775), *L. hasselti* Thorell, 1870 and *L. tredecimguttatus* (Rossi, 1790)) causing significant morbidity and mortality in their distribution range (Jelinek 1997; Garb et al. 2004; Ryan et al. 2017). This exceptionally successful genus has settled on almost all continents (except Antarctica) and some species now (likely due to anthropogenic dissemination) have an almost cosmopolitan distribution (e.g., *L. geometricus* C.L. Koch, 1848) (Gonzalez et al. 2004). While the majority of species are found in Africa/Middle East (~13 species) and North/South Americas (11 species) (World Spider Catalog 2020), southern and southeastern Asia exhibit a relatively low *Latrodectus* species diversity (three species). Among the Asian species, *L. erythromelas* Schmidt & Klaas, 1991 has an uncharacteristically narrow distribution range (Sri Lanka and southern India: Schmidt & Klaas 1991; Srinivasulu et al. 2013), while *L. hasselti* appears in southern Asia at the western edge of its vast distribution area (Srinivasulu et al. 2013), which also includes Australia and New Zealand (Garb et al. 2004). The third species native to southern Asia, *L elegans,* ranges from India, Burma and China to Japan (Yoshida 2009). This species has only been recorded from southern Asia (India) relatively recently (Kananbala et al. 2012), perhaps reflecting historical undersurveying of arachnids in this region. This is particularly true for Nepal, with the most recent summary publication listing only 175 species of spiders (Thapa 1995), undoubtedly an underestimate. Contributions to the diversity of the Nepali spider fauna thus fill an important knowledge gap in biodiversity estimates. Nepal shares borders with both India (in the south, east and west) and China (in the north) and is a biodiversity hotspot due to its variety of altitudes that create a diversity of microclimate and vegetation zones across the country. During a trip to Nepal in April 2016, we observed several apparent members of the genus *Latrodectus*, one of which was clearly identifiable as *L. elegans*. These observations are described herein and contextualized with a previous (historical) record for the genus in Nepal.

Observed specimens: Two adult females, 28°19’35.6”N & 84°54’29.9”E, Kerauja, Yaruphant (Manaslu), Nepal, 1,250m, 24.ii.2012, under stones in dry riverbed (Buri Gandaki), observed by Henning Rose and Alexander Rose, not collected. Two adult females, 27°56’14.1”N & 84°24’15.2”E, Bandipur, Nepal, 900m,

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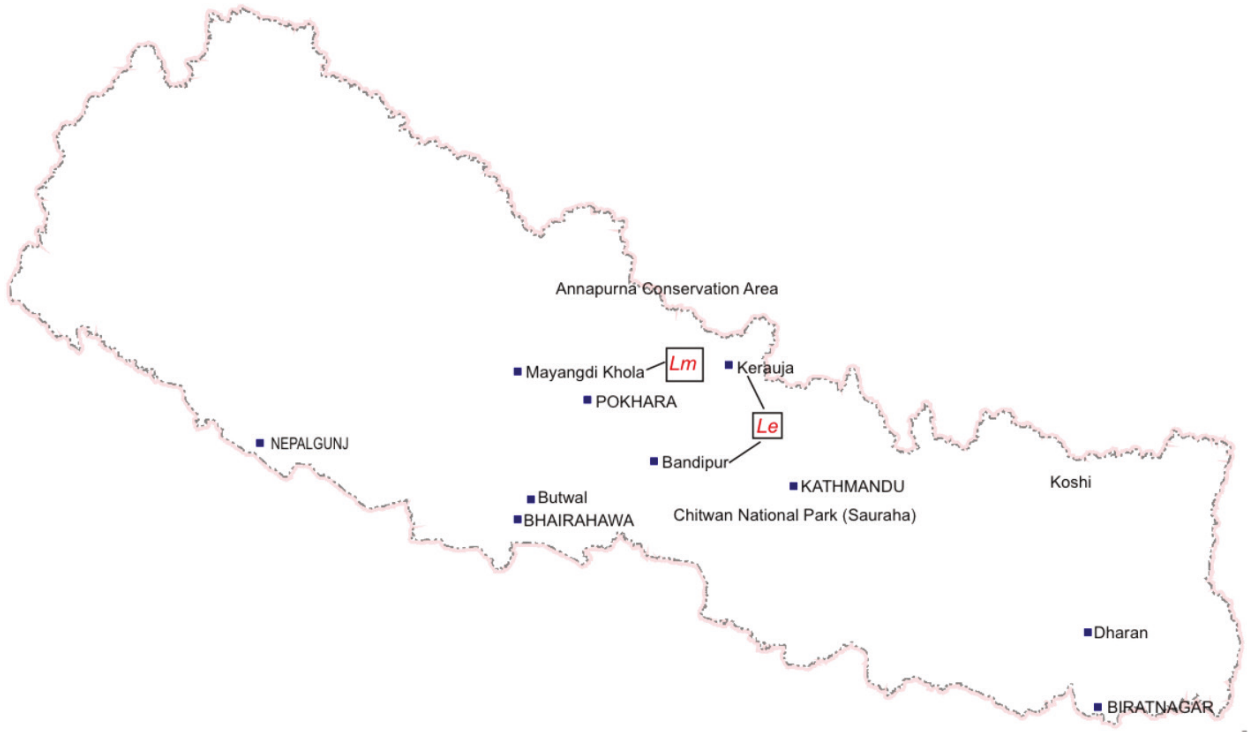

Figure 1. Known records of *Latrodectus* in Nepal. Lm, *L. mactans* sensu Levi 1959, Le, *L. elegans.* The map was created through modification of a template obtained from Naapi Bibhag (www.dos.gov.np).

