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New records of phytoseiid mites from Mauritius Island (Acari: Mesostigmata)

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Original research

ABSTRACT

Mauritius is one of the three main islands constituting Mascareignes Archipelago, with La Réunion and Rodrigues. So far, fourteen mite species of the family Phytoseiidae had been reported from this island. We report in this paper the results of a survey conducted at the end of 2018 in Mauritius Island, in which 12 additional species were firstly recorded.

Keywords survey; collection; predators; taxonomy; systematics

Introduction

Mites of the family Phytoseiidae are known for their predatory behaviors on phytophagous mites and small insects on cultivated plants and wild vegetation. Several species are used for the control of pest organisms in agricultural open fields and above all protected crops all around the world (McMurtry and Croft 1997; McMurtry et al. 2013). This family is widespread around the world, present on all inhabited continents and consists presently of 2,521 valid species of 94 genera belonging to three sub-families (Demite et al. 2020).

Biodiversity surveys in poorly investigated areas is still an urgent need and might resulted in the discovery of additional species potentially useful for biological control as well as having more information on the biodiversity of these areas (Kreiter et al. 2018a, b, c, 2020a, b, c).

Most of the Indian Ocean constitutes one of the world’s biodiversity hotspots, a concept defined by Myers (1988) in order to identify the most immediately important areas for biodiversity conservation. The characteristics of these hotspots are to hold high endemism levels and have lost at least 70% of their original natural vegetation (Myers et al. 2000). Knowledge of the phytoseiid diversity in these areas may contribute to future establishment of conservation programs.

Located in the Indian Ocean at 1,000 km from the eastern coast of Madagascar, Mauritius is one of the three main islands constituting Mascareignes Archipelago, together with La Réunion and Rodrigues.

Only three phytoseiid species had been reported from this island for a long time (Moutia 1958, Schicha 1984, Demite et al. 2020), namely Amblyseius caudatus Berlese, Euseius ovalis (Evans) and Phytoseius coheni Swirski and Shechter. Kreiter et al. (2018a) had reported the occurrence of four additional species, namely Paraphytoseius orientalis (Narayanan, Kaur and Ghai), Phytoseiulus persimilis Athias-Henriot, Scapulaseius reptans (Blommer) and Typhlodromips culmulus (van der Merwe). Ferragut and Baumann (2019) had added eight additional species to these seven previous ones: Scapulaseius asiaticus (Evans), Amblyseius largoensis (Muna), A. passiflorae Blommer, A. tamatavensis Blommer, Transelus pungi Ferragut, Phytoseius haroldi Ueckermann and Kreiter, P. crinitus Swirski and Shechter and Typhlodromus (Anthoseius) recurviremous Ferragut, bringing the number of recorded species for the Mauritius’ fauna to 15.

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The objective of this paper is to present the phytoseiid mites species reported in a new survey conducted in October and November 2018 in Mauritius.

**Materials and methods**

The survey took place in Mauritius at the end of October and beginning of November 2018. Plant inhabiting mites were collected from cultivated and wild plants in several locations of the island. Mites were directly collected on leaves with a fine brush or by beating the plants and collecting the mites in a black plastic rectangular saucer 45 x 30 cm (Ref. STR 45, BHR, 71370 Saint-Germain-du-Plain, France), depending on the plant investigated:

- large leaves of shrubs and trees with the direct collection method or by beating;
- very small leaves or spiny shrubs and trees with the beating method;
- and herbaceous plants with a brush.

Collected mites were then transferred with a brush into small plastic vials containing 1.5 ml of 70% ethanol. Mites were then all mounted on glass slides using Hoyer’s medium and all identified using a phase and interferential contrast microscope (DMLB, Leica Microsystèmes SAS, Nanterre, France). Characters of specimens were measured using a graded ocular micrometre (Leica, see above).

Chant and McMurtry’s (1994, 2007) concepts of the taxonomy of the family Phytoseiidae and the world catalogue database of Demite et al. (2014, 2020) were used for identification and for distribution and information on descriptions and re-descriptions, respectively. The setal nomenclature system adopted was that of Lindquist and Evans (1965) and Lindquist (1994) as adapted by Rowell et al. (1978) and Chant and Yoshida-Shaul (1992) for the dorsum and by Chant and Yoshida-Shaul (1991) for the venter. The notation for solenostomes and poroids is based on Athias-Henriot (1975). Numbers of teeth on the fixed and movable cheliceral digits do not include the respective apical teeth. Setae not referred to in the results section should be considered as absent. All measurements are given in micrometres (µm) and presented with the mean in bold followed by the range in parenthesis.

Specimens of each species are deposited in the mite collections of Montpellier SupAgro conserved in UMR CBGP INRA/IRD/CIRAD/SupAgro/University of Montpellier.

Specimens collected in fields in Mauritius within these surveys were all identified and only very few single males or immatures collected during this study are not taken into account.

The following abbreviations are used in this paper for morphological characters: **dsla** = dorsal shield length just under j1 to just below j5; **dsw** = dorsal shield width at the level of s4; **Z4 ser., Z5 ser. = Z4, Z5 serrated (if Z4 and Z5 without ser. = not serrated);** **gensl** = genital shield length; **gensw post. cor.** = genital shield width posteriorly; **lisl** = Largest inguinal sigilla (= “metapodal plate”) length; **lisw** = Largest inguinal sigilla (= “metapodal plate”) width; **sisl** = smallest inguinal sigilla (= “metapodal plate”) length; **sisw** = smallest inguinal sigilla (= “metapodal plate”) width; **vsl** = ventrianal shield length; **gv3 - gv3** = distance between solenostomes gv3 on the ventrianal shield; **vsw ZV2 & vsw anus** = ventrianal shield width at ZV2 level and at paranal setae level; **scl.** = calyx length; **scw** = calyx widest width; **Fdl** = fixed digit length; **Md1** = movable digit length; **Nb teeth Fd** = number of teeth on the fixed digit; **Nb teeth Md** = number of teeth on the movable digit; **Shaft** = length of the shaft of spermatodactyl; **toe** = length of the toe; **BCA** = Biological control agent; **aasl** = altitude above sea level.

The following abbreviations are used in this paper for institutions: **CBGP** = Centre de Biologie pour la Gestion des Populations; **CIRAD** = Centre International de Recherche Agronomique pour le Développement; **INRA** = Institut National de la Recherche Agronomique; **IRD** = Institut de Recherche pour le Développement; **MSA** = Montpellier SupAgro, France; **UMR** = Unité Mixte de Recherche.
Results and discussion

We have collected a total of 22 species, 21 being presented thereafter (a new species will be described in a following paper).

Subfamily Amblyseiinae Muma


Tribe Neoseiulini Chant & McMurtry

Neoseiulini Chant & McMurtry 2003a: 6

Genus Neoseiulus Hughes

Neoseiulus Hughes 1948: 141.

Neoseiulus houstoni Schicha


Neoseiulus recifensis Gondim Jr. & Moraes 2001: 77 (synonymy according to Kreiter et al. 2020c).

Neoseiulus barreti Kreiter in Furtado et al. 2005: 135 (synonymy according to Kreiter et al. 2020c).

This species belongs to the cucumeris species group of Neoseiulus. It was collected on Vigna unguiculata (L.) Walpers in Queensland, Australia and described by Schicha (1987). Then described a long time after under two different species names, N. recifensis Gondim Jr and Moraes and N. barreti Kreiter. Kreiter et al. (2020c) had put those two species as junior synonyms of N. houstoni and described for the first time the male of N. houstoni. Biology of this species remains totally unknown and it is the first record from Mauritius.

