

ERIOPHYID MITES (ACARI, ERIOPHYOIDEA: ERIOPHYIDAE) OF THE GENUS  
*LEIPOTHRIX* KEIFER, 1966 FROM SEDGES (CYPERACEAE)

ЧЕТЫРЁХНОГИЕ КЛЕЩИ (ACARI, ERIOPHYOIDEA: ERIOPHYIDAE) РОДА  
*LEIPOTHRIX* KEIFER, 1966 С ОСОКОВЫХ (CYPERACEAE)

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Ключевые слова: Eriophyidae, *Leipothrix*, *Epitrimerus*, осоки, Cyperaceae, *Leipothrix hirtus* sp. n.

ABSTRACT

Mites of the genus *Leipothrix* Keifer, 1966 are recorded from Russia and Ukraine for the first time. A new species, *Leipothrix hirtus* sp. n. from *Carex hirta* L. (Cyperaceae), is described and poorly known *L. roivaineni* (Liro, 1943) comb. n. (from *Epitrimerus*) from *Eriophorum latifolium* L. (Cyperaceae) is redescribed. *Epitrimerus eriophori* Roivainen, 1947 syn. nov. is considered as a junior subjective synonym of *Leipothrix roivaineni*. Taxonomy of the genus *Leipothrix* is briefly discussed.

РЕЗЮМЕ

Клещи рода *Leipothrix* Keifer, 1966 обнаружены на территории России и Украины впервые. Приводятся описание и переописание видов *Leipothrix hirtus* sp. n. с *Carex hirta* L. (Cyperaceae) и *L. roivaineni* (Liro, 1943) comb. n. (= *Epitrimerus eriophori* Roivainen, 1947 syn. nov.) с *Eriophorum latifolium* L. Кратко обсуждается таксономия рода *Leipothrix*.

INTRODUCTION

The family Eriophyidae includes about 3000 species of highly specialized plant parasites [Bag-njuk et al., 1998]. This family is represented on sedges (Cyperaceae) by 18 species of six genera: *Aceria* Keifer, 1944, *Eriophyes* von Siebold, 1851, *Epitrimerus* Nalepa, 1898, *Cupacarus* Keifer, 1943, *Moraesia* Flechtmann, 2004, and *Leipothrix* Keifer, 1966. Only one species of the latter genus, *Leipothrix bangkokus* (Chandrapatya, 1996) is known from sedges, *Cyperus* sp. in Thailand [Bai-mai, Tankalakha, 2005]. In this paper, I describe a new species of this genus associated with sedges, *Leipothrix hirtus* sp. n. from *Carex hirta* L. from Ukraine, redescribe *L. roivaineni* (Liro, 1943) comb.

n. (from *Epitrimerus*) (= *Epitrimerus eriophori* Roivainen, 1947 syn. nov.) from *Eriophorum latifolium* L. (Cyperaceae) and briefly discuss systematics of the genus *Leipothrix*.

MATERIAL AND METHODS

Mites were collected from leaves of different plants belonging to the genera *Eriophorum* L., *Carex* L. and *Scirpus* L. using a fine pine and mounted on slides in Berlese medium. In descriptions, all measurements are given in micrometers (µm) and represented in Table 2. The terms of eriophyid morphology follow Nalepa [1910] and Keifer [1975]. Classification of Eriophyidae follows that of Amrine et al. [2003].

Family Eriophyidae Nalepa, 1898

Subfamily Phyllocoptinae Nalepa, 1892

Tribe Phyllocoptini Nalepa, 1892

Genus *Leipothrix* Keifer, 1966

*Leipothrix* Keifer, 1966: 9; Amrine 1996: 73

*Flechtmannia* Keifer, 1979: 10

**Type species:** *Leipothrix solidaginis* Keifer, 1966, by monotypy.

**Diagnosis.** Body compact, fusiform; setae s. d. 2 oriented anteriodorsally, their tubercles anterior to posterior shield margin; setae s. apic. bifurcate or angled, usually consisting of basic and accessory branches; setae s. fem. I and II absent; claws I–II with large spherical knobs.

Species included: *L. bangkokus* (Chandrapatya, 1996), *L. coactus* (Nalepa, 1896), *L. conval-lariae* (Liro, 1943) comb. n. (from *Epitrimerus*); *L. darlingtoniae* Fashing, 1994, *L. eichorniae* (Keifer, 1978), *L. hirtus* sp. n., *L. mangiferae* (Chandra-

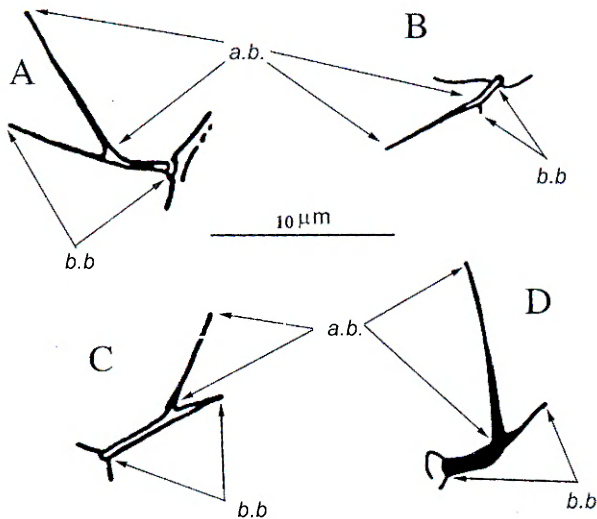


Fig. 1. Setae s. apic.: A — *Dicrothrix anacardii* Keifer, 1966; B — *Leipothrix solidaginis* Keifer, 1966; C — *Neodicrothrix tiliacorae* Mohanasundaram, 1984; D — *Moraesia tau* Flechtmann, 2004.

