Notes on the genus *Asperoseius* Chant, 1957 (Acari, Phytoseiidae), with descriptions of two new species

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The holotype of *Asperoseius africanus* Chant, 1957, is redescribed and two new species, *Asperoseius henryae* and *A. australiensis* are described (Acari: Phytoseiidae).

Note sur le genre Asperoseius *Chant, 1957 (Acari, Phytoseiidae) et description de deux nouvelles espèces.* - L'holotype de *Asperoseius africanus* Chant, 1957 est redécrit et deux nouvelles espèces, *Asperoseius henryae* et *A. australienses,* sont décrites.

Key words: Systematics, new species, Mesostigmata.

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INTRODUCTION

Recently, the senior author received from Dr. M.-Cl. Henry, of the University of Kinshasa, Zaïre, a single female specimen of a mite that she had collected on the abdomen of a *Simulium* sp., near Kinshasa. Some years ago, another specimen resembling the former had been sent for identification to the junior author, who recognized its close relationship with the genus *Asperoseius* Chant. It had been collected from *Culicoides suzukii* in Australia. Both specimens appeared similar to *Asperoseius africanus* Chant (Chant, 1957) except for one important character, i.e. the insertion of setae *S1* (*R1* of Chant) on the shield rather than on the adjoining cuticle, as in *A. africanus.*

Through the kindness of Mr. R. Smiley and Dr. H. Denmark, we were able to examine the holotype female of *A. africanus* and to compare it with our specimens. We feel that all three represent the same genus and that the setal discrepancy noted above resulted from an inaccuracy in the original description. The specimen from Kinshasa is quite similar to *A. africanus.* However, it differs from *africanus* in one major character that justifies its separation as a new species (*A. henryae* sp. n.). The specimen from Australia differs from *africanus* and *henryae* in several important characters and is described herein as a new species. Pritchard and Baker (1962) placed *Asperoseius* as a subgenus of *Amblyseius* Berlese. They included in this subgenus the type species *Asperoseius africanus,* along with 3 other species, i. e. *Typhlodromus heveae* Oudemans, 1930 and *T. hevearum* Oudemans, 1930, both from leaves of *Hevea* in E. Sumatra, and *Amblyseius grandis* Berlese 1915, found under tree bark in Argentina.

We feel that *A. grandis* does not belong in *Asperoseius* but rather in *Amblyseius,* as noted by Chant (1957a). Chant redescribed the type specimen of *A.*

