Correspondence

First record of quill mites of the family Syringophilidae Lavoipierre (Acari: Cheyletoidea) from Iran

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The Cheyletoidea is a large superfamily of suborder Prostigmata and most of the cheyletid families including Syringophilidae, Harpirhynchidae, Psorergatidae and Demodicidae are represented by permanent parasites of vertebrates and only one family namely Cheyletidae includes both free-living and parasitic forms of birds and mammals. Many species of these parasitic mites have importance role in public health and they can cause some damages like demodicosis in man, dogs and cats, syringophilosis in chickens and cheyletiellosis in peoples who are dealing with infected pets (Bochkov & Galloway 2004; Bochkov 2008).

It has been noted that most of zooparasitic mites were nest-inhabiting and free-living predators, keratinophagous, coprophagous or phoretic forms. Although, we have no records of syringophilid fossils yet, it seems that they were diverged from a common cheyletoid-like ancestor in the bird nests (Fain et al. 2000; Dusbábek 2002; Dunlop et al. 2014).

These mites are permanent parasites inhabiting quill cavities of different types of feathers (primaries, secondaries, coverts, tail-feathers and body feathers). They feed by piercing the quill fibrous wall with their flexible styliiform chelicerae and therefore causing broken feathers. They also reproduce in this place. The effect of an infestation with this mite on egg production and general health of chickens has not been evaluated but the presumption is that beyond the loss of feathers and the unsightly appearance of the birds, very little damage results (Roberts 1952; Hwang 1959; Kethley 1971).

The world biodiversity of Syringophilidae includes about 335 species grouped in 60 genera and described from more than 470 bird species belonging to 24 orders that are distributed in all zoogeographical regions. Based on the high numbers of their host, actual number of syringophilids could be more than 5000 species. These mites show a high degree of host specificity, where most of species are monoxenous (parasitizing one host species) or narrowly oligoxenous (parasitizing several closely related host species). Oligoxenous ones are restricted to a single bird genus or group of closely related genera. In addition, it is possible to find two or more different syringophilid species, usually representing different genera parasitizing the one bird or same host individual. In these cases quill mites occupy separate niches in the plumage of the host (Kethley 1970, 1973; Kethley & Johnston 1975; Skoracki et al. 2010, 2012; Skoracki 2011; Sikora et al 2014).

Morphologically syringophilids are large, elongate mites with weakly sclerotized cuticle and white color in life. Palp claw process is absent in this family and coxa II is separated from coxa III (not contiguous). One pair of claws and a bipectinate empodium are present on each leg. At present, this family is divided into two subfamilies:
Syringophilinae Lavoipierre and Picobiinae Johnston & Kethley, and both are occurred in the Palearctic region. The main differences between both subfamilies are visible in morphology and ecology of these mites e.g. in syringophilines the distal tip of the palp tibiotarsus is rounded, proral setae are multiserrate, females are not capable to physogastry and the main microhabitats are quills of wing and tail feathers; in picobiines, distal tip of the palp tibiotarsus is tapering, proral setae are rod-like and with two minute tines, females are able to physogastry, and the main microhabitats are quills of the body feathers. In this family, deutonymph is absent in the life cycle and adult females could be distinguished by presence of genito-anal opening and their occurrence in the terminal part of the body and also in some details of the leg chaetotaxy (Johnston & Kethley 1973; Skoracki 2011).

The oldest and the type genus of the family is Syringophilus Heller contains two large-sized species (total body length 900–1240 µm) distributed in Palearctic, Nearctic, Ethiopian and Neotropical region. In adult females of this genus, the large gnathosoma is devoid protuberances, the distal tip of the movable cheliceral digits is needle like, the peritremes are U-shaped with clearly visible chambers, the dorsal and ventral sclerotizations are well developed, the body and the legs are with full complement of setae. Both species of this genus are associated with birds of family Phasianidae (Galliformes) (Bochkov 2000; Skoracki 2011).

A single wing’s feather of rooster (type host), Gallus gallus domesticus (Linnaeus) (Galliformes: Phasianidae) was found in a chicken coop and a few mites observed on its downy barb. For finding more individuals the quill was examined under stereomicroscope and its calamus was opened by scalpel. A large number of Syringophilus bipectinatus Heller (Fig. 1) obtained from this quill including all the life stages which their heavily infestation discolored the calamus part.

Figure 1. Syringophilus bipectinatus Heller - Habitus of adult (female).

This oligoxenous species has worldwide distribution and was collected from its type host and also from Alectoris rufa (Linnaeus) and Ptilopachus petrosus (Gmelin). In
the Palearctic region, the largest ecozone, this species have been recorded from France, Germany, Poland, Ukraine, Belorussia, Russia, Kirghizia, China, Cameroon (Bochkov 2000; Skoracki 2011) and Iran (present study).

In S. bipectinatus, the shape of the hypostomal apex is rounded, peritremes are U-shaped in females and M-shaped in males and setae ag3 are 1.2–1.3 times longer or subequal in length with ag1. In another species of the genus, S. numidae Bochkov, 2000 the hypostomal apex is tapering and setae ag3 are two times longer than ag1. The latter species was recorded from Ethiopian region (Bochkov 2000; Skoracki 2011).

Material of this study was collected by the author in Jari-Abad village, Fars province, Iran, 26 Jun 2013. Mounted specimens includes 11 larvae, four protonymphs, 13 tritonymphs, 35 females and six males and are deposited in the personal collection of the author. Two males and two females was sent to Dr. Maciej Skoracki, Adam Mickiewicz University, Poznan, Poland and a complete series will be send to the Acarological Collection, Acarological Society of Iran, Department of Plant Protection, Faculty of Agriculture, University of Tehran, Karaj, Iran.

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References


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