Abbreviations: b.b. — basic branch; a.b. — accessory branch.

patya, 1997), *L. minidonta* (Meyer, 1990), *L. roivaineni* (Liro, 1943) **comb. n.** (from *Epitrimerus*); *L. solidaginis* Keifer, 1966, *L. taraxaci* (Liro, 1943) **comb. n.** (from *Epitrimerus*); *L. triquetra* (Meyer, 1990), *L. urticae* (Liro, 1941) **comb. n.** (from *Epitrimerus*).

**Distribution and hosts.** Mites of this genus are recorded for North America, South Africa, Europe, and Asia. In Russia and Ukraine mites of the genus *Leipothrix* are recorded for the first time. Host-plants of these mites include both monocotyledons (Cyperaceae) and dicotyledons (Plantaginaceae, Pontederiaceae, Moraceae, Asteraceae, Primulaceae, Sarraceniaceae, and Anacardiaceae), and even ferns (Table 1). Mites of this genus, however, are not recorded from gymnosperms.

**Remarks.** The main distinctive feature of the genus *Leipothrix* spp. is the bifurcate setae s. apic. of the gnathosoma. It consists of a basic branch and an accessory branch diverging from the middle part of the basic branch (Fig. 1A, C, D). In some species, (e. g., *L. solidaginis*), the distal part of the basic branch is very short [Amrine et al., 2003], and setae s. apic. have an "angled" form [Roivainen, 1947, 1950, 1951] (Fig. 1B). Bifurcate setae s. apic. were observed in species of the genera *Dicrothrix* Keifer, 1966, *Moraesia* Flechtmann, 2004, and *Neodicrothrix* Mohanasundaram, 1984. Species of these three genera differ from *Leipothrix* spp. by the structure of the empodia and by the number of setae on the legs and opisthosoma [Amrine et al., 2003].

The species *Epitrimerus convallariae*, *E. roivaineni*, *E. taraxaci*, and *E. urticae* are placed into the genus *Leipothrix* because their setae s. apic. are branched and setae s. fem. I and II are absent. Moreover, according to the original descriptions, some other eriophyid species placed in the genus *Epitrimerus* (such as *E. aegopodii* Liro, 1941; *E. alinae* Liro, 1941; *E. anthrisci* (Lindroth, 1904) Liro, 1941; *E. bupleurispinosi* Roivainen, 1953; *E. femoralis* Liro, 1941; *E. jaceae* Liro, 1943 (= *E. liroi* Roivainen, 1947); *E. pratensis* Liro, 1941; *E. pyrolae* Liro, 1943; *E. ranunculi* Liro, 1941; *E. urbanus* Liro, 1943; *E. violarius* Liro, 1941), probably, belong to the genus *Leipothrix*. However, the types of the most of these species are lost and the voucher specimens are not available for study.

The structure of setae s. apic. is not described in at least four species of the genus *Leipothrix*, which are, therefore, considered here as species *incertae sedis* in the family Eriophyidae: *L. bombicis* Huang, 1989, *L. lysimachiae* Hong et Kuang, 1989, *L. mimulicalis* Kuang, 1991, and *L. moraceus* Castagnoli, 1980.

#### *Leipothrix hirtus* sp. n.

Fig. 2.

**Female** (holotype): brightly reddish, 174 long (156–194 in 10 paratypes), 54 wide (52–56). Prodorsal shield 62 long (61–64), frontal lobe 12 long (10–12), rounded. This shield covered by 2 longitudinal median lines, beginning near rear shield margin and disappearing at distance of 10–15 from front of this shield. In middle part of prodorsal shield, on each side of median lines, one short, indistinct, and curved line present. Posterior margin of prodorsal shield uneven, with three roundish projections, directed backwards (Fig. 2B). Rear shield margin slightly elevated and slope formed behind this shield. Setae s.d. 2–3 long. Gnathosoma 25 long (23–26), oriented ventrally. Setae s. apic. bifurcate. Basic branch 5 long (5–6), accessory branch 9 long (9–10). Accessory branch beginning from middle of basic branch. Foreleg 30 (30–32), tibia 7 (5–6), s.tib.I 2 (1–2), tarsus 6 (5–6); claw 5 (5–6) long, with small roundish knob; feather claw 3(4)-rayed. Setae s. fem. I and II absent. Sternum absent (Fig. 2C). Hindleg 30 (29–31), tibia 5, tarsus 5 long, feather claw 3(4)-rayed. Setae s. fem. I and II absent. Sternum absent. Epigynium 10 long (10–11), 19 wide (19–21), coverflap with 18 thin, longitudinal lines (18–20) (Fig. 2C), s.gen. 10 long (8–11). Opisthosoma with 44 (43–47) smooth tergites and 75 (72–81) sternites, covered by oval microtubercles. Telosome with 6 ventrally striated rings.

