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A review of quill mites of the genus *Syringophiloidus* KETHLEY, 1970
parasitizing quills of passeriform birds, with descriptions of four new
species

(Acari: Prostigmata: Syringophilidae)

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ABSTRACT. Four new species are described and figured: *Syringophiloidus oriolus* n. sp. from the eurasian golden-oriole *Oriolus oriolus* (Oriolidae), *S. artamus* n. sp. from the white-breasted woodswallow *Artamus leucorhynchus* and the ashy woodswallow *A. fuscus* (Artamidae), *S. stawarczyki* n. sp. from the golden-rumped euphonia *Euphonia cyanocephala* and the white-lined tanager *Tachyphonus rufus* (Emberizidae), *S. erythrurus* n. sp. from the blue-faced parrotfinch *Erythrura trichroa* and *Lonchura* sp. (Estrildidae). Additionally, new localities, new host records and a key for all known species of the genus *Syringophiloidus* are given in this paper.

Key words: acarology, taxonomy, new species, Syringophilidae, *Syringophiloidus*, quill mite, Passeriformes, ectoparasites.

INTRODUCTION

The mites of the genus *Syringophiloidus* are small to medium sized mites (600-925) parasitizing quills of various types of feathers (great coverts, secondaries, tail feathers).

The genus was established by KETHLEY (1970) who included in this genus two species *Syringophilus minor* described by BERLESE in 1878, and *Syringophilus seiurus* described by CLARK in 1964. After KETHLEY's revision, for 20 years the investigations concerned only the ecology of *S. minor* (KETHLEY 1971; CASTO 1974a, b, 1975 a, b). Although CASTO (1976) reported 5 new host records for this

genus, the specimens found by him on these hosts were appointed only to the genus *Syringophiloidus* (CASTO 1976) (see Table 1.). The thorough systematic studies were started after year 1995. The first description of a new species, *S. presentalis*, was given by CHIROV and KRAVTSOVA (1995). BOCHKOV and MIRONOV (1998) described the next new species, *S. motacillae*, and redescribed *S. glandarii* which was considered *incerta sedis* species by KETHLEY (1970). Investigations led in 2000-2003 by different explorers finally enlarged the list of known species to 16 (BOCHKOV 2000; FAIN et al. 2000; BOCHKOV & APANASKEVICH 2001; SKORACKI et al. 2001, 2003; SKORACKI 2002; SKORACKI & SIKORA 2002). The list of known avian hosts also grew simultaneously with taxonomical works. Birds from 14 families of the order Passeriformes and one family of the order Apodiformes have been reported as hosts for syringophilid mites of the genus *Syringophiloidus* up to this time: Passeriformes: Ploceidae (5 bird species), Turdidae (3), Sturnidae (2), Parulidae (2), Corviidae (2), Emberizidae (3), Fringillidae (2), Hirundinidae (2), Motacillidae (1), Laniidae (1), Rhinocryptidae (1), Bombycillidae (1), Icteridae (2), Troglodytidae (1), Apodiformes: Apodidae (1). These mites probably occupy mainly avian hosts restricted to the order Passeriformes. Out of 20 known species of this genus (including the new species in the present paper), 19 are connected with passerine birds. Only one – *S. cypsiurus* was described from *Cypsiurus parvus* belonging to the order Apodiformes (FAIN et al. 2000) (Table 1). The record of quill mite species from apodiform species may be a result of 1) horizontal transfer from passerine hosts, but it is not excluded that 2) *Syringophiloidus* evolved on the common ancestor of Passeriformes and Apodiformes. Further investigations of the presence or absence of mites of the genus *Syringophiloidus* inhabiting swifts and hummingbirds and also Caprimulgiformes and Strigiformes closely related with them (SIBLEY & AHLQUIST 1990, BLEIWEISS et al. 1994) can provide answers to these questions.

In the present paper I describe four new species belonging to the genus *Syringophiloidus*: *S. oriolus* n. sp. from *Oriolus oriolus* (Oriolidae – a new host family for quill mites), *S. artamus* n. sp. from *Artamus leucorhynchus* and *A. fuscus* (Artamidae – a new host family for quill mites), *S. stawarczyki* n. sp. from *Euphonia cyanocephala* and *Tachyphonus rufus* (Emberizidae), *S. erythrurus* n. sp. from *Erythrura trichroa* and *Lonchura* sp. (Estrildidae – a new host family for the genus *Syringophiloidus*). Additionally, new localities, new host records and a key to all known species of this genus are given in this paper.

MATERIAL AND METHODS

The syringophilid mites from *Oriolus oriolus*, *Artamus leucorhynchus*, *Artamus fuscus*, *Euphonia cyanocephala*, *Tachyphonus rufus*, *Erythrura trichroa*, *Lonchura* sp. and *Pica pica* were acquired from the bird collection kept at the Museum of Natural History, Wrocław University (Poland) (NMW). The remaining syringophilid material was acquired from birds caught by various ornithologists in

Poland. Mites were mounted on microslides in a polivinylolactophenol medium and examined with the Nomarsky interference-contrast-phase with Olymplus BH2 microscope.

The nomenclature of idiosomal setae follows FAIN (1979) in the version adapted for the family Syringophilidae (BOCHKOV & MIRONOV 1998) and the chaetotaxy for the legs is that of GRANDJEAN (1944). Bird taxonomy follows that of HOWARD & MOORE (1991). All measurements in descriptions are given in micrometers (μm). The holotypes and most of the paratypes are deposited at the Department of Animal Morphology, A. Mickiewicz University, Poznań, Poland (UAM). Some paratypes are deposited at the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZIN) and at the National Museum of Natural History, Smithsonian Institution, Washington, USA (SNM).

RESULTS

Family Syringophilidae LAVOPIERRE, 1953
Subfamily Syringophilinae LAVOPIERRE, 1953
Genus *Syringophiloidus* KETHLEY, 1970

***Syringophiloidus oriolus* n. sp.**

Figs. 1-8

ETYMOLOGY

The name *oriolus* refers to the generic and specific name of the host – *Oriolus oriolus*.

TYPE MATERIAL

Holotype female and 6 paratype females, 4 paratype males and 1 paratype larva from quills of secondary feathers of the eurasian golden-oriole *Oriolus oriolus* (L., 1758) (Oriolidae); 1909, no other data. Deposition of material: Holotype (No. Syr.51.1), 4 female, 4 male and 1 larva paratypes are deposited at UAM, 1 female paratype at ZIN, 1 female paratype at SNM.

