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Article

Redefinition of the genus *Krczaldania* Sasa, 1961 stat. nov. (Acari: Heterostigmata: Pygmephoroidea) with notes on its generic synonyms and redescription of *Pygmephorus primitivus* Krczal, 1959

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Abstract

The subgenus *Allositeroptes* Livshits, Mitrofanov and Sharonov, 1986 of the genus *Siteroptes* Amerling (Acari: Pygmephoridae) is considered as junior synonym of *Krczaldania* Sasa, 1961 **stat. nov**. The subgenus *Krczaldania* Sasa, 1961 is redefined and elevated to a generic rank. The type species of the genus *Krczaldania* - *Pygmephorus primitivus* Krczal, 1959, is redescribed based on material from Crimea, Ukraine. A key to the known species of the genus *Krczaldania* is provided.

Key words: Pygmephoridae, *Krczaldania*, new synonyms, redescription

Introduction

Sasa (1961) in his review of the mite genus *Pygmephorus* Kramer sensu Krczal, 1959 (Acari: Pygmephoridae) created the subgenus *Krczaldania* with type species *Pygmephorus primitivus* Krczal, 1959. Mahunka (1970a) considered *Krczaldania* as a junior synonym of *Siteroptes* Amerling. Livshits *et al.* (1986) created the subgenus *Allositeroptes* Livshits, Mitrofanov and Sharonov, 1986 in the genus *Siteroptes,* with type species *Pygmephorus primitivus*. In my opinion *Krczaldania* is a genuine genus and because both *Allositeroptes* and *Krczaldania* have the same type species, *Allositeroptes* should be considered a junior synonym of *Krczaldania*.

The purpose of this paper is to redefine the genus *Krczaldania,* to redescribe *K. primitiva* (Krczal, 1959) and provide new synonymy for this genus.

Material and methods

The material available for this study was collected from soil in Crimea using Berlese funnels without heating, and mounted on slides in Hoyer's medium. In the description, the terminology of idiosoma and legs follows Lindquist (1986). The nomenclature of subcapitular setae follows Grandjean (1944), and the designation of cheliceral setae follows Grandjean (1947). The system of Pygmephoroidea follows Khaustov (2004, 2008). All measurements are given in micrometers (μm). In descriptions of leg chaetotaxy the number of solenidia is given in parenthesis.

Systematics

Family Pygmephoridae Cross, 1965

Genus *Krczaldania* Sasa, 1961 stat. nov.

Pygmephorus (*Krczaldania*) Sasa, 1961: p. 192.
Siteroptes (*Allositeroptes*) Livshits, Mitrofanov and Sharonov, 1986: p. 10**. syn. nov**.

Type species: *Pygmephorus primitivus* Krczal, 1959

Diagnosis (Female)

Gnathosoma. Gnathosomal capsule prognathous, dorsally with three pairs of setae (*cha, chb, pp*). Ventral gnathosoma with one pair of subcapitular setae *m*. Palps freely articulated with gnathosomal capsule, with setae *dFe* and *dGe* dorsolaterally, one small solenidion and accessory setigenous structure ventrally and terminated with small claw.

Idiosomal dorsum. Prodorsum with three pairs of normal setae (v_1, v_2, sc_2), pair of capitate trichobothria (sc_1) and a pair of elongate stigmata. Setae *e* absent from tergite EF.

Idiosomal venter. Coxisternal plates I with three pairs of setae (1*a*, 1*b*, 1*c*). Setae 1*b* bifurcate. Coxisternal plates II with two pairs of setae (2*a*, 2*c*); setae 2*b* absent. Coxisternal plates III with three pairs of setae (3*a*, 3*b*, 3*c*). Coxisternal plates IV with two pairs of setae (4*a*, 4*b*); setae 4*c* absent. Posterior margin of posterior sternal plate entire. Pseudanal plate with three pairs of setae (ps_1-ps_3), surrounded by, but not united with, plate H.

