Article

Latrodectus hasselti Thorell, 1870 (Araneae: Theridiidae): A species new to Punjab, Pakistan

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Abstract

This paper reports first sighting of medically important *Latrodectus hasselti* (Thorell, 1870) from Punjab, Pakistan. As this species has not previously reported from Punjab spider fauna of Pakistan, the brief illustration of this species is narrated along with comments on its natural history global distribution.

Keywords faunistic study; *Latrodectus hasselti*; new record; red back spider; Pakistan.

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1 Introduction

The genus *Latrodectus* Walckenaer, 1805 (Theridiidae) is broadly distributed genus of spiders commonly known as red back spiders in Australia, button spiders in Africa and true widows, as the female generally gobbles the male after mating (Grab et al., 2004; Ushkaryov, 2004; Sari et al., 2017; Nentwig, 2017). However, this behavior has been documented for only *Latrodectus hasselti* Thorel, 1870 (Segoli et al., 2008). Spiders of the genus *Latrodectus* Walckenaer, 1805 are reported to present worldwide (Graudins et al., 2001) especially in drier warmer regions of the world (Murphy and Murphy, 2000). Currently, the genus comprises 32 species (Platnick, 2014; World Spider Catalogue, 2019) and largest amongst the comb footed spiders (Mc Crone, 1964). Spiders of the genus are of high medical importance due to their high α-latrotoxin neurotoxin (Grab et al., 2004) which results opening of neural calcium channels with sudden massive neurotransmitter release leading to serious neuromuscular, neurosecretory, and cardiovascular effects in vertebrates (Orlav et al., 2000; Stommel and Watters, 2006).

In Pakistan, *Latrodectus hasselti* Thorell is first reported by Luqman et al. (2019) from Baluchistan (Pakistan) and Kazim et al. (2014) from Sindh province of the Pakistan. This paper gives detailed information of *Latrodectus hasselti* Thorel from Punjab, Pakistan along with its natural history and habitat. This paper is part of project "Diversity of Insect Pest and Predators of Agriculture Crops of Lahore".

2 Materials and Methods

2.1 Study area

Lahore is the capital of province of the Punjab and second largest city of as well as 18th largest city in the world. It is spread on an area of 1,772 km^2. It is situated geographically at latitude 31.5580006 and longitude 74.350708, in the northern hemisphere (Fig. 1). Its agriculture spider fauna has been extensively studied by Tahir et al. (2011).

Fig. 1 Current location of *Latrodectus hasselti* Thorell from Punjab, Pakistan.

2.2 Spider collection, preservation and identification

One ♀ specimen is hand collected from maize crops in Lahore, Pakistan on 13 July, 2020. The specimen was preserved in 70% ethyl alcohol in 20 ml glass tube. Live specimen photographs were taken using Samsung mobile C-7. Specimen was dissected under dissecting microscope and photographs were made. Identification was made on morphological basis according to international standard taxonomic key diagnostic (Roth, 1982; Levi, 1983).

3 Results

One ♀ specimen of *L. hasselti* Thorell was collected from maize agriculture fields from Lahore, Pakistan. The adult female redback has a body around 1 centimetre (0.4 in) long, with slender legs, the first pair of which are longer than the rest. The round abdomen is with red stripe on upper dorsal side of abdomen. Cehpalothorax is much small than abdomen and black. A pair of venom gland attached on side of the chelicerae with little fangs. The description of the specimen is given In Table 1, and Figs 2-3.

Table 1 Body part measurement of *Latrodectus hasselti* Thorell, 1870.

Total Length of Body	Length of Cehpalothorax	Width of Cehpalothorax	Length of Abdomen	Width of Abdomen
10 mm	4 mm	3 mm	6 mm	4.4 mm

