

## **New locality of *Orthochirus innesi* Simon, 1910 in Algeria (Scorpiones: Buthidae)**

Salah Eddine Sadine<sup>1,2</sup>

<sup>1</sup> Faculté des Sciences de la Nature et de la Vie et Sciences de la terre, Université de Ghardaïa, BP 455 Ghardaïa 47000, Algeria

<sup>2</sup> Laboratoire de Recherche sur la Phœniciculture, Faculté des Sciences de la Nature et de la Vie, Université KASDI Merbah-Ouargla, 30000, Algeria  
E-mail: [sse.scorpion@yahoo.fr](mailto:sse.scorpion@yahoo.fr)

### **Abstract**

This note concerns a small scorpion and a little-known buthid species *Orthochirus innesi* Simon, 1910. According to the last work about scorpions of Algeria in 2018, this species is located in Algerian Septentrional Sahara at the East of Algeria. This finding provides a new locality of *O. innsi* outside this geographical distribution range, of which it is extended about 200 km to the central of Algeria (Ghardaïa). This new locality is a palm groves of Zelfana, confirming that *O. innesi* from Algeria has an affinity to shady and humid area.

**Keywords:** Scorpion, *Orthochirus innesi*, Septentrional Sahara, Algeria.

### **Introduction**

The genus *Orthochirus* Karsch, 1891 actually counts 52 valid named species (Rein, 2020). Two species have clearly been reported from Africa, *O. aristidis* (Simon, 1882) and *O. innesi* Simon, 1910. The first species *O. aristidis* is distributed in the South of Egypt, Sudan, Djibouti and possibly Ethiopia (Vachon, 1952; Levy & Amitai, 1980; El-Hennawy, 1992, Lourenço & Leguin, 2011). However, many works indicated that *O. innesi* Simon, 1910 can be found in large band of North Africa and even Middle East. It was reported for the first time from Morocco in 1995 at the edge of Sahara Desert (Kovářík, 1995).

In Lourenço & Leguin (2011), three species were added to this genus in North Africa: *O. atarensis* Lourenço & Leguin, 2011 from Mauritania, *O. cloudsleythompsoni* Lourenço & Leguin, 2011 from Morocco and *O. tassili* Lourenço & Leguin, 2011 from Algeria. According to this reference, the distribution of *O. innesi* begins from Egypt to south Tunisia with a question mark on its distribution in Algeria.

Many recent works of Sadine and his co-authors proved the existence of this species in several localities in Septentrional Sahara of East Algeria (Sadine, 2005; Sadine *et al.*, 2011; Sadine, 2012; Sadine & Bissati, 2014; Sadine, 2018; Sadine *et al.*, 2018). Although, Sadine *et al.* (2014), Lahrech & Souilem (2017), Sadine (2018), and Bengaid (2018) indicated the absence of this species in central of Algeria (Ghardaïa).

Our finding provides a new locality of *O. innesi* in this region outside the geographical distribution range about 200 km to the central of Algeria, based on two specimens recently collected from palm groves of Zelfana.

## Material and Methods

### Study area

The region of Ghardaïa is located in the central of Algeria (Fig. 1A) at an average altitude of the main reliefs of 520 metres. Geomorphological features are constituted by the Wadis and the Regs (Benkenzou *et al.*, 2007).

The region is characterized by a dry Saharan climate with extreme thermal amplitudes between the day and the night; the coldest month is January with a minimal temperature of 6°C, whereas the hottest month is July with a maximum temperature of 41°C (Sam, 2012).

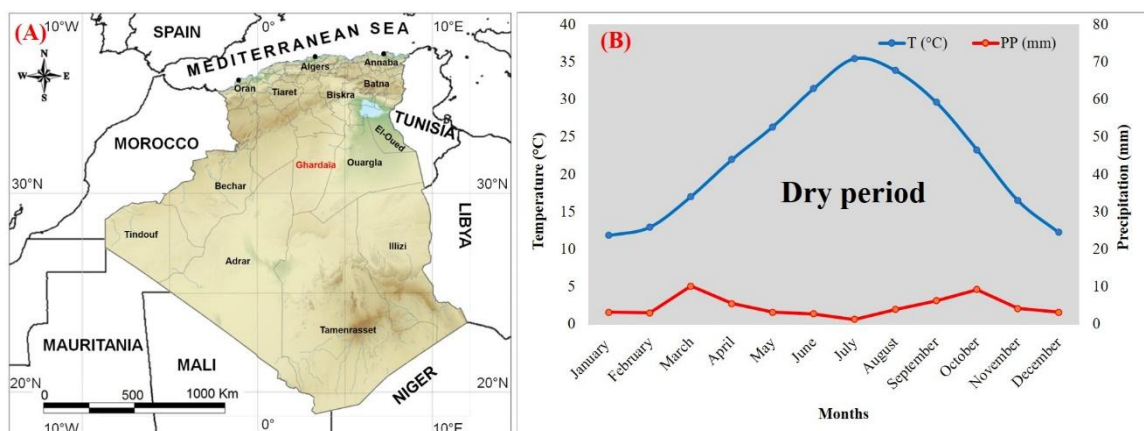


Fig. 1. Description of study area. A. Map of Algeria showing the region of Ghardaïa. B. Ombrothermic diagram of Bagnouls and Gausson (Ghardaïa: 2010-2019).

