
INTRODUCTION

Twice in the course of 1972 (February and July), I had the opportunity to visit the experimental station of the I.P.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 Phytoseiidae.

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

ACKNOWLEDGEMENTS

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**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 Ms and Zs, or only one of these, absent. A. parasundi and the two Afri-Can species *A. sundi* Pritchard & Baker, 1962, and *A. papayana* Van der Merwe, 1965, are the only species in this subgenus lacking seta Ms and possessing Zs. *A. parasundi* is most closely related to *A. sundi*, and differs in the shorter length of seta Ms 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, 370 μ long and 290 μ 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 inter- scutal membrane, 22 μ and 10 μ long, respectively. Peritremes reaching in front of setae j1.

Sternal and genital shield as usual. Ventri- nal shield 125 μ long and 85 μ wide, laterally constricted, with three pairs of pre-anal setae. Surrounding membrane with five pairs of pores and four pairs of setae; VLI 90 μ long.

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

Fixed digit of chelicera with two subapical teeth and eleven in a row. Moveable digit with three teeth. Length of both digits 3 μ.

Major duct of spermatheca thin walled, 2 μ wide and at least 10 μ long. Atrium thick walled, 10 μ long. Cervix slender and tube-like, minimum width 3 μ, length 35 μ (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 Kennett (1958) and in *A. deleoni* Muma & Denmark, 1970 [= *A. longaensis* Muma, 1961, nec (Muma, 1955)] by Van der Merwe (1968).

**Amblyseius (Amblyseius) tomatavensis**

sp. n. (Figs. 6-12)


Differential diagnosis.— *A. tomatavensis* resembles *A. anomalous* Van der Merwe, 1968. It differs from this species in the greater length of setae s4, z4 and z5 of the three macrosetae on leg IV, and in the shape of the spermatheca. *A. tomatavensis* is also related to *A. obtusus* Koch, 1839, sensu Kang, 1960, from which it differs in the smaller size of the same setae.

Description.— Female: Dorsal shield smooth, 360 μ long and 250 μ 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 85, s2 5, s4 6, z5 6. Setae r2 and r1 on interscutal membrane, respectively 15 μ and 5 μ long. Peritremes reach behind setae j1.

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

Length tarsus IV 120 μ. Leg IV with four macrosetae: on genu 120 μ and 32 μ, on tibia 75 μ and on basitarsus 73 μ long. Macrosetae present on other legs: genu III 61 μ, tibia III 41 μ, basitarsus III 22 μ, genu II 39 μ, genu I 41 μ.
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 5, 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 VI. 40u long.

Macrosetae on leg IV: on genu 65u, on tibia 45u and on basitarsus 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)

Material studied.— Holotype 9 (author’s serial no. A7-15) and 3 9 paratypes (A7-series) collected on Passiflora foetida (fam. Passifloraceae), I.P.A.C.-station, Ivoloina near Tamatave, 5-VII-1972 (L. Blommers). Two paratypes (9 and 4; A19-5 and A19-3) from the same species of plant and the same locality, 24-VII-1972 (L. Blommers).

Differential diagnosis.— A. passiflorae resembles A. largeoensis (Muma, 1955) (= A. neolargoensis Van der Merwe, 1965), A. deleoni Muma & Denmark, 1970 (= A. largeoensis 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-ana shield constructed 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, z1 10, z4 94, z5 260, s2 15, s4 85, s2 12, s4 12, s5 10, r2 and R1 on intercostal membrane and both 12u long. Peritremes ending in front of setae j1.

Sternal and genital shield as usual. Ventral anal 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, VI. 60u long.

Length of tarsus IV 145u. Macrosetae present on legs: genu IV 115u and 22u, tibia IV 90u, basitarsus IV 70u, genu III 45u, tibia III 42u, basitarsus III 30u, genu II 36u, genu I 42u.

Fixed digit of chelicera 35u 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 shield slightly imbricate, fused with peritremal shields, 100u long.

Macrosetae on legs: genu IV 62u, tibia IV 50u, basitarsus IV 50u, genu III 45u, 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 9 (author’s serial no. A26-15) and 7 paratypes (4 9 and 3 d: 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 z4 and z5 and in the shorter length of VL1.