Legs. Leg I. Tibia and tarsus separated. Tarsus with simple claw. Setal formula: Tr1(*v'*)-Fe4(*d*, *l'*, *l"*, *v"*)-Ge4(*l'*, *l"*, *v'*, *v"*)-Ti6(2)(*d*, *l'*, *l"*, *v'*, *v"*, *kζ*, φ_1, φ_2)-Ta13(2)(*p'ζ*, *p"ζ*, *tc'ζ*, *tc"ζ*, *ft'ζ*, *ft"ζ*, *pl'*, *pl"*, *u'*, *u"*, *s*, *pv'*, *pv"*, ω_1, ω_2). Setae *d FeI* long, setiform, weakly barbed. Leg II. Tarsus with simple sickle-like claws and large empodium. Setal formula: Tr1(*v'*)-Fe3(*d*, *l'*, *v"*)-Ge2(*l'*, *v'*)-Ti4(1)(*d*, *l'*, *v'*, *v"*, φ)-Ta7(1)(*u'*, *u"*, *pv'*, *pv"*, *tc'*, *tc"*, *pl"*, ω). Seta *l"* on genu is absent. Leg III. Claws of same shape as on tarsus II. Setal formula: Tr1(*v'*)-Fe2(*d*, *v'*)-Ge2(*l'*, *v'*)-Ti4(1)(*d*, *l'*, *v'*, *v"*, φ)-Ta7(*u'*, *u"*, *pv'*, *pv"*, *tc'*, *tc"*, *pl"*). Leg IV. Tarsus thin, with two small simple claws and small empodium. Setal formula: Tr1(*v'*)-Fe2(*d*, *v'*)-Ge1(*v'*)-Ti4(1)(*d*, *l'*, *v'*, *v"*, φ)-Ta6(*u'*, *pv'*, *pv"*, *tc'*, *tc"*, *pl"*).

Male and larva unknown.

Species included: the genus *Krczaldania* currently includes two species: *K. primitiva* (Krczal, 1959) distributed in Europe, and *K. longisetosa* (Mahunka, 1970) **comb. nov**. described from Brasil (Mahunka, 1970b).

Mites of the genus *Krczaldania* inhabit soil and forest litter. Phoretic females and phoresy unknown.