DIFFERENTIAL DIAGNOSIS

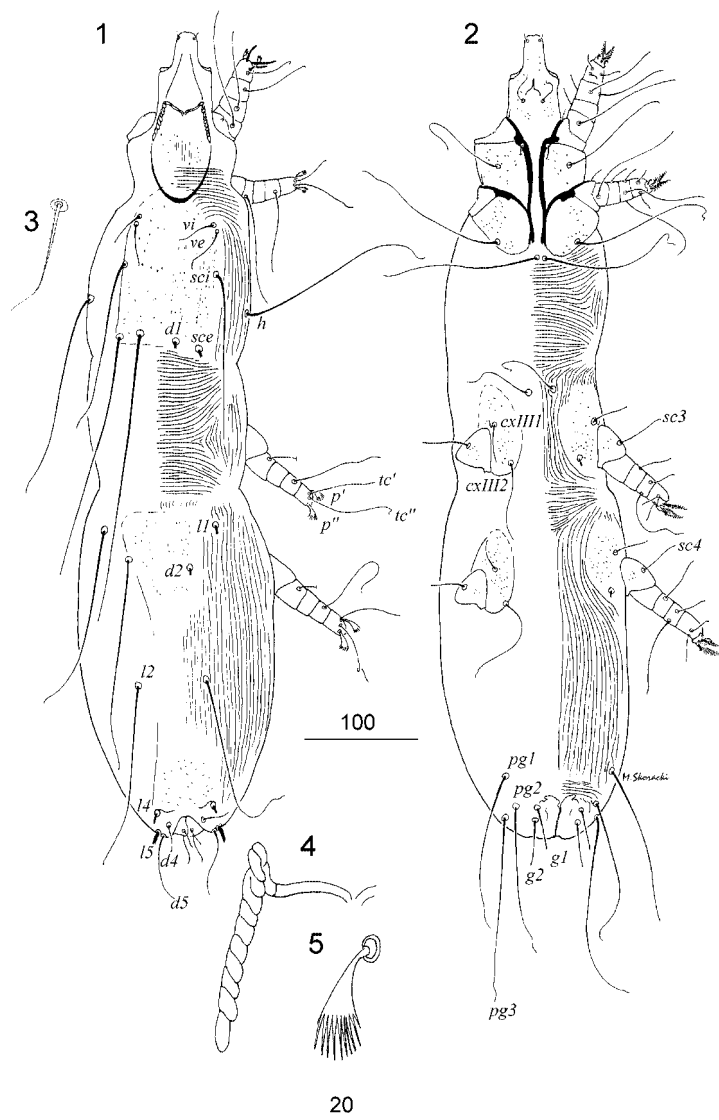
Syringophiloidus oriolus n. sp. is closely related to *S. graculae* FAIN, BOCHKOV et MIRONOV, 2000 described from the hill myna *Gracula religiosa* (Sturnidae) from S.E. Asia (FAIN et al. 2000). In both species the females have 2 pairs of anal setae; setae *vi* and *ve* are short (shorter than 90) and slightly serrate; setae *sci* are long (longer than 90); the fan setae *p'* and *p''* of legs III and IV are with at least 10 tines. This new species differs from *S. graculae* in the following characters: In females of *S. oriolus* n. sp. setae *d4* are about 2 times shorter than setae *d5*,

Table 1. Quill mite species of the genus *Syringophiloidus*.

Quill mite species	Host		Distribution
<i>S. minor</i> (BERLESE, 1887)	<i>Passer domesticus</i>	Passeriformes: Ploceidae	Europe, N. America, Russia, Kirghizia
	<i>Passer montanus</i>	Passeriformes: Ploceidae	Russia
	<i>Turdus iliacus</i>	Passeriformes: Turdidae	Russia
	<i>Sturnus vulgaris</i>	Passeriformes: Sturnidae	France
<i>S. seiurus</i> (CLARK, 1964)	<i>Seiurus aurocapillus</i>	Passeriformes: Parulidae	USA, Canada
	<i>Quelea erythrops</i>	Passeriformes: Ploceidae	Togo
	<i>Othyphantes stuhlmanni</i>	Passeriformes: Ploceidae	Congo
	<i>Pachyphantes superciliosus</i>	Passeriformes: Ploceidae	Togo
	<i>Helmitheros vermivorus</i>	Passeriformes: Parulidae	USA
	<i>Melospiza melodia</i>	Passeriformes: Emberizidae	USA
	<i>Garrulus glandarius</i>	Passeriformes: Corviidae	Germany, Russia
<i>S. glandarii</i> (FRITSCH, 1958)	<i>Coccothraustes coccothraustes</i>	Passeriformes: Corviidae	Germany
	<i>Pica pica</i>	Passeriformes: Corviidae	Japan
	<i>Delichon urbica</i>	Passeriformes: Hirundinidae	Russia, Poland
<i>S. delichonum</i> BOCHKOV, 2000	<i>Delichon urbica</i>	Passeriformes: Hirundinidae	Russia, Poland
<i>S. motacillae</i> BOCHKOV et MIRONOV, 1998	<i>Motacilla flava</i>	Passeriformes: Motacillidae	Russia
	<i>Zonotrichia albicollis</i>	Passeriformes: Emberizidae	Canada
	<i>Sturnus vulgaris</i>	Passeriformes: Sturnidae	Kirghizia, France
<i>S. presentalis</i> CHIROV et KRAVTSOVA, 1995	<i>Garrulus glandarius</i>	Passeriformes: Corviidae	Russia
	<i>Turdus iliacus</i>	Passeriformes: Turdidae	Russia
	<i>Turdus pilaris</i>	Passeriformes: Turdidae	Russia
	<i>Carpodacus erythrinus</i>	Passeriformes: Fringillidae	Kazakhstan, Poland
<i>S. carpodaci</i> BOCHKOV et APANASKEVICH, 2001	<i>Carpodacus erythrinus</i>	Passeriformes: Fringillidae	Kazakhstan, Poland
<i>S. weiszii</i> SKORACKI et al., 2002	<i>Lanius excubitor</i>	Passeriformes: Laniidae	Slovakia
<i>S. tarnii</i> SKORACKI et SIKORA, 2002	<i>Pteroptochos tarni</i>	Passeriformes: Rhinocryptidae	Argentina