Table 1  
 Eriophyoid mites of the genus *Leipothrix* Keifer, 1966  
 Таблица 1  
 Четырёхногие клещи рода *Leipothrix* Keifer, 1966

Species	Host species	Host family	Relation to host	Locality	Reference
<i>L. bangkokus</i>	<i>Cyperus</i> sp.	Cyperaceae	Vagrant on the lower leaf surface	Thailand	Chandrapatya, 1996
<i>L. coactus</i>	<i>Plantago lanceolata</i> L., <i>P. major</i> L., <i>P. minor</i> L.	Plantaginaceae	Causes wrinkles on the longitudinal folds of the leaves	Germany	Nalepa, 1896
<i>L. convallariae</i> comb.n.	<i>Convallaria majalis</i> L.	Liliaceae	Vagrant on leaves, causing rust	Finland	Liro, 1943
<i>L. darlingtoniae</i>	<i>Darlingtonia californica</i> Torr.	Sarraceniaceae	Free-living on inner walls of pitcher above fluid line, causing no injury	USA (Oregon)	Fashing, 1994
<i>L. eichorniae</i>	<i>Eichornia crassipes</i> (Mart.) Solms.	Pontederiaceae	Rust on leaves	Brazil (Piracicaba, Sao Paulo)	Keifer, 1979
<i>L. hirtus</i> sp.n.	<i>Carex hirta</i> L., <i>C. atherodes</i> Spreng.	Cyperaceae	Vagrant on the lower leaf surface	Russia (NW Russia), Ukraine (Dnepropetrovsk)	this paper
<i>L. mangiferae</i>	<i>Mangifera indica</i> L.	Anacardiaceae	Vagrant on the lower leaf surface	Thailand	Chandrapatya, 1997
<i>L. minidonta</i>	<i>Cheilanthes viridis</i> (Forssk.) Swartz.	Sinopteridaceae	On the slightly deformed leaves	South Africa (Richmond, Natal)	Meyer, 1990
<i>L. roivaineni</i> comb.n.	<i>Carex vesicaria</i> L., <i>C. lasiocarpa</i> L., <i>Eriophorum vaginatum</i> L., <i>E. polystachyum</i> Koch., <i>E. latifolium</i> , <i>Scirpus sylvaticus</i> L.	Cyperaceae	Vagrant in leaf furrows	Finland, Russia (NW Russia)	Liro, 1943; Roivainen 1947, 1950; this paper
<i>L. solidaginis</i>	<i>Solidago californica</i> Nutt.	Asteraceae	Rust on the lower leaf surface	USA (California)	Keifer, 1966
<i>L. taraxaci</i> comb.n.	<i>Taraxacum officinale</i> Web.	Asteraceae	Vagrant on lower surface of leaves, causing rust	Finland	Liro, 1943
<i>L. triquetra</i>	<i>Cheilanthes</i> sp.	Sinopteridaceae	On the slightly deformed leaves among sporangia	South Africa (Pretoria, Transvaal)	Meyer, 1990
<i>L. urticae</i> comb.n.	<i>Urtica dioica</i> L.	Urticaceae	Vagrant	Finland	Liro, 1941