World distribution: Australia, Brazil, Reunion Island.

Specimens examined: 2 ♀♀ in total. Pamplemousse, Botanical Garden (altitude above sea level = aasl 41 m, lat. 20°06′24″ S, long. 57°34′49″ E), 1 ♀ on Acacia glauca Willdenow (Fabaceae), 3/XI/2018; Bel Ombre, Resorts (aasl 11 m, lat. 20°06′24″ S, long. 57°34′49″ E), 1 ♀ on Thespesia populneaoides (L.) Solander ex Corrèa (Malvaceae), 5/XI/2018.

Remarks: morphological and morphometric characters and all measurements fit well measurements in Kreiter et al. (2020c). This species was described from Australia, but recorded also in Brazil and was first mentioned in the Indian Ocean from La Réunion Island, an Island distant of only 225 km from Mauritius. Several species were shared by the two Islands and probably by many others.

Tribe Kampimodromini Kolodochka


Subtribe Paraphytoseiina Chant & McMurtry

Paraphytoseiina Chant & McMurtry 2003b: 211.

Genus Paraphytoseius Swirskii & Shechter

Paraphytoseius horrifer (Pritchard & Baker)


In our specimens of this genus, setae S5 are absent. So accordingly, with Chant and McMurtry (2003b) all specimens belong to the orientalis species group. Accordingly, with these previous authors, and with Moraes et al. (2007), we consider that P. horrifer and P. orientalis are different valid species. Our specimens with longer setae s4, Z4, Z5, and lacking a distinctly short, thick, spatalute macroseta on genu I belongs to the former species. Paraphytoseius horrifer is widely distributed in Sub-Saharan Africa and Madagascar. Its biology remains totally unknown and it is the first record from Mauritius.

**World distribution:** Benin, DR Congo, Ghana, India, Kenya, La Réunion Island, Madagascar Island, Malawi, Mozambique, Senegal, South Africa, Uganda.

**Specimens examined:** 10 ♀♀ in total. Curepipe, Anderson street (aasl 540 m, lat. 20°19′11″ S, long. 57°31′52″ E), 1 ♀ on Litsea monopetala (Roxburgh) Person and 1 ♀ on Litsea glutinosa (Loureiro) C.B. Robinson (Lauraceae), 27/X/2018; Côte d’Or, Bridge (aasl 443 m, lat. 20°15′26″ S, long. 57°32′21″ E), 1 ♀ on Tristemma mauritianum J.F. Gmelin (Melastomataceae), 28/X/2018; Curepipe, Botanical Garden (aasl 540 m, lat. 20°19′28″ S, long. 57°30′50″ E), 6 ♀♀ on Rubus alceifolius Poiret (Rosaceae) and 1 ♀ on Clidemia hirta (L.) D. Don (Melastomataceae), 29/X/2018.

**Remarks:** morphological and morphometric characters and all measurements fit well measurements in Kreiter et al. (2020b, c). This species was described from Africa (Pritchard and Baker 1962), but recorded also in Vietnam (Kreiter et al. 2020b) and was first mentioned in the Indian Ocean from La Réunion Island by Kreiter et al. (2020c), an Island distant of only 225 km from Mauritius with several species shared by the two Islands (this study and Kreiter et al. 2020c).

Paraphytoseius orientalis (Narayanan, Kaur & Ghai)

Typhlodromus (Amblyseius) orientalis Narayanan, Kaur & Ghai 1960: 394.


Paraphytoseius multidentatus Swirski & Shechter 1961: 114 (synonymy according to Matthysse & Denmark 1981 in Denmark et al. 1999).

Paraphytoseius narayanani Ehara 1967: 67 (synonymy according to Ehara & Ghai, in Ehara 1967).

This species belongs to the genus Paraphytoseius and to the orientalis species group (Chant and McMurtry 2003b). Our specimens with relatively shorter setae s4, Z4 and Z5, having a distinctly short, thick, spatalute macroseta on genu I is belonging to the species P. orientalis. It is widely distributed in tropical and subtropical areas in South America, Africa and Asia. It belongs to a genus included in the large polyphagous generalist group named type III phytoseid mites (McMurtry and Croft 1997; McMurtry et al. 2013). Navasero and Navasero (2016) had studied the life history of P. orientalis on the broad mite (Polyphagotarsonemus latus) (Banks) as prey and reported high predation rates on the eggs of P. latus, suggesting good potential for the control of this pest. Paraphytoseius orientalis had been collected before in Mauritius (Kreiter et al. 2018a; Ferragut and Baumann 2019).
World distribution: Argentina, Brazil, Burundi, India, Japan, Kenya, La Réunion Island, Madagascar Island, Martinique Island, Mauritius Island, Mozambique, Rwanda.

Specimens examined: 20 ♀♀ and 3 ♂♂ in total. Rivière des Anguilles, Bridge (aasl 158 m, lat. 20°28′49″ S, long. 57°33′37″ E), 1 ♀ on Solanum mauritianum Scopoli (Solanaceae), 31/X/2018; Réserve Nationale de Pétrins, Chemin de Maccabée (aasl 676 m, lat. 20°29′26″ S, long. 57°33′31″ E), 19 ♀♀ and 3 ♂♂ on Urena lobata L. (Malvaceae), 6/XI/2018.

Remarks: this species was reported before by Kreiter et al. (2018a), but with only one female collected. Ferragut and Baumann (2019) had also reported *P. orientalis*, but with a lot of specimens. Morphological and morphometric characters and all measurements fit well measurements in Ferragut and Baumann (2019) and Kreiter et al. (2020b, c). This species was described from Asia (Narayanan et al. 1960) and recently recorded from Vietnam (Kreiter et al. 2020b), and also in La Réunion Island (Kreiter et al. 2020c). It seems more common than *P. horrifer* in Mauritius Island.

Tribe Typhlodromipsini Chant & McMurtry


Genus *Scapulaseius* Karg & Oomen-Kalsbeek


*Scapulaseius asiaticus* (Evans)


Species of this genus are supposed to be of type III (McMurtry and Croft 1997; McMurtry et al. 2013), i.e., a polyphagous generalist predator. However, the biology of *S. asiaticus* remains totally unknown. This species had been collected before in Mauritius (Kreiter et al. 2018a; Ferragut and Baumann 2019).

World distribution: Angola, China, Cyprus, Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, Vietnam.