Concerning Rain fall, it is extremely low in this region with an average value of 80 mm per year. Air humidity is rather weak with a maximum value of 55% in December and a minimum of 21% in July (Chehma, 2011). Analysis of dry periods over ten years attest that the drought period spans almost all twelve months of the year (Fig. 1B).

### Material examined

The present note is based on two female specimens (2 ♀♀) collected from central Algeria, Region of Ghardaïa, Zelfana (32°42'N, 04°22'E), in palm groves, 03/III/2020 (S.E. Sadine). Material is deposited in Laboratory of Zoology, University of Ghardaïa, Algeria.



Fig. 2. *Orthochirus innesi* (♀) alive in natural environment.

### Description

Medium sized scorpions, never exceed 35 mm. with a dark colour (ranging from reddish-brown to black) (Fig. 2). Chelicerae yellowish to reddish-yellow; base of fingers blackish; fingers reddish-brown. Legs reddish-yellow with three distal segments yellowish (Lourenço & Leguin, 2011). Fixed and movable fingers with 8 rows of denticles. Pectinal teeth in females count 15-16.



Fig. 3. Palm groves of Zelfana, a natural biotope of *Orthochirus innesi* in the study area.

### Ecological and geographical considerations

*O. innesi* is very little-known and a very little work has been done on the ecology of this species. Vachon (1952) classified it as oasis scorpion. Because it prefers shady and humid area. This species is ranged as hygrophilous species (Sadine, 2005; Sadine, 2012; Sadine & Bissati, 2014; Sadine, 2018; Sadine *et al.*, 2018). However, in Morocco, *O. innesi* is limited to areas with loamy, clayey soils (pelophilous species), sandy, and earthy habitats. It is classifying as a non-opportunistic species because it is not plastic and environmentally shows strict respect to the nature of the substratum requirements (El

Hidan *et al.*, 2016). Recently, Touloun (2019) confirmed that this species is known from the oases of the Anti-Atlas and the Drâa valley (Morocco).

In Algerian Septentrional Sahara, this species is represented with abundance less than 5% in the palm groves of East Algeria (Sadine, 2005; Sadine *et al.*, 2011; Sadine, 2012; Sadine & Bissati, 2014; Sadine, 2018; Sadine *et al.*, 2018). Contrariwise, this species, was not reported in central of Algeria, especially in Ghardaïa (Sadine *et al.*, 2014; Lahrech & Souilem, 2017; Sadine, 2018; Bengaid, 2018).

In this work, two specimens of *O. innesi* were found in palm groves of Zelfana (Fig. 3) outside the geographical distribution range indicated in Sadine (2018), of which it is extended about Ghardaïa 200 km to the central of Algeria.

According to the last repartition of *O. innesi* in Algerian Septentrional Sahara and the new locality indicated in the present work. The current distribution of *O. innesi* can be summarized in Fig. (4).

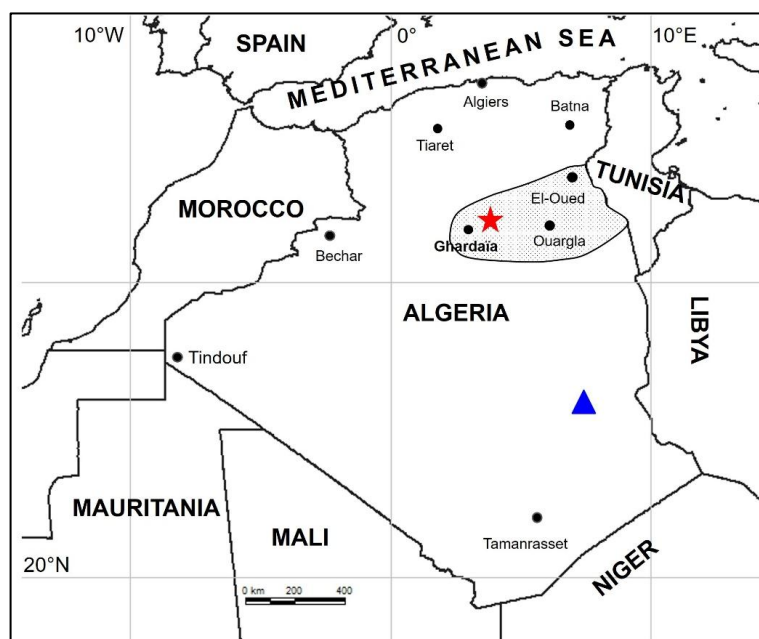


Fig. 4. Map of the present geographical distribution range of *Orthochirus innesi* in Algeria (dashed area). New locality (red star). *Orthochirus tassili* (blue triangle).