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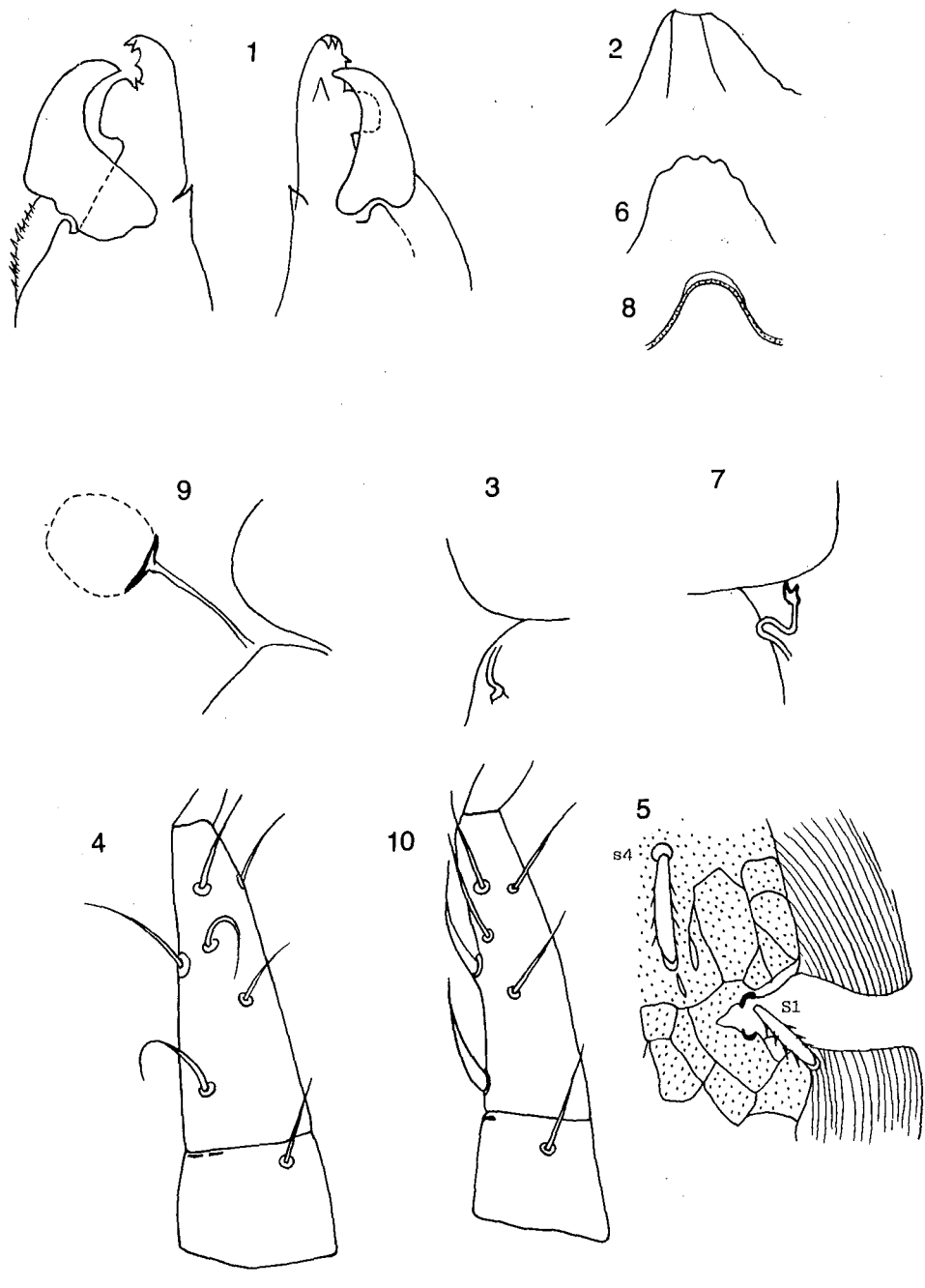

Figs. 1-10. – (1-5) *Asperosetus africanus* Chant. Holotype female: Chelicerae (1); tectum (2); inseminating organ, between coxae III and IV (3); tarsus II, in ventrolateral view (4); lateral margin of dorsum deeply torn at level of seta *S1* (5). – (6-7) *Asperosetus henryae* sp. n. Holotype female: Tectum (6); inseminating organ (7). – (8-10) *Asperosetus australiensis* sp. n. Holotype female: Tectum (8); inseminating organ (9); tarsus II in lateral view (10).

grandis, showing that all but 5 pairs of dorsal setae are bare and very short. Moreover, unlike *A. africanus*, the opisthogaster bears 4 pairs of short bare setae and the ventrianal shield is wider than long.

We were able to examine the holotypes of *T. heveae* (female n° 3697-1) and of *T. hevearum* (male n° 3697-2). Both of these species are represented by single specimens. The holotype of *T. heveae* is strongly flattened and some dorsal setae are lost. It corresponds closely to the unpublished drawing of Oudemans (reproduced herein), except that there is a distinct notch in the lateral margins of the shield at the level of the setae *s4*. This notch apparently was overlooked by Oudemans. The dorsal setae are not flattened as is typical of *Asperoseius*, and setae *S1* are situated on the soft cuticle. Moreover, the cheliceral digits have more teeth (6 on the fixed digit and 3 or 4 on the movable digit) than in *Asperoseius*, and the opisthogaster bears 4 pairs of setae rather than 3 pairs as in *Asperoseius*. We feel therefore that *T. heveae*, like *A. grandis*, is a species of *Amblyseius*. The holotype male and single known specimen of *T. hevearum* is almost completely opaque and not observable.

In the following descriptions, all measurements are in micrometers (μm).

GENUS *ASPEROSEIUS* CHANT, 1957

Pritchard & Baker (1962) have placed *Asperoseius* as a subgenus of *Amblyseius*. We submit that the distinctive dorsal chaetotaxy (dorsal shield with 15 pairs of setae of which 11 pairs are thick, short, serrated and flattened; only one seta, *r3*, situated on the soft cuticle) and the shape of the sternal and genital shields justify the maintenance of this taxon at the generic level.

Asperoseius africanus Chant, 1957

FEMALE (holotype) (figs. 1-5).