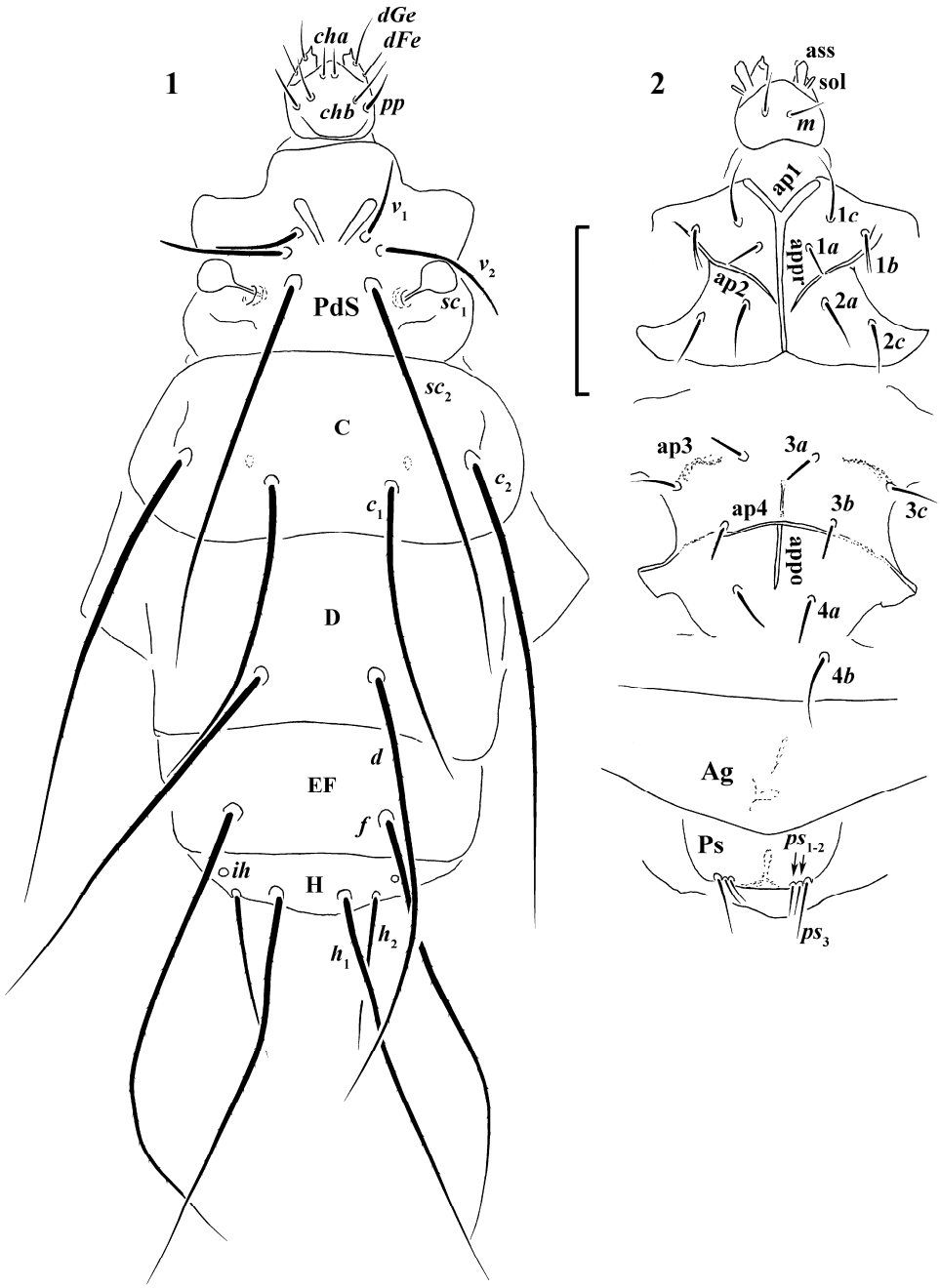
Krczaldania primitiva (Krczal, 1959)

Figs. 1−6.

Description (Female**)**

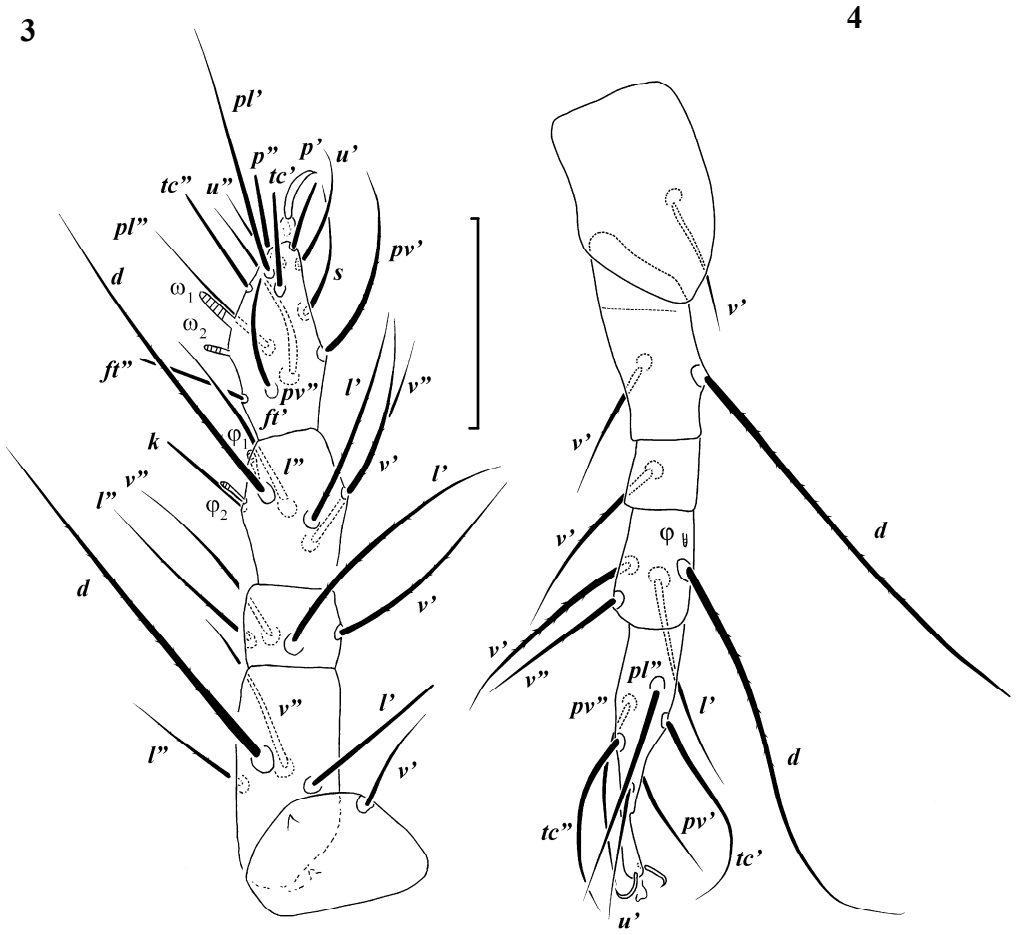
Gnathosoma (Figs. 1−2)**.** Setae *pp* needle-like. Setae *chb* distinctly longer than *cha*. Dorsal medial apodeme not evident. Setae *dGe* distinctly longer than *dFe*.

