Indian Journal of Entomology 85(1): 222-224 (2023) DoI. No.: 10.55446/IJE.2022.803

NEW RECORD OF THE MEDITERRANEAN RECLUSE SPIDER *LOXOSCELES RUFESCENS* (DUFOUR) FROM EASTERN INDIA

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ABSTRACT

A new record of *Loxosceles rufescens* (Dufour, 1820) (Araneae, Sicariidae) from Eastern India is discussed herein. This paper extends the distribution of *L. rufencens* from Western India to Eastern India. It was sampled from the wild habitat area inside the campus of Berhampur University, Ganjam, Odisha, India.

Key words: *Loxosceles rufescens*, Sicariidae, Mediterranean recluse spider, Eastern India, new record, invasive species, distribution, redescription

The family Sicariidae Keyserling (1880) of Order Araneae, includes spiders that are well known for their painful bites, which can cause necrotic severe skin damage at the biting site (Swanson and Vetter, 2006; Vetter and Isbister, 2008; Yigit et al., 2008). These spiders are easily distinguished by their six rather than eight eyes, which are grouped in three clusters of two eyes (ocelli) each. This family includes three genera, *Hexophthalma* Karsch, 1879, *Loxosceles* Heineken and Lowe, 1832 and *Sicarius* Walckenaer, 1847, having 8, 143 and 21 species worldwide, respectively (World Spider Catalog Version 23.0). Only one genus *Loxosceles* (violin spiders) has been documented in India, with a lone species, *Loxosceles rufescens* (Dufour, 1820), with distribution as various states of western India, including Gujarat, Jammu and Kashmir, Karnataka, Lakshadweep, Maharashtra, Manipur, Sikkim and Tamil Nadu (Trivedi and Dal, 2019; Tiwari et al., 2021). *Loxosceles rufescens* is commonly called the Mediterranean recluse spider, and originally found in the Mediterranean countries. This spider species has now spread to most countries, including Australia, the United States, East Asia, Africa, and China (Taucare-Rios et al., 2018). The major source of the invasion of this species is the transportation of goods by ship (Nentwig, 2017; Taucare-Rios et al., 2018). Its natural microhabitat consists of sparsely dispersed plants and beneath rocks and cracks (Nentwig et al., 2017). The invaded area's usual microhabitats are old buildings, tree barks and leaf litter (Borkan et al., 1995; Greene et al., 2009). It is both a passive hunter making irregular webs and an active hunter at night (Fischer et al., 2006). Its feeding habit is polyphagic as it can feed on a wide variety of diurnal and nocturnal insects, but in the invaded region, its preferred preys are woodlice, termites, ants, silver fishes and cockroaches (Greene et al., 2009). There are many publications regarding the severe and fatal bite of this species (Nentwig et al., 2017). Therefore, this species has medical importance, although there is no report of spider bites by this species in India.

MATERIALS AND METHODS

Spiders were sampled from wild habitats inside the campus of Berhampur University, Ganjam, Odisha, India (19˚17'56.62"N, 84˚53'01.26"E). Two techniques, beating and shaking of branches to the inverted umbrella and direct putting into the plastic vial, were used. If possible, the microhabitat of each spider was recorded and photographed in the field. Then the specimens were photographed in the laboratory using a DSLR camera with a 40 mm macrolens and preserved in 70% isopropyl alcohol in an air-tight labelled vial. The identification was done using key characters in Jocque and Dippenaar-Schoeman (2007) and Gertsch and Ennik (1983). One specimen of a female adult spider was identified to be *Loxosceles rufescens* (Dufour, 1820). The specimen was observed under a dissecting microscope, with large parts of the body measured using a divider and scale and smaller parts were measured with reference to the previously measured parts from perpendicularly taken macrophotographs. The genitalium was dissected and kept in 10% NaOH for 30 min and cleared using a fine brush and distilled water. Then the epigynum part was placed on the dry slide, and one drop of clove oil to observe under a stereozoom microscope (Levi, 1965). The voucher specimen is deposited and registered in

the National repository of EBRC-Zoological survey of India, Gopalpur-on-Sea, Odisha, India, with registration number: EBRC/ZSI/Ar13897.