Quill mite species	Host		Distribution
<i>S. graculae</i> FAIN et al., 2000	<i>Gracula religiosa</i>	Passeriformes: Sturnidae	S.E. Asia
<i>S. dendroicittae</i> FAIN et al., 2000	<i>Dendroicitta rufa</i>	Passeriformes: Corviidae	East Asia
<i>S. hirundinis</i> SKORACKI et al., 2003	<i>Hirundo rustica</i>	Passeriformes: Hirundinidae	Italy, Poland
<i>S. bombycillae</i> SKORACKI, 2002	<i>Bombycilla garrulus</i>	Passeriformes: Bombycillidae	Slovakia, Poland
<i>S. schoenichusii</i> SKORACKI, 2002	<i>Emberiza schoenichus</i>	Passeriformes: Emberizidae	Slovakia, Poland
	<i>Phoenicurus ochruros</i>	Passeriformes: Turdidae	Poland
<i>S. montanus</i> SKORACKI, 2002	<i>Passer montanus</i>	Passeriformes: Ploceidae	Slovakia
<i>S. sp.</i>	<i>Agelaius phoeniceus</i>	Passeriformes: Icteridae	Texas
	<i>Molothrus ater</i>	Passeriformes: Icteridae	Texas
	<i>Quiscalus mexicanus</i>	Passeriformes: Icteridae	Texas
	<i>Campylorhynchus</i> <i>brunneicapillum</i>	Passeriformes: Troglodytidae	Texas
	<i>Turdus migratorius</i>	Passeriformes: Turdidae	Texas
<i>S. oriolus</i> sp. n.	<i>Oriolus oriolus</i>	Passeriformes: Oriolidae	?
<i>S. artamus</i> sp. n.	<i>Artamus leucorhynchus</i>	Passeriformes: Artamidae	Indonesia
	<i>Artamus fuscus</i>	Passeriformes: Artamidae	Indonesia
<i>S. stawarczykii</i> sp. n.	<i>Euphonia cyanocephala</i>	Passeriformes: Emberizidae	Brasil
	<i>Tachyphonus rufus</i>	Passeriformes: Emberizidae	Brasil
<i>S. erythrurus</i> sp. n.	<i>Erythrura trichroa</i>	Passeriformes: Estrildidae	Spain
	<i>Lonchura sp.</i>	Passeriformes: Estrildidae	?
<i>S. cypsiuri</i> FAIN et al., 2000	<i>Cypsiurus parvus</i>	Apodiformes: Apodidae	Congo

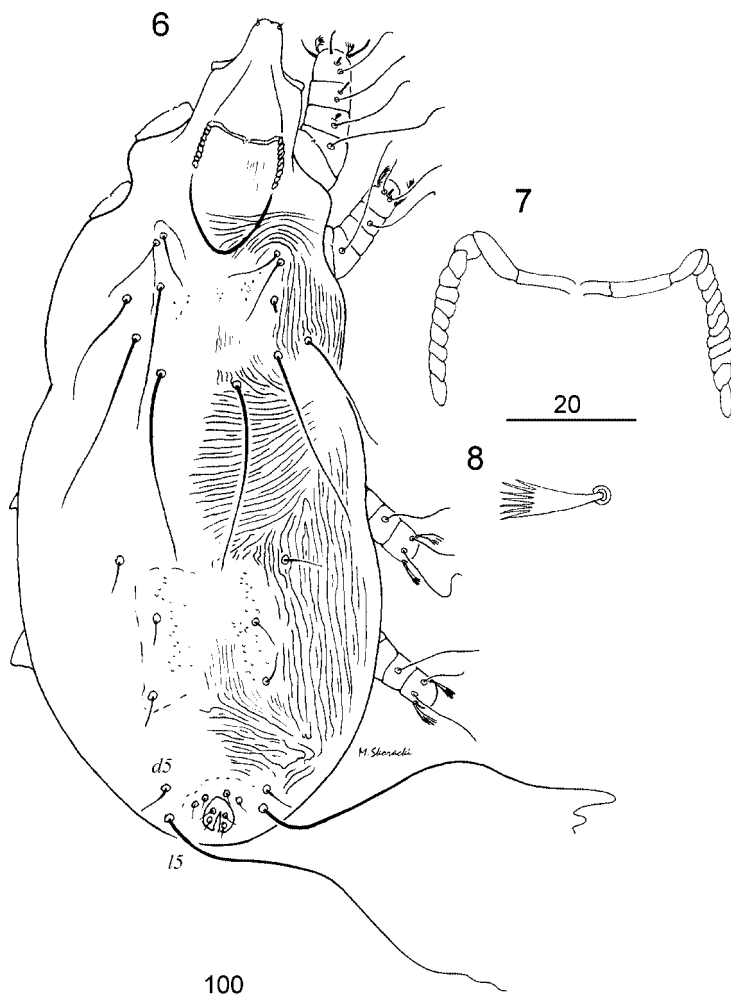
propodosomal shield is completely punctated, hysterosomal shield is punctated on anterior part; in males setae *l1*, *l2* and *d2* are subequal in length. In females of *S. graculae* setae *d4* and *d5* are subequal in length, propodosomal shield is with punctate ornament only on lateral margins, hysterosomal shield is without punctations on anterior part; in males setae *l1* are several times longer than *l2* and *d2*.



1-5. *Syringophiloidus oriolus* sp. n., female: 1 - dorsal view, 2 - ventral view, 3 - seta *vi*, 4 - peritreme, 5 - fan seta *p'III*

DESCRIPTION

Female (Figs. 1-5), holotype (6 paratypes in parentheses). Total body length 670 (650-705). GNATHOSOMA. Gnathosoma with punctate ornament ventrally. Each transverse branch of peritremes with 2-3 chambers, each longitudinal branch with 10-11 chambers (Fig. 4). Stylophore punctated dorsally and rounded posteriorly, 150 (145-150) long. IDIOSOMA. Propodosomal shield weakly sclerotized and punctated, setae *vi*, *ve*, *sci*, *sce* and *d1* situated on this shield. Setae *vi* and *ve* thin and slightly serrate (Fig. 3), length ratio of setae *vi*:*ve*:*sci* 1:1.2-1.6:5.2-7.6. Setae *sce* and *d1* set at the same level. Hysterosomal shield weakly sclerotized in middle part or divided into two separate parts. Setae *d4* about 2 times shorter than



6-8. *Syringophiloidus oriolus* sp. n., male: 6 - dorsal view, 7 - peritremes, 8 - fan seta *p'III*

d5. Two pairs of anal setae present, setae *a1* shorter than *a2*. Genital setae subequal in length. Paragenital setae *pg1* 1.1-1.3 times longer than *pg2*, setae *pg3* 1.2-1.5 times longer than *pg2*. Cuticular striations as in Figs. 1 and 2. LEGS. All coxae with punctate ornament. Setae *cxIII2* 3-3.5 times longer than *cxIII1*. Fan setae *p'* and *p''* of legs III and IV with 10-11 tines (Fig. 5). Setae *tc'''III-IV* 1.6 times longer than *tc'''III-IV*.

