

A new genus of the family Sejidae (Acari: Mesostigmata) based on *Sejus krantzi* and *S. manualkrantzi* Hirschmann, 1991

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Abstract

Sejus manualkrantzi (Acari: Mesostigmata: Sejidae) is synonymized with *S. krantzi* and is assigned to a new genus, *Adenosejus*.

Key words: *Sejus*, *Adenosejus*, *krantzi*, *manualkrantzi*

In a recent revisionary work, Hirschmann (1991) synonymized the sejine genera *Epicroseius* (Berlese 1905), *Zuluacarus* (Trägårdh 1906) and *Willmannia* (Trägårdh 1906) under the genus *Sejus* Koch, 1836, described or redescribed 26 species of the newly constituted genus (Hirschmann *et al.* 1991), and assigned the resulting 44 recognized species to ten species groups (Hirschmann, 1991). Among the new species were *S. krantzi* and *S. manualkrantzi*, both described solely based on illustrations taken from "A Manual of Acarology" (Krantz, 1978). These illustrations, referred to in the Manual as "*Sejus* sp. (Oregon, USA)", were intended only to provide a typical habitus for the family Sejidae, and include drawings of the dorsum of the female (Fig. 12-1) and male (Fig. 12-2), types of dorsal setae (Fig. 12-3), the venter of the female (Fig. 12-4) and the epigynal shield (Fig. 12-5) (page 170). There was no accompanying species description. As a result of studying the drawings of the venter and dorsum of the female, Hirschmann found characters that "were not matching". For example, he noted that the shape of the venter is oval while the dorsum is pear-shaped. He also noted a difference in the number of posteromarginal setae: the venter has 6 and the dorsum has 4 setae. Hirschmann also concluded that peritrematic shields are absent, and that the crateriform structures on the lateral margins of the ventrianal shield represent the bases of missing setae. Based on these observations Hirschmann described *Sejus krantzi* from the drawing of the female venter (Fig. 12-4 in Krantz, 1978) and *S. manualkrantzi* from the drawing of the female dorsum (Fig. 12-1 in Krantz, 1978). He then placed these two entities into two different species groups: *S. manualkrantzi*, with *S. solaris* in the "solaris" group and *S. krantzi* with *S. posnaniensis* and *Willmannia sejiformis* in the "posnaniensis" group (Hirschmann, 1991). Given Hirschmann's proclivity for using the "Gangsystematik" approach to systematics (Hirschmann, 1957), a strategy that is based on morphological characters observable in all instars, it is unclear as to why he placed these two entities in separate species groups based solely on limited female characters.

It is important to emphasize that Hirschmann's two new species were based only on illustrations, without benefit of examination of the actual specimens. We examined all slides of female specimens in the Oregon State University collection and compared these specimens with the illustrations in the Manual, and have concluded that the drawings of the venter and dorsum were made from the same specimen, a dissected female. This slide has identifying marks verifying that the illustrations were made from this specific slide (GWK). Given that the names *S. krantzi* and *S. manualkrantzi* were based on the same specimen, we herein synonymize *S. manualkrantzi* (**syn. nov.**) with *S. krantzi*.

What about the non-matching characters of Hirschmann? The difference in shape of the dorsum vs. venter (pear-shaped vs. oval) is likely to be an artifact and, while the peritrematic shields are only partially visible in the drawings, they are in fact well developed. There are ten setae on the posterior margin of the body, six of which are positioned ventrally and four dorsally (as illustrated on Plate 12). Hirschmann assumed that the same posterior setae were represented on both dorsum and venter. The crateriform tubercles on the lateral margins of the ventrianal shield are in fact very large glands and not the bases of missing setae. Hirschmann probably did not anticipate the presence of these kinds of glands on the ventrianal shield since they do not occur in any other Sejidae that he examined. It appears, therefore, that his decision to describe two specific entities from these illustrations was based on misinterpretation of characters.

Even at first glance, *S. krantzi* differs from other Sejidae in having three dorsal shields in the female and in lacking posterior opisthonotal projections in all postlarval instars (larvae do have such projections). The mesonotal shields in nymphs and females develop differently from those of other *Sejus*. They are absent in the protonymph (they are present in known protonymphs of virtually all other species of *Sejus*). In deutonymph, the shields ostensibly are fused with the pygidial shield to form an opisthonotal shield. This character is shared only with *S. congoensis* Wisniewski & Hirschmann, but the opisthonotal shield of deutonymphal *S. congoensis* is fused to, or contiguous with, the podonotal shield. Female *S. krantzi* have only one mesonotal shield instead of the four characteristic of other species of *Sejus*. A single mesonotal element also is found in females of the genus *Epicroseius*, but its shape is distinctly different from that of *S. krantzi*. Other characters of note include: tritosternum without lateral extensions; sternal setae *st1* in female on sclerotized platelets, *st2* and *st4* in soft cuticle, *st3* on transverse sternal element with convex anterior margin; and epigynal shield oval, wider than long, with two pairs of setae¹.

In addition, metapodal shields are absent in both sexes, which is also a unique character within the Sejidae. While nearly all known members of the family have highly inflated hypostomatic setae 1 that often appear as membranous lobes, hypostomatics 1 of *S. krantzi* are only slightly inflated and are basically setiform. Finally, legs I have very large spiniform setae, slightly larger in females than in males.

