TWO NEW SPECIES OF THE GENUS *SYRINGOPHILOPSIS* KETHLEY, 1970 (ACARI: SYRINGOPHILIDAE) PARASITIZING QUILLS OF TRUE SHRIKES (AVES: LANIIDAE)

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Summary :

Two new species of syringophilid mites (Acari: Syringophilidae) are described from quills of true shrikes (Passeriformes: Laniidae): *Syringophilopsis kristini* sp. n. from Lesser Grey Shrike, *Lanius minor*, from Slovakia, and *Syringophiopsis yosefi* sp. n. from *Lanius* sp. from Cameroun.

KEY WORDS : Acari, quill mite, ectoparasites, taxonomy, *Syringophilopsis*, *Lanius*.

Résumé : DESCRIPTION DE DEUX NOUVELLES ESPÈCES DU GENRE *SYRINGOPHILOPSIS* KETHLEY, 1970 (ACARI: SYRINGOPHILIDAE) PARASITES DES PLUMES DE PIES (AVES: LANIIDAE)

Deux nouvelles espèces d'acariens (Acari : Syringophilidae) sont décrites au niveau des plumes de pies (Passeriformes : Laniidae) : Syringophilopsis kristini *sp. n. chez* Lanius minor, *en Slovaquie, et* Syringophilopsis yosefi *sp. n. chez* Lanius *sp. au Cameroun.*

MOTS CLÉS : *Acari, acarien, ectoparasite, taxonomie,* Syringophilopsis, Lanius.

INTRODUCTION

Syringophilid mites are obligatory parasites that live and reproduce in the quills of flight and body feathers of many bird species. They feed on the tissue fluids of birds by piercing the quill wall with their styletiform chelicerae (Kethley, 1971; Casto, 1974). Therefore, quill mites can be expected to be parasites that substantially affect birds' condition and fitness.

To date, the genus *Syringophilopsis* Kethley, 1970 includes 15 described species from two orders of avian host: Passeriformes (Sylviidae, Icteridae, Fringillidae, Ploceidae, Hirundinidae, Turdidae, Sturnidae, Troglodytidae, Motacillidae, Emberizidae) and Coraciiformes (Meropidae) (Fain *et al.*, 2000; Bochkov *et al.*, 1999; Skoracki & Dabert, 2000). In this paper we give a description of new species of syringophilids associated with passeriform birds of the family Laniidae.

The terminology for morphology and leg chaetotaxy follows that of Kethley (1970). The nomenclature of Fain (1979) is used for idiosomal chaetotaxy and the nomenclature in the version adapted for the family Syringophilidae (Bochkov & Mironov, 1998; Bochkov *et al.*, 1999). All measurements, including scale bars in figures, are given in micrometres (µm). The setal measurements of holotypes are incomplete because some setae are broken.

Abbreviations for locations where the type materials are deposited:

UAM – Department of Animal Morphology, A. Mickiewicz University, Poznań, Poland.

MRAC – Royal Museum of Central Africa, Tervuren, Belgium.

SMB – Department of Natural History, the Šarišské Museum, Bardejov, Slovakia.

ZIN – Zoological Institute, St. Petersburg, Russia.

DESCRIPTIONS

SYRINGOPHILOPSIS KRISTINI SP. N.
(Figs 1-4 and 7-11)

• Female (Figs 1, 2 and 7-9)

Total body length 1,015 in holotype (1,020-1,050 in paratypes).

Gnathosoma. Hypostomal apex (Figs 7, 8) with a pair small of median protuberances. Peritremes M-shaped (Fig. 9), each branch with 14-18 chambers. Stylophore 245 (245-250) long, slightly constricted posteriorly.

Idiosoma. Cuticular striations as in figures 1 and 2. Propodosomal plate well sclerotized, cleft on anterior and lateral margins. Setae *vi*, *ve*, *sci*, and *d1* set on the plate, setae *sce* on or near the plate. Length of setae: *vi* (100-125); *ve* 210 (215-220); *sci* 345 (290-345); *h* (320-360); *sce* 400 (360-400); *d1* 395 (360-420). Small sclerotized plates near setae *d2* present or absent.