Idiosomal dorsum (Fig. 1). Idiosomal length 238, width 133. All dorsal plates smooth. All dorsal setae weakly barbed. Setae v_1 and v_2 obtuse, other dorsal setae pointed, whip-like. Length of dorsal setae: v_1 25, v_2 42, sc_2 130, c_1 100, c_2 154, *d* 135, *f* 143, h_1 137, h_2 58. Distances between dorsal setae: v_1-v_1 22, v_2–v_2 30, sc_2–sc_2 25, c_1–c_1 40, c_1–c_2 28, *d*–*d* 40, *f*–*f* 48, h_1–h_1 22, h_1–h_2 11.



Figures 1-2. *Krczaldania primitiva* (Krczal, 1959) (female). 1. Dorsum of body; 2. Venter of body. Scale bar 50 μm.

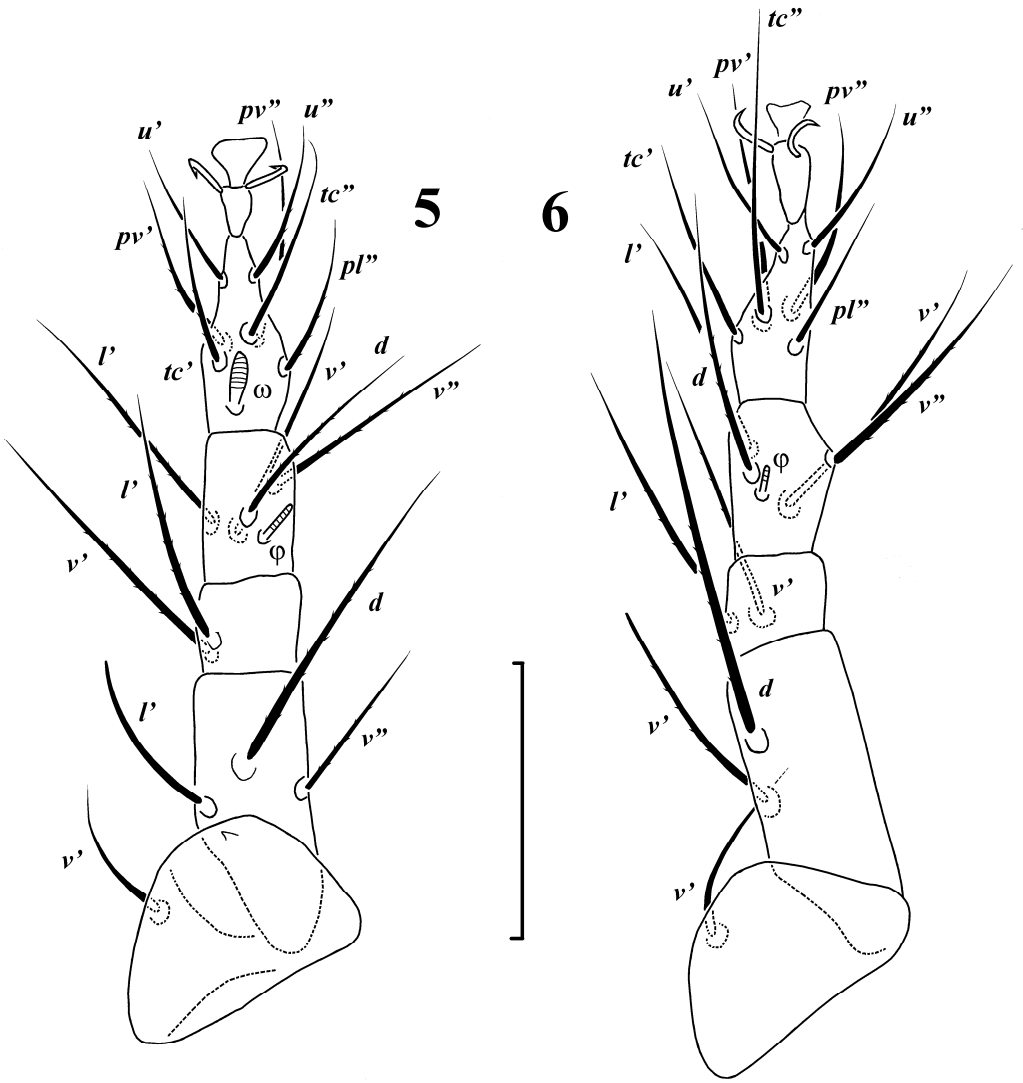
Idiosomal venter (Fig. 2). All ventral setae smooth. Setae 1*b* bifurcate. Setae 3*a*, 3*b*, and 4*a* needle-like, blunt-ended. All ventral plates smooth. Ap*1* and ap*2* well developed and joined with presternal apodeme (appr), sejugal apodeme indistinct. Apodemes 3 weakly developed, diffuse, arch-like. Apodemes 4 (ap4) weakly sclerotized in central part and strong medially and laterally, long and joined with poststernal (appo) apodeme, apodemes 5 absent. Posterior margin of posterior sternal plate straight. Bases of pseudanal setae situated close to each other. Setae ps_1 and ps_2 subequal and distinctly shorter than ps_3. Length of ventral setae: 1*a* 12, 1*b* 15, 1*c* 24, 2*a* 17, 2*c* 15, 3*a* 12, 3*b* 14, 3*c* 15, 4*a* 16, 4*b*, 24, ps_1 10, ps_2 10, ps_3 20.



Figures 3–4. *Krczaldania primitiva* (Krczal, 1959) (female). 3. Leg I; 4. Leg IV. Scale bar 50 μm.

Legs (Figs. 3–6). Leg I (Fig. 3). Solenidia ω_1 (10) > ω_2 (5), both baculiform. Solenidia φ_1 (7) > φ_2 (5), φ_1 clavate, φ_2 baculiform. Setae *l'FeI* obtuse. Leg II (Fig. 5). Tarsus with simple sickle-like claws and large empodium. Solenidion ω (8) lanceolate, solenidion φ (5) baculiform. Setae *l'FeII* obtuse. Leg III (Fig. 6). Claws of same shape as on tarsus II. Solenidion φ (4) baculiform. Setae *v'FeIII* obtuse. Leg IV (Fig. 4). Tarsus relatively short, with two well developed simple claws and small

empodium. Solenidion φ (2) very small. Setae *dFeIV* obtuse at the tip. Setae *dFeIV* and *dTiIV* very long.



Figures 5–6. *Krczaldania primitiva* (Krczal, 1959) (female). 5. Legs II; 6. Legs III. Scale bar 50 μm.

Male and larva unknown.