Specimens examined: 27 ♀♀ and 5 ♂♂ in total. Côte d’Or, Village (aasl 443 m, lat. 20°15′26″ S, long. 57°32′21″ E), 2 ♀♀ on *Clidadium surinamense* L. (Asteraceae), 28/X/2018; Curepipe, Trou aux cerfs (aasl 593 m, lat. 20°19′04″ S, long. 57°30′47″ E), 1 ♀ on *Rubus apetalus* Poiret (Rosaceae), 29/X/2018; Mare aux Vacoas (aasl 572 m, lat. 20°19′11″ S, long. 57°30′45″ E), 11 ♀♀ on *Tibouchina heteromalla* Cogniaux (Melastomataceae) and 2 ♀♀ on *Litsea monopetala* (Roxburgh) Person (Lauraceae), 30/X/2018; Quartier Militaire (aasl 472 m, lat. 20°19′11″ S, long. 57°36′05″ E), 1 ♀ on *Clidemia hirta* (L.) D. Don (Meliaceae), 1/XI/2018; Curepipe, Bld Pasteur (aasl 510 m, lat. 20°19′21″ S, long. 57°31′45″ E), 1 ♀ on *Ageratum conyzoides* L. (Asteraceae), 4/XI/2018; Curepipe, Anderson street (aasl 560 m, lat. 20°19′11″ S, long. 57°31′52″ E), 5 ♀♀ and 3 ♂♂ on *Erigeron canadensis* (L.) Cronquist (Asteraceae) and 3 ♀♀ and 2 ♂♂ on *Sonchus oleraceus* L. (Asteraceae), 4/XI/2018; Mare...
aux Vacoas (aasl 581 m, lat. 20°22′05″ S, long. 57°29′31″ E), 1 ♀♀ on Ludwigia octovalvis (Jacquemin) P.H. Raven (Onagraceae), 5/XI/2018.

Remarks: Scapulaseius asiaticus was described by Evans (1953) under the name Typhlodromus asiaticus from specimens collected in Java island, Indonesia. The closely related Scapulaseius reptans (Blommers) was described by Blommers in 1974 from Madagascar in Tamatave from specimens collected on Psidium guajava L.

Character measurements of 12 of the 27 females (Table 1) and of the five males (Table 2) collected in Mauritius agree very well with those obtained from specimens of S. asiaticus or S. reptans. We consider so far that our specimens can be anyone of the two species and that examination of the specimens collected in this study can lead to anyone of the two species. Consequently, the morphometrics strongly suggest synonymy.

There are however some discrepancies between our measurements and observations and previous descriptions of the two species. In the two descriptions:

- dorsal shield is reticulated in the description of S. reptans in the anterior lateral margins and on all the posterior part of the dorsal shield except the centre. This was not illustrated in the original description of S. asiaticus by Evans (1953), but was illustrated by Ehara and Bhandhufalck (1977) and by Ferragut and Baumann (2019);

- Ehara and Bhandhufalck (1977) pointed out that the seta R1 is inserted on a lateral projection of the dorsal shield, trait taken back also by Ferragut and Baumann (2019). Scapulaseius reptans is morphologically very close to S. asiaticus, but with setae R1 located off the dorsal shield in the description of Blommers (1974). Taking this trait into consideration as an apomorphic character, Chant and McMurtry (2005c) placed the two species within different groups, S. asiaticus in the asiaticus species group characterized by having R1 on the dorsal shield and S. reptans in the ficilocus species group with species bearing R1 on the lateral integument. However, in S. asiaticus the position of this seta is variable even among individuals of the same population. Ehara and Bhandhufalck (1977) were the first to mention this variability. Ferragut and Baumann (2019) had examined 19 females from Mauritius: eleven females (58%) have both R1 setae on the dorsal shield, four females (26%) have one setae of the pair on a lateral projection of the shield and the other on the soft integument, and three females (16%) have both setae R1 on the lateral integument. If the majority of specimens have both or one seta on the dorsal shield, 16% is not a negligible proportion;

- a peculiar trait in S. asiaticus not mentioned by previous authors and especially by Blommers (1974) for S. reptans is the position of the dorsal solenostome gd3. Ferragut and Baumann (2019) stated that while in females of the family Phytoseiidae, this pore-like structure is usually placed on the peritremal plate, in S. asiaticus, it is on the lateral integument, between the peritremal and dorsal shields, posterior to setae r3 and close to the margin of dorsal shield.

Our examination of the material collected in Mauritius (this study) and Vietnam (Kreiter et al. 2020b) and identified as S. asiaticus and of the material collected in Mauritius (Kreiter et al. 2018a) and in La Réunion (Kreiter et al. 2020c) and identified as S. reptans along with the original descriptions of S. asiaticus and S. reptans shows:

- Re-examination of our specimens from La Réunion (Kreiter et al. 2020c) and of Mauritius (Kreiter et al. 2018a) show that the dorsal shields of the two species present exactly the same reticulation as drawn by Bommers (1974) for the description of S. reptans and in Ehara and Bhandhufalck (1977) for the redescriptions of S. asiaticus;

- In our 27 specimens females of Mauritius (this study), we have 21 females out of 27 (77.8%) with R1 on the dorsal shield, four females / 27 (14.8%) with one of these setae on and the other one off shield and two females / 27 (7.4%) with setae R1 both off shield,
compared to 58, 26 and 16% for Ferragut and Baumann (2019), respectively. In specimens from Vietnam (Kreiter et al. 2020b), we had four females out of seven (57.1%) with R1 on the dorsal shield, only one female / seven (14.3%) with one of these setae on and the other one off shield and two females / seven (28.6%) with setae R1 both off shield. In the two specimens from Maurice (Kreiter et al. 2018a), both specimens have R1 on the dorsal shield. And in the two female specimens from La Réunion (Kreiter et al. 2020c), one specimen has both R1 on the dorsal shield, but the other specimens have one seta on and the other one off the dorsal shield.

- solenostomes gv3 are on integument in all our specimens from Mauritius (this study), from Vietnam (Kreiter et al. 2020b), but also on those from Mauritius (Kreiter et al. 2018a) and La Réunion (Kreiter et al. 2020c) previously identified as S. reptans.

Given this variability in S. asiaticus, we agree with Ferragut and Baumann (2019) that the taxonomic status of S. reptans is uncertain, because the holotype used to describe the latter species could represent, in fact, a female of S. asiaticus with setae R1 outside their most common position. Setal measurements and other morphological features of the specimens collected in Mauritius agree well with both, with those of the original description and subsequent redescriptions of S. asiaticus by Ehara and Blandhufalck (1977), Moraes et al. (2004), Oliveira et al. (2012), Karmakar and Bhowmik (2018) and Ferragut and Baumann (2019); as well as with the morphological data provided in the original description of S. reptans, and the redescriptions given by Kreiter et al. (2018a, 2020c).

Considering all this information, we can conclude that our specimens from Mauritius (this study and Kreiter et al. 2018a) and from La Réunion (Kreiter et al. 2020c) must be all identified as S. asiaticus. Previous specimens collected in La Réunion Island (Kreiter et al. 2020c) and in Mauritius Island (Kreiter et al. 2018a) and previously identified as S. reptans are consequently belonging all to S. asiaticus. Consequently, this is the third report of that species in Mauritius Island after Kreiter et al. (2018a) and Ferragut and Baumann (2019).

Unfortunately, the confinement during the Covid-19 pandemic has not given us the possibility to borrow type materials of both species in order to compare specimens of the two species. Despite this fact, we strongly suspect just like Ferragut and Baumann (2019) that S. reptans is a junior synonym of S. asiaticus.

Tribe Amblyseiini Muma
Amblyseiinae Muma 1961: 273..

Subtribe Amblyseiina Muma

Genus Amblyseius Berlese
Amblyseius Berlese 1914: 143.

Amblyseius haleakalus Prasad

This species belongs to the obtusus species group as seta z4 is minute and female ventral shield is not vase-shaped or divided. It belongs to the andersoni species subgroup as the spermatheca has a differentiated atrium, a calyx not dotted or annulated, not swollen basally and calyx dish-, cup-, bell- or V-shaped. The biology is totally unknown.