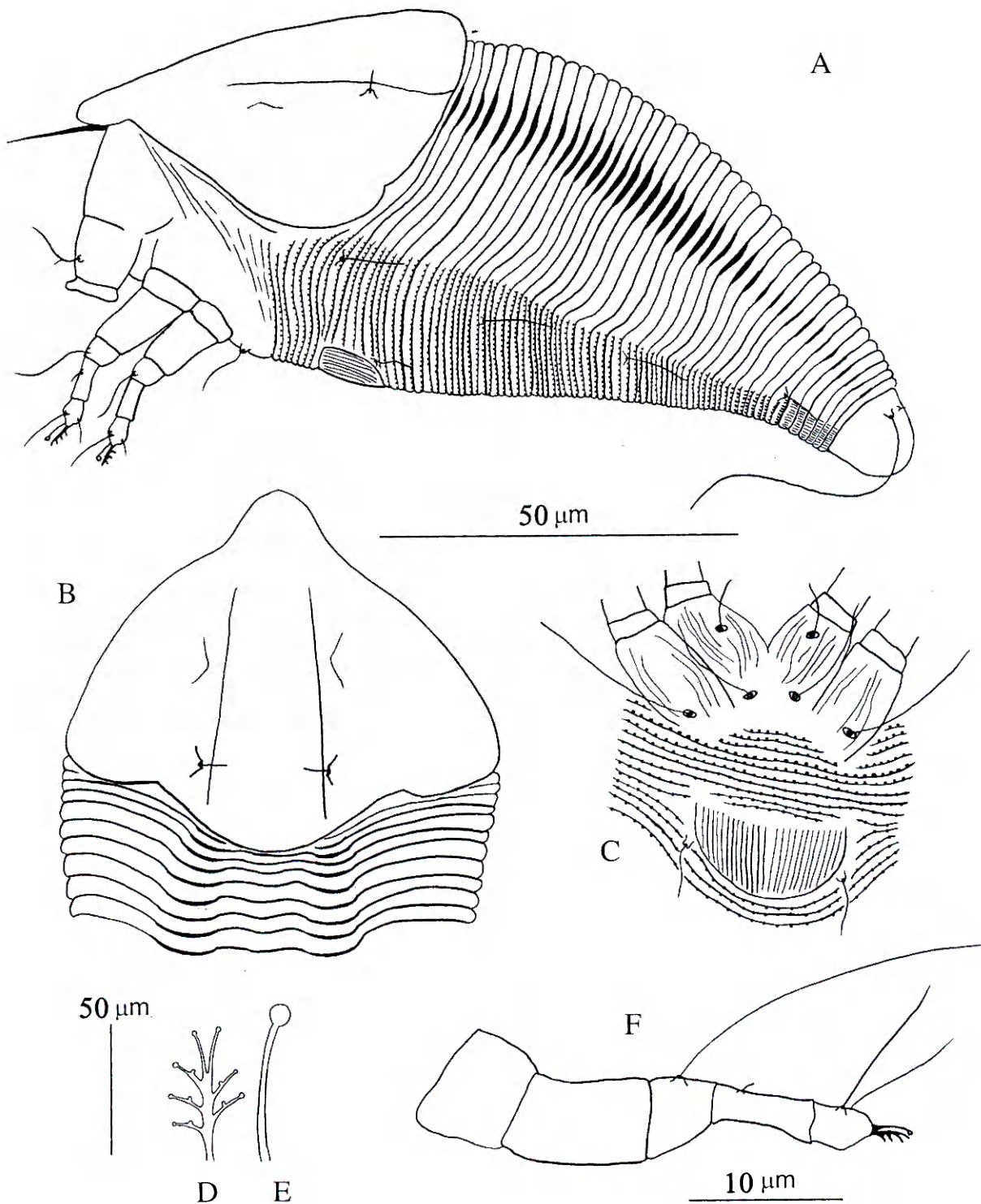


Fig. 2. *Leipothrix hirtus* sp. n., female: A — body in lateral view; B — dorsal shield; C — coxogenital region; D — empodium; E — claw; F — foreleg.

Flattened area of dorsal opisthosomal surface situated between rear shield margin and level of 14–16 rings of anal lobe. Tergites on lateral surfaces of opisthosoma thickened, forming lens-like structures. Setae s.l. 8 (8–10), s.v.1 16 (12–18), s.v.2 10 (8–13), s.v.3 (17–20) long, s.acc. 2 (1–2). Nine (8–10) sternites present before s.l.; 15 (14–17) ster-

nites present between s.l. and s.v.1; 24 (23–26) sternites present between s.v.1 and s.v.2; 20 (19–21) sternites present between s.v.2 and s.v.3.

**Males** (n = 5): 131–143 long, 41–43 tergites, 60–70 sternites, epiandrium smooth.

**Type material.** Female holotype (slide 112), 9 female paratypes and 5 males (on same slide) from

*Carex hirta* L. (Cyperaceae) [lower surface of leaves among epidermal hairs; no damage was observed], Ukraine: Dnepropetrovsk Prov., Moskovskoye Lake, 48°27'00" N 34°59'00" E, meadow, 13 August 2002, coll. Ph. Chetverikov. Type material is deposited in the collection of Phytoacarological Laboratory (Biological Research Institute, St. Petersburg State University, Old Peterhof, Russia).

**Additional material.** Six females from *Carex hirta* L., Ukraine: Dnepropetrovsk Prov., Moskovskoye Lake, 48°27'00" N 34°59'00" E, 22 August 2002, coll. Ph. Chetverikov; 14 females, same host and locality, 10 July 2003, coll. Ph. Chetverikov; 10 females, same host and locality, 12 August 2004, coll. Ph. Chetverikov; 15 females from *C. hirta*, Russia: Pskov Prov., Nevel, Turchino village, coll. Ph. Chetverikov; 12 females from *C. hirta*, Russia: Smolensk Prov., Velidze, Kobizi village, 10 July 2004; 9 females from *Carex atherodes* Spreng., Ukraine: Zaporizhya Prov., Vasilyevka, 47°25' N, 35°19' E, coll. Ph. Chetverikov.

