



## New species and new records of mites of the family Laelapidae (Acari: Mesostigmata) associated with Coleoptera in Iran

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### Abstract

We report on a collection of mites in the family Laelapidae associated with scarabaeid beetles in Iran. Five known species are recorded from Iran for the first time: *Coleolaelaps asiaticus* Karg, 1999, *Hypoaspis integer* Berlese, 1911, *Hypoaspis pentodonti* Costa, 1971, *Hypoaspis phyllognathi* Costa, 1971, and *Hypoaspis terrestris* (Leonardi, 1899). Four new species are described: *Coleolaelaps costai* **sp. nov.**, *Hypoaspis larvicolus* **sp. nov.**, *Hypoaspis maryamae* **sp. nov.**, and *Hypoaspis melolonthae* **sp. nov.** The ecological relationship between these mites and their beetle hosts has not been analysed in detail, but they probably do not play a major role as biological control agents of pest scarabs.

**Key words:** Laelapidae, Iran, Coleoptera, *Coleolaelaps*, *Hypoaspis*

### Introduction

The classification of the mite family Laelapidae is unstable as a result of continued confusion about the definition and status of some of its genera. Different concepts of genera and subgenera have been used by, for example, Evans & Till (1966), Van Aswegen & Loots (1970), Tenorio (1982) and Karg (1993). Very few species from western Asia have contributed to the existing classification, and the family Laelapidae in Iran is very poorly known. Faraji *et al.* (2008) published a key to 21 Iranian species in the genus *Hypoaspis sensu lato*, but commented that the identification of some of these species remains unconfirmed. The present paper is part of a project which has the objective of increasing the knowledge of this poorly studied regional fauna of Laelapidae, based on extensive recent collections of free-living and insect-associated species.

This paper deals with the genera *Coleolaelaps* Berlese, 1914 and *Hypoaspis* Canestrini, 1884. These two genera are superficially similar in morphology and have often been confused with each other. Species in both genera have long setae on the dorsal shield and on some leg segments, and these setae often appear wavy in slide-mounted specimens. Species in both genera are also similar in their biology, occurring in symbiotic relationships with soil-dwelling Coleoptera. This problem was discussed in detail by Costa & Hunter (1971). Their results are summarised in Table 1, which allows a clear separation of these genera.

### Material and methods

Laelapidae phoretic on beetles were collected in the Tehran, Yazd and Shiraz areas of Iran in the years 2008 and 2009. Beetles of the family Scarabaeidae were collected at light traps and placed individually in vials of 70% ethanol. Beetle larvae with their associated mites were also excavated from soil. Mites were removed from the beetles, cleared in Nesbitt's solution and mounted in Hoyer's medium. The nomenclature used for the dorsal idiosomal chaetotaxy is that of Lindquist & Evans (1965), the leg chaetotaxy is that of Evans (1963a), the palp chaetotaxy that of Evans (1963b), and names of other anatomical structures mostly follow Evans & Till (1979). Holotypes and