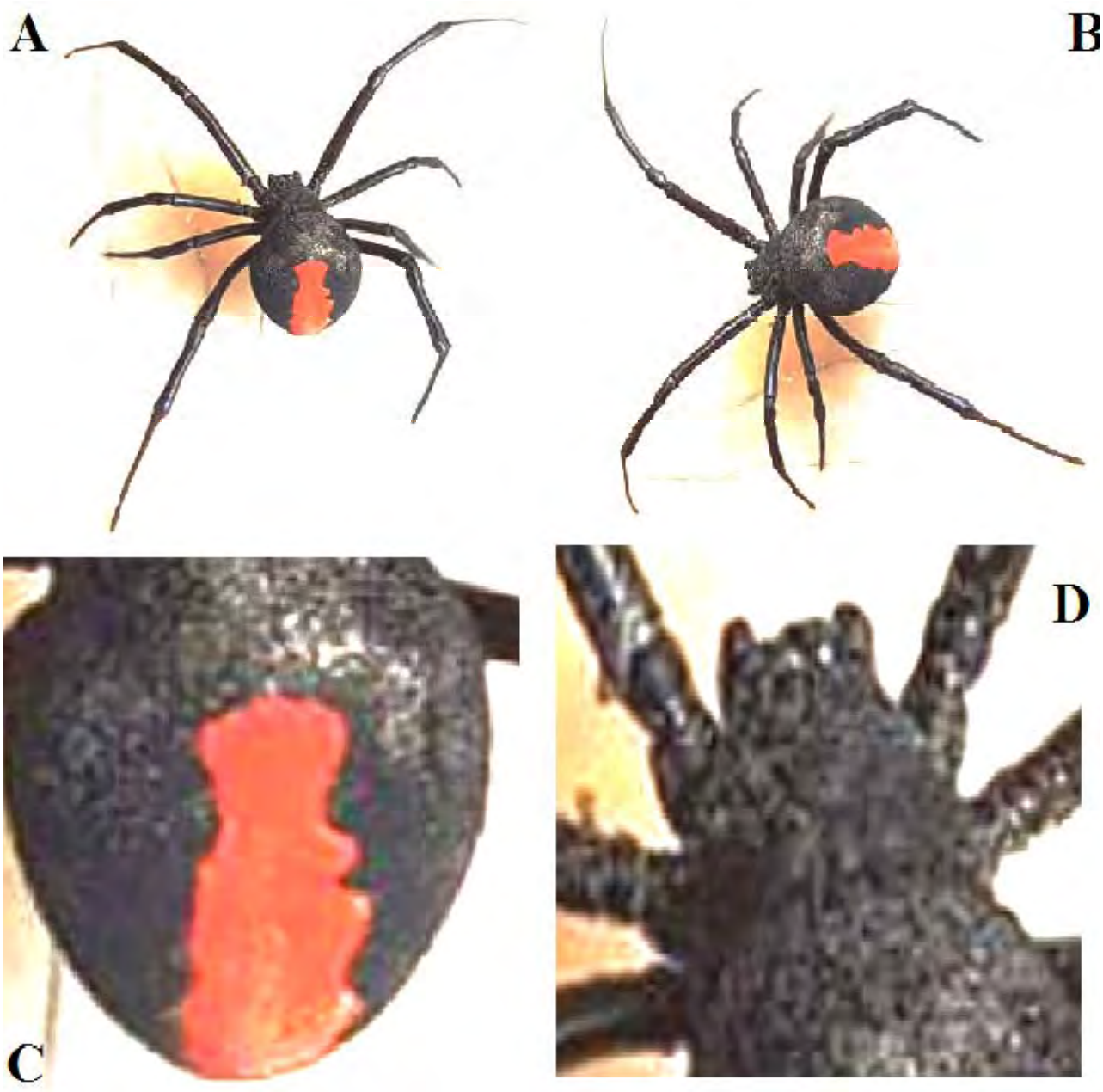

Fig. 2 A: Dorsal view of *L. hasselti*; B: Lateral view of *L. hasselti*; C: Red longitudinal strip on dorsal side of *L. hasselti*; D: Eyes pattern of *L. hasselti*.

Fig. 3 E: Epigynum sketch of *L. hasselti*; F: Eye pattern sketch of *L. hasselti*.

4 Natural History and Global Distribution

Red back spiders are commonly found in the urban areas due to sheltered human habitats providing protection from unfavorable climatic conditions. They are also found in tropical and temperate areas of Australia. Their presence is not reported in savanna, deserts, and continent of high elevations. The presence of the red back spiders in Japan shows their survival in the low temperature (Isbister and Gary, 2003).