RESULTS AND DISCUSSION

***Loxosceles rufescens* (Dufour, 1820)** (Fig. 1.A)

Material Examined: 1 example, Registration Number: EBRC/ZSI/In-12261 A-P, collected by: Somanath Sahoo, Adult: ♀ Medium-sized; body length 7.6 mm.

Redescription: Female: Total body length is 7.6 mm. Carapace is 3.3 mm long, 2.7 mm wide. The abdomen is 4.5 mm long and 3.2 mm wide. The Colour of the body is bright orange-brown. The lower parts of the legs are lighter than the femur. The entire body is covered with black hairy setae. Clypeus 0.15 mm long. Six eyes are present in three groups, one median group and two lateral groups (Fig. 1B). The space between median eyes and lateral eyes is 0.15 mm. Eyes are small and almost equal in size. The sternum is 1.6 mm long, 1.1 mm wide. The labium is 0.53 mm long. The chelicera is 0.92 mm long. The length of parts of appendages (legs, pedipalp) is as follows:

Appendages	I	II	III	IV	Palp
Femur	4.40	4.75	4.15	4.70	1.25
Patella	1.15	1.15	0.95	1.20	0.45
Tibia	4.55	4.85	3.70	4.30	0.85
Metatarsus	4.60	5.15	4.35	5.15	
Tarsus	1.20	1.30	1.15	1.25	1.25
Total	15.90	17.20	14.30	16.60	3.80

Leg formula (shortest as 1 to longest as 4) 2413. The second pair of legs is the longest, and the third pair of legs is the shortest. Epigynum (Fig. 1D) with genital furrow and swelled epigynum visible from the ventral side (Fig. 1C); receptacle closely located and produced into lobular sacs tilting to the inner side. Dark sclerotized bands along the outer face of the receptacles are present.

Ecology: The sampled spider was collected from the leaves of a wild shrub plant in the resting stage at 11.30 am. High trees entirely shaded the microhabitat. Gound was covered by leaf litter with moist soil due to rain one day before.

Potential threats: This new sighting of this species indicates that it can adapt to live in human habitat and

Fig. 1. *Loxosceles rufescens;* A. Dorsal view; B. Arragement of six eyes on cephalothorax; C. Ventral view showing female genitalia and spinneret; D. Dissected epigynum of genitalia

can easily relocate and establish itself in a new place to increase its population range throughout the world. As it is an invasive species, it can have the potential behaviour of dominance over native spider fauna to cause a drastic imbalance in the food chain in different microhabitats. Its bite can cause medical problems in children and hypersensitive groups of people. Therefore there is an immediate requirement to evaluate its relocation rate to a new place, establishment rate to increase its population size and ecological interference to native spider populations.

Remarks

Loxosceles rufescens, is now cosmopolitan and invasive in most countries. As the species possess ecological and medical importance, in some countries like USA, Brazil, Thailand etc., there are some guidelines to manage and treat the spider bite of the species by the local government (Nentwig et al., 2017). The new sighting of the spider *Loxosceles rufescens* from Odisha is the first documentation from Eastern India. The current record of its new distribution provides preliminary information about its faster invasion rate and potential threat to the spider fauna in India. This species may inflict necrotic severe skin damage at the biting site. The current record of its expanding distribution provides information about its rapid invasion rate and potential threat to the spider fauna in India.

ACKNOWLEDGEMENTS

The authors thank the Post Graduate Department of Zoology, Berhampur University, Ganjam, Odisha, for providing laboratory facilities.

AUTHORS' CONTRIBUTIONS

S Sahoo conducted the sampling, collected, took the photographs and identified the specimens. S Sahoo, G Mishra, J K Seth, L K Murmu and S Goud prepared the manuscript. All authors read and approved the manuscript.

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(Manuscript Received: July, 2022; Revised: September, 2022;
Accepted: October, 2022; Online Published: October, 2022)
Online First in www.entosocindia.org and indianentomology.org Ref. No. e22564