Lengths of setae: *vi* 25 (25-30); *ve* 40 (30-35); *sci* 190 (150-155); *h* (175-190); *sce* 230 (215-225); *l1* 160 (160); *l2* 170 (140-160); *d1* 250 (235-265); *d2* 190 (180-195); *d4* 25 (20-25); *d5* 45 (45-50); *a1* 20 (15-20); *a2* 25 (25); *g1* and *g2* 35 (35-45); *pg1* 140 (145); *pg2* 135 (115-125); *pg3* 160 (170-175); *sc3* 45 (40-45); *sc4* 40 (30-40); *cxIII1* 30 (30); *cxIII2* 105 (90-100); *tc'''III-IV* 45 (45); *tc'''III-IV* 75 (70).

Male (Figs. 6-8) (4 paratypes). Total body length 450. GNATHOSOMA. Gnathosoma with punctate ornament ventrally. Each transverse branch of peritremes with 2-3 chambers, each longitudinal branch with 10-11 chambers (Fig. 7). Stylophore without dorsal punctations, constricted posteriorly 135 long. IDIOSOMA. Propodosomal shield weakly sclerotized, anterior and posterior margins of this shield invisible. Length ratio of setae *vi:ve:sci* 1:1.2:2.8. Hysterosomal shield weakly sclerotized and with punctate ornament, all margins of this shield invisible. Setae *l1*, *l2* and *d2* subequal in length. Pygidial shield present and restricted to genital region. Number of paragenital setae variable, 2-3 pairs. Cuticular striations as in Fig. 6. LEGS. All coxae with punctate ornament. Setae *tc'''III-IV* about 2 times longer than *tc'''III-IV*. Fan setae *p'* and *p''* of legs III and IV with 6-7 tines (Fig. 8).

Lengths of setae: *vi* 25; *ve* 30-35; *sci* 70-80; *h* 70-80; *sce* variable 65-105; *l1* 15; *l2* 15; *l5* 210-220; *d1* variable 80-145; *d2* 15; *d5* 20-25; *pg1* 65-70; *pg2* 35; *tc'''III-IV* 20-25; *tc'''III-IV* 35-40.

Syringophiloidus artamus n. sp.

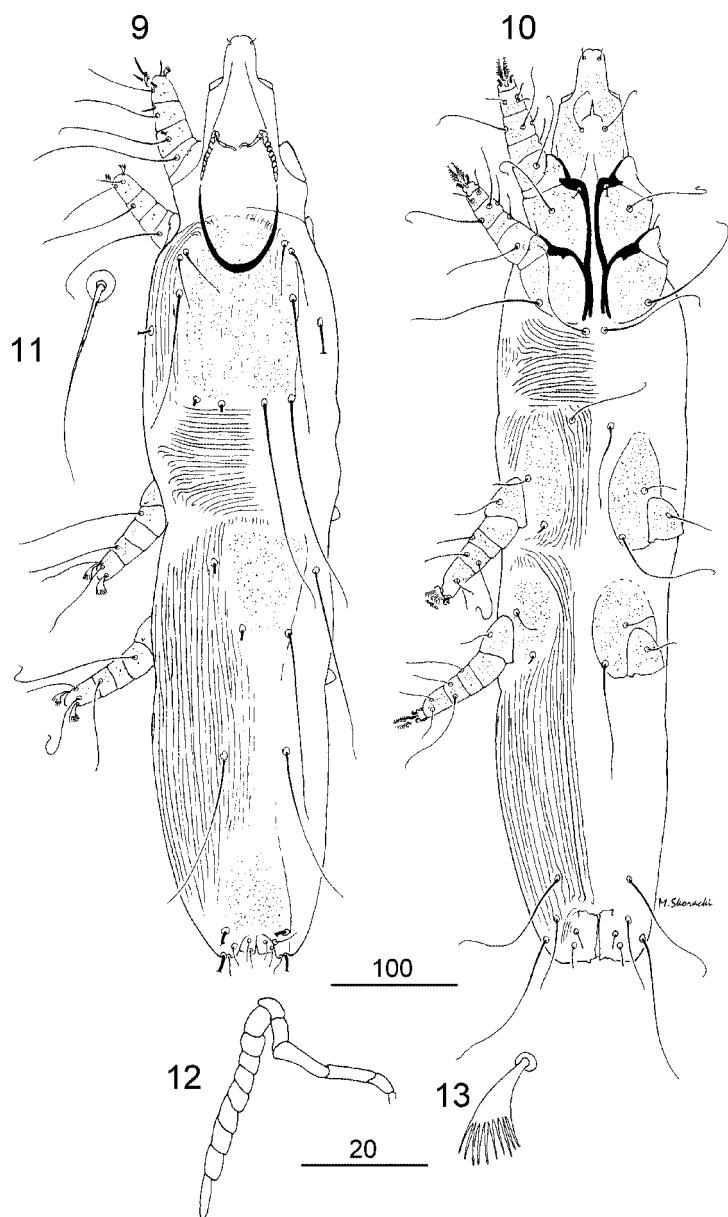
Figs. 9-13

ETYMOLOGY

The name *artamus* refers to the generic name of the host – *Artamus leucorhynchus*.

TYPE MATERIAL

Holotype female and 4 paratype females, 2 paratype nymphs, 1 paratype larva from quills of secondary feathers of the white-breasted woodswallow *Artamus leucorhynchus* (L., 1771) (Artamidae – new host family for Syringophilidae); Sumatra, Indonesia; 1901, no other data. The specimen of type host is deposited at NMW. Deposition of material: Holotype (No. Syr.52.1), 3 female, 2 nymphal and 1 larva paratypes are deposited at UAM, 1 female paratype at ZIN.



9-13. *Syringophiloidus artamus* sp. n., female: 9 - dorsal view, 10 - ventral view, 11 - seta vi, 12 - peritreme, 13 - fan seta p'III

ADDITIONAL MATERIAL

7 females (No. Syr.53) from secondary of the ashy woodswallow *Artamus fuscus* VIEILLOT, 1817 (Artamidae); locality and date unknown. Three females are deposited at UAM, 2 females at ZIN, 2 females at SNM. A specimen of an additional host is deposited at NMW.