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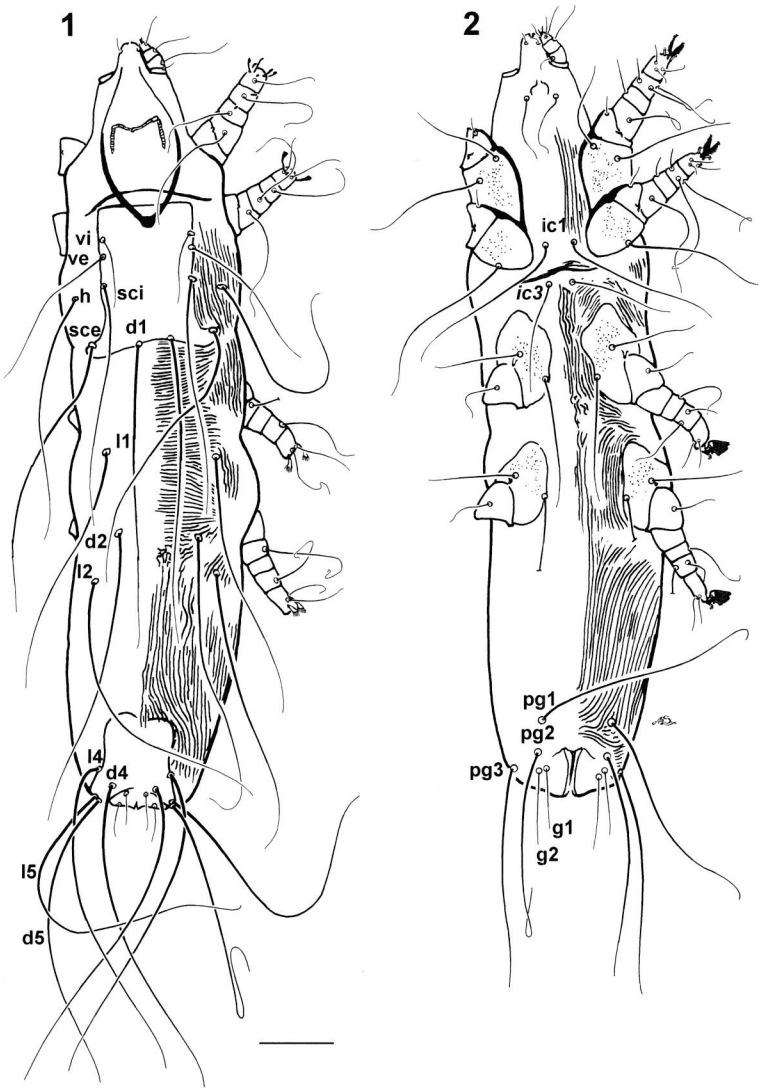
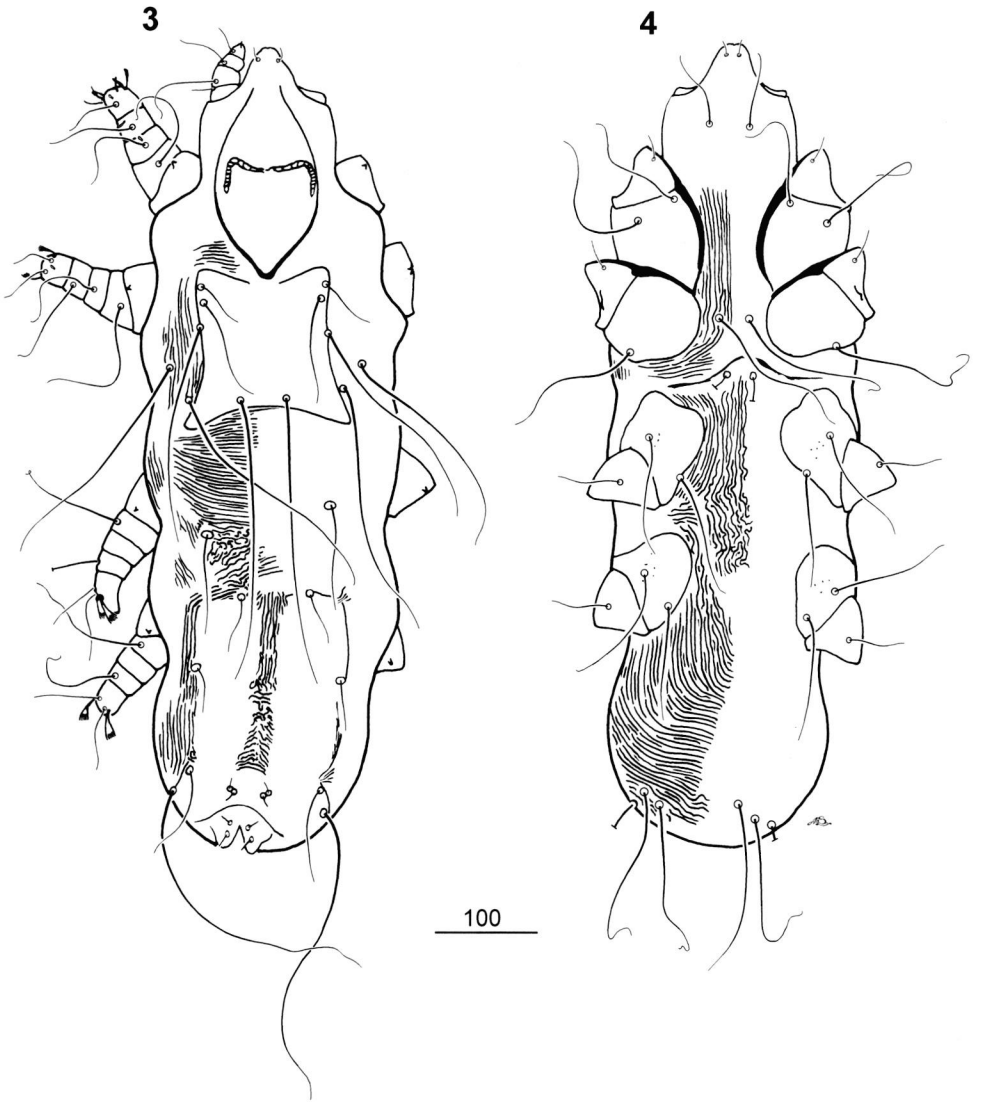