The holotype is strongly flattened and crushed at the level of *S1*, which has caused a tearing of the soft cuticle and of the lateral parts of the shield, and a possible confusion as to the insertions of setae *S1* (fig. 5). This distortion may explain the position of these setae in the original figures.

Dorsal shield 375 long, 270 wide, with a characteristic sclerotized pattern. Lateral margins slightly concave at the level of setae *r3*. With 15 pairs of setae, of which *j4, j5* and *z5* are very short and bare; *J5* are reduced to short, terminal triangular spines and the remaining 11 pairs are serrated and slightly flattened with their apices enveloped by a small membrane. Setae *r3* are on the soft cuticle. Length of setae: *j1* 33; *j3* 18; *j4, j5* and *z5* 5; *j6* 22; *z2* 30; *z4* 33; *r3* 25; *S1* 33; *S2* 42; *Z1* 24; *Z4* 52; *Z5* 57. *Venter:* Sternal shield with 3 pairs of smooth setae 30-35 long; the fourth pair is situated on small elongate metasternal platelets. Epigynial shield 140 long and 75 wide (maximum, in posterior half). Ventrianal shield 123 long and 84 wide (maximum in anterior half), bearing 3 pairs of preanal setae. The paranal setae are simple and equal in length to the preanals, the posterior anal seta is cylindrical with a truncate apex. Cribrum well developed. Soft cuticle of opisthogaster with 3 pairs of setae, of which *Zv1* is simple, *Jv4* is cylindrical with a truncate apex, and *Jv5* is thicker and serrate (18 long). *Legs:* Length of tarsi I-IV: 84-75-78-108. Chaetotaxy (number of setae): tibiae 10-7-7-6; genua 10-6-7-7; femora 12-9-6-6; trochanters 5-5-5-5. Basifemur IV with a cylindrical seta inflated at the apex and 40 long; genu IV with a similar seta but shorter (7 long). Most of the dorsal setae of tibiae, genua and femora are short and cylindrical with rounded apices. *Gnathosoma:* Tectum irregularly rounded. Base of gnathosoma

85 long (to apex of corniculi) and 84 wide, ventrally with 3 rows of denticles extending laterally beyond a narrow deutosternal groove. Palps 105 long; number of setae: trochanters 2; femora 5; genua 6; tibiae 14. Chelicerae 84 long, movable digit 24 long. Fixed digit with bifid apex, bearing 2 small preapical teeth and a long rounded internal process. Movable digit without teeth. *Inseminating organ* with a very short and narrow canaliculus describing one loop (= probably the *adductor canal*) and ending in a small irregular cavity with two projections (= *atrium, sensu* Fain, 1987). Spermiduct not observed.

Habitat

Holotype female, 13 females and 5 male paratypes, from cut flowers imported from South Africa into Boston, U.S.A. Holotype in the U.S. National Museum.

Asperosetus henryae spec. nov.

FEMALE (holotype (figs. 6-7, 11-12)

The holotype female, and only known specimen, differs from the holotype of *A. africanus* in the following characters:

1. Dorsal plate smaller: 330 long and 240 wide.
2. Ventrianal shield shorter (110 long and 80 wide).
3. *Inseminating organ:* the *adductor canal* is longer, forming two loops; *atrium* with thicker walls and 2 longer processes.
4. The modified seta of genu IV is longer (13 long).

