

## The first report of the family Protrinemuridae and *Neoasterolepisma priesneri* (Stach, 1946) (Insecta: Zygentoma) for Iran

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**Abstract:** In this study, we investigated the fauna of *Zygentoma* in different regions of Kermanshah Province (Kermanshah, Iran) during 2013. Among the different specimens collected, the species *Neoasterolepisma priesneri* (Stach, 1946) was found, being new for Iran and for Asia. Moreover, the capture of a representative of the genus *Trinemophora* (Schaeffer, 1897) represents the first citation of the family Protrinemuridae in Iran.

**Key words:** Protrinemuridae, *Neoasterolepisma priesneri*, *Trinemophora* sp., Iranian fauna, *Zygentoma*, Thysanura s. s., Lepismatidae

Among *Zygentoma*, Lepismatidae is the largest family, widespread with more than 200 species, many living in human habitations. Lepismatidae species are easily recognized by the presence of eyes (composed of 12 ommatidia) and scales, and the absence of abdominal vesicles. The families Nicoletiidae and Protrinemuridae lack eyes. The latter family was created by Mendes (1988) as a subfamily of Nicoletiidae, on the basis of the different structure of the lacinia, opening of the penis, apical area of gonapophyses IX, absence of subgenital plate in females, and modifications in the antenna of males. Recently it was raised to the level of family (Mendes, 2002).

Data on the Iranian fauna of *Zygentoma* are scarce. Prior to this work, only a few researchers have studied isolated samples belonging to this order of insects (Paclt, 1966; Mendes, 1985; Irish, 1995; Kahrarian et al., 2014). Two faunistic novelties in support of these papers are presented here.

This study was carried out during the period of April 2013 to December 2013 in different regions of Kermanshah Province (Kermanshah, Sar-e-pol-e-Zahab, Harsin, and Paveh counties). The specimens were collected by hand or with an entomological aspirator from leaf litter and under rocks. They were then fixed in 75% ethanol and labeled. Several specimens were dissected and mounted on slides for microscopic study. The specimens are deposited in the collection of the Department of Zoology of the University of Cordoba (UCO, Spain).

### *Neoasterolepisma priesneri* (Family Lepismatidae)

One female, under rocks, living with ants, Tag-e-Bostan Mountain (34°23'N, 47°07'E, 1488 m a.s.l.), Kermanshah County, Kermanshah Province, Iran. October 2013.

This represents the first record of this species in Iran (and in Asia), as it was originally known only from its type locality in Egypt. The available specimen agrees well with the description given by Stach (1946) and completed by Mendes (1988).

*N. priesneri* can be recognized by the high number of macrosetae of the urosternal combs (the median combs usually have more than 25); in the female, the internal process of the IXth coxite is very long, about 5 times longer than wide at its base (Figure). The urotergites show the usual setation of the genus (1+1 infralateral groups of macrosetae, 1 + 1 lateral, 1+1 sublateral, and 1+1 submedian isolated macrosetae), while *N. evansi* shows a modified setation with very numerous macrosetae inserted on the hind margins of the urotergites. The only female of *N. priesneri* was collected together with one male identified as *N. evansi*, both living in the same ant nest. Since the female of *N. evansi* has never been found previously and its characters are not known, it can be hypothesized that the two specimens of the same sample belong to the same species, and the aforementioned differences of the abdominal setation can be interpreted as sexual dimorphism (in some other species of *Neoasterolepisma*, sexual dimorphism concerning specialized setation

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**Figure.** Microscope photograph of the ninth coxite, stylets, and ovipositor of the female of *Neoasterolepisma priesneri* collected in Kermanshah. Scale: 0.5 mm.

has been described). However, the male of *N. priesneri* described by Stach has bigger paramera and a higher number of macrosetae in the urosternal combs than what has been described for *N. evansi* males (median combs in *N. evansi* usually have fewer than 20 macrosetae). The parabiosis of *Zygentoma* (more than one species living together in the same ant nest) has previously been observed in other regions (Mendes, 1987, and unpublished data).

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## *Trinemophora* sp. (Family Protrinemuridae)

One juvenile specimen (4 mm long), under rocks and leaf litter, oak forest, Quri Qal'eh village (34°53'N, 46°30'E, 1624 m a.s.l.), Paveh County, Kermanshah Province, Iran. July 2013.

This is the first citation of this genus and family in Iran. The collected specimen bears only one pair of stylets on abdominal segment IX; this character places this insect in the genus *Trinemophora* (Schaeffer, 1897). Currently, 4 species of this genus are known. Only one of them, *T. schaefferi* (Silvestri, 1905), has only one pair of abdominal stylets, but this species was described from Chile. The nearest species from a geographical point of view is *T. bitschiana* (Wygodzinsky, 1959), described from Turkey, but this species has two pairs of stylets. Nevertheless, the specimen from Iran is likely an immature stage, and perhaps bigger insects develop a second pair of these appendages; Turkish *T. bitschiana* with two stylets are about 5.5 mm long, as Wygodzinsky (1959) indicated in the original description. The assignment of the available material with *T. bitschiana* cannot be assured because of its poor condition; this suggests that its specific identification must await further investigations.

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