Figs 1, 2. – *Syringophilopsis kristini* sp. n. Female. 1. Dorsal view. 2. Ventral view.

Setae *d2* closer to *l2* than to *l1*. Distance between setal bases *l1-d2* and *d2-l2*: (95-135) and (70-100) respectively. Length ratio *d2-l2*:*l1-d2* 1:1,4-1,9. Length of setae: *l1* 375 (330-370); *d2* (370-425); *l2* (410-420). Pygidial plate present, bearing setae *l4*, *l5*, *d4* and *d5*. Length of setae: *l5* 440 (445-455); *d5* 375 (365-420); *l4* 440 (430-470); *d4* (400-465); *ic1* (200-240); *ic3* 120 (170); *g1* (70-80); *g2* (80-125); *a1* 50 (40-50); *a2* 55 (40-55); *pg1* (270-315); *pg2* (265-330); *pg3* (275-305).
Legs. All coxae punctate. Length of setae: *sc1* 30 (25-30); *sc2* (35); *sc3* 80 (60-75); *sc4* (65-75). Setae *p'* and *p''* of legs III and IV with 11-13 tines. Length of setae: *tc'* of tarsi III and IV (75-90); *tc''* of tarsi III and IV (95-105).

• Male (Figs 3, 4 and 10, 11)
Total body length 755-770.
Gnathosoma. Hypostomal apex as in figure 10. Peritremes M-shaped (Fig. 11), each branch with 17-19 chambers. Stylophore 215-220 long, constricted posteriorly.
Idiosoma. Cuticular striations as in figures 3 and 4. Propodosomal plate with slightly concave margins, not punctated. Setae *vi*, *ve*, *sci*, and *d1* set on the plate; setae *sce* set on or near the plate. Length of setae: *vi* 55-65; *ve* 110-115; *sci* 215-240; *h* 230; *sce* 255; *d1* 280. Hysterosomal and pygidial plate fused, bearing setae *d2*, *l2*, *d5* and *l5* (Fig. 3).
Setae *d2* closer to *l2* than to *l1*. Distance between setal bases *l1-d2* and *d2-l2*: 70 and 40 respectively. Length ratio *d2-l2*:*l1-d2* 1:1,7; *l1* 70-85; *d2* 40-55; *l2* 40-50; *d5* 65-80; *l5* 295; *pg1* 150-165; pg2 150; *ic1* 140-155; *ic3* 95-115.
Legs. Coxae III and IV slightly punctate or without punctations. Length of setae: *sc1* 25-30; *sc2* 30; *sc3* 60; *sc4* 55. Setae *p'* and *p''* of legs III and IV with 8-9 tines. Length of setae *tc'* of tarsi III and IV 55-70; *tc''* of tarsi III and IV 70.

• Type material
Female holotype (S-10.2.1), six females, three males and 15 nymph paratypes from secondaries feathers



Figs 3, 4. – *Syringophilopsis kristini* sp. n. Male. 3. Dorsal view. 4. Ventral view.

from *Lanius minor* Gmell., 1788 (Passeriformes: Laniidae); Slovakia, Kurov, 06 June 1960, leg. T. Weisz. Holotype, three females, two males and 13 nymph paratypes are deposited at UAM; one female and two nymph paratypes are deposited at SMB; two female and one male paratypes are deposited at ZIN. The specimen of type host is deposited at SMB (154/60).

• Etymology

This species is named in honour of the distinguished Slovak ornithologist and ecologist Dr. Anton Kristin (Institute of Forest Ecology SAS, Zvolen, Slovakia), who strongly contributed to knowledge of *Lanius minor* ecology and conservation.

• Differential diagnosis

Syringophilopsis kristini sp. n. is closely related to *S. borini* Bochkov & Mironov, 1999 described from *Sylvia borin* (Passeriformes: Sylviidae) from Novgorod Prov., Russia. In both species, the hypostomal apex has a pair of small protuberances; length ratio of setae *vi* and *ve* 1: 2; setae *d2* closer to *l2* than to *l1*; all coxae punctate, setae *p'* and *p''* of legs III and IV with 12-16 tines (in females); setae *d5* four times shorter than *l5*; three pairs of paragenital setae present (in males). This new species is distinguishable from *S. borini* by the presence of following characters: In the female *S. kristini* sp.n. length of setae: *pg1* 270-315; *pg2* 265-330; *pg3* 275-305; setae *g2* 2,5-3,5 times shorter than *pg3*; each branch of peritremes with 14-18 chambers; pygidial plate present. In the male length of setae: *vi* and *ve*: 100-125 and 210-220 respectively (length ratio 1:2); length of setae: *l1* and *d2*: 70-85 and 40-55 respectively (length ratio 1:1,5-1,8); length of setae: *pg1* 150-165; *pg2* 150; hysterosomal plate present. In the female *S. borini* length of setae: *pg1*, *pg2* and *pg3* 145-180; 145-157 and 180-198 respectively; setae *g2* and *pg3* subequal; each branch of peritremes with 13 chambers; pygidial plate absent. In the male length of setae: *vi* and *ve*: 49-54 and 67-72 respectively (length ratio 1:1,3-1,4); length of setae: *l1* and *d2*: 39-49 and

39-45 respectively (length ratio 1:1); length of setae: *pg1* 58-67; *pg2* 63-70; hysterosomal plate absent.