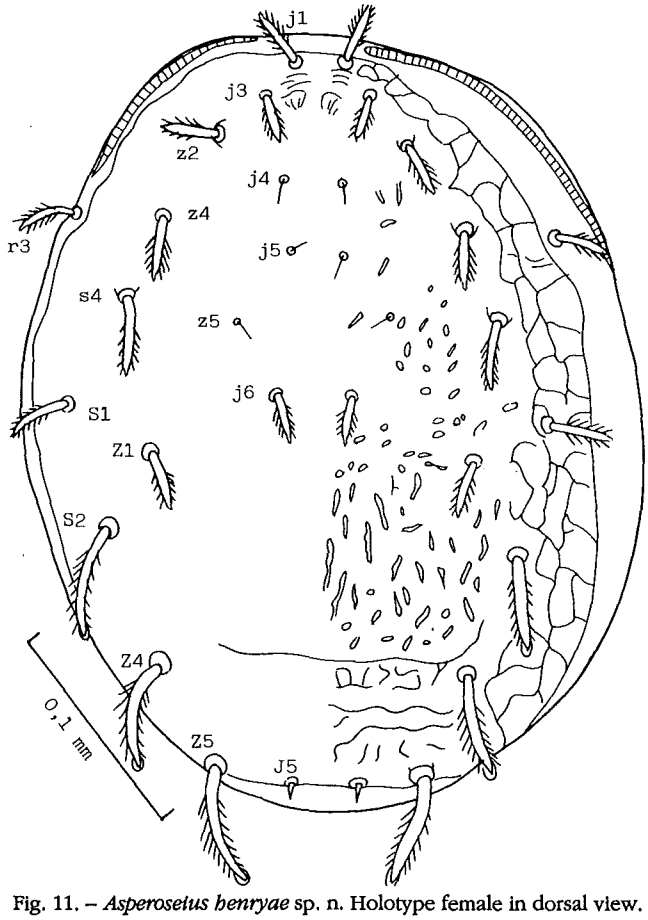

Fig. 11. – *Asperosetus henryae* sp. n. Holotype female in dorsal view.

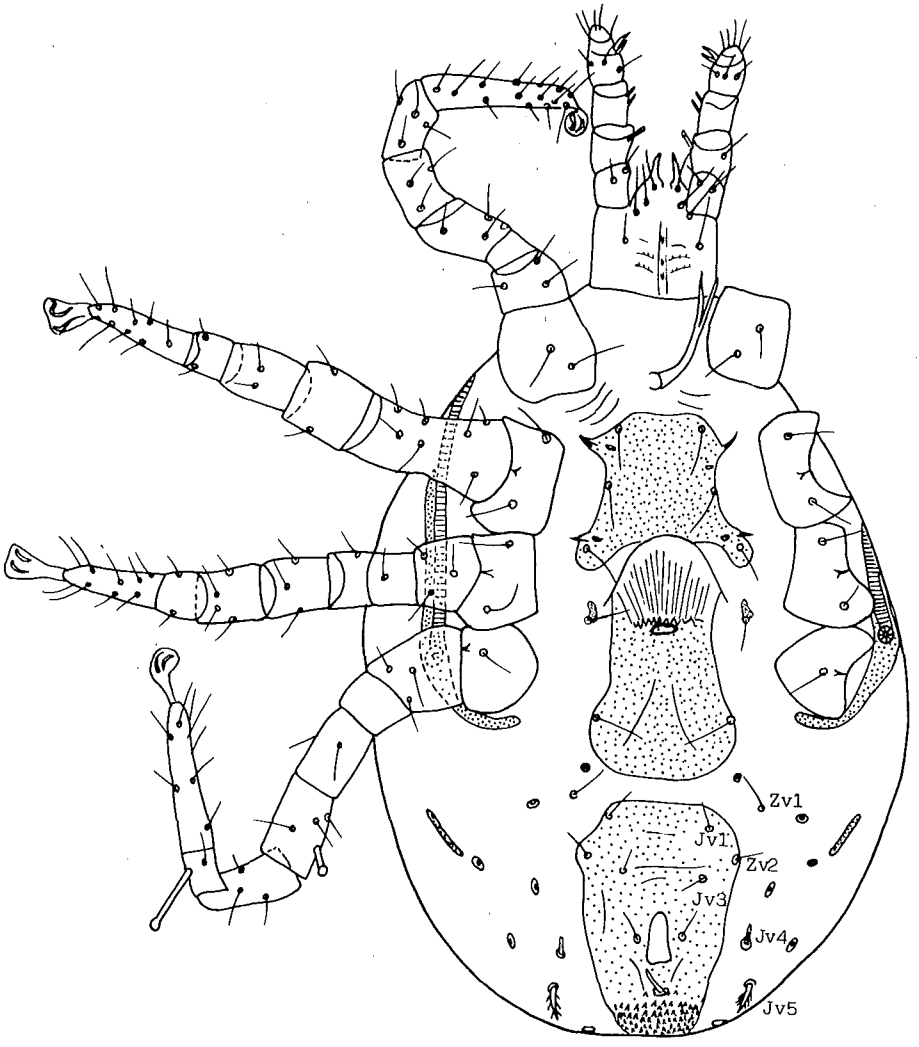

Fig. 12. – *Asperoseius henryae* sp. n. Holotype female in ventral view.