**Etymology.** The species name is derived from the species name of the host plant and is an adjective.

**Differential diagnosis.** Based on the number of the opisthosomal rings and measurements (Table 2), the new species is close to *L. roivaineni*. These two species differ from each other by the following characters. In *L. hirtus* sp. n., two straight longitudinal median lines and two short curved lines are present on the prodorsal shield, the rear shield margin is uneven, with three roundish projections directed backwards, the coverflap of the epigynium is covered by 18–20 thin, longitudinal lines, the sternum is absent (Fig. 2). In *L. roivaineni* (Liro, 1943) four long undulate lines are present on the prodorsal shield, the rear shield margin without projections, the coverflap of the epigynium, in its proximal part, is covered by 10–12 thin, longitudinal striae and in the distal part, by dots the sternum is present (Fig. 3). The new species is distinguished from *L. bangkokus* by the pattern of the prodorsal shield and by the ornamentation of the coverflap of the epigynium (Fig. 2, 4).

**Distribution.** Ukraine (Dnepropetrovsk and Zaporizhye Prov.), Russia (Pskov, Smolensk, Leningrad and Arkhangelsk Prov.).

**Hosts.** *Carex hirta* L., *C. atherodes* Spreng.

**Biology.** All our samples are represented by specimens collected in July and August, therefore, data pertaining the female dimorphism and overwintering are still unknown. Mites were mainly

recorded on *Carex hirta* and only once on *C. atherodes*. These sedges species possess the thick epidermal hairs on the both leaf surfaces [Egorova, 1999]. In all cases, colonies of mites *L. hirtus* sp. n. were small (in average 4–5 females and 10 nymphs per leaf, situated on lower leaf surface). It should be mentioned, that until now the only known species from the lower leaf surface of Cypraceae is *L. bangkokus* [Boczek, Chandrapatya, 1996; Baimai, Tankalakha, 2005]. The eggs of *L. hirtus* sp. n. were rarely observed because they had very small sizes and, therefore, are almost indistinct between epidermal hairs of leaves. Specimens of *Carex hirta* vary in the degree of density of hairs on sheaths and leaves [Egorova, 1999]. I found *L. hirtus* sp. n. only on plants with dense hairs on the lower surface of leaves. Mites were not uniformly distributed along the shoots of *Carex hirta*. The mature shoots of this plant consist of scale-leaves, middle leaves and spikelets [Egorova, 1999]. *L. hirtus* sp. n. has never been found inside the spikelets and under the scale-leaves. Most mites were observed on third, fourth, and fifth leaves of the middle formation. In these limits, mites were mostly concentrated in the lower one third of leaves, where the epidermal hairs were most numerous.

**Comparative material.** 2 female paratypes of *Leipothrix bangkokus* (Chandrapatya, 1996) from *Cyperus* sp. (Cyperaceae) [vagrant on lower surface of the leaves], Thailand: Kasetsart University Sang Khen campus, Bangkok, 26 October 1993, coll. Dr. A. Chandrapatya.

#### *Leipothrix roivaineni* (Liro, 1943), comb. n.

Fig. 3.

*Epitrimerus roivaineni* Liro, 1943: 9, fig. 7

*Epitrimerus eriophori* Roivainen, 1947: 31, fig. 16; 1950: 42; 1951: 36 (syn. nov.)

**Summer female** (n = 10): reddish 200–244 long, 65–76 wide. Prodorsal shield includes two longitudinal admedian lines beginning at level of s.d.2. From distance of 15–20, they are parallel and then gradually converge and disappear in area of frontal lobe. Two undulate lines 20–25 long beginning immediately from tubercles of s.d.2 lateral to median lines. Thin transverse line between tubercles of s.d.2 present (Fig. 3A). Prodorsal shield 62–71 long; frontal lobe 12–17 long, rounded with arched striates on its lower surface. Setae s.d.2 2–4 long, directed upward and centrally, their tubercles 12–15 anterior to rear shield margin, 12–17 apart. Gnathosoma 20–24, directed downward. Setae s. apic. bifurcated (Fig. 3C). Basic branch 6–

Table 2  
 Measurements of *Leipothrix* spp.  
 Таблица 2  
 Промеры видов рода *Leipothrix*

Character	min	max	mean	SD
<i>L. hirtus</i> (10 females)				
length of body	156	194	174	1
width of body	52	56	53	1.3
length of gnathosoma	23	26	24	0.9
s.apic. length of accessory branch	9	10	9	0.5
s.apic. length of basic branch	5	6	5	0.5
length of shield	61	64	63	0.9
length of frontal lobe	10	12	11	0.8
length of s.d.2	3	4	3	0.5
length of foreleg	30	32	31	0.6
length of tibia I	6	7	7	0.5
s.tib.1	1	2	2	0.5
length of tarsus I	5	6	6	0.5
length of claw I	5	6	6	0.5
length of hindleg	29	31	30	0.8
length of tibial I	5	6	6	0.5
length of tarsus II	5	6	5	0.5
number of tergites	43	47	45	1.2
number of sternites	72	81	77	3
s.l.	8	10	9	0.8
s.v.1	12	18	15	1.7
s.v.2	8	13	11	1.6
s.v.3	17	20	18	1.1
number of sternites before s.l.	8	10	9	0.7
number of sternites between s.l. – s.v.1	14	17	16	1
number of sternites between s.v.1–2	23	26	25	0.9
number of sternites between s.v.2 – s.v.3	19	21	20	0.7
length of s.acc.	1	2	2	0.5
length of epigynium	10	11	10	0.5
width of epigynium	19	21	20	0.7
s.gen.	8	11	9	1
<i>L. hirtus</i> (5 males)				
length of body	131	143	137	4.1
number of tergites	41	43	42	0.7
number of sternites	60	70	65	3.4

