SPECIES OF THE GENUS AMBLYSEIUS BERLESE, 1914, FROM TAMATAVE, EAST MADAGASCAR
(ACARINA: PHYTOSEIIDAE)

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ABSTRACT


INTRODUCTION

Twice in the course of 1972 (February and July), I had the opportunity to visit the experimental station of the I.F.A.C. (Institut Français de Recherches Fruitières Outre-Mer) at Ivoloina, 10 km north of Tamatave, and to study the fruit tree spider mites and their phytoseiid enemies. Nine species of the genus Amblyseius were found, seven of which undescribed; the remaining two species were described recently from the southwestern part of the island (Blommers, 1973).

I have made an attempt to compare my new species with the many hundreds of Amblyseius-species from all over the world, with emphasis on those from the Old World tropics. The nomenclature of the dorsal setae is as illustrated in fig. 6 (cf. Blommers, 1973).

I have followed the subgeneric division of the genus Amblyseius used by Van der Merwe (1968) in his recent monograph on the South African Phytoseidae.

Holotypes and paratypes will be deposited in the Institute of Taxonomic Zoology (Zoölogisch Museum) of the University of Amsterdam.

ACKNOWLEDGEMENTS

The author is greatly indebted to Mr. B. Moreau and his staff of the I.F.A.C.-station in Ivoloina, for their hospitality and helpfulness in providing working space and equipment in their laboratory. This study forms part of project GUA-6 of the Netherlands University Foundation for International Cooperation (N.U.F.I.C.), in cooperation with the O.R.S.T.O.M.-centre in Tananarive, Madagascar.
**Amblyseius (Proprioseiopsis) parasundi**

sp. n. (figs. 1-5)


Differential diagnosis.- The subgenus Proprioseiopsis Muma, 1961, is characterized by a number of 15 or 16 setae on the female dorsal shield, at the same time both setae J1 and J2, or only one of these, absent. *A. parasundi* and the two African species *A. sundi* Pritchard & Baker, 1962, and *A. papayana* Van der Merwe, 1965, are the only three species in this subgenus lacking seta J1, and possessing J2. *A. parasundi* is most closely related to *A. sundi*, and differs in the shorter length of seta 25 and the macrosetae on leg IV. The occurrence in central Madagascar of a form that I identified as the genuine *A. sundi*, also justifies my opinion that *A. parasundi* is a good new species.

Description.- Female: Dorsal shield weakly sclerotized and smooth, 370μ long and 290μ wide; with 18 pairs of pores; 16 pairs of setae, length in microns: J1 40, J3 52, J4 3, J5 3, J6 3, J2 5, J5 4, z4 6, z5 3, Z4 170, Z5 430, s2 10, s4 165, S2 7, S4 9, S5 7. Setae r2 and R1 on interscutal membrane, 22μ and 10μ long, respectively. Peritremes reaching in front of setae J1.

Sternal and genital shield as usual. Ventral shield 125μ long and 80μ wide, laterally constricted, with three pairs of pre-anal setae. Surrounding membrane with five pairs of pores and four pairs of setae; VLI 90μ long.

Length tarsus IV (including basitarus) 180μ. Six macrosetae on leg IV: two on genu 190μ and 55μ, two on tibia 140μ and 50μ, two on basitarus 85μ and 30μ long. Length of remaining macrosetae: genu III 70μ, tibia III 55μ, tarsus III 40μ, genu II 50μ and genu I 70μ.

Fixed digit of chelicera with two subapical teeth and eleven in a row. Moveable digit with three teeth. Length of both digits 38μ.

Major duct of spermatiche thin walled, 2μ wide and at least 10μ long. Atrium thick walled, 10μ long. Cervix slender and tube-like, minimum width 3μ, length 35μ (see fig. 3).

Remarks.- *A. parasundi* is a thelytokous species. Both in the field and in several mass-rearings in the laboratory males were never found, while the progeny of females isolated individually since the egg-stage consisted entirely of reproducing females; the third generation being females, too. Thelytoky was observed in only two other species of Phytoseiidae: in *A. guatemalensis* (Chant, 1959) [= *A. elongatus* Garman, 1958, nec (Oudemans, 1930)] by Bennett (1958) and in *A. deicent* Muma & Denmark, 1970 [= *A. largoensis* Muma, 1961, nec (Muma, 1955)] by Van der Merwe (1968).