SYRINGOPHILOPSIS YOSEFI SP. N.
(Figs 5, 6 and 12, 13)

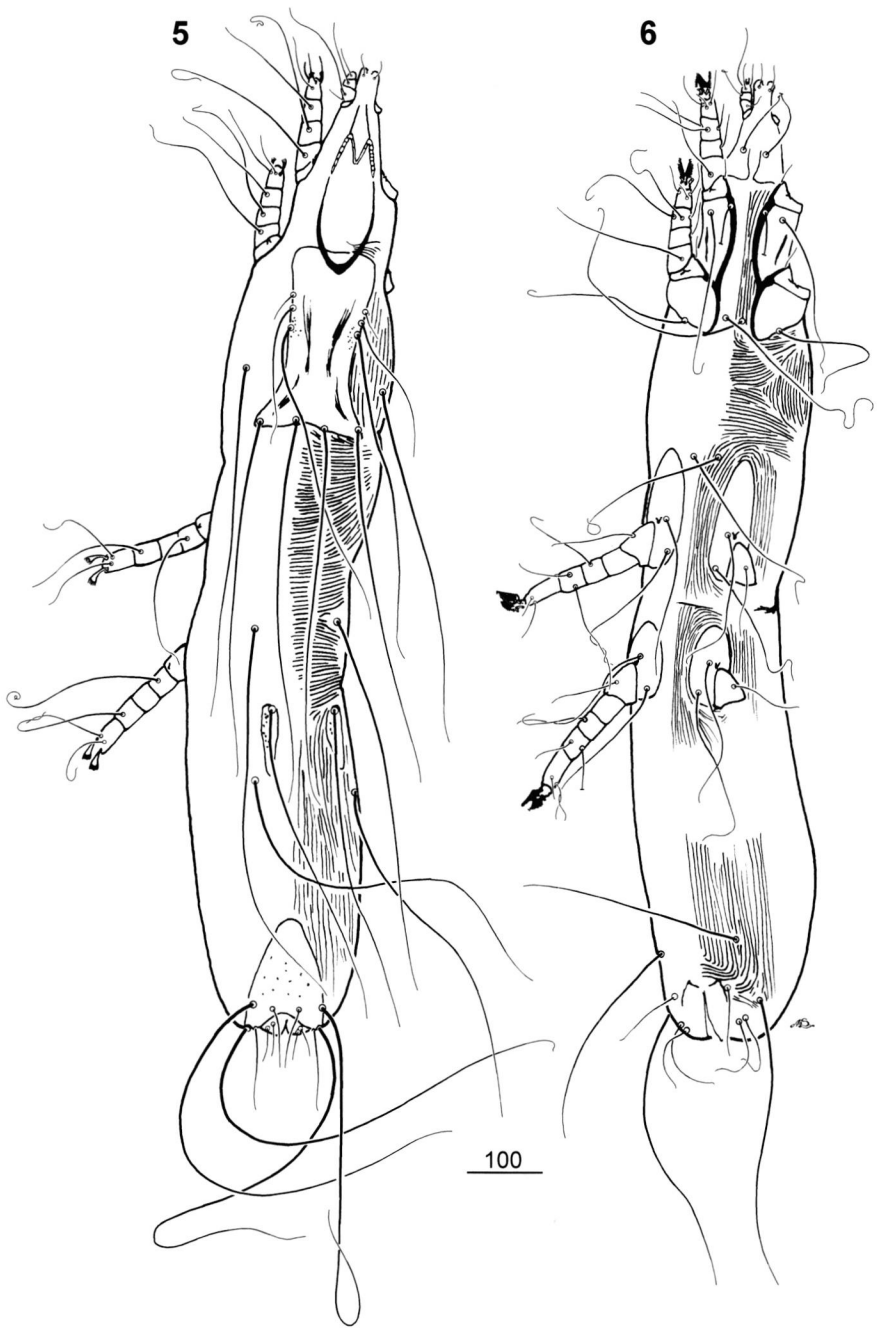
• Female (Figs 5, 6 and 12, 13)

Total body length 1,265 in holotype (1,305 in paratype).

