



## Morphological features and distribution of *Loureedia jerbae* (El-Hennawy, 2005) (Araneae: Eresidae) in Libya

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### Abstract:

Seven male specimens (one immature and six adults) of a rare species of *Loureedia jerbae* (El-Hennawy, 2005), are recorded for the first time in Libya, representing the first record of this species outside of Tunisia. Illustrations and a description are provided. Only the most recent adult of the specimens captured in October/November of 2019 to 2022 was examined, identified and described. Although Libya has one of the least recorded spider species in the Mediterranean region, it is promising to reveal more undiscovered and undocumented species through extensive research in this large country.

**Keywords:** Araneae, North Africa, Joker Spiders, Libya, Rare Species.

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## السمات المورفولوجية وتوزيع *Loureedia jerbae* (الحناوي، 2005) (Araneae: Eresidae) في ليبيا

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### الملخص

تم تسجيل سبع عينات ذكور (عينة غير كاملة النمو وست بالغات) لنوع نادر من العناكب *Loureedia jerbae* (El-Hennawy, 2005) لأول مرة في ليبيا، وهو ما يمثل أول تسجيل لهذا النوع النادر خارج تونس. تم دعم التسجيل بالرسوم التوضيحية والوصف التفصيلي. أحدث عينة بالغة فقط من بين كل العينات التي تم جمعها في شهر أكتوبر أو نوفمبر من سنة 2019 إلى 2022 تم فحصها، التعرف عليها وصفها. بالرغم من أن ليبيا لديها واحدة من أقل السجلات لأنواع العناكب المسجلة في منطقة البحر المتوسط، فهي واعدة بإمكانية الكشف عن المزيد من الأنواع غير المكتشفة والموتقة من خلال البحث واسع النطاق في هذا البلد الكبير.

**الكلمات المفتاحية:** العناكب، شمال أفريقيا، عناكب الجوكر، ليبيا، نوع نادر

### Introduction

The spider family Eresidae (commonly known as velvet spiders) includes 9 genera and 107 species [1] and its members are distributed in Africa, Europe, and Asia (mostly arid areas), although some can be found in tropical rainforests of Africa, Central and South Americas [2, 3, 4]. *Loureedia* Miller et al., 2012 is the most recently described genus, although its type species *L. annulipes* (Lucas, 1857) (= *Eresus annulipes*) was described 167 years ago [5, 6]. *Loureedia jerbae* (El-Hennawy, 2005) is a rare species currently known only in Tunisia,

although some individuals were observed in Libya (Figure 1), near the Tunisian borders, they have not been examined yet for confirmation [5]. This research aims to identify, illustrate and describe the rare species *L. jerbae* from Libya.

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### Material and methods

Six adult and one immature male specimens were sampled by active searching [7] in October and November of 2019 to 2022 from a house garden in Al-Kahassat rural village of Gharyan city (mountainous city, 750 m above sea level and 105 kilometres south of Tripoli). The specimens were preserved separately in plastic tubes containing 75% ethanol, at laboratory of the Biology Department, Faculty of Education (Souq Al Jum'aa), University of Tripoli. They were later examined using Wild M3 (Heerbrugg) dissecting Stereomicroscope and photographed with Omax A35180U3 mounted microscope digital camera. Image editing and measurements were performed using ImageJ image processing and Analysis software program (V 1.8.0).

Abbreviations used in the description: AL = abdomen length, ALE = anterior lateral eye(s), AME = anterior median eye(s), AW = abdomen width, CL = carapace length, CW = carapace width, TL = Total length; leg measurements were taken on the dorsal side and are listed as the total length (femur + patella + tibia + metatarsus + tarsus); all measurements were in millimeters. The distributional map was designed using SimpleMappr [8].

Because old preserved specimens may lose their coloration (scales, setae), an obstacle that can make our descriptions more difficult [5], we chose to describe the most recent (adult) specimen (2022) and preserved the other specimens in 70–75% ethanol for future DNA analysis.

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### Results and discussion

#### Eresidae C. L. Koch, 1845

#### *Loureedia* Miller et al., 2012

The genus *Loureedia* contains 6 species, each of which, except *L. annulipes* (Lucas, 1857), is found in one country only (see Table 1 for their distribution). All *Loureedia* species are restricted to the Old World (4 in Africa, 2 in Asia, and 1 in Europe) [1].

The genus *Loureedia* can be differentiated from other eresid genera by having cephalic region wider than long, median ocular quadrangle much wider than long, bifid process of palpal conductor, vulva with compact duct system and anterior lobe, and living on the ground in burrows, and in a silken tube [9, 10]

*Loureedia jerbae* (El-Hennawy, 2005) (Figure 2).

*Material examined*: 1♂, Libya: Gharyan, Al-kahassat, 32°06'52.7"N 13°00'51.5"E, 7 November 2022, Hamida S. Khbaish.