## References

- Bengaid, Y. 2018. *Composition et structure de peuplement scorpionique de la région de Ghardaïa (Algérie)*. Mémoire de Master Académique en Ecologie. Université de Ghardaïa. Algérie. 43 pp.
- Benkenzou, D., Chegma, S., Merakchi, F. & Zidane, B. 2007. *Monographie de la wilaya de Ghardaïa, Direction de la Planification et de l'Aménagement du Territoire (D.P.A.T.). Statistiques au 31 décembre 2006*. Algérie, 122 pp.
- Chehma, A. 2011. *Le Sahara en Algérie, situation et défis. Séminaire L'effet du Changement Climatique sur l'élevage et la gestion durable des parcours dans les zones arides et semi-arides du Maghreb. Du 21 au 24 Novembre 2011*. Université de Ouargla, Algérie. 8 pp.
- El-Hennawy, H.K. 1992. A catalogue of the scorpions described from the Arab countries (1758-1990) (Arachnida: Scorpionida). *Serket*, 2(4): 95-153.
- El Hidan, M.A, Touloun, O. & Boumezzough, A. 2016. New data on the diversity of scorpion fauna in the oases of south eastern Morocco. *Serket*, 15(1): 1-7.



- Karsch, F.A.F. 1891. Arachniden von Ceylon und von Minikoy gesammelt von den Herren Doctoren P. und F. Sarasin. III. Ordo Scorpiones. *Berliner entomologische Zeitschrift*, 36(2): 305-307.
- Kovařík, F. 1995. First report of *Orthochirus innesi* (Scorpionida: Buthidae) from Morocco. *Klapalekiana*, 31: 19-21.
- Lahrech, A. & Souilem, Z. 2017. *Contribution à l'étude de la faune scorpionique de la région de Ghardaïa (Algérie)*. Mémoire de Master Académique en Ecologie. Université de Ghardaïa. Algérie. 43 pp.
- Levy, G. & Amitai, P. 1980. *Fauna Palaestina, Arachnida I. Scorpiones*. Jerusalem: The Israel Academy of Sciences and Humanities, 130 pp.
- Lourenço, W.R. & Leguin, E.A. 2011. Further considerations on the species of the genus *Orthochirus* Karsch, 1891 from Africa, with description of three new species (Scorpiones: Buthidae). *Euscorpius*, 123: 1-19.
- Rein, J.O. 2020. The Scorpion Files. <https://www.ntnu.no/ub/scorpion-files/> (accessed on 10.09.2020).
- Sadine, S.E. 2005. *Contribution à l'étude bioécologique de quelques espèces de scorpions; Androctonus australis, Androctonus amoreuxi, Buthacus arenicola, Buthus tunetanus et Orthochirus innesi dans la wilaya de Ouargla*, Mémoire Ingénieur d'Etat en Biologie, Option Ecologie et environnement, Université de Ouargla. Algérie. 100 pp.
- Sadine, S.E. 2012. *Contribution à l'étude de la faune scorpionique du Sahara septentrional Est algérien (Ouargla et El Oued)*. Mémoire de Magister. Option Zoophytiatrie, Université de Ouargla. Algérie. 84 pp.
- Sadine, S.E. 2018. *La faune scorpionique du Sahara septentrional algérien: Diversité et Ecologie*. Thèse de Doctorat ès sciences. Université Kasdi Merbah-Ouargla. Algérie. 112 pp.
- Sadine, S.E. & Bissati, S. 2014. *La faune scorpionique des palmeraies algériennes*. 1<sup>er</sup> Congrès International sur le Milieu Aride. Ghardaïa. Algérie. p. 135.
- Sadine, S.E., Alioua, Y., Kemassi, A., Mebarki, M.T., Houtia, A. & Bissati, S. 2014. Aperçu sur les scorpions de Ghardaïa (Algérie). *Journal of Advanced Research in Science and Technology*, 1(1): 12-17.
- Sadine, S.E., Bissati, S. & Idder, M.A. 2018. Diversity and structure of scorpion fauna from arid ecosystem in Algerian Septentrional Sahara (2005-2018). *Serket*, 16(2): 51-59.
- Sadine, S.E., Bissati, S. & Ould El-Hadj, M.D. 2011. Premières données sur la diversité scorpionique dans la région du Souf (Algérie). *Arachnides*, 61: 2-10.
- Sam, F. 2012. Réhabilitation thermique d'un local dans une zone aride: cas de Ghardaïa. Mémoire de Magister en Génie-mécanique. Université Mouloud Mammeri de Tizi-Ouzou, Algérie. 111 pp.
- Simon, E. 1882. II. Étude sur les arachnides de l'Yemen méridional. In: Viaggio ad Assab nel Mar Rosso, dei signori G. Doria ed O. Beccari con il R. Aviso "Esploratore" dal 16 Novembre 1879 al 26 Febbraio 1880. *Annali del Museo Civico di Storia Naturale di Genova*, 18: 207-260.
- Simon, E. 1910. Révision des scorpions d'Égypte. *Bulletin de la Société entomologique d'Égypte*, 2: 57-87.
- Touloun, W. 2019. Liste actualisée et commentée de la faune scorpionique du Maroc (Arachnida: Scorpiones). *Revista Ibérica de Aracnología*, 34(1): 126-132.
- Vachon, M. 1952. *Etude sur les scorpions*. Institut Pasteur d'Algérie. Alger. 479 pp.