Material examined

One female, UKRAINE, Crimea, Yalta mountain pasture, from moss on soil, 29 September 2002, coll. A.A. Khaustov.

Remarks

The type material of *Pygmephorus primitivus* was not available for study. The available specimen of this species from Crimea well agrees with original description of Krczal (1959) in all details.

Discussion

Livshits *et al*. (1986) placed two species in the subgenus *Allositeroptes*: *Siteroptes* (*A*.) *primitivus* (Krczal, 1959) and *S*. (*A*.) *tameri* Sevastianov and Abo-Korah, 1984. They also considered *S. longisetosus* Mahunka, 1970 as a junior synonym of *S. primitivus* without studying the type material. My study of the type specimen of *S. tameri* revealed that it belongs to the subgenus *Siteroptes* sensu stricto and must be excluded from *Krczaldania*. Synonymization of *Krczaldania primitiva* and *K. longisetosa* (Mahunka, 1970) **comb. nov**. is doubtful because *K. primitiva* was described from Europe and *K. longisetosa* from Brasil (Mahunka, 1970b) and well separable by morphological characters. In my opinion *K. primitiva* and *K. longisetosa* are separate species, and their differential characters are summarized in the key provided below. Kaliszewski (1988) created the genus *Diroptes* Kaliszewski, 1988 with type species *Siteroptes vetus* Rack, 1965 and placed *Siteroptes longisetosus* Mahunka, 1970 in this genus. On my opinion *Siteroptes longisetosus* must be excluded from *Diroptes* because type species of the genus *Diroptes* has two pairs of setae on coxisternal plates I (1*c* absent) and well developed setae *e*, while *Krczaldania* has three pairs of setae on coxisternal plates I and setae *e* absent.

The genus *Krczaldania* Sasa is most similar to the genus *Siteroptes* Amerling, both genera characterized by the absence of setae *e*. However species of the genus *Siteroptes* have characteristic very long and narrow body (shorter in *Krczaldania*), setae 4*c* always present and setae 4*a* absent (vs. 4*c* absent and 4*a* present in *Krczaldania*).

Sasa (1961) also included in the subgenus *Krczaldania* two more species: *Siteroptes* (*K*.) *priscus* (Krczal, 1959) and *S*. (*K*.) *antiquissimus* (Krczal, 1958). Currently *S. priscus* placed in the genus *Pediculaster* Vitzthum, 1927 (= *Siteroptoides* Cross, 1965), and *S. antiquissimus* in the genus *Neositeroptes* Livshits, Mitrofanov and Sharonov, 1986 (Livshits *et al.*, 1986).

Key to the species of the genus *Krczaldania* (females)[1]

1. Setae c_1 and c_2 subequal, setae h_2 less than two times shorter than *f*, bases of setae ps_2 and ps_3 separated by short distance, setae $ps_{1\text{-}2}$ about three times shorter than ps_3, setae *dFeIV* distinctly shorter than *dTiIV* ……...…….. ..……...… *K. longisetosa* (Mahunka, 1970) **comb. nov**., Brasil

- Setae c_1 distinctly shorter than c_2, setae h_2 more than two times shorter than *f*, bases of setae ps_2 and ps_3 situated close to each other, setae $ps_{1\text{-}2}$ about two times shorter than ps_3, setae *dFeIV* and *dTiIV* subequal…….. *K. primitiva* (Krczal, 1959), Europe

[1] The characters of *K. longisetosa* are taken from original description of this species.

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چکیده

زیرجنس *Allositeroptes* Livshits, Mitrofanov and Sharonov, 1986 از جنس *Siteroptes* Amerling (Acari: Pygmephoridae) به عنوان مترادف کم سابقه جنس *Krczaldania* Sasa, 1961 **stat. nov.** در نظرگرفته شد. این زیر جنس بازتعریف و به مرتبه جنس ارتقاء داده شد. گونه تیپ جنس *Krczaldania* – *Pygmephorus primitivus* Krczal, 1959 بر اساس نمونه‌های کریمه اوکراین بازتوصیف شد. کلیدی برای گونه‌های جنس *Krczaldania* ارایه شد.