Zootaxa 3847 (4): 533–544
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3847.4.3
http://zoobank.org/urn:lsid:zoobank.org:pub:1CB7A7DF-4CB7-44E7-9DA0-9A08816CB826

Two new species of *Cosmolaelaps* Berlese (Acari:Laelapidae) from Iran

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Abstract

This paper reports on two species of mites of the genus *Cosmolaelaps* Berlese, 1903 in Iran—*C. dorfakiensis* **sp. nov**., and *C. pinnatus* **sp. nov**., extracted from soil and leaf litter samples in Guilan Province, Northern Iran. A key to the species of C*osmolaelaps* occurring in the Iran is also provided.

Key words: taxonomy, soil mites, Mesostigmata, Laelapidae, *Cosmolaelap*, Iran

Introduction

The genus *Cosmolaelaps* has been collected in many parts of the world and includes approximately 108 described species (Moreira *et al*., 2014). Most of the species are free-living in soil, litter and humus under trees, in moss, or on rodents or in their nest (Evans & Till, 1966; Evans & Till, 1979; Bregetova, 1977; Moreira *et al*., 2014). Some species are associated with insects such as cockroaches (*Cosmolaelaps calamitus* (Faraji & Halliday, 2009)), and termites (*C. ungeri* and *C. brevipedestra* (Karg, 1985)).

The genus *Cosmolaelaps* was described by Berlese (1903) as a subgenus of *Laelaps* Koch, and raised to the genus level by the same author some years later (Berlese, 1920). Some modern authors have considered *Cosmolaelaps* a subgenus of *Hypoaspis* Canestrini *sensu lato* (Evans & Till, 1966; Karg, 1978 1979, 1981, 1982, 1987, 1988, 1993, 1994, 1995, 1997, 2003, 2006; Xu & Liang, 1996; Faraji & Halliday, 2009). However we here consider it to be a separate genus, following Casanueva (1993), Farrier & Hennessey (1993) and Moreira *et al*. (2014). This genus was poorly characterised in its original description as well as in subsequent publications, but fortunately comprehensive recent efforts have significantly improved the taxonomy of the genus (Moreira *et al*., 2014).

In this paper two new species of *Cosmolaelaps* extracted from soil and leaf litter samples in Guilan Province, Northern Iran are described. An identification key to 12 species of genus C*osmolaelaps* (females) recorded from Iran is also provided.

Material and methods

Soil samples including leaf litter were collected from different parts of Guilan Province in Iran. Mite specimens were collected by extracting from soil samples through a Tullgren funnel. Collected mites were cleared in Nesbitt's fluid and then mounted in Hoyer's medium on microscope slides. The line drawings and examinations of the specimens were performed with an Olympus BX51 phase contrast microscope equipped with a drawing tube. The nomenclature used for dorsal idiosomal chaetotaxy is that of Lindquist & Evans (1965), the leg chaetotaxy is that of Evans (1963a), the palp chaetotaxy is that of Evans (1963b), names of other anatomical structures mostly follow Evans & Till (1979) and poroidotaxy is based on Johnston & Moraza (1991). Six specimens were used for most character measurements. All measurements are given in micrometres (μm) as mean (mininum-maximum). The

Accepted by B. Halliday: 15 Jul. 2014; published: 11 Aug. 2014

8. Dorsal shield with an unpaired *Jx* seta, spatulate seta present on palp femur, soft cuticle surrounding dorsal shield with scimitar-like setae . . . . . *Cosmolaelaps subacutiscutus* Bai & Wang, 2005
- Dorsal shield with two unpaired *Jx* setae, palp femur without spatulate seta, soft cuticle surrounding dorsal shield without setae . . . . . *Cosmolaelaps acutiscutus* Teng, 1982
9. Dorsal setae similar in shape and size 10
- Dorsal setae vary in shape and size 11
10. Thirty-seven pairs of dorsal setae knife-shaped, fixed digit of chelicera with five teeth, epistome with small denticles, dorsal shield 420–450 . . . . . *Cosmolaelaps vacua* Michael, 1891
- Thirty-eight pairs of dorsal setae lancet-like, fixed digit of chelicera with three teeth, epistome with large denticles, dorsal shield 530–580 . . . . . *Cosmolaelaps lutegiensis* Shcherbak, 1971
11. Dorsal shield with an unpaired *Jx* seta, *Z5* not serrate . . . . . *Cosmolaelaps cassoidea* Karg, 1981
- Dorsal shield with two unpaired *Jx* setae, *Z5* lightly serrate . . . . . *Cosmolaelaps brevipedestra* Karg, 1985

Acknowledgements

We are very gratful to Dr. Grazielle Furtado Moreira (Departamento de Fitossanidade, Universidade Estadual Paulista (Unesp), Câmpus de Jaboticabal, Jaboticabal, São Paulo, Brazil) for her all helpful and valuable comments and to Dr. Roberto Nannelli for his generous help with information about the types of *Cosmolaelaps ornatus* in the Berlese Acaroteca. This study was supported by University of Guilan, Rasht, Iran which is greatly appreciated. We are grateful to the anonymous reviewers for their valuable suggestions. We are indebted to Dr. Bruce Halliday (CSIRO Entomology, Canberra, Australia) for his all helpful and valuable comments.

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