DIFFERENTIAL DIAGNOSIS

Syringophiloidus artamus n. sp. is closely related to *S. motacillae* BOCHKOV et MIRONOV, 1998 described from the Yellow Wagtail *Motacilla flava* (Motacillidae) from Rusia, reported also from the White-throated Sparrow *Zonotrichia albicollis* (Emberizidae) from Canada (BOCHKOV & MIRONOV 1998; BOCHKOV & GALLOWAY 2001). In both species the females have the setae *vi* 3 or more times shorter than *sci*, the setae *sci* are shorter than 135. This new species is distinguishable by the following characters: in females of *S. artamus* n. sp. the setae *vi*, *ve* and *sci* are thin and slightly serrate; the paragenital setae *pg1* are 1.6-2 times longer than *pg2*; each transverse branch of peritremes consists of 4 chambers. In females of *S. motacillae* the setae *vi*, *ve* and *sci* are thick, enlarged in basal part and distinctly serrate, the setae *pg1* and *pg2* are subequal in length; each transverse branch of peritremes consists of 5-6 chambers.

DESCRIPTION

Female (Figs. 9-13), holotype (4 paratypes in parentheses). Total body length 695 (605-655). GNATHOSOMA. Gnathosoma with punctate ornament ventrally. Each transverse branch of peritremes with 4 chambers, each longitudinal branch with 9-10 chambers (Fig. 12). Stylophore punctated dorsally and rounded posteriorly, 180 (170-195) long. IDIOSOMA. Propodosomal shield well sclerotized and punctated, setae *vi*, *ve*, *sci*, *sce* and *d1* situated on this shield. Setae *vi* and *ve* thin and slightly serrate (Fig. 11), the length ratio of setae *vi:ve:sci* 1:1.3-1.5:3.5-3.7. Setae *sce* and *d1* set at the same level. Hysterosomal shield invisible in middle part, well sclerotized and punctated in anterior and posterior part, setae *d2*, *d4* and *l4* situated on this shield. Setae *d2* situated 1.7 times closer to *l1* than to *l2*. The setae *d4* and *d5* subequal in length. Two pairs of anal setae present, setae *a1* shorter than *a2*. Genital setae subequal in length. Paragenital setae *pg1* and *pg3* subequal in length and 1.6-2 times longer than *pg2*. Cuticular striations as in Figs. 9 and 10. LEGS. All coxae and free segments of legs I-IV with punctate ornament. Setae *cxIII2* 3-4.5 times longer than *cxIII1*. Fan setae *p'* and *p''* of legs III and IV with 10 tines (Fig. 13). Setae *tc'''III-IV* 1.7 times longer than *tc'''III-IV*.

Lengths of setae: *vi* 30 (30); *ve* 40 (40-45); *sci* 105 (105-110); *sce* 175 (165); *l1* (150); *l2* 135; *d1* 170 (155-170); *d2* 145; *d4* 12 (15); *d5* 15 (15); *a1* 15 (15-20); *a2* 20 (20-25); *g1* and *g2* 15 (15); *pg1* 115 (135); *pg2* 70 (60); *pg3* 115 (135); *sc3* 40 (40); *sc4* 20; *cxIII1* 25 (20); *cxIII2* 75 (90); *tc'''III-IV* 40 (40-50); *tc'''III-IV* 70 (70).

Male: unknown.

***Syringophiloidus stawarczyki* n. sp.**

Figs. 14-18

ETYMOLOGY

This species is dedicated to the honour of Polish ornithologist and curator of the Museum of Natural History, Wrocław University, Wrocław, Poland - Prof. Tadeusz STAWARCZYK.

TYPE MATERIAL

Holotype female and 3 paratype females, 11 paratype nymphs from quills of secondary feathers of the golden-rumped euphonia *Euphonia cyanocephala* (VIEILLOT, 1818) (Emberizidae); Brasil, no other data. The specimen of type host is deposited at NMW. Deposition of material: Holotype (No. Syr.55.1) and 2 female and 11 nymphal paratypes are deposited at UAM, 1 female paratype at ZIN.

ADDITIONAL MATERIAL

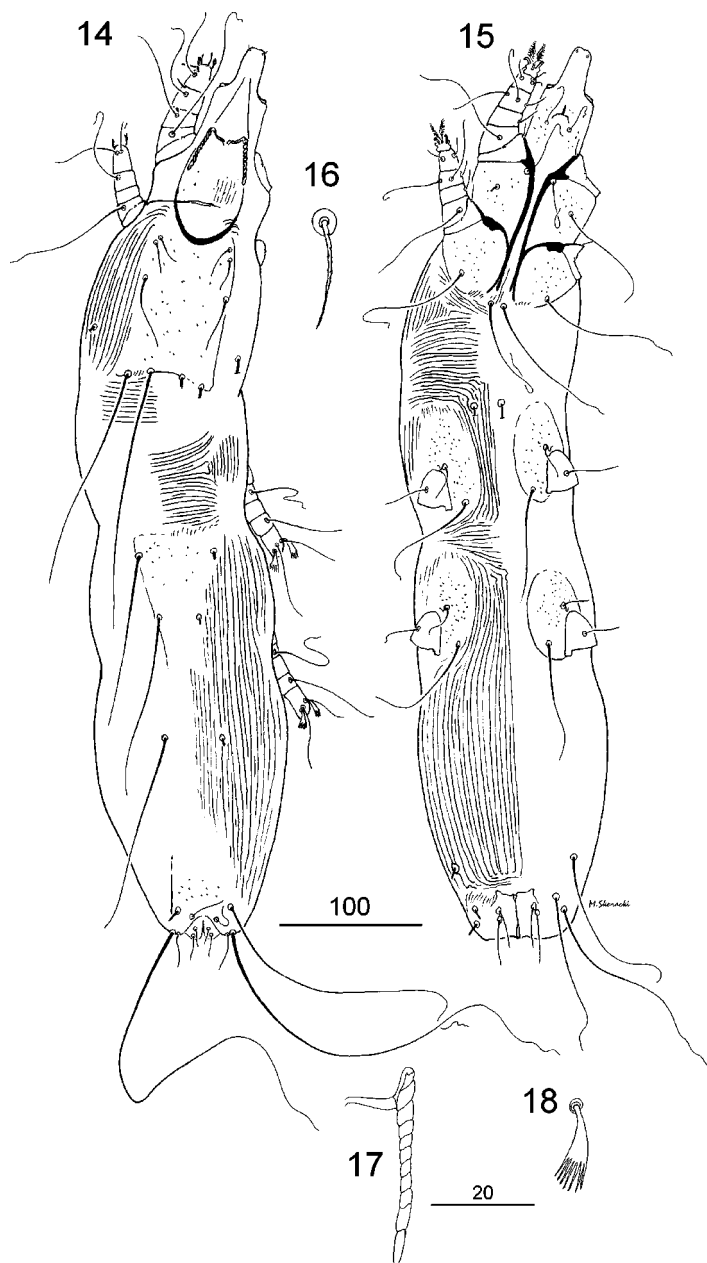
6 females (No. Syr.56) from secondary of the white-lined tanager *Tachyphonus rufus* (BODDAERT, 1783) (Emberizidae); Brasil, no other data. Four females are deposited at UAM, 2 females are deposited at ZIN. A specimen of an additional host is deposited at NMW.