*Etymology*: The genus *Loureedia* of velvet spiders that live underground was named after Lou Reed, guitarist, singer and leader of the rock band The Velvet Underground from 1965–1970 [10]. The species name *jerbae* is a noun in apposition taken from the type locality [11].

*Diagnosis*: The dorsal coloration pattern of the male *L. jerbae* resembles those of *L. maroccana* and *L. lucasi*, but *L. jerbae* is distinguished from them by the presence of many white patches and short bands at the ends of the side branches of the median abdominal foliate pattern compared to no white spots or a few extremely small white spots on the others. *L. jerbae* and *L. maroccana* both have a red (dark in *L. lucasi*) posterior part on the carapace. Moreover, two distinct white patches are present around the posterior lateral eyes of our specimen. The prolateral arm of the palp's bifid conductor is slightly shorter and has wider base than the retrolateral arm counterpart has. In addition, the terminal part of the prolateral arm bends posteriorly and laterally.

*Distribution*: Tunisia: Djerba island (about 33°47'31"N 10°53'51"E) [11] and Libya: Gharyan, Al-kahassat (about 32°06'52.7"N 13°00'51.5"E) (Figure 3).

*Description of male specimen*: The carapace has (1) large triangular crimson hairy patch with its base situated anteriorly behind the black chelicerae, and two longitudinal black spots located in the patch, (2) U-shaped black hairy strip laterally and posteriorly. Two small white spots are encircling the PLE. Pars thoracica (appearing as a bowtie) is covered mostly with red bristles on the sides and small black and white hairy strip in the midline. All legs are covered with regions of thin black bristles at the leg segments, separated by areas of white hairs

(forming white rings) at the joints of these segments. Dorsally, opisthosoma has an impressive crimson longitudinal leaf-like pattern with white patches at its lateral branches. The ventral side of the spider (sternum, labium, maxillae and leg bases) is almost dark brown to black with long thick black and white hairs, particularly at the first three segments of the legs and posterior part of the abdomen; the sternum has a white ring encircling it. Measurements of the most recent adult male specimen (collected in 2022): CL 5.77, CW 5.55, AL 6.74, AW 4.81, TL 11.75. Eye diameters and interdistances: AME 0.12, ALE 0.1, PME 1.90, PLE 0.1, AME–AME 0.15, PME–PME 0.35, ALE–ALE 3.69, PLE–PLE 2.95. Measurements of legs: I: 10.30 (3.31, 1.88, 2.26, 1.71, 1.14); II: 10.15 (2.87, 2.1, 2.2, 1.81, 1.17); III: 9.25 (2.69, 1.74, 2.1, 1.67, 1.05); IV: 11.64 (3.27, 2.05, 3.03, 2.1, 1.19). Anteriorly, the chelicerae have strong black boss covered with long black and white hairs at the inferior ends.

*Palp.* Conductor is longer than wide; its mesal margin is almost straight compared to a slight concavity of its ectal margin; its retrolateral arm is slightly longer and narrower than its prolateral arm; both arms have pointed tips.