10, accessory branch 10–14 long. Accessory branch beginning from middle part of basic branch. Foreleg 29–34, tibia 6–9, s.tib. I 1–2, tarsus 4–5, tarsus + tibia 11–14; claw 4–5 long, with big spherical knob; feather claw 3(4)-rayed. Hindleg 29–32, tibia 5–8 long, s.tib. II absent, tarsus 4–5 long, feather claw 3(4)-rayed. Setae s. fem. I and II absent. Sternum 8–10 long, unforked, not reaching s.cox. II. Coxae with numerous dotted lines (Fig. 3 C). Setae s.cox. I — 6–10 long, 12–15 apart; s.cox. II 10–16 long, 7–10 apart; s.cox. III 25–41 long, 21–27 apart. Epigynium 10–12 long, 19–21 wide;

s.gen. 9–12 long. Epigynium with 10–12 thin longitudinal striates in proximal part and with dots in distal part (Fig. 3C). Opisthosoma with 37–46 smooth tergites (first 2–3 tergites incomplete) and 77–87 microtuberculate sternites. Microtubercles roundish (Fig 3 A, C). Seven-nine sternites present before epigynium. Dorsal surface of last 10–15 tergites each with small tubercle situating on middle line (Fig. 3A). Telosome with 5 rings ventrally covered by elongated microtubercles. Setal lengths: s.l. — 6–9, s.v.1 11–17, s.v.2 6–8, s.v.3 22–27, s.acc. 1–2. 15–19 sternites anterior to s.l.; 14–

Character	min	max	mean	SD
<i>L. roivaineni</i> (10 summery females)				
length of body	200	244	222	13.6
width of body	65	76	69	3.3
length of gnathosoma	20	24	21	1.1
s.apic.length of accessory branch	10	14	12	1.2
s.apic.length of basic branch	6	10	8	1.3
length of shield	62	71	69	2.8
length of frontal lobe	12	17	15	1.5
distance between s.d.2 and rear shield margin	12	15	13	1.1
s.d.2	2	4	3	0.7
between s.d.2	12	17	15	1.4
length of foreleg	29	34	32	1.8
length of tibia I	6	9	7	1
s.tib.1	1	2	2	0.5
length of tarsus I	4	5	5	0.5
length of tarsus I + tibia I	11	14	13	0.9
length of claw I	4	5	4	0.4
length of hindleg	29	32	30	0.9
length of tibial I	5	8	6	0.9
length of tarsus II	4	5	4	0.5
s.cox I	6	10	7	1.2
between s.cox. I	12	15	14	1.1
s.cox II	10	16	14	1.6
between s.cox. II	7	10	8	0.8
s.cox. III	25	41	32	5.2
between s.cox. III	21	27	25	1.7
length of sternum	8	10	9	0.7
number of tergits	37	46	41	2.4
number of sternits	77	87	83	3.5
s.l.	6	9	7	1
s.v.1	11	17	14	2
s.v.2	6	8	7	0.7
s.v.3	22	27	25	1.5
number of tergits before s.l.	15	19	17	1.2
number of tergits between s.l. – s.v.1	14	18	16	1.3
number of tergits between s.v.1 – s.v.2	20	25	23	1.6
number of tergits between s.v.2 – s.v.3	20	25	23	1.4
number of tergits between s.acc.	1	2	2	0.5
length of epigynium	10	12	11	0.7
width of epigynium	19	21	20	0.8
s.gen.	9	12	10	1
<i>L. roivaineni</i> (10 overwintered females)				
length of body	220	265	245	12.8
width of body	65	76	69	2.9
length of frontal lobe	14	18	16	1.2
distance between s.d.2 and rear shield margin	14	12	14	1.2
s.d.2	3	4	3	0.5
number of tergits	36	42	38	1.8
number of sternits	79	88	84	2.9
length of tarsus I + tibia I	9	12	11	0.9
length of sternum	8	9	8	0.5