Based on its unusual suite of characteristics, and results of recently completed analyses of sejine phylogeny (Lekveishvili & Klompen, 2004; Lekveishvili & Klompen, in prep) we remove *S. krantzi* from *Sejus* and name it as the sole representative of a new genus, which we describe below. The male and immature stages will be described in a later paper.

1. The illustration of the female venter of *Sejus* sp. in A Manual of Acarology (12-4) shows the epigynal shield as having three rather than two pairs of setae. Since all of the specimens in the available series have only two pairs, the inclusion of a third pair in the illustration is considered to have been erroneous.

Adenosejus new genus

Type species *Sejus krantzi* (*S. krantzi* and *S. manualkrantzi* (**syn. nov.**), *sensu* Hirschmann, 1991). *Acarologie* 38: p. 155 and p. 148.

Diagnosis. With the characteristics of the family, except for the following: female with three (podonotal, mesonotal, pygidial) and male with two (podonotal, opisthonotal) dorsal shields; deutonymphs and adults with three pairs of enlarged dorsal glands, one on podonotal shield, another in the soft cuticle postero-lateral to the podonotal shield and a third pair on the pygidial (female) or opisthonotal (DN and male) shield; ventrally with one additional pair of enlarged glands on lateral margins of ventrianal shield. Protonymphs with only two pairs of enlarged glands, one on podonotal and another on pygidial shield. Metapodal shields absent. Femur-tarsus I with large spiniform setae. Protonymph without mesonotal elements. Hypostomatic seta 1 slightly inflated, setiform.

Type species. *Sejus krantzi* (*Sejus krantzi* and *S. manualkrantzi* (**syn. nov.**), *sensu* Hirschmann 1991), by monotypy

Type material. HOLOTYPE female, U.S.A.: Oregon, 20 miles southwest of Philomath, coll. G.W. Krantz, 9 May, 1958, ex fir tree hole (OSAC558-1); PARATYPES: 1 female (OSAC558-2), 3 males (OSAC558-2, OSAC558-3), 2 protonymphs (OSAC558-4), and 1 larva (OSAC558-4).

Additional material examined. U.S.A.: Washington, Mtn. Foothills, Lake Olympic, 12 miles east of Quinalt, coll. R.G. Mitchell, 10 Sep, 1958, ex litter (1 F, 1 M, 2 L); U.S.A.: Oregon, Mary's Peak nr. Philomath, Elev 3500', coll. G.W. Krantz, 19 June, 1957, ex forest litter (1M); U.S.A.: Oregon, Lincoln Co., 4 miles south of Waldport, coll. G.W. Krantz and J.D. Lattin, 8 Feb, 1960, ex moss (2 F, 1 DN); U.S.A.: Oregon, Mary's Peak, 0.2 miles east of Griffith Pk. Spur, coll. G.W. Krantz, 28 July, 1959, ex Hemlock tree hole (2 PN); U.S.A.: California, 44 miles north of Eureka, Redwood Hwy, coll. S. Radinovsky, 22 July, 1961, ex litter around fallen redwood (2 F, 1 M, 1 DN).

Type material. Holotype female will be deposited in the collection of the National Museum of Natural History, Beltsville, MD. Paratype females, males and immatures will be placed in the Oregon State University Arthropod Collection, Corvallis, OR. Study specimens will be deposited in the Museum of Biological Diversity, Ohio State University, Columbus, and the Canadian National Collection, Ottawa.

Distribution. *Adenosejus krantzi* has been collected only from sites in the Pacific coastal range of Oregon and California, suggesting a limited and possibly relictual distribution.

Etymology. The genus is named *Adenosejus* (*adeno*-gland) because of its enlarged glands.

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References

- Berlese, A. (1905) Acari nuovi, Manipulus IV. *Redia*, 2, 154–176 (Pl. I–III)
Hirschmann, W. (1957) Gangsystematik der Parasitiformes. Teil 1. Rumpfbehaarung und Rückenflächen. *Acarologie*, Fürth, 1–20.

- Hirschmann, W. (1991) Weltweite Revision der Ganggattung *Sejus* C.L. Koch 1836 (Trichopygidiina). *Acarologie*, Nürnberg 38, 107–135.
- Hirschmann, W., Wisniewski J. & Kaczmarek, S. (1991) Weltweite Revision der Ganggattung *Sejus* C.L. Koch 1836 (Trichopygidiina). *Acarologie*, Nürnberg 38, 136–214.
- Koch, C.L. (1836) *Deutschlands Crustaceen, Myriapoden und Arachniden*. fa. 4. t. 17, Regensburg.
- Krantz, G.W. (1978) *A manual of acarology*. Corvallis, Oregon, Oregon State University Book Stores, Inc., 509 pp.
- Lekveishvili, M. & Klompen, H. (2004) Phylogeny of infraorder Sejina (Acari: Mesostigmata). *Zootaxa*, 629, 1–19.
- Trägårdh, I. (1906) Neue Acariden aus Natal und Zululand. *Zoologischer Anzeiger*, 30, 870–877.

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