**Amblyseius (Amblyseius) tomatavensis**

sp. n. (figs. 6-12)


Differential diagnosis.- *A. tomatavensis* resembles *A. anomalus* Van der Merwe, 1968. It differs from this species in the greater length of setae s4, Z4 and Z5 and of the three macrosetae on leg IV, and in the shape of the spermatiche. *A. tomatavensis* is also related to *A. obtusus* Koch, 1839, sensu Karg, 1960, from which it differs in the smaller size of the same setae.

Description.- Female: Dorsal shield smooth, 340μ long and 250μ wide; with 20 pairs of pores; 17 pairs of setae, length in microns: J1 32, J3 54, J4 4, J5 3, J6 3, J2 5, J5 6, s4 6, s5 3, Z1 5, Z4 115, Z5 250, s2 6, s4 88, S2 5, S4 6, S5 6. r2 and R1 on interscutal membrane, respectively 15μ and 5μ long. Peritremes reach beyond setae J1.

Sternal and genital shields as usual. Ventral shield 120μ long and 100μ wide, not imbricate; smooth; with three pairs of pre-anal setae. Eight pairs of pores in surrounding membrane; four pairs of setae; VLI 84μ long.

Length tarsus IV 120μ. Leg IV with four macrosetae: on genu 120μ and 32μ, on tibia 75μ and on basitarus 73μ long. Macrosetae present on other legs: genu III 61μ, tibia III 41μ, basitarus III 22μ, genu II 39μ, genu I 41μ.
Fixed digit of chelicera with two subapical teeth and 12 in an irregular row. Movable digit with three teeth. Length of both digits about 35u.

Major duct of spermatheca well defined, 30u long and 4u wide. Atrium small. Cervix tube-like, 16u long, hardly widening towards the end, about 4u wide.

Male: r2 and R1 on dorsal shield. Length of dorsal setae (in microns): j1 26, j3 54, j4 4, j5 3, j6 4, j2 5, j5 5, z4 5, z5 3, z1 5, z4 85, z5 170, s2 4, s4 60, s2 5, s4 5, s5 5, r2 12, R1 5.

Ventral shield 110u long, imbricate anteriorly, with three pairs of pre-anal. Surrounding membrane with three pairs of pores and setae VLI 40u long.

Macrosetae on leg IV: on genu 66u, on tibia 45u and on basitarsi 55u long.

Fixed digit of chelicera with one subapical tooth and seven teeth in a row. Movable digit with one small tooth, and L-shaped spermatophoral process. Major portion of the latter 17u long; branch 20u, parallel-sided, with somewhat bulged end.

**Amblyseius (Amblyseius) passiflorae** sp. n. (figs. 13-20)


Differential diagnosis.- *A. passiflorae* resembles *A. largoensis* (Muma, 1955) (= *A. neolargoensis* Van der Merwe, 1965), *A. deleoni* Muma & Denmark, 1970 (= *A. largoensis* Muma, 1961, sensu Van der Merwe, 1968), and *A. impactus* Chaudri, 1968. All these species have about ten teeth on the fixed digit of the chelicera of the female; setae s4, Z4 and Z5 whip-like; the cervix of the spermatheca more or less elongated and tube-like; and the ventral-posterior shield constricted in the middle. *A. passiflorae* resembles African *A. deleoni* most of all. From this species it differs in the more compact shape of the spermathecal major duct and cervix and in the greater difference in length between setae j1 and j3.

Description.- Female: Dorsal shield smooth, 360u long and 240u wide; with 18 pairs of pores; 17 pairs of setae, length in microns: j1 34, j3 50, j4 7, j5 8, j6 10, j2 10, j5 8, z4 10, z5 6, j1 10, z4 94, z5 260, s2 15, s4 85, s2 12, s4 12, s5 10, r2 and R1 on interocular membrane and both 12u long. Peritremes ending in front of setae j1.