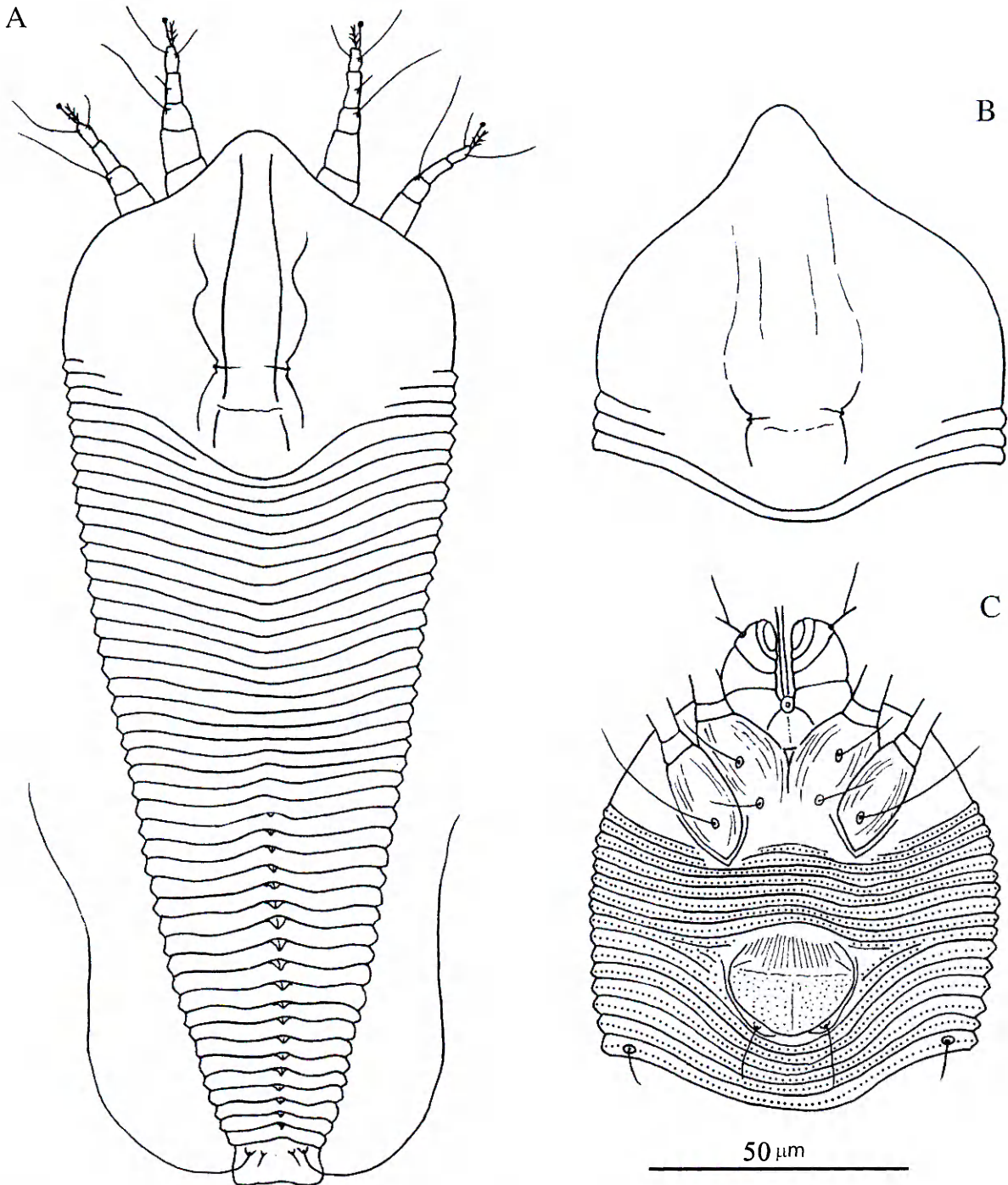


Fig. 3. *Leipothrix roivaineni* (Liro, 1943) comb. nov., female: A — body of summer female in lateral view; B — dorsal shield of overwintered female; C — coxogenital region.

18 sternites situated between s.l. and s.v.1; 20–25 sternites situated between s.v.1 and s.v.2; 20–25 sternites situated between s.v.2 and s.v.3.

**Male:** Unknown.

**Overwintered female** (n = 10): dark brown; 220–265 long, 65–76 wide. Prodorsal shield with two indistinct incomplete smoothed longitudinal admedian lines beginning on level of tubercles of s.d.2. Two thin undulate lines (20–25 long) begin-

ning immediately from tubercles of s.d.2 and reaching laterally to medial lines. Transverse line between tubercles of s.d.2 usually absent (Fig. 3B). Frontal lobe 14–18. Setae s.d.2 3–4 long, directed upward and centrally, their tubercles situated 12–16 anterior to of rear shield margin. Setae s. apic. bifurcated. Combined length of tarsus + tibia 9–12. Sternum 8–9 long, unforked, not reaching s.cox. II. Opisthosoma of 36–42 smooth tergites and 79–88