World distribution: Hawaii.
Table 1. Character measurements of adult females of *Scapulaseius asiaticus* collected in this study compared to previously published character measurements of adult females of *Scapulaseius asiaticus* and *S. reptans* (localities followed by the number of specimens measured between brackets).

<table>
<thead>
<tr>
<th>Characters</th>
<th>Scapulaseius asiaticus</th>
<th>Scapulaseius reptans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dsl</td>
<td>Mauritius 1 (12) (this study)</td>
<td>Vietnam (7)</td>
</tr>
<tr>
<td>Dow at st level</td>
<td>174 (145 – 205)</td>
<td>180 – 195</td>
</tr>
<tr>
<td>Perit. reaching</td>
<td>jl</td>
<td>jl</td>
</tr>
<tr>
<td>gd on dorsal shield</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>jl</td>
<td>23 (18 – 25)</td>
<td>16 – 18</td>
</tr>
<tr>
<td>j3</td>
<td>22 (20 – 23)</td>
<td>16 – 18</td>
</tr>
<tr>
<td>j4</td>
<td>8 (8 – 9)</td>
<td>8 – 9</td>
</tr>
<tr>
<td>j5</td>
<td>8 (8 – 9)</td>
<td>8 – 9</td>
</tr>
<tr>
<td>j6</td>
<td>11 (9 – 13)</td>
<td>8 – 9</td>
</tr>
<tr>
<td>J2</td>
<td>13 (10 – 15)</td>
<td>8 – 9</td>
</tr>
<tr>
<td>J5</td>
<td>8 (8 – 10)</td>
<td>8 – 9</td>
</tr>
<tr>
<td>r3</td>
<td>19 (18 – 20)</td>
<td>16 – 18</td>
</tr>
<tr>
<td>s4</td>
<td>27 (25 – 31)</td>
<td>16 – 18</td>
</tr>
<tr>
<td>z5</td>
<td>10 (8 – 12)</td>
<td>–</td>
</tr>
<tr>
<td>Z1</td>
<td>12 (9 – 13)</td>
<td>–</td>
</tr>
</tbody>
</table>

Sources of measurements: *Scapulaseius asiaticus* – Original description: Indonesia: Evans (1953); Mauritius 2: Ferrugat & Baumann (2019); Vietnam: Kreiter et al. (2020b); *S. reptans* – Original description Madagascar: Blommers (1974); Mauritius: Kreiter et al. (2018a); – : not provided.
Specimens examined: 8 ♀♀ and 1 ♂ in total. Curepipe, Anderson street (aasl 560 m, lat. 20°19’11” S, long. 57°31’52” E), 8 ♀♀ and 1 ♂ on Araucaria columnaris (Forster) Hook (Araucariaceae), 4/XI/2018.

Remarks: this is the first mention of this species from Indian Ocean and in an area outside the land from which the species was described, Hawaii. The measurements of specimens collected in Mauritius Island (Table 3) are very close to those obtained from specimens of Hawaii by Prasad (1968) in the original description and by Denmark and Muma (1989) in the only available redescriptions of the type material, except for general slightly shorter dimensions

Table 2. Character measurements of adult males of Scapulaseius collected in this study compared to previously published character measurements of adult males of Scapulaseius asiaticus and S. reptans (localities followed by the number of specimens measured between brackets).

<table>
<thead>
<tr>
<th>Characters</th>
<th>Mauritius (5) (this study)</th>
<th>India (6)</th>
<th>Thailand 1 (?)</th>
<th>Thailand 2 (1)</th>
<th>La Réunion (1)</th>
<th>Madagascar (3)</th>
<th>Mauritius (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dsl</td>
<td>250 (245 – 258)</td>
<td>277 (275 – 280)</td>
<td>240</td>
<td>237</td>
<td>250</td>
<td>250</td>
<td>255</td>
</tr>
<tr>
<td>Dsw</td>
<td>137 (133 – 143)</td>
<td>184 (183 – 185)</td>
<td>160</td>
<td>150</td>
<td>170</td>
<td>170</td>
<td>175</td>
</tr>
<tr>
<td>j1</td>
<td>20 (18 – 22)</td>
<td>18 (16 – 20)</td>
<td>17</td>
<td>15</td>
<td>16</td>
<td>16</td>
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</tr>
<tr>
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</tr>
<tr>
<td>j4</td>
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</tr>
<tr>
<td>j5</td>
<td>8 (8 – 9)</td>
<td>9 (8 – 10)</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>j6</td>
<td>9 (8 – 9)</td>
<td>10 (10 – 11)</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>J2</td>
<td>10 (10 – 11)</td>
<td>12 (10 – 14)</td>
<td>9</td>
<td>10</td>
<td>13</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>J5</td>
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<td>3</td>
<td>6</td>
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<td>16 (15 – 18)</td>
<td>14 (13 – 15)</td>
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<td>15</td>
<td>15</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>R1</td>
<td>13 (12 – 14)</td>
<td>10 (9 – 11)</td>
<td>10</td>
<td>12</td>
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<td>13</td>
</tr>
<tr>
<td>s4</td>
<td>23 (20 – 26)</td>
<td>18 (16 – 20)</td>
<td>20</td>
<td>20</td>
<td>28</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>S2</td>
<td>20 (18 – 23)</td>
<td>11 (10 – 12)</td>
<td>15</td>
<td>15</td>
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</tr>
<tr>
<td>S4</td>
<td>18 (14 – 20)</td>
<td>11 (10 – 12)</td>
<td>13</td>
<td>13</td>
<td>20</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>S5</td>
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<td>16</td>
<td>15</td>
<td>20</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>z5</td>
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<td>8 (6 – 10)</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Z1</td>
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<td>12 (12 – 13)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Z4</td>
<td>38 (35 – 40)</td>
<td>33 (30 – 35)</td>
<td>34</td>
<td>35</td>
<td>40</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>Z5</td>
<td>54 (53 – 55)</td>
<td>55 (53 – 57)</td>
<td>47</td>
<td>50</td>
<td>58</td>
<td>35</td>
<td>50</td>
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<tr>
<td>st1-st1</td>
<td>44 (43 – 45)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>30</td>
<td>–</td>
<td>47</td>
</tr>
<tr>
<td>st2-st2</td>
<td>49 (48 – 50)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>53</td>
<td>–</td>
<td>53</td>
</tr>
<tr>
<td>st3-st3</td>
<td>47 (43 – 48)</td>
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<td>–</td>
<td>–</td>
<td>50</td>
<td>–</td>
<td>55</td>
</tr>
<tr>
<td>st1-st5</td>
<td>101 (100 – 103)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>78</td>
<td>–</td>
<td>105</td>
</tr>
<tr>
<td>st4-st4</td>
<td>35 (30 – 38)</td>
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<td>–</td>
<td>–</td>
<td>38</td>
<td>–</td>
<td>40</td>
</tr>
<tr>
<td>st5-st5</td>
<td>32 (30 – 35)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>38</td>
<td>–</td>
<td>35</td>
</tr>
<tr>
<td>Vsl</td>
<td>107 (100 – 113)</td>
<td>112 (110 – 113)</td>
<td>104</td>
<td>100</td>
<td>105</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Vsw ZY2</td>
<td>113 (108 – 120)</td>
<td>112 (110 – 113)</td>
<td>140</td>
<td>133</td>
<td>–</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Vsw anus</td>
<td>53 (48 – 60)</td>
<td>54 (53 – 55)</td>
<td>–</td>
<td>–</td>
<td>75</td>
<td>–</td>
<td>60</td>
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<tr>
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<td>–</td>
<td>19</td>
<td>18</td>
<td>17</td>
<td>20</td>
<td></td>
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<tr>
<td>Sgel</td>
<td>19 (18 – 20)</td>
<td>–</td>
<td>15</td>
<td>25</td>
<td>–</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>SgeH</td>
<td>13</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>12</td>
<td>–</td>
<td>18</td>
</tr>
<tr>
<td>SgeHIII</td>
<td>16 (15 – 18)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>8</td>
<td>–</td>
<td>15</td>
</tr>
<tr>
<td>St1H</td>
<td>17 (15 – 18)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>20</td>
</tr>
<tr>
<td>SgeIV</td>
<td>21 (18 – 23)</td>
<td>33 (30 – 35)</td>
<td>19</td>
<td>21</td>
<td>25</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>St1V</td>
<td>20 (18 – 21)</td>
<td>27 (26 – 28)</td>
<td>17</td>
<td>19</td>
<td>23</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>St2V</td>
<td>45 (43 – 48)</td>
<td>40 (38 – 43)</td>
<td>44</td>
<td>42</td>
<td>45</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>Fdl</td>
<td>20 (18 – 20)</td>
<td>–</td>
<td>19</td>
<td>20</td>
<td>–</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>No teeth Fd</td>
<td>8</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>8</td>
<td>–</td>
<td>8</td>
</tr>
<tr>
<td>Mill</td>
<td>20 (18 – 22)</td>
<td>–</td>
<td>21</td>
<td>23</td>
<td>–</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>No teeth Md</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Shaft</td>
<td>16 (15 – 17)</td>
<td>15 (15 – 16)</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>17</td>
</tr>
</tbody>
</table>