DIFFERENTIAL DIAGNOSIS

Syringophiloidus stawarczyki sp.n. is closely related to *S. presentalis* CHIROV et KRAVTSOVA, 1995 described from the common starling *Sturnus vulgaris* (Sturnidae) from Kirghizia (CHIROV & KRAVTSOVA 1995). In both species the females have two pairs of anal setae, each transverse branch of peritremes consists of 2-3 long chambers, the setae *sci* are longer than *vi* and *ve* but not longer than 110. This new species is distinguished by the following characters: in females *S. stawarczyki* n. sp. the length of setae *sci* is 30-65; the paragenital setae *pg1* and *pg2* are subequal in length. In females of *S. presentalis* the length of setae *sci* is 80-100; the paragenital setae *pg1* are 1.5 times shorter than *pg2*.

DESCRIPTION

Female (Figs. 14-18), holotype (2 paratypes in parentheses). Total body length 695 (605-655). GNATHOSOMA. Gnathosoma with punctate ornament ventrally. Each transverse branch of peritremes with 2-3 chambers, each longitudinal branch with 11-12 chambers (Fig. 17). Stylophore rounded posteriorly, 180 (170-195) long, with punctate ornament dorsally. IDIOSOMA. Propodosomal shield well sclerotized and punctated, setae *vi*, *ve*, *sci*, *sce* and *d1* situated on this shield. Setae *vi* and *ve* thin, slightly serrate (Fig. 16) and subequal in length. Setae *sci* variable in length but always longer than *vi* and *ve*. Setae *h* serrate. Bases of setae *d1* situated anteriorly to bases of setae *sce*. Hysterosomal shield invisible in middle part, well sclerotized and punctated in anterior and posterior part, setae *d2*, *d4* and



14-18. *Syringophiloidus stawarczyki* sp. n., female: 14 - dorsal view, 15 - ventral view, 16 - seta vi, 17 - peritreme, 18 - fan seta p'III

l4 situated on this shield, setae *l1* set on margins of this shield, bases of setae *l2* set near this shield. Bases of setae *d2* situated 1.8 times closer to *l1* than to *l2*. The setae *d4* and *d5* subequal in length. Two pairs of anal setae present, setae *a1* shorter than *a2*. Genital setae subequal in length. Paragenital setae *pg1* and *pg2* subequal in length and 1.3 times shorter than *pg3*. LEGS: All coxae well sclerotized and with punctate ornament. Setae *cxIII2* 2.7-3.2 times longer than *cxIII1*. Fan setae *p'* and *p''* of legs I and with 4-5 tines, III and IV with 7-8 tines (Figs. 18). Setae *tc'''III-IV* 1.6-2 times longer than *tc'''III-IV*.

Lengths of setae: *vi* 15 (15); *ve* 15 (15-18); *sci* variable (30-60); *sce* 170 (165); *l1* 120 (115-125); *l2* (145-150); *l4* (220); *l5* 305; *d1* 195; *d2* 145 (150-160); *d4* 25 (25); *d5* 25 (25); *a1* (12); *a2* (14-18); *g1* and *g2* 30 (25-30); *pg1* 130 (135); *pg2* 125 (135); *pg3* 165; *sc3* 30 (35-50); *sc4* 30 (25-30); *cxIII1* 25 (25-30); *cxIII2* 80 (80); *tc'''III-IV* (30-40); *tc'''III-IV* (60-65).

Male: unknown.

Syringophiloidus erythrurus n. sp.

Figs. 19-23

ETYMOLOGY

The name *erythrurus* refers to the generic name of the host – *Erythrura trichroa*.

TYPE MATERIAL

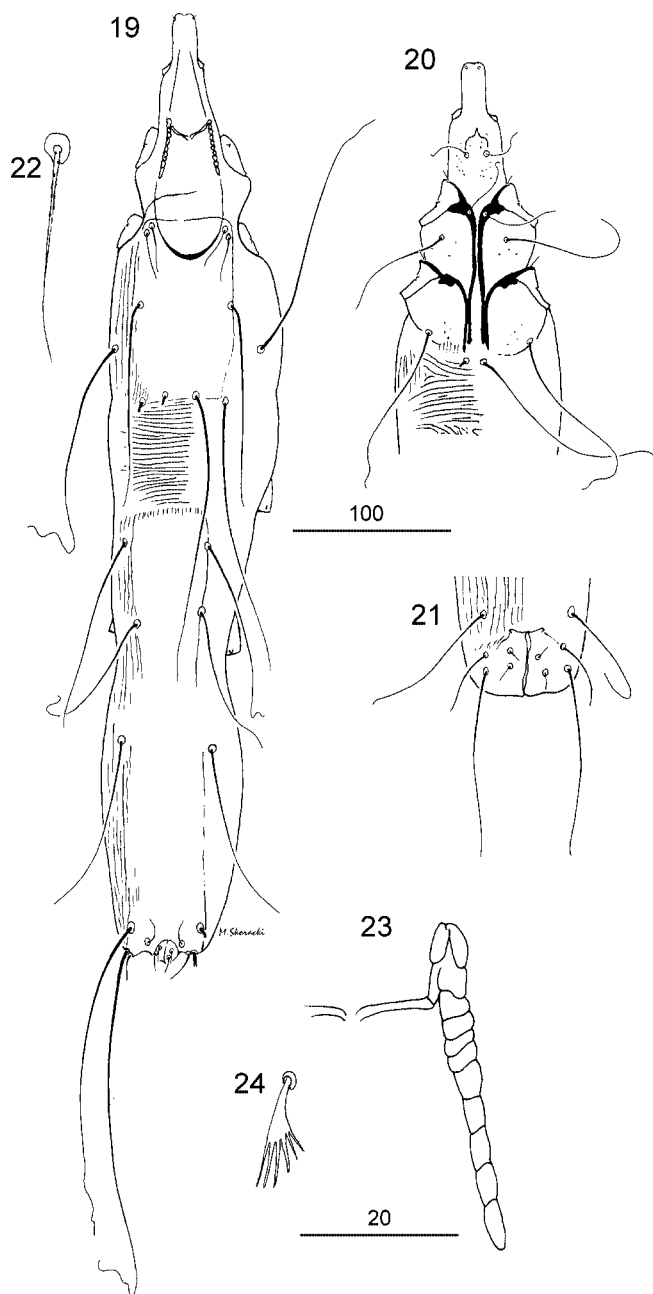
Holotype female and 14 paratype females from quills of secondary feathers of the blue-faced parrotfinch *Erythrura trichroa* (KITTLITZ, 1835) (Estrildidae – new host family for the genus *Syringophiloidus*); Tenerife, Spain; 1874, no other data. The specimen of the type host is deposited at NMW. Deposition of material: Holotype and 10 female paratypes are deposited at UAM, 2 female paratypes at ZIN, 2 female paratypes at SNM.