Sternal and genital shield as usual. Ventral-posterior shield 105u long and 70u wide, constricted on level of pre-anal pores. Three pairs of pre-anals. Eight pairs of pores in surrounding membrane; four pairs of setae, VLI 60u long.

Length of tarsus IV 145u. Macrosetae present on legs: genu IV 115u and 22u, tibia IV 90u, basitarsus IV 70u, genu III 85u, tibia III 42u, basitarsus III 30u, genu II 36u, genu I 42u.

Fixed digit of chelicera 33u long; with two subapical teeth, and nine teeth in a row; movable digit (33u) with three teeth.

Major duct of spermatheca clearly defined, about 20u long and 4u wide. Atrium bulbous. Cervix somewhat swollen, 9u wide and 16u long.

Male: Length dorsal shield 260u, width 180u. r2 and R1 on dorsal shield. Length of setae (in microns): j1 25, j3 43, j4 6, j5 5, j6 7, j2 9, j5 7, z4 8, z5 5, z1 9, z4 64, z5 195, s2 11, s4 67, s2 10, s4 10, s5 8, r2 8, R1 8.

Ventral-posterior shield slightly imbricate, fused with peritremal shields, 100u long.

Macrosetae on legs: genu IV 62u, tibia IV 50u, basitarsus IV 50u, genu III 85u, tibia III 42u, basitarsus III 30u.

Fixed digit of chelicera with one subapical tooth, and nine teeth in a row. Movable digit with one tooth. Spermatophoral process L-shaped; major portion 15u long; branch 14u and pointedly ending. Length fixed digit 26u, movable digit 24u.

**Amblyseius (Amblyseius) reptans** sp. n. (figs. 21-27)

Material studied.- Holotype ♀ (author's serial no. A26-15) and 7 paratypes (♀ A and ♀ A26-series) from guava leaves (*Psidium guajava*; fam. Myrtaceae), Tamatave, 28-VII-1972 (L. Blommers).

Differential diagnosis.- *A. reptans* resembles closely *A. dimidiatus* De Leon, 1962, from Florida, U.S.A., but differs in the greater length of dorsal setae 24 and 25 and in the shorter length of VLI.

Description.- Female: Dorsal shield laterally...
reticulate, 29u long and 19u wide; with 19p pairs of pores; 17 pairs of setae, length in microns: j1 21, j3 15, j4 8, j5 7, j6 10, j2 10, j5 7, z4 16, z5 18, z1 10, z4 48, z5 70, s2 16, s4 25, s2 18, s4 15, s5 14. 24 and 25 serrate. r2 and R1 on intercalary membrane, both 15p long. Peritremes reach in front of seta j1.

Ventral and genital shield as usual. Ventrianal shield pentagonal, 98u long and 78u wide, with three pairs of pre-anals. Eight pairs of pores in surrounding membrane; four pairs of setae, VLI 24u long.

Macrosetae on leg IV: on genu 27u, on tibia 20u, and on basitarsus 50u long. Macrosetae on other legs hardly longer than normal setae, but more dagger-like: on genu, tibia, tarsus of leg III, and on geni II and I. In some specimens some macrosetae with knobbled end.

Fixed digit of chelicera with two subapical teeth and six in a row. Movable digit with three teeth. Both digits 26u long.

Spermatheca with major duct 2u wide and 16u long. Atrium short. Cervix long and slender, parallel-sided for most of its length, 45u long and 2u wide.

Male: Dorsal shield as in female; 250u long and 170u wide. r2 and R1 on dorsal shield. Length (in microns): j1 16, j3 20, j4 7, j5 8, j6 8, j2 8, j5 3, z4 16, z5 6, z1 9, z4 20, z5 35, s2 16, s4 20, s2 20, s4 15, s5 13, r2 14, R1 13. 24 and 25 serrate.

Ventral-anal shield 105u long, with three pairs of pre-anals and five pairs of pores; fused with peritremal shields. Surrounding membrane with two pairs of pores and VLI 17u long.

Macrosetae on leg IV: on genu 19u, on tibia 15u and on basitarsus 45u long.