of characters and especially of setae $j3$ and $s4$ and of the macroseta StIV and lower number of teeth in both movable and fixed digits of the chelicera.

The male of *A. haleakalus* is unknown and the description of the single male specimen collected will be provided in another article (Kreiter and Abo-Shnaf, in progress).

**Amblyseius herbicolus** (Chant)

*Typhlodromus (Amblyseius) herbicolus* Chant 1959: 84.


*Amblyseius impactus* Chaudhri 1968: 553 (synonymy according to Daneshvar & Denmark 1982; Denmark & Muma 1989).

*Typhlodromus* (*Amblyseius*) *amitae* Bhattacharyya 1968: 677 (synonymy according to Denmark & Muma 1989).

*Amblyseius deleoni* Muma & Denmark 1970: 68 (synonymy according to Daneshvar & Denmark 1982; Denmark & Muma 1989).


Table 3 Character measurements of adult females of *Amblyseius haleakalus* collected in this study and those reported in previous studies (localities followed by the number of specimens measured between brackets).

<table>
<thead>
<tr>
<th>Characters</th>
<th>Mauritius (8, this study)</th>
<th>Hawaii 1 (?)</th>
<th>Hawaii 2 (?) Measurements of types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dsl</td>
<td>371 (343 – 398)</td>
<td>351 – 417</td>
<td>351 – 417</td>
</tr>
<tr>
<td>$s4$ level</td>
<td>244 (220 – 260)</td>
<td>252 – 285</td>
<td>245</td>
</tr>
<tr>
<td>$j1$</td>
<td>37 (30 – 40)</td>
<td>42</td>
<td>31 – 42</td>
</tr>
<tr>
<td>$j3$</td>
<td>41 (38 – 44)</td>
<td>47</td>
<td>47</td>
</tr>
<tr>
<td>$j4$</td>
<td>5 (5 – 6)</td>
<td>7</td>
<td>5 – 7</td>
</tr>
<tr>
<td>$j5$</td>
<td>5 (5 – 6)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>$j6$</td>
<td>8 (5 – 8)</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>$J2$</td>
<td>8 (8 – 9)</td>
<td>9</td>
<td>6 – 8</td>
</tr>
<tr>
<td>$J3$</td>
<td>8 (6 – 9)</td>
<td>7</td>
<td>7 – 11</td>
</tr>
<tr>
<td>$r3$</td>
<td>12 (10 – 15)</td>
<td>14</td>
<td>14 – 20</td>
</tr>
<tr>
<td>$R1$</td>
<td>9 (8 – 10)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>$s4$</td>
<td>101 (98 – 103)</td>
<td>108</td>
<td>108 – 115</td>
</tr>
<tr>
<td>$S2$</td>
<td>14 (10 – 13)</td>
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<td>12 – 14</td>
</tr>
<tr>
<td>$S4$</td>
<td>12 (10 – 13)</td>
<td>14</td>
<td>11 – 14</td>
</tr>
<tr>
<td>$S5$</td>
<td>10 (8 – 12)</td>
<td>14</td>
<td>12 – 14</td>
</tr>
<tr>
<td>$z2$</td>
<td>9 (8 – 10)</td>
<td>13</td>
<td>10 – 13</td>
</tr>
<tr>
<td>$z4$</td>
<td>10 (10 – 11)</td>
<td>13</td>
<td>11 – 13</td>
</tr>
<tr>
<td>$z5$</td>
<td>6 (6 – 7)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>$Z1$</td>
<td>9 (8 – 10)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>$Z4$</td>
<td>128 (120 – 138)</td>
<td>138</td>
<td>138</td>
</tr>
<tr>
<td>$Z5$</td>
<td>306 (300 – 320)</td>
<td>313</td>
<td>257 – 313</td>
</tr>
<tr>
<td>$st1-st1$</td>
<td>68 (65 – 68)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>$st2-st2$</td>
<td>79 (75 – 80)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>$st3-st3$</td>
<td>86 (80 – 90)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>$st1-st3$</td>
<td>71 (70 – 75)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>$st4-st4$</td>
<td>86 (80 – 90)</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Sources of measurements – Hawaii 1: Prasad (1968), original description; Hawaii 2: Denmark & Muma (1989); – : not provided.

This species belongs to the largoensis species group as setae J2 and Z1 are present, setae s4 are minute and the ventrianal shield of the female is vase-shaped. It belongs to the largoensis species subgroup as setae Z4 are long, spermatheca has the calyx elongate and the female ventrianal shield is entire (Chant and McMurtry 2004). Amblyseius herbicolus is widespread in all tropical and subtropical regions of the world. It is the second most abundant phytoseiid mites on Coffea arabica L. in Brazil, associated with Brevipalpus phoenicis (Geijskes), vector of the coffee ring spot virus and it was found to be an efficient predator (Reis et al. 2007). Amblyseius herbicolus is also found associated with the broad mite, P. latus in crops such as chili pepper (Capsicum annuum L.) in Brazil and has also a good potential for controlling the pest. Rodriguez-Cruz et al. (2013) had studied biological, reproductive and life table parameters of A. herbicolus on three different diets: broad mites, castor bean pollen (Ricinus communis L.) and sun hemp pollen (Crotalaria juncea L.). The predator was able to develop and reproduce on all these three diets. However, its intrinsic growth rate was higher on broad mites and castor bean pollen. Feeding on alternative food such as pollen can facilitate the predator’s mass rearing and maintain its population on crops when prey is absent or scarce. Many polyphagous generalist phytoseiid mites are important natural enemies because they can feed on plant provided pollen and various prey species, and thus persist in crops even in the absence of target pests (McMurtry et al. 2013). Hence, populations of these predators can be established in a crop by providing alternative food, thus increasing biological control. Alternative food affects P. latus control on chili pepper plants by predatory mites (Duarte et al. 2015). Amblyseius herbicolus had high oviposition and population growth rates when fed with cattail pollen (Typha latifolia L.), chili pepper pollen and bee-collected pollen, and a low rate on the alternative prey (Tetranychus urticae Koch). Supplementation pepper plants with pollen resulted in better control of broad mite populations (Duarte et al. 2015). Release of A. herbicolus on young plants with weekly addition of honeybee pollen or cattail pollen until plants produce flowers seems a viable strategy to sustain populations of this predator (Duarte et al. 2015). Amblyseius herbicolus was previously recorded in Comoros Archipelago (Kreiter et al. 2018b) and in La Réunion (Quilici et al. 1997, 2000; Kreiter et al. 2020c), but this is the first mention from Mauritius despite the fact that with 115 female specimens collected, this is one of the more common species.