L. hasselti also known as Australian black widow (Ushkaryov, 2004; Palop et al., 2010) is extremely venomous species of genus *Latrodectus* Walckenaer, 1805. Australia is considered as native region of red back spiders (Winkel and Nimorakiotakis, 2004). They believed to be originated in Australia but now found in throughout Australia (Raven and Galloon, 1987; Isbister and Gray, 2003), North and South Islands of New Zeeland and South East Asia and getting the status of cosmopolitan (Whyte, 2017). Currently, *L. hasselt* is reported to present in Australia, New Zealand (Forster, 1984; Foster and Foster, 1999), South Central Japan (Ori et al., 1996; Niehi et al., 2003; Grab et al., 2004; Vink et al., 2009, 2011), India (Simon, 1897; Pocock, 1900; Daniel and Soman, 1961; Patel, 1973; Tikader, 1987; Kumar, 2005; Kananbala et al., 2012; Goyal and Malik, 2017), South East Asia (Platnick, 2010), The Philippines (Cariaso, 1967), Belgium (Blick et al., 2004), Iran (Shahi et al., 2011), Iraq (Abdul-Rassoul et al., 2012; Al-Hadlak and Najam, 2015), Luqman et al. (2019) from Baluchistan , Pakistan and Kazim et al. (2014) from Sindh province of the Pakistan.

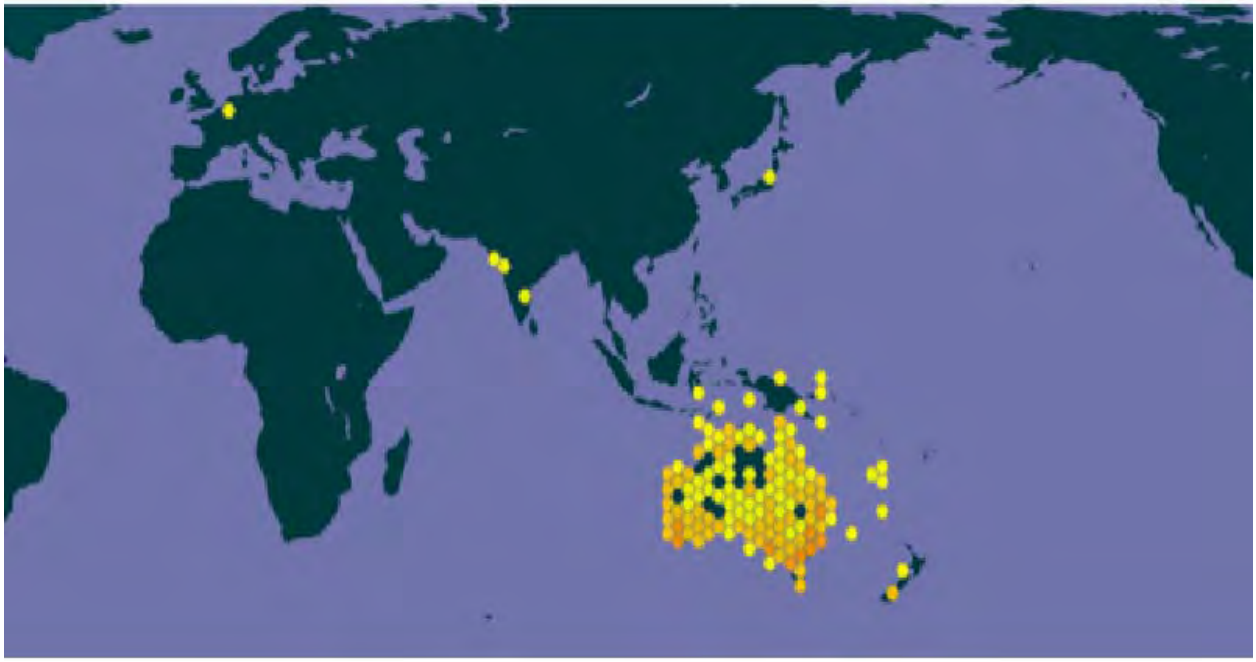

Fig. 4 Global distribution of *L. hasselti* Thorell, 1870.

5 Discussion

The spider of the genus *Latrodectus* has widespread distribution (Graudins et al., 2001). Their affinity for human modified environment has facilitated them to stretch to several countries through international trade and shipping (Vink et al., 2010). Morphologically *L. hasselti* has close resemblance with *Latrodectus katipo* but former has small red smooth strip on dorsal side of abdomen and latter has white border long red stripe that throughout the abdomen. Bonnrt in 1999 has reported painful bite and injection of Alpha-latrotoxin by *L. hasselti.* The red back spiders results in severe pain and systemic symptom that may continue for hours to days but are not life threatening (Ushkaryov et al., 2004).

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