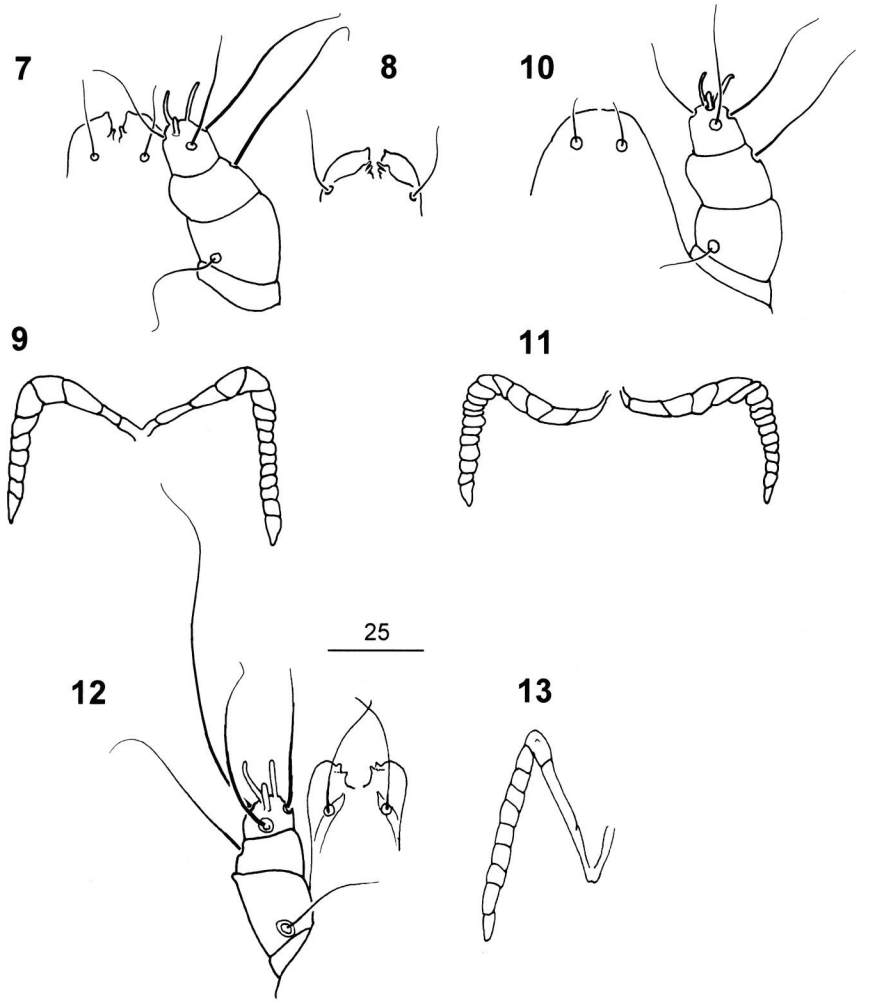
Gnathosoma. Hypostomal apex (Fig. 12) ornamented with two pairs of median protuberances. Peritremes M-shaped (Fig. 13), each transverse branch with three-six chambers, each longitudinal branch with 10-13 chambers. Stylophore 280 (280) long, constricted posteriorly.

Idiosoma. Cuticular striations as in figures 5 and 6. Propodosomal plate well sclerotized, punctate and with concave lateral and posterior margins. Setae *vi*, *ve*, *sci*, *sce* and *d1* set on the plate. Length of setae: *vi* 60 (50-60); *ve* (130-165); *sci* (430-475); *h* 527 (530-555); *sce* 550; *d1* (525-550). Pair of small sclerotized plates near bases of setae *d2* present.

Setae *d2* closer to *l2* than to *l1*. Distance between setal bases *l1-d2* and *d2-l2*: (130-150) and 105-120 respectively. Length ratio *d2-l2:l1-d2* 1:1,2-1,3. Length of setae: *l1* 550 (570); *d2* 475; *l2* (520-535). Pygidial plate



Figs 5, 6. – *Syringophilopsis yosefii* sp. n. Female. 5. Dorsal view. 6. Ventral view.



