

## Case Report

# First Record of the Mediterranean Recluse Spider *Loxosceles rufescens* (Araneae: Sicariidae) from Iran

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## Abstract

*Loxosceles rufescens*, commonly known as the Mediterranean Recluse or Mediterranean Fiddle-Back Spider is recorded from Iran for the first time. The genus *Loxosceles* contains 103 accepted species, two of them (including *L. rufescens*) are cosmopolitan. All *Loxosceles* species tested so far possess necrotic venoms, which is a unique characteristic among the Order Araneae. Considering this characteristic, it is of medical importance to determine a specific geographical distribution of these spiders. Collecting methods include visual inspection and direct hand collecting. All of the specimens were collected in Tehran.

Six specimens of both sexes were collected from parks, houses and apartments. The characteristics of the genus, which are the unique arrangement of six eyes in three diads, the violin shaped mark on the cephalothorax, and the short tibia of adult male palpi with narrow base and its embolus which is about as long as the width of the globular bulb were observed and recorded. Having the cytotoxicity of the venom and its urban distribution in mind, *L. rufescens* is probably among the more important spider species of Iran. Since there are no reports of loxoscelism from Iran, we assume that the bites are either infrequent or misdiagnosed. Therefore further studies are needed to clarify the medical importance degree of this species.

**Keywords:** cytotoxicity, arachnidism, loxoscelism, distribution, faunistics

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## Introduction

Among all animal Orders, with more than 40,000 described species, Araneae (Spiders) ranks seventh in the global diversity (Mirshamsi Kakhki 2005). With more than 244 recorded species (Ghavami 2006), Iran's araneofauna is very poorly known. In the latest published checklist of spiders of Iran (Ghavami 2006), it is declared that an unidentified *Loxosceles* species was reported from Tehran by Goodarzi (1994). The genus *Loxosceles* consists of 103 species, several of which have been the subject of medical and biological research due to their necrotic venom, which may produce a set of symptoms known as loxoscelism (Appel et al. 2005). Loxoscelism is the only proven cause of arachnogenic necrosis

in humans (Swanson and Vetter 2006). Once these spiders were placed in their own family, Loxoscelidae (Gertsch 1949, Gertsch and Ennik 1983) and in Scytodidae (Gertsch 1967), but now, along with *Sicarius* spiders, they are placed in the family Sicariidae (Simon 1893).

Out of 103 described species of *Loxosceles* spiders, two are reported to have been transported to numerous parts of the world (Harvey 1996). One of them is the Chilean Recluse Spider *L. laeta* (Nicolet, 1849), which is originally from South America, but studies have shown their presence in California and Finland as well (Gertsch and Ennik 1983), and the other one, is the more widely distributed *L. rufescens* (Dufour, 1820). The

latter originated from Mediterranean countries, but now can be found in regions including USA, East Asia, Australia and many others (Bonnet 1957, Gertsch and Ennik 1983, Platnick 1989, Platnick 1993) and it is now considered as a cosmopolitan species (Platnick 2012). The aim of this study was to declare the presence of *L. rufescens* in Iran for the first time.

## Materials and Methods

### Study area

This study was based on the specimens that were collected from different parts of Tehran province, the capital of Iran. Tehran is geographically located at 35.7117°N 51.4070°E in the northern parts of the central plateau of Iran, below the southern slopes of Alborz Mountains.

### Spiders

Since these spiders are ground dwelling and usually live inside apartments, under rocks and fallen tree logs, discovery of all *L. rufescens* specimens was a result of visual inspections and direct hand collecting between years 2010–2013. Indoor specimens were found on the walls or were captured while they were foraging on the ground. Outdoor specimens were found under large rocks and in the leaf litter. Six specimens were collected (first one: 35°45'N, 51°24'E second one: 35°43'N, 51°25'E third one: 35°43'N, 51°25'E fourth one: 35°21'N, 51°22'E fifth one: 35°34'N, 51°02'E and sixth one: 35°46'N, 51°20'E) (Fig. 1), preserved in 75 % ethanol and deposited in senior author's personal collection. Half of the specimens were found in apartments/ houses and the rest of them were found in parks. Various stereo-microscopic photos of specimens and their structures were captured using a light stereo-microscope, plus a Sony DSC-TX10 camera. Publication of Gertsch and Ennik (1983) was used as an identification key.

## Results

Laboratory examinations clarified that two adult males and four subadult females were collected.

## Description

Medium-sized, haplogyne, six-eyed spiders. Males have simple palpal organs, females without sclerotized epigyne. Total body length 7–7.5 mm in both sexes (Fig. 2, 3).

As in most spiders, the most definite key for identifying to the species level is the form of the adult male palpi and female genitalia (Gertsch and Ennik 1983). In *L. rufescens*, the tibia of male's palpus is short, thick, and its base is narrow and not very prolonged. The embolus is about as long as the width of the globular bulb (Greene et al. 2009) (Fig. 4).

In female *L. rufescens*, the spermathecae is white and dimpled, and its parts are near each other at the midline and are identified by a single, large rounded lobe (Greene et al. 2009).



**Fig. 1.** Tehran, Iran. The collecting site for *L. rufescens*



**Fig. 2.** Male's cephalothorax, dorsal view. The characteristics of the genus, arrangement of six eyes in three pairs and also the violin shaped mark on the cephalothorax are visible



**Fig. 3.** Female's cephalothorax, dorsal view. The characteristics of the genus, arrangement of six eyes in three pairs and also the violin shaped mark on the cephalothorax are visible



**Fig. 4.** Right male palpus, lateral view. Note that the tibia is short, thick, and its base is narrow and the embolus is about as long as the width of the globular bulb

## Discussion

*Loxosceles* spiders are infamous for their ability to cause severe skin necrosis, and in some cases, highly damaging systematic effects (Greene et al. 2009). There are several reports of loxoscelism caused by *L. rufescens* in numerous parts of the world; such as in western Asia, it was blamed for an outbreak of skin lesions in orchard workers (Borkan et al. 1995), in Turkey, a case of loxoscelism which after 20 days caused severe necrosis has been reported (Yigit et al. 2008) and other reports from Greece (Stefanidou et al. 2006), Jordan (Amr 1988) and Palestine (Wong et al. 1987). Considering several other medically important spiders of Iran which all possess neurotoxic venoms (including *Latrodectus tredecimguttatus* (Rossi, 1790), *L. dahli* Levi, 1959, *L. hasseltii* Thorell, 1870 and etc.), having the cytotoxicity of the venom and its urban distribution in mind, *L. rufescens* is probably among the more important species of Iran and should be added to the list of Iranian spiders of medical importance. Since there are no confirmed reports of loxoscelism from Iran, we assume that the bites are either infrequent or misdiagnosed, which probably the latter would be the case. Therefore further studies are needed to clarify the medical importance degree of this species.

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