Fixed digit of chelicera with one subapical tooth and seven teeth in a row. Movable digit with one tooth; spermatophoral process I-shaped; major portion 15u, branch 9u long.

**Amblyseius (Amblyseius) iivoloinae** sp. n. (Figs. 28-34)


Differential diagnosis.—*A. iivoloinae* resembles *A. culmus* Van der Merve, 1968, and *A. eh! Fritchard & Baker, 1962. However, the shorter dorsal setae and macrosetae on leg IV distinguish it from the former, and the shape of the spermatheca from the latter.

Description.—Female: Dorsal shield reticulate laterally, imbricate in the centre, 320u long and 230u wide; with 20 pairs of pores; 17 pairs of setae, length in microns: j1 15, j3 18, j4 10, j5 10, j6 10, j2 12, j5 8, z4 10, z5 10, z1 10, z4 26, z5 60, s2 14, s4 18, s2 12, s4 10, s5 10. 24 and 25 serrate. Peritremes reach in front of j1. r2 and R1 on intercalary membrane, both 12u long.

Sternal and genital shield as usual. Ventrianal shield pentagonal, laterally faintly constricted, 105u long and 80u wide, with three pairs of pre-anals. Surrounding membrane with eight pairs of pores and four pairs of setae; VLI 35u long.

Macrosetae on leg IV: on genu 40u, on tibia 32u and on basitarsus 50u long. In some specimens these macrosetae knobbled. Macrosetae on other legs short and dagger-like, the longest on genu III (28u).

Fixed digit of chelicera 25u long, with two subapical teeth and six in a row. Movable digit 27u long, with three teeth.

Spermatheca with major duct long and slender at least 25u long, and 1u wide. Atrium small, cervix practically nil.

Male: Dorsal shield as in female, 270u long and 190u wide; r2 and R1 on it. Length of setae (in microns): j1 15, j3 25, j4 9, j5 8, j6 9, j2 10, j5 7, z4 9, z5 8, z1 10, z4 25, z5 45, s2 10, s4 15, s2 10, s4 9, s5 8, r2 11, R1 10. 24 and 25 serrate.

Ventral-anal shield not fused with peritremal shields, 95u long, with five pairs of pores and three pairs of pre-anals. Surrounding membrane with two pairs of pores and VLI 25u long.

Macrosetae on leg IV: on genu 25u, on tibia 23u and on basitarsus 38u long.

Fixed digit of chelicera with one subapical tooth and six teeth in a row. Movable digit with one tooth; spermatophoral process I-shaped; major portion 19u long, branch 9u.
**Amblyseius (Amblyseius) ovaloides**
sp. n. (figs. 35-41)

Material studied.— Holotype ♂ (author’s serial no. A15-2) from combine leaves (Citrus (Fusedia) hystrix; fam. Rutaceae), I.P.A.C.-station, Ivoloina near Tamatave, 18-VII-1972 (L. Blommers). Four ♀ paratypes (A2-series) from avocado leaves (Persea americana; fam. Lauraceae) at the same locality as the holotype, 6-II-1972 (L. Blommers).

**Differential diagnosis.—** Comparison of our specimens with the original description of *A. ovalis* (Evans, 1953) from Malayia, and with the description of Japanese *A. ovalis* by Ehara (1967) reveals only slight differences. In table I some comparative measurements are given (in microns). Other noteworthy differences are the smooth dorsal shield described by Evans, in contrast to the reticulate shield observed by Ehara and myself. A median lobe of the sternal shield in the female is present only in *A. ovaloides*. Because distinguishing marks are rather scarce in the *ovalis*-group (cf. Blommers, 1973), I prefer to consider *A. ovaloides* a good species.

Within the Malagasy fauna *A. ovaloides* comes close to *A. brevipes* Blommers, 1973, and *A. rotwandus* Blommers, 1973, but the shape of the spermatheca and the ventri-anal shield in the female of the latter two species is quite different.