5. Opisthogaster with 5 pairs of small pores situated on small platelets. These structures have not been observed in the holotype of *A. africanus*.
6. Tectum narrower and more sinuous.

Other characters as in *A. africanus*.

Habitat

The holotype was found on the abdomen of a *Simulium* sp., Riv. Nsele, near Kinshasa Zaire, 25 June, 1988 (Coll. M.-Cl. Henry). Holotype in the Musée royal de l'Afrique centrale, Tervuren, Belgium. This species is named for the collector, Dr. M.-Cl. Henry, University of Kinshasa, Zaïre.

Asperoseius australiensis spec. nov.

FEMALE (holotype) (Figs. 8-10, 13)

Dorsal shield 324 long and 240 wide, with a characteristic pattern resembling

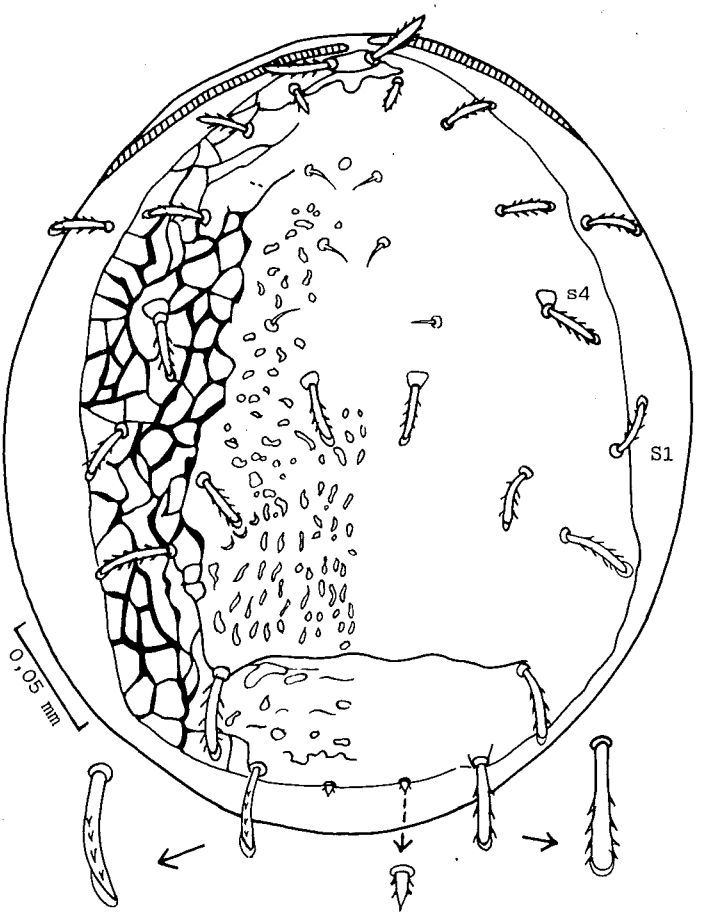

Fig. 13. – *Asperoseius australiensis* sp. n. Holotype female in dorsal view.

that of *A. africanus* but with a more developed network laterally. Chaetotaxy as in *A. africanus* but with most of the setae shorter: *j1* about 35 long; *j3* 16; *j6* 24; *z2* 25; *z4* 26; *r3* 24; *S4* 27; *S1* 24; *S2* 33, *Z1* 22; *Z4* 37; *Z5* 37. Setae *S1* are slightly closer to the borders of the shield than in . africanus. *Venter:* Sternal area in poor condition. Epigynial shield 99 long and 75 wide. Ventrianal shield 108 long and 75 wide, with setae as in *A. africanus.* Soft cuticle of opisthogaster with 4 pairs of small pores situated on small platelets; one pair of very narrow metapodal plates and 3 pairs of opisthogastric setae as in *A. africanus. Legs:* Taris I-IV 81-72-72-105 long respectively; chaetotaxy as in *A. africanus* but tarsus II (fig. 10) bears 2 ventral setae that are much thicker than those in *A. africanus* (fig. 4). A thick modified seta (cylindrical with inflated apex) is present on the basitarsus, the tibia and genu of leg IV (length: 42, 12 and 16 respectively). *Gnathosoma:* Tectum rounded, smaller than in *A. africanus.* Gnathosomal base with 4 parrallel pairs of ridges extending laterally from a narrow deutosternal groove, denticles indistinct or absent. Palps 90 long, with same numbers of setae as in *A. africanus.* Chelicerae 93 long, movable digit 23 long; apex of fixed digit bifid. *Inseminating organ* with a long straight *adductor canal* attached to the *maturation pouch*