**World distribution:** Argentina, Australia, Azores, Benin, Brazil, Burundi, Canary Islands, China, Colombia, Grande Comore Island, Costa Rica, Dominican Republic, Dr Congo, El Salvador, Ghana, Guadeloupe Island, Guatemala, Hawaii, Honduras, India, Iran, Kenya, Les Saintes Island, La Réunion Island, Madagascar Island, Malawi, Malaysia, Martinique Island, New Caledonia Island, Papua New Guinea, Peru, Philippines, Portugal, Puerto Rico, Rwanda, Senegal, Singapore, South Africa, Spain, Taiwan, Thailand, Turkey, USA, Venezuela, West Indies.

**Specimens examined:** 116 ♀ and 3 im. in total. Curepipe, Anderson street (aasl 560 m, lat. 20°19′11″ S, long. 57°31′52″ E), 1 ♀ on Codiaeum variegatum (L.) Jussieu (Euphorbiaceae) and 8 ♀♀ on Cleome viscosa L. (Cleomaceae), 27/X/2018; Curepipe, La Marie (aasl 600 m, lat. 20°19′02″ S, long. 57°31′36″ E), 4 ♀♀ on Clidemia hirta (L.) D. Don (Melastomataceae), 27/X/2020; Curepipe, Usine à thé (aasl 557 m, lat. 20°18′54″ S, long. 57°31′29″ E), 1 ♀ on Antigonon leptopus Hooker and Arnott (Polygonaceae) and 2 ♀♀ on Hibiscus genevii Bojer ex Hook. (Malvaceae), 27/X/2020; Curepipe, Botanical Garden (aasl 540 m, lat. 20°19′28″ S, long. 57°30′50″ E), 11 ♀♀ on C. hirta, 6 ♀♀ on Syzygium jambos (L.) Alston (Myrtaceae), 2 ♀♀ on Impatiens flaccida Arnott (Balsaminaceae), 1 ♀ on Vernicia montana Loureiro (Euphorbiaceae) and 1 ♀ on Pachira glabra Aublet (Malvaceae), 29/X/2018; Curepipe, Trou aux cerfs (aasl 593 m, lat. 20°19′04″ S, long. 57°30′47″ E), 1 ♀♀ and 2 im. on Pinus massoniana D. Don in Lambert (Pinaceae), 29/X/2018; Mare aux Vacoas (aasl 572 m, lat. 20°21′40″ S, long. 57°29′59″ E), 1 ♀ on Litsea monopetala (Roxburgh) Person (Lauraceae), 30/X/2018; Mare aux Vacoas (aasl 589 m, lat. 20°22′36″ S, long. 57°29′10″ E), 4 ♀♀ on Cytisus purpureus Swartz (Fabaceae), 30/X/2018; Piton Grand Bassin, Carrefour Chamarel (aasl 665 m, lat. 20°24′30″ S, long. 57°28′24″ E), 1 ♀ on Callistemon citrinus.
(William Curtis) Homer Collar Skeels (Myrtaceae), 1 ♀ on *Boehmeria penduliflora* Weddell ex D.G.Long (Urticaceae) and 1 ♀ on *Pinus eliottii* Engelmann (Pinaceae), 30/X/2018; **Bassin Blanc** (aasl 665 m, lat. 20°24′30″ S, long. 57°28′24″ E), 16 ♀ on *C. hirta*, 30/X/2018; **Nouvelle-France** (aasl 534 m, lat. 20°19′21″ S, long. 57°32′17″ E), 6 ♀♀ on *Camelia sinensis* (L.) Kuntze (Theaceae), 31/X/2018; 7 ♀♀ on *C. hirta*, 30/X/2018; **Quartier Militaire** (aasl 510 m, lat. 20°19′21″ S, long. 57°31′45″ E), 2 ♀♀ on *Acalypha hispida* Burman (Euphobiaceae), 4/XI/2018; **Mare aux Vacoas** (aasl 581 m, lat. 20°21′05″ S, long. 57°29′31″ E), 1 ♀ on *Ludwigia octovalvis* (Jacquemin) P.H. Raven (Onagraceae), 30/X/2018.

**Remarks:** this species was reported before by Kreiter et al. (2018b) in the Grande Comore Island of the Comoros Archipelago in the Indian Ocean with two females collected. Curiously, Ferragut and Baumann (2019) had not reported it from Mauritius in their study despite the fact that it seems to be the more common species in Mauritius Island and at least the more numerous species after our study. It is interesting to notice that, despite the large number of female specimens, no male was collected just like in La Réunion Island (Kreiter et al. 2020c).

*Amblyseius largoensis* was also recently reported from Vietnam (Kreiter et al. 2020b) and La Réunion Island (Kreiter et al. 2020c). Morphological and morphometric characters and all measurements fit well previous measurements in Kreiter et al. (2018b, 2020b, c).

**Amblyseius largoensis** (Muma)

*Amblyseius largoensis* Muma 1955: 266.

Typhlodromus (Amblyseius) largoensis, Chant 1959: 96.


Amblyseius magnolia Muma 1961: 289 (synonymy according to Denmark & Evans 2011).

Amblyseius sakalava Blommers 1976: 96 (synonymy according to Ueckermann & Loots 1988).

Amblyseius antalaensis Gupta 1977: 53 (synonymy according to Gupta 1986).

This species belongs also to the *largoensis* species group and the *largoensis* species subgroup (see for the previous species). It is widespread in all tropical and subtropical regions of the world and was the most abundant species collected by Moraes et al. (2000) in French Caribbean Islands and a potential BCA of *Raoiella indica* Hirst in La Réunion Island (Moraes et al. 2012).

Using morphometric analyses of 36 characters, molecular analyses and crossing tests, Navia et al. (2014) studied specimens collected in Brazil, La Réunion Island and Trinidad and Tobago to determine whether *A. largoensis* populations from different geographic origins belong to the same taxonomic entity. Though differences in the lengths of some setae were observed, molecular analyses and crossing experiments indicated that populations from Indian Ocean and America were conspecific. *Amblyseius largoensis* was previously recorded from Mauritius by Ferragut and Baumann (2019) and so this is the second record of that species.

**World distribution:** this species is widely distributed in the tropical and subtropical regions of Africa, America, Asia and the Pacific Islands.
Specimens examined: 7 ♀♀ in total. Pamplemousse, Botanical Garden (aasl 41 m, lat. 20°06′24″ S, long. 57°34′49″ E), 3 ♀♀ on Mangifera indica L. (Anacardiaceae), 3 ♀♀ on Psidia viscosa (Asteraceae) and 1 ♀ on Hyophorbe lagenicaulis (L.H. Bailey) H.E. Moore (Arecaceae), 3/XI/2018.