Description.— Female: Dorsal shield laterally
reticulate, 29u long and 19u wide; with 19u 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, s5 18, Z1 10, Z4 48, Z5 70, s2 16, s4 25, s2 18, s4 15, s5 14. Z4 and Z5 serrate. r2 and R1 on intercalary membrane, both 15u long. Peritremes reach in front of setae j1.

Ventral and genital shield as usual. Ventrianal shield pentagonal, 98u long and 79u wide, with three pairs of pre-anals. Eight pairs of pores in surrounding membrane; four pairs of setae, VL1 23u 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 genu II and I. In some specimens some macrosetae with knobbed 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, s5 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 pores of setae; fused with peritremal shields. Surrounding membrane with two pairs of pores and VL1 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 L-shaped; major portion 15u, branch 9u long.

Amblyseius (Amblyseius) ivoloinae

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sp. n. (Figs. 28-34)


Differential diagnosis.— A. ivoloinae resembles A. culmus Van der Merve, 1968, and A. sp. Frichard & 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 Z5 serrate. Peritremes reach in front of j1. r2 and R1 on intercalary membrane, both 12u long.

Sternal and genital shield as usual. Ventral-anal 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; VL1 35u long.

Macrosetae on leg IV: on genu 40u, on tibia 32u and on basitarsus 50u long. In some specimens these macrosetae knobbed. 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 VL1 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 L-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 combave leaves (Citrus (Evadna) Aegridii; 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 Malay, 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. rotratus* 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, 35u long and 200u 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, j2 7, j5 5, s2 8, s5 7, 21 5, 24 8, 25 44, s2 7, s4 12, s4 8, s7 5, t2 and R1 on intercostal membrane, both 8u long. Peritremes not reaching level with j3.

Sternal shield with large median lobe. Genital shield as usual. Ventri-anal shield constricted anteriorly, 100u long and 72u 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 22u long.

Length of tarsus IV 125u, including basitarsus of 32u. Length of macrosetae: on genu IV 40u, on tibia IV 32u and on basitarsus IV 58u, on genu III 25u and on tibia III 20u.

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

Major duct of spermatheca ill-defined, 9u long and 1u wide. Atrium small. Cervix tubular, 11u long, 1u 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, 450u long and 350u 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 25

| Table I |
|------------------|------------------|------------------|
|                  | *A. ovalis*      | *A. ovalis*      | *A. ovaloides* |
|                  | Evans (Malaya)   | Ehara (Japan)    | sp. n. (Madagascar) |
| Dorsal setae j1  | 33               | 31               | 27-30          |
| Dorsal setae j3  | 55               | 50               | 45-48          |
| Dorsal setae s+  | ≥20              | 15               | 9-12           |
| Remaining dorsal setae | 9-11          | 7-14             | 5-8            |
| Macropsetae leg IV: genu | 39              | 37               | 36-40          |
| tibia            | 37               | 32               | 29-34          |
| basitarsus      | 55               | 53               | 52-57          |
Amblyasyus (Amblyasyus) bivena
Bloomers, 1973


This species was previously recorded from various annuals in the region of Tuléar.

Material studied.—10 V and 1 d (A6-series) from Phaeoscelus (lanatus?), Ivoloina, Tamatave, 11-11-1972 (L. Bloomers).

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: 6, dorsum; 7, spermatheca; 8, leg IV; 9, chelicera; 10, venter; 11-12: 11, ventri-anal shield; 12, chelicera.
Figs. 13-20. *Amblyseius* (*Amblyseius*) *passiflorae* sp. n. 13-18 9: 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: 21, dorsum; 22, venter; 23, spermatheca; 24, leg IV; 25, chelicera; 26-27: 26, ventral shield; 27, chelicera.
Figs. 28-34. *Amblyseius (Amblyseius) involinos* sp. n. 28-32: 28, dorsum; 29, venter; 30, leg IV; 31, chelicera; 32, spermatheca; 33-34: 33, ventri-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.