ADDITIONAL MATERIAL

8 females (No. Syr.59) from *Lonchura* sp. (Estrildidae); locality and date unknown. The whole material is deposited at UAM except 1 female at ZIN and 1 female at SNM. A specimen of an additional host is deposited at NMW.

DIFFERENTIAL DIAGNOSIS

Syringophiloidus erythrurus n. sp. is closely related to *S. tarnii* SKORACKI et SIKORA, 2002 described from the huet-huet *Pterotochos tarni* (Passeriformes: Rhinocryptidae) from Argentina (SKORACKI & SIKORA 2002). In both species females have fan setae of legs III and IV with no more than 7 tines, setae *vi* and *ve* are thin and short (shorter than 90), setae *sci* are long (longer than 90). This new species is distinguishable from *S. tarnii* by the following characters: In females *S. erythrurus* n. sp. setae *vi* and *ve* are subequal in length, coxae are weakly



19-24. *Syringophiloides erythrurus* sp. n., female: 19 - dorsal view, 20 - gnathosoma and propodosoma in ventral view, 21 - hysterosoma in ventral view, 22 - seta vi, 23 - peritreme, 24 - fan seta p'III

sclerotized and without punctation or scarcely punctated, paragenital setae *pg2* are 2.8 times shorter than *pg3*. In females *S. tarnii* setae *vi* are 1.3-1.5 times shorter than *ve*, coxae are well sclerotized and numerous punctated, paragenital setae *pg2* are 1.3 times shorter than *pg3*.

DESCRIPTION

Female (Figs. 19-23), holotype (8 paratypes in parentheses). Total body length 555 (550-580). GNATHOSOMA. Gnathosoma punctated on ventral side. Each transverse branch of peritremes with 2-3 chambers, each longitudinal branch with 8-9 chambers (Fig. 23). Stylophore rounded posteriorly, 150 (150) long, with punctate ornament dorsally. IDIOSOMA. Propodosomal shield weakly sclerotized, without punctations, setae *vi*, *ve*, *sci* and *d1* situated on this shield, setae *sce* near this shield. Setae *vi* and *ve* thin, slightly serrate (Fig. 22) and subequal in length. Setae *vi* and *ve* 5.4-6 times shorter than *sci*. Bases of setae *d1* situated slightly anteriorly to bases of setae *sce*. Hysterosomal shield weakly sclerotized, not punctated. Bases of setae *d2* situated 1.7 times closer to *l1* than to *l2*. The setae *d4* and *d5* subequal in length. Two pairs of subequal anal setae present. Genital setae *g1* and *g2* subequal in length. Paragenital setae *pg2* about 2 times shorter than *pg1* and 2.8 times shorter than *pg3*. Cuticular striations as in Figs. 19-21. LEGS. Coxae I and II well sclerotized, III and IV weakly sclerotized, all scarcely punctated or without punctate ornament. Setae *cxIII2* 3-3.3 times longer than *cxIII1*. Fan setae *p'* and *p''* of legs III and IV and with 6-7 tines (Fig. 24). Setae *tc'''III-IV* 1.4-1.7 times longer than *tc'''III-IV*.

Lengths of setae: *vi* 25 (20-25); *ve* 25 (20-25); *sci* 135 (130-150); *sce* 170 (175-180); *l1* 125 (140); *l2* 105 (105-125); *l4* (220); *l5* (245); *d1* 170 (175-200); *d2* 105 (105-125); *d4* 20 (20); *d5* 20 (20); *a1* and *a2* (12); *g1* and *g2* 20 (20); *pg1* 90 (85-90); *pg2* 45 (45-55); *pg3* 125 (125-150); *sc3* 25 (25-30); *sc4* 20 (15-20); *cxIII1* 20 (20); *cxIII2* 65 (60); *tc'''III-IV* (30-35); *tc'''III-IV* (50).

Male: unknown.

Syringophiloidus glandarii (FRITSCH, 1956)

This species was described from the eurasian jay *Garrulus glandarius* (Corviidae) from Germany (FRITSCH 1956). In 2001 BOCHKOV redescribed this species basing on material from the same host species from Russia. Up to this time *S. glandarii* was known from two avian hosts, type host *G. glandarius* and from the hawfinch *Coccothraustes coccothraustes* (Fringillidae). Collecting this species from the black-billed magpie *Pica pica* is a new host and locality record.

MATERIAL EXAMINED

7 females, 6 males (No. Syr.60) from secondary of *Pica pica* (L., 1758) (Corviidae); Japan, no other data. The whole material is deposited at UAM except 1 female and 1 male at ZIN and 1 female at SNM.

***Syringophiloidus bombycillae* SKORACKI, 2002**

This species was described from the bohemian waxwing *Bombycilla garrulus* (L., 1758) (Bombycillidae) from Slovakia (SKORACKI 2002). It is recorded here for the first time from Poland.

MATERIAL EXAMINED

34 females, 3 males, 10 nymphs and 1 larva (No. Syr.14B) from secondary of the type host *Bombycilla garrulus*; Poland, Rychlik; 31.01.2001, leg. L. KUCZYŃSKI. The whole material is deposited at UAM except 2 females at ZIN and 2 females at SNM.

***Syringophiloidus schoeniciusii* SKORACKI, 2002**

This species was described from the reed bunting *Emberiza schoeniclus* L., 1758 (Emberizidae) from Slovakia (SKORACKI 2002). Below I give a new host for this species – the black redstart *Phoenicurus ochruros* (GMEL., 1774) (Turdidae) and a new locality – Poland.

MATERIAL EXAMINED

22 females, 2 males, 3 nymphs and 1 larva (No. Syr.15B) from secondary of the type host *Emberiza schoeniclus*; Poland, Weltyń; 07.2001; leg. G. KILJAN. The whole material is deposited at UAM except 2 females at ZIN and 2 females at SNM. 13 females, 2 males (No. Syr.61) from secondary of the new host species *Phoenicurus ochruros*; Poland, near Świnoujście; 04. 2001; leg. G. KILJAN. The whole material is deposited at UAM except 2 females at ZIN and 1 female at SNM.