Remarks: morphological and morphometric characters and all measurements fit well values given by Zannou et al. (2007) for specimens from Africa, Navia et al. (2014) for specimens from Brazil, La Réunion and Trinidad and Tobago, and Ferragut and Baumann (2019) for specimens from Mauritius.

Amblyseius neolargoensis van der Merwe

Amblyseius (Amblyseius) neolargoensis van der Merwe 1965: 59.

Remarks: morphological and morphometric characters and all measurements fit well measurement values given by van der Merwe (1965) for specimens from South Africa and Zannou et al. (2007) for specimens from South Africa and Mozambique.

Amblyseius passiflorae Blommers


This species belongs to the largoensis species group and the arcus species subgroup (see above for A. largoensis). Its biology is totally unknown. It was previously only known from the type series (five females and one male) (Blommers 1974). The original description was rather complete, providing comprehensive information on female and male morphology. Ferragut and Baumann (2019) had added information on dorsal adenotaxy and poroidotaxy. Amblyseius passiflorae was collected by the latter authors and was thus already recorded from Mauritius.

World distribution: Madagascar, Mauritius.

Specimens examined: 63 ♀♀ and 1 ♂ in total. Brittania (aasl 442 m, lat. 20°22′34″ S, long. 57°33′58″ E), 1 ♀ on Camelia sinensis (L.) Kuntze (Theaceae), 31/X/2018; Rivière des Anguilles, Bridge (aasl 158 m, lat. 20°28′49″ S, long. 57°33′37″ E), 6 ♀♀ on Mangifera indica L. (Anacardiaceae) and 4 ♀♀ on Asplenium nitens Swartz (Aspleniaceae), 31/X/2018; Le Val, close to the river (aasl 153 m, lat. 20°22′29″ S, long. 57°35′12″ E), 5 ♀♀ on Euphoria pulcherima Wildenow ex Klotzsch (Euphorbiaceae) and 3 ♀♀ on Callistemon citrinus (William Curtis) Homer Collar Skeels (Myrtaceae) and 3 ♀♀ on Callistemon citrinus (William Curtis) Homer Collar Skeels (Myrtaceae), 1/XI/2018; Quartier militaire (aasl 472 m, lat. 20°15′11″ S, long. 57°34′32″ E), 15 ♀♀ on C. japonica, 1/XI/2018; Pamplemousse, Botanical Garden (aasl 41 m, lat. 20°06′24″ S, long. 57°34′49″ E), 1 ♀ on Artocarpus heterophyllus Lamarck (Moraceae), 1 ♀ on Hyophorbe lagenicaulis (L.H. Bailey) H.E. Moore (Arecaceae), 5 ♀♀ and 1 ♂ on Acalypha hispida Burman (Euphorbiaceae) and 1 ♀ on Saraca indica L. (Fabaceae), 5/XI/2018.
3/XI/2018; Curepipe, Bld Pasteur (aasl 510 m, lat. 20°19′21″ S, long. 57°31′45″ E), 1 ♀ on Sphaeropteris cooperi (Hooker ex F. Mueller) R.M. Tryon (Cyatheaceae) and 1 ♀ on Ixora coccinea L. (Rubiaceae), 4/XI/2018.

Remarks: morphological and morphometric characters and all measurements of our specimens fit well values in Blommers (1974) and Ferragut and Baumann (2019). This species is the third most collected species in our study and probably one of the three more common species with A. herbicolus and E. ovaloides.

Amblyseius tamatavensis Blommers


This species belongs to the obtusus species group as setae J2 and ZI are present, setae z4 are minute and the female ventrianal shield is not vase-shaped or divided. It belongs to the aerialis species subgroup (46 species) as the calyx of the spermatheca is tubular (Chant and McMurtry 2004).

It seems to fit the functional type III-b (generalist predators living on glabrous leaves) group defined by McMurtry et al. (2013). Cavalcante et al. (2017) reported this species as a promising natural enemy of Bemisia tabaci (Gennadius). Experimental releases of this predator on caged plants in a screenhouse caused the reduction of the density of B. tabaci on pepper plants by up to 60-80% (Massaro and Moraes 2019). It can be easily produced in large numbers (Massaro et al. 2018) when fed with astigmatine mites, which could allow the mass production for augmentative biological control. This species is reported in tropical areas from over 20 countries around the world (Africa, Asia, America and Oceania). It was recently recorded from La Réunion since previous studies (Quilici et al. 2000).

World distribution: this species was described from Madagascar, but is actually widely distributed in the tropical and subtropical regions of Africa, America, Asia and the Pacific Islands.

Specimens examined: 7 ♀♀ in total. Nouvelle-France (aasl 442 m, lat. 20°22′34″ S, long. 57°35′58″ E), 4 ♀♀ on Camellia sinensis (L.) Kuntze (Theaceae), 31/X/2018; Riambel, Sea Front (aasl 11m, lat. 20°31′15″ S, long. 57°30′45″ E), 2 ♀♀ on Musa paradisiaca L. (Musaceae), 31/X/2018; Curepipe, Anderson street (aasl 560 m, lat. 20°19′11″ S, long. 57°31′52″ E), 1 ♀ on Sonchus oleraceus L. (Asteraceae), 4/XI/2018.

Remarks: this species was described from Madagascar (Blommers 1974), then mentioned in the Indian Ocean from La Réunion Island (Quilici et al. 2000) and recently from Mauritius (Ferragut and Baumann 2019). Morphological and morphometric characters and all measurements of our specimens fit well measurements in Blommers (1974), Ferragut and Baumann (2019) and Kreiter et al. (2020c).

Tribe Euseiini Chant & McMurtry


Subtribe Typhlodromalina Chant & McMurtry


Genus Typhlodromalus Muma

Typhlodromalus spinosus (Meyer & Rodrigues)

Kampimodromus spinosus, Quilici et al. 2000: 100. 

This species belongs to the athiasae species group as setae J1 and S5 are absent. This species group contains six species (Chant and McMurtry 2005b, Moraes et al. 2006).

Typhlodromalus spinosus was collected from Eastern, Western, but mainly Southern Africa and La Réunion (Demite et al. 2020). The rapid multiplication of this species on the western flower thrips (WFT), Frankliniella occidentalis Pergande, was confirmed and clear evidence that T. spinosus predates on WFT under laboratory and field conditions, but not on T. urticae (Mwangi et al. 2015). This species seems abundant in low vegetation as it was found in high populations in a study of companion plants in citrus orchard (Le Belloc et al. unpub. data).

This species has never been record from Guadeloupe or Martinique in similar studies, but it is interesting to notice that in those islands, another Typhlodromalus was collected, T. peregrinus (Muma) (Mailoux et al. 2010; Kreiter et al. 2013, 2018c). Typhlodromalus spinosus was recorded in low numbers from La Réunion by Quilici et al. (2000) and in high numbers by Kreiter et al. (2020c). This is the first mention of this species from Mauritius Island.

World distribution: Benin, Burundi Dr Congo, Kenya, Malawi, Mozambique, La Réunion Island.