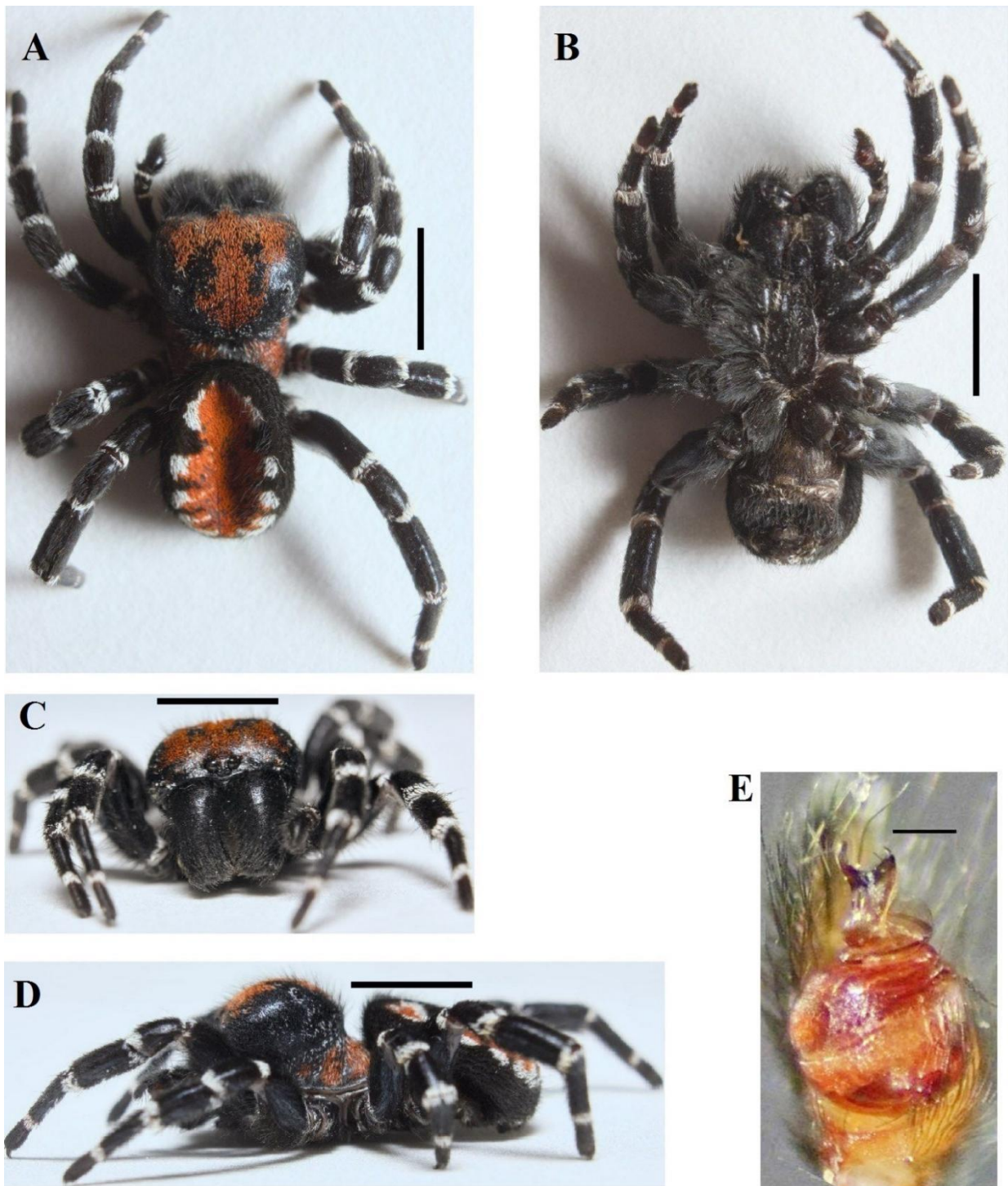
Apart from records of this species in Tunisia (Bizerte and Djerba), at least four similar individuals have been observed and photo captured by amateur photographers in northwestern Libya, but their examination and identification have not been confirmed yet (Figure 1). The male specimens were active during October/November.

**Table 1** Species distribution and composition of *Loureedia* Miller et al., 2012 in Africa, Europe and Asia.

SN.	Species name	Sexes known	Distribution
1	<i>L. annulipes</i> (Lucas, 1857)	♂♀	Libya, Egypt, Israel
2	<i>L. colleni</i> Henriques et al., 2018	♂♀	Spain
3	<i>L. jerbae</i> (El-Hennawy, 2005)	♂♀	Tunisia
4	<i>L. lucasi</i> (Simon, 1873)	♂♀	Algeria
5	<i>L. maroccana</i> Gál et al., 2017	♂	Morocco
6	<i>L. phoenixi</i> Zamani & Marusik, 2020.	♂	Iran



**Figure 1:** Different observations of unexamined male specimens of *Loureedia jerbae*. **A** From Surman, Zawiya District (Photo in 2012 by Osama O. Ehtawish); **B C D** From Al Serraj area, Janzur, Tripoli District (Photos by Fawzia Shugman in November 2015, 2018, 2019, respectively).



**Figure 2:** *Loureedia jerbae*, male. A habitus, dorsal view; B same, ventral view; C same, frontal view; D same, lateral view; E right palp, ventral view. Scale bars = 5 mm (A-D); 0.25 mm (E).



**Figure 3:** Distribution of *Loureedia jerbae* in Tunisia (Djerba island, 33°47'31"N 10°53'51"E) (blue circle) and Libya (Gharyan, Al-kahassat, 32°06'52.7"N 13°00'51.5"E) (red circle)

These specimens represent the southernmost distribution of *L. jerbae* and the first confirmed record in Libya. Several individuals with the same or similar patterns have been observed and photographed by amateurs in different locations of northwestern Libya from 2012 to 2019 (Figure 1). Unfortunately, these photographed specimens have not been collected and/or examined or preserved to confirm their identity.

## Conclusion

A total number of seven male spider samples of *L. jerbae* (El-Hennawy, 2005) have been captured, of which the most recent was examined and described. Although Libya has a large surface area (the 4<sup>th</sup> largest African country), it has the fewest number of recorded species (310) compared to other northern African or southern European countries: Morocco (505), Algeria (886), Tunisia (400), Egypt (399), Portugal (892), Spain (1401), France (1596), Italy (1586), Greece (1216) and Türkiye (1487) [9]. Lack of sufficient experts and taxonomists, climate change and limited research due to shortage of financial resources and political turmoil contribute to low diversity of spider fauna in Libya. However, further extensive research may reveal a more diverse spider fauna in this country.

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