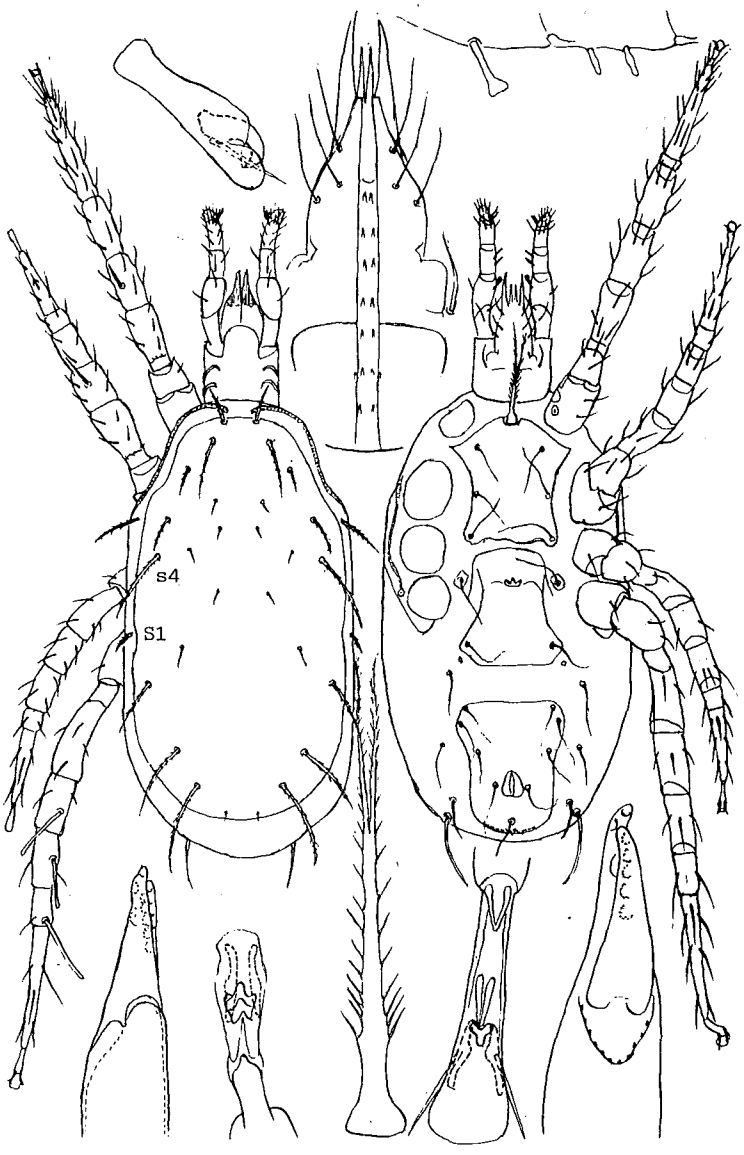

Fig. 14. – *Typhlodromus heveae* Oudemans. Holotype female (copy of the original figure of Oudemans, reproduced with authorization of Dr. P.J. van Helsdingen, Leiden).
(The signatures *s4* and *S1* have been added by the authors).

by an elongate sclerite which is probably the *calyx* (nomenclature *sensu* Fain, 1987).

Habitat

Holotype female taken from *Culicoides suzukii*, Northern Terrace, Beatrice Hill, Australia (Coll. 31 Jan. 1979). Holotype in the collection of the U.S. National Museum.

Diagnosis

This species is distinguished from *A. africanus* and *A. henryae* by the following characters:

1. Shorter length of most of the dorsal setae.
2. Ornamentation more developed on the dorsal shield.
3. Dorsal shield smaller.
4. Ventral setae of tarsi II much thicker.
5. Tibia IV with a modified dorsal seta.
6. 4 pairs of extra-deutosternal ridges on venter of gnathosoma, with denticles indistinct or absent.
7. Inseminating organ different in form: with a longer and straight *adductor canal* and an apical part long and narrow and perpendicular to the adductor *canal.*

Habitat of the *Asperoseius* spp.

Phoresy is unusual in the Phytoseiidae and the occurrence of two species of the same genus in phoretic association with biting nematocerous Diptera seems even more remarkable.

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