**Description.—** Female: Dorsal shield reticulate anterolaterally, 35μ long and 200μ wide; with at least 16 pairs of pores; 17 pairs of setae, length in microns: j1 30, j3 8, j4 5, j5 5, j6 6, j7 7, j5 5, z4 8, z5 7, z1 8, z4 8, z5 44, a2 7, a4 12, a2 8, s4 8, s8 8, s7 7. r2 and R1 on interscutal membrane, both 8μ long. Peritremes not reaching level with j3.

Sternal shield with large median lobe. Genital shield as usual. Ventri-anal shield constricted anteriorly, 100μ long and 72μ wide; setal arrangement as in *A. ovalis* (see fig. 37). Surrounding membrane with at least four pairs of pores, and four pairs of setae; VI.1 22μ long.

Length of tarsus IV 12μ, including basitarsus of 3μ. Length of macrosetae: on genu IV 40μ, on tibia IV 32μ and on basitarsus IV 58μ, on genu III 25μ and on tibia III 20μ.

Fixed digit of chelicera with one blunt tooth, 28μ long. Movable digit with one small tooth, 26μ long.

Major duct of spermatheca ill-defined, 9μ long and 1μ wide. Atrium small. Cervix tubular, 11μ long, 1μ wide, suddenly widened terminally.

Male: Unknown to the author.

**Amblyseius (Amblyseius) aequidens**
sp. n. (figs. 42-47)


**Differential diagnosis.—** A combination of features shown by *A. aequidens* makes it quite unique among species of the genus *Amblyseius*. I do not know of any other species having large multidentate chelicera, a heavily sclerotized dorsal shield, subequal dorsal setae, and a pentagonal ventri-anal shield.

**Description.—** Female: Dorsal shield strongly sclerotized, 450μ long and 350μ wide, imbricate in the centre; with at least 18 pairs of pores; 17 pairs of setae, length in microns: j1 25, j3 20, j4 11, j5 12, j6 14, j2 16, j5 9, z4 23, z5 20, z7 24.

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**Table I**

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Amblyseius (Amblyseius) brevipes
Blommers, 1973


This species was originally described from Carica papaya in Tuléar and Diospyros sp. in Manombo, N. of Tuléar.

Material studied. - 13 9 and 1 d (A6-series) from Carica papaya, I.F.A.C.-station, Ivoloina near Tamatave, 8-II-1972 (L. Blommers).

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REFERENCES


Figs. 1-5. *Amblyseius (Proprioseiopsis) parasundi* sp. n. 9: 1, dorsum; 2, leg IV; 3, spermatheca; 4, venter; 5, chelicera.
Figs. 6-12. *Amblyseius (Amblyseius) tamatavensis* sp. n. 6-10 9: 6, dorsum; 7, spermatheca; 8, leg IV; 9, chelicera; 10, venter; 11-12 d: 11, ventral-anal shield; 12, chelicera.
Fig. 13-20. *Amblyseius (Amblyseius) passiflorae* sp. n. 13-18: 13, dorsum; 14, spermatheca; 15, leg IV; 16, sternal shield; 17, chelicera; 18, genital and ventri-anal shields; 19-20, ♂: 19, ventri-anal shield; 20, chelicera.
Figs. 21-27. *Amblyseius* (*Amblyseius*) *reptans* sp. n. 21-25 v: 21, dorsum; 22, venter; 23, spermatheca; 24, leg IV; 25, chelicera; 26-27 d: 26, ventral shield; 27, chelicera.
Figs. 28-34. Amblyseius (Amblyseius) involinos sp. n. 28-32 9: 28, dorsum; 29, venter; 30, leg IV; 31, chelicera; 32, spermatheca; 33-34 d: 33, ventral-anal shield; 34, chelicera.

Fig. 35. Amblyseius (Amblyseius) ovaloides sp. n. 9: dorsum.
Figs. 36-41. *Amblyseius (Amblyseius) ovaloides* sp. n. 36, leg IV; 37, genital and ventri-anal shields; 38, sternal shield; 39, chelicera; 40/41, spermatheca.
Figs. 42-47. *Amblyseius* (*Amblyseius*) *aequidens* sp. n. 42-46 9: 42, dorsum; 43, sternal shield; 44, leg IV; 45, spermatheca; 46, chelicera; 47 d: chelicera.