Figs 7-9. – *Syringophilopsis kristini* sp. n. Female. 7. Hypostomal apex ventral view. 8. Hypostomal apex dorsal view. 9. Peritreme.
Figs 10, 11. – *Syringophilopsis kristini* sp. n. Male. 10. Hypostomal apex ventral view. 11. Peritreme.
Figs 12, 13. – *Syringophilopsis yosefii* sp. n. Female. 12. Hypostomal apex ventral view. 13. Peritreme.

present, punctate, bearing setae *l4*, *l5*, *d4* and *d5*. Length of setae: *l5* 635 (570); *d5* 100 (110-135); *l4* 665 (620-700); *d4* (100-120); *ic1* (290); *ic3* (220-235); *g1* 85 (80-120); *g2* 90 (90-100); *a1* 40 (40-45); *pg1* 300 (290-360); *pg2* 100 (75-100); *pg3* 410 (400-425).
Legs. All coxae without punctations. Length of setae: *sc1* 25 (25); *sc2* 25; *sc3* 75 (90); *sc4* 70. Setae *p'* and *p''* of legs III and IV with 10-13 tines. Length of setae: *tc'* and *tc''* of tarsi III and IV (100).

• Male: unknown.

• Type material
Female holotype and 11 paratype females from *Lanius* sp. (Passeriformes: Laniidae); Cameroun, Yagoua, 03 August 1971, leg. F. Puylaert (141.265). Holotype and nine paratype females are deposited at MRAC; two paratype females, are deposited at UAM.

• Etymology
This species is named in honour of Dr. Reuven Yosef (IBRC Eilat, Ben-Gurion University of the Negev, Israel), a prominent Israel' ornithologist and conservationist, author of basic studies on shrike ecology and promotor of new directions in shrike research, as well as our friend.

• Differential diagnosis
Syringophilopsis yosefi sp. n. is closely related to *S. turdus* (Fritsch, 1958) from *Turdus pilaris* (Turdidae) from Germany. In females of both species, body length longer than 1,000, the hypostomal apex with two pairs of median protuberances; length ratio of setae *pg2* and *pg1* 1:3,5-4; the pygidial plate present, setae *sci* longer than 400, genital setae longer than 80.
This new species is distinguishable from *S. turdus* by the presence of following characters: In the female *S. yosefi* sp. n. length of setae *vi* 50-55; propodosomal plate punctate and not cleft on anterior margin; setae *sce* and *d1* set on the plate and located in the same line; pygidial plate well sclerotized and punctate. In the female *S. turdus* (10 specimens from the type host from Poland) length of setae *vi* 120-140; propodosomal plate not punctate and cleft on anterior margin; setae *l1* not set on the plate, setae *d1* and *l1* not located in the same line; pygidial plate weakly sclerotized and without punctations.

DISCUSSION

True shrikes of the family Laniidae are predominantly birds of semiopen habitats, frequently intensively farmed landscapes (Lefranc & Worfolk, 1997). Most shrike species are in decline on a worldwide basis (Yosef, 1994). As part of understanding this decline there is an urgent need to include also parasitic species in ecological and environmental studies. It is practically impossible to examine any organism in detail without acquiring at least basic knowledge on its parasitofauna (Widsor, 1995).

However, the information about shrike parasites is very poor, consisting mainly of records of parasite occurrence and taxonomic works. There is an acute lack of studies focused toward ecology (Harris & Franklin, 2000; Hromada *et al.*, 2001). To date, only one shrike syringophilid mite is described – *Syringophiloidus weiszii* Skoracki, Hromada & Tryjanowski, 2001 from the Great Grey Shrike, *Lanius excubitor* (Skoracki *et al.*, 2001).

Quill mites, as obligatory parasites of very specialized life cycle, typically exhibit low infection prevalences in non social, separately breeding hosts such as shrikes. This is likely due to the limited opportunity for mites to colonize new hosts. Practically all true shrikes of the family Laniidae breed in separate pairs; outside of the breeding season, they are solitary and defend extensive territories. Thus, without another possibility of quill mite dispersal than from parents to juveniles, there are very limited chances of collonizing of new host individuals.

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