16.iv.2016, in webs at night at upper edge of roadside embankment, observed by Binu Shrestha and Tobias Dörr, not collected.

Historical record: *L. mactans* (mentioned in (Levi 1959): Nepal: 28°24'N & 83°23'E, Mayangdi Khola nr. Darban, 3,000ft , collected by K.H. Hyatt.

While conducting night-time searches (20.00–21.00 h) in Bandipur (roughly halfway between Kathmandu and Pokhara) in April 2016, we encountered two large individuals of a *Latrodectus* sp. in their webs at the top of a roadside embankment (at a height of ~3m) close to Bandipur main street (Image 1A–C). Based on coloration, these spiders were identified as *Latrodectus elegans*, a species which is widely distributed in southern and southeastern Asia (Japan, Myanmar, and India) (Yoshida 2009; Kananbala et al. 2012; World Spider Catalog 2020). The dorsal coloration matches that described for *L. elegans* (Image 1A,D); however, the red ventral hourglass marking typical of many *Latrodectus* species, though present, was not clearly visible due to a somewhat subdued red coloration (Image 1B). The distinctness of this hourglass shape appears to exhibit high inter-individual variation in other *Latrodectus* as well (Kaston 1970).

An exhaustive internet search revealed an additional photographic record from the Gorkha area, around 60km distance from Bandipur area. Two females were found during a trekking expedition under stones in a dry river bed (Image 1D) (Henning & Alexander Rose pers. comm. May 2016).

The nearest confirmed record for *L. elegans* lies in Manipur, India (Kananbala et al. 2012), a distance of ~1,000km to the southeast, and its occurrence in Nepal, and thus represents a significant extension of the known range of this species. Importantly, to the best of our knowledge, this is only the second record of the genus *Latrodectus* from Nepal and the first more recent one – a historical record of *L. mactans* is mentioned in (Levi 1959) without a date (but must stem prior to 1959, when the citing article was published), however, what was considered by Levi as "*L. mactans*" comprises a group that other authors have considered distinct species (while presently, *L. mactans* refers to a species with a North American center of distribution). Importantly, the Nepali "*L. mactans*" was collected in west-central Nepal only ~100km from where we found *L. elegans* (Figure 1). We consider it highly likely that this record actually refers to *L. elegans,* or an as yet undescribed *Latrodectus* species.

The occurrence of *L. elegans* in Nepal raises a number of interesting questions. Firstly, *Latrodectus* spp. are medically significant spiders, and the degree to which

Image 1. ***Latrodectus elegans*** **from two localities in Nepal: A—dorsal view of adult female from Bandipur | B—ventral view of same individual | C—adult female in situ in its web in Bandipur | D—adult female from Manaslu. © 1A–C—Tobias Dörr; 1D—Henning and Alexander Rose.**

the Nepali species cause envenomation is unknown. Nepal is listed among countries in which "Latrodectism" (Black Widow spider envenomation) is endemic (Maretic 2013) (albeit without clear source attribution), suggesting that indeed *Latrodectus* might be of medical significance in Nepal. Secondly, the apparently immense distribution area of *L. elegans* (from Japan, Burma, China, and India to Nepal) raises the question of origin. Are the Nepali specimens autochthonous populations or were they established in Nepal by accidental human activity? *Latrodectus* spp. are often found near human habitations and could have traveled to Nepal via, for example, firewood. Future studies should be directed at phylogenetic comparisons of specimens collected in Nepal with those from the type locality in Myanmar. If *L. elegans* turns out to be autochthonous, this likely means that the species is widely distributed within Nepal. Alternatively, *L. elegans* might actually represent a morphologically extensively homogeneous species complex. Unfortunately, a recent phylogenetic study of global *Latrodectus* distribution omitted *L. elegans* (Garb et al. 2004). Future work is needed to address this issue.

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Corrigenda

Daniel, J.A. & K. Ramaraju (2020). Collecting parasitic Aculeata (Hymenoptera) from rice ecosystems of Tamil Nadu, India. *Journal of Threatened Taxa* 12(8): 15828–15834. https://doi.org/10.11609/jott.4724.12.8.15828-15834

(i) Page No. 15831 Image no. 9 written as "*Zavatilla* sp." should be read as "*Spilomutilla* sp."

(ii) "*Zavatilla* sp." should be read as "*Spilomutilla* sp." throughout the article.

(iii) Page No. 15833, Table 3, Rows 9 & 10, column 2 (host), written as "Coleoptera, Diptera, & Hymenoptera" should be read as "Hymenoptera (Aculeata), rarely Diptera or even Coleoptera"

(iv) Page No. 15833, Table 3, Rows 9 & 10, column 3 written as "Lelej et al. 2007" should be read as "Lelej & Schmid-Egger 2005".

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