***Syringophiloidus hirundinis* SKORACKI, MOLLER et TRYJANOWSKI, 2003**

This species was described from the barn swallow *Hirundo rustica* L., 1758 (Hirundinidae) from Italy (SKORACKI et al. 2003). It is recorded here for the first time from Poland.

MATERIAL EXAMINED

17 females, 5 males, 1 nymph (No. Syr.40B) from secondary of the type host *Hirundo rustica*; Poland, near Olsztyn; 29.07.1999; leg. J. NOWAKOWSKI. The whole material is deposited at UAM except 2 females, 1 male at ZIN and 2 females at SNM.

***Syringophiloidus minor* (BERLESE, 1878)**

Although this species has worldwide distribution parallel with their type host the house sparrow *Passer domesticus* (Ploceidae) and other hosts (see Table 1), it is recorded here for the first time from Poland.

MATERIAL EXAMINED

12 females, 3 males, 20 nymphs, 9 larvae (No. Syr.62) from tail feather of the type host *Passer domesticus*; 04.05.2000; Poland, Darłowo; leg. M. SKORACKI; 43 females 5 males, 38 nymphs, 2 larvae from secondary of the same host; 06. 2001; Poland, near Świnoujście; leg. G. KILJAN. The whole material is deposited at UAM except 2 females at SNM.

***Syringophiloidus carpodaci* BOCHKOV et APANASKEVICH, 2001**

This species was described from the common rosefinch *Carpodacus erythrinus* (PALL., 1770) (Fringillidae) from Kazakhstan (BOCHKOV & APANASKEVICH 2001). It is recorded here for the first time from Poland.

MATERIAL EXAMINED

10 females, 3 males, 3 nymphs (No. Syr.63) from secondary of the type host *Carpodacus erythrinus*; 29.07.1999; Poland, near Olsztyn; leg. J. NOWAKOWSKI. The whole material is deposited at UAM except 1 female at ZIN and 1 female at SNM.

***Syringophiloidus delichonum* BOCHKOV, 2000**

This species was described from the northern house-martin *Delichon urbica* (L., 1758) (Hirundinidae) from Russia (BOCHKOV 2000). This species is recorded here for the first time from Poland.

MATERIAL EXAMINED

3 females (No. Syr.64) from type host *Delichon urbica*; Poland, Słońsk; 05.1995; leg. J. DABERT. The whole material is deposited at UAM.

KEY TO SPECIES OF *SYRINGOPHILOIDUS* (FEMALES).

1. One pair of anal setae present *S. schoeniclus*
- Two pairs of anal setae present 2.
2. Each transverse branch of peritremes with no more than 3 long chambers 3.
- Each transverse branch of peritremes with 4 and more short chambers 14.
3. Setae *vi*, *ve* and *sci* subequal in length *S. dendroicittae*
- Setae *sci* longer than *vi* and *ve* 4.
4. Length of setae *sci* no more than 110 5.
- Length of setae *sci* longer than 130 6.
5. Length of setae *sci* is 30-65, paragenital setae *pg1* and *pg2* subequal in length
..... *S. stawarczyki* n. sp.
- Length of setae *sci* is 80-100, paragenital setae *pg1* 1.5 times shorter than *pg2*
..... *S. presentalis*

6. Length of setae *ve* no more than 50 7.
- Length of setae *ve* longer than 80 10.
7. Fan setae *p'* and *p''* of legs III and IV with no more than 7 times 8.
- Fan setae *p'* and *p''* of legs III and IV with at least 10 times 9.
8. Setae *vi* and *ve* subequal, setae *pg2* 2.8 times shorter than *pg3*
..... *S. erythrurus* n. sp.
- Setae *vi* 1.3-1.5 times shorter than *ve*, setae *pg2* 1.3 times shorter than *pg3*
..... *S. tarnii*
9. Setae *d4* about 2 times longer than *d5* *S. oriolus* n. sp.
- Setae *d4* and *d5* subequal in length *S. graculae*
10. Length of setae *ve* no more than 120 11.
- Length of setae *ve* longer than 175 13.
11. Setae *vi*, *ve* and *sci* smooth *S. delichonum*
- Setae *vi*, *ve* and *sci* slightly serrate 12.
12. Each longitudinal branch of peritremes with 11-14 chambers (13-14 in males),
fan setae *p'* and *p''* of legs III and IV with 9-10 times *S. glandarii*
- Each longitudinal branch of peritremes with 7-9 chambers (7-9 in males), fan
setae *p'* and *p''* of legs III and IV with 6-8 times *S. weiszii*
13. Bases of setae *d1* situated anteriorly to *sce*; (in males, bases of setae *g1*
situated anteriorly to *g2*) *S. hirundinis*
- Bases of setae *d1* and *sce* situated at the same level (in males, bases of setae
g1 and *g2* situated at the same level) *S. cypsiuri*
14. Length of setae *sci* longer than 155 *S. bombycillae*
- Length of setae *sci* no more than 135 15.
15. Setae *vi* no more than 2 times shorter than *sci* *S. minor*
- Setae *vi* 3 and more times shorter than *sci* 16.
16. Paragenital setae *pg2* 1.6-2 times shorter than *pg1*, setae *vi*, *ve* and *sci* thin and
slightly serrate *S. artamus* n. sp.
- Paragenital setae *pg1* and *pg2* subequal in length, setae *vi*, *ve* and *sci* thick and
distinctly serrate 17.
17. Lateral branch of peritremes with 5-6 chambers 18.
- Lateral branch of peritremes with 8 and more chambers 19.
18. The length ratio of setae *pg2* : *pg3* 1:1.0-1.2; (in males length of setae *sci* 50-
80) *S. motacillae*
- The length ratio of setae *pg2* : *pg3* 1: 1.4-1.7; (in males length of setae *sci* 22-
33) *S. seiurus*
19. Length of stylophore 155, propodosomal shield narrow, length between bases
of setae *ve-ve* and *sci-sci* 45-50 and 55-65; (in males setae *l1* 3 times longer
than *d2* and *l2*; length of setae *pg2* about 60-65) *S. carpodaci*
- Length of stylophore 170, propodosomal shield wide, length between bases of
setae *ve-ve* and *sci-sci* 70-80 and 80-95; (in males setae *l1* no more than 1.5
times longer than *d2* and *l2*; length of setae *pg2* 25)
..... *S. montanus*

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