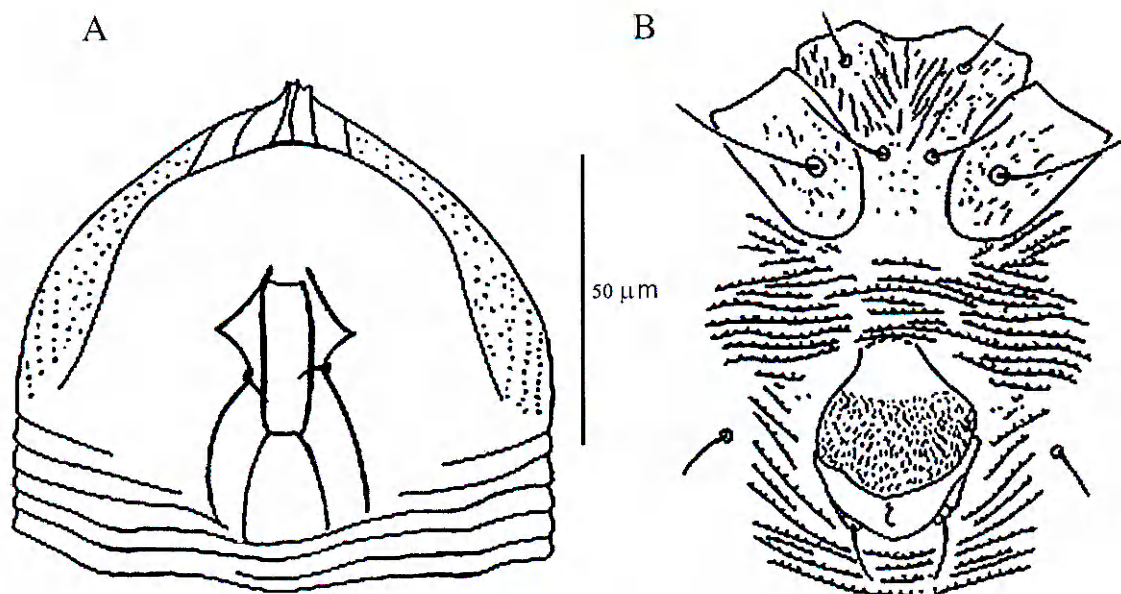


Fig. 4. *Leipothrix bangkokus* (Chandrapatya, 1996): A — dorsal shield; B — coxogenital region.

microtuberculate sternites. Other characteristics identical to that of summery females mentioned above.

**Male:** unknown.

**Material examined.** 10 females, and 5 males (slide 63) from *Eriophorum latifolium* L. (Cyperaceae) [upper surface of leaves; no damage was observed], Russia: Arkhangelsk Prov., Plesetsk area, marsh near village Kokovka, 62°14'10" N, 39°29'15" E, 26 June 2005, coll. Ph. Chetverikov.

**Remarks.** The descriptions of *Epitrimerus roivaineni* and *E. eriophori* show that they differ mainly by the same characteristics as overwintered and summer females of *L. roivaineni* (by the body length, length of the distal leg segments, and by the numbers of the dorsal rings). Unfortunately, the types of these species are lost. I think that Liro [1943] described the overwintering form of *L. roivaineni*, and Roivainen [1947] described the summer form of the same species and called it "*Epitrimerus eriophori* Roivainen, 1947". Therefore we consider *E. eriophori* **syn. nov.** as junior subjective synonym of *L. roivaineni*.

**Biology and host associations** of *L. roivaineni* (Liro, 1943). These mites were mainly recorded from midfurrow on the upper surface of leaves near the stem on *Eriophorum polystachyum* L. and *E. latifolium* L. and very seldom on plants of the genera *Carex* L. and *Scirpus* L.

Our observations of *L. roivaineni* from *Eriophorum latifolium* L. from Arkhangelsk Prov. revealed that the large brown overwintered females laying eggs could be observed on leaves (not more

than 5–7 per leaf) in the end of May. Numerous smaller summer females appear on leaves during June, when the number of overwintered females is gradually decreasing. Only samples with summer females (10–15 per leaf), nymphs I and II (not more than 15 per leaf) and eggs were present in July. Winter females were found again in the end of August, whereas the number of nymphs substantially decreases in this time.

I do not have any autumn-winter specimens from Arkhangelsk Prov. but I collected these mites from Leningrad Prov. Eleven large brown slow-moving females were collected from the leaf of *Scirpus sylvaticus* L. on 24 September 2003. I transferred them to the laboratory at room temperature where these females were more active. I also observed immobile overwintering females of *L. roivaineni* on hoar-frosted leaves of *Carex lasiocarpa* and *C. vesicaria* on 6 October 2002. These females resided on the lower part of leaves in groups of 20–30 individuals. They settled in lines along the middle furrow with their legs under the body. In the laboratory conditions they were also inactive.

**Key to species of the genus *Leipothrix* Keifer, 1966 living on Cyperaceae**

1. Sternum present .....  
..... *L. roivaineni* (Liro, 1943) comb. n., Fig. 3.  
— Sternum absent ..... 2
2. Rear shield margin not elevated, no slope posterior to prodorsal shield. Tubercles of s. d. 2 situated at distance 20–22 from posterior shield margin

and extending in two distinct lines anteriorly. Admedian lines close to each others. Frontal lobe indistinct. .... *L. bangkokus* (Chandrapatya, 1996), Fig. 4. — Rear shield margin slightly elevated, slope posterior to prodorsal shield present. Tubercles of s. d. 2 situated at distance 14–16 from posterior shield margin. Admedian lines widely distinctly separated Frontal lobe massive, 10–12 long. .... *L. hirtus* sp. n., Fig. 2.

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