Specimens examined: 3 ♀♀ in total. Côte d’Or, Village (aasl 443 m, lat. 20°15′26″ S, long. 57°32′21″ E), 1 ♀ on Clibadium surinamense L. (Asteraceae), 28/X/2018; Le Val, close to the river (aasl 157 m, lat. 20°22′47″ S, long. 55°36′18″ E), 1 ♀ on Callistemon citrinus (William Curtis) Homer Collar Skeels (Myrtaceae), 1/XI/2018; Curepipe, Bld Pasteur (aasl 510 m, lat. 20°19′21″ S, long. 57°31′45″ E), 1 ♀ on C. citrinus, 4/XI/2018.

Remarks: this species was described from Mozambique (Meyer and Rodrigues 1966), then mentioned in the Indian Ocean from La Réunion Island (Quilici et al. 2000; Kreiter et al. 2020c). Morphological and morphometric characters and all measurements of our specimens fit well measurements in Kreiter et al. (2020c).

Subtribe Euseiina Chant & McMurtry


Genus Euseius Wainstein


Euseius gallicus Kreiter & Tixier


This species was described from Southern France (Tixier et al. 2010). It had also been recorded from Tunisia, Belgium, Germany, the Netherlands, and Turkey (Kreiter et al. 2010; Döker et al. 2014) and recently from Slovenia (Kreiter et al. 2020a).

Unlike most phytoseiid species, which are classified as generalist predators of small insects and mites (type III), Euseius species are pollen-feeding generalist predators (type IV) (McMurtry and Croft 1997; McMurtry et al. 2013). Type III phytoseiids also feed on pollen, but prefer or show better performance on insect or mite prey. Type IV predatory mites have their highest reproductive capacity when feeding on pollen, and populations in the field often increase significantly when the crop or the surrounding vegetation is flowering (McMurtry et al. 2013).
Recently, *E. gallicus* had shown potential as a biocontrol agent for thrips and whiteflies in roses when *Typha* sp. (cattail) pollen was supplied as an additional food source (Biobest 2013; Wackers 2013). Provision of pollen as a supplementary food source can improve biological control of whiteflies and thrips by type III phytoseiids (van Rijn and Sabelis 1993; Nomikou *et al.* 2010), and control works excellently in crops where pollen is naturally available (Calvo *et al.* 2012). The populations of *Euseius* species can grow faster than the populations of type III phytoseiids when pollen is provided as a food source.

This is the first report of this species from Mauritius, but also the first mention from the Indian Ocean, very far from the European area where the species was originally described and recorded.

**World distribution**: Belgium, France, Germany, Italy, The Netherlands, Slovenia, Tunisia, Turkey.

**Specimens examined**: a single ♀ collected in Mauritius during the survey. *Mare aux Vacoas* (aasl 572 m, lat. 20°21′40″ S, long. 57°29′50″ E), 1 ♀ on *Tibouchina heteromalla* Cogniaux (Melastomataceae), 30/X/2018.

**Remarks**: morphological and morphometric characters and all measurements of our specimens fit well measurements in Tixier *et al.* (2010) and Döker *et al.* (2014).

**Euseius hima** (Pritchard & Baker)

*Amblyseius (Amblyseius)* *hima* Pritchard & Baker 1962: 257; Blommers 1976: 89. *Euseius hima*, Moraes *et al.* 1986: 46, 2004: 71; Quilici *et al.* 2000: 99; Chant & McMurtry 2005b: 215, 2007: 121. This species was recorded from several countries of Sub-Saharan Africa, but also from Madagascar, India (Demite *et al.* 2020) and La Réunion (Quilici *et al.* 2000; Kreiter *et al.* 2020c). All details of collections were provided in those papers. Its biology remains totally unknown. This is the first report of *E. hima* from Mauritius.

**World distribution**: Cameroon, Equatorial Guinea, La Réunion Island, Madagascar Island.

**Specimens examined**: 4 ♀♀ and 1 ♂ in total. *Morne-Brabant* (aasl 249 m, lat. 20°22′05″ S, long. 57°29′31″ E), 4 ♀♀ and 1 ♂ on *Lantana camara* L. (Verbenaceae), 5/XI/2018.

**Remarks**: measurements of specimens collected and identified were published only in Kreiter *et al.* (2020c). Morphological and morphometric characters and all measurements of our specimens fit well measurements in Kreiter *et al.* (2020c).

**Euseius ovaloides** (Blommers)

*Amblyseius (Amblyseius)* *ovaloides* Blommers 1974: 147. *Euseius ovaloides* Moraes *et al.* 1986: 51, 2004: 78; Chant & McMurtry 2005a: 215, 2007: 121. This species was described by Blommers (1974) from specimens collected on *Citrus hystrix* and *Persea americana* in Madagascar. Like all *Euseius* species, it belongs to the type IV (pollinophagous generalist predators) of McMurtry and Croft (1997) and McMurtry *et al.* (2013). The species had been occasionally recorded from Madagascar (Blommers 1974), Papua-New Guinea (Schicha and Gutierrez 1985), Seychelles (Schicha 1987), La Réunion Island, (Quilici *et al.* 1997, 2000), Guadeloupe, Martinique and Marie-Galante (Moraes *et al.* 2000; Kreiter *et al.* 2006) on various plants, though its biology remains unknown. It is suspected to be a poor predator of tetranychid mites (Gutierrez and Etienne 1986), but can be considered as a potentially good predator of thrips and of whiteflies. This is one of the more common species on La Réunion Island. This is the first mention of *E. ovaloides* from Mauritius.

**World distribution**: Guadeloupe, Madagascar Island, Marie-Galante, Martinique, Papua New Guinea, La Réunion Island, Seychelles Archipelago.

**Specimens examined**: 83 ♀♀, 7 ♂♂ and 1 im. in total. *Curepipe*, Anderson street (aasl 560 m, lat. 20°19′11″ S, long. 57°31′52″ E), 21 ♀♀ on *Codiaeum variegatum* (L.)
Jussieu (Euphorbiaceae), 27/X/2018; Curepipe, Botanical Garden (aasl 540 m, lat. 20°19′28″ S, long. 57°30′50″ E), 1 ♀ + 1 ♂ on Cinnamomum camphora (L.) Presl (Lauraceae), and on Vernicia montana Loureiro (Euphorbiaceae), 29/X/2018; Curepipe, Trou aux cerfs (aasl 593 m, lat. 20°19′04″ S, long. 57°30′47″ E), 1 ♀ on Solanum mauritianum Scopoli (Solanaceae), 29/X/2018; Baie du Cap (aasl 55 m, lat. 20°29′11″ S, long. 57°22′43″ E), 8 ♀♀ + 1 ♂ on Terminalia cathappa L. (Combretaceae), 31/X/2018; Mahébourg, Pointe des Régates (aasl 2 m, lat. 20°24′15″ S, long. 57°42′35″ E), 1 ♀ on T. cathappa, 31/X/2018; Riambel, Sea Front (aasl 11 m, lat. 20°31′15″ S, long. 57°30′45″ E), 5 ♀♀ on Carica papaya L. (Caricaceae), 2 ♀♀ on Musa paradisiaca L. (Musaceae) and 2 ♀♂ on Pithecellobium dulce (Asteraceae), 4/XI/2018; Mare d’Albert (aasl 160 m, lat. 20°25′13″ S, long. 57°38′16″ E), 7 ♀♀ on C. papaya and 3 ♀♂ on Litchi sinensis Sonnerat (Sapindaceae), 1/XI/2018; Anse aux petits sables (aasl 2 m, lat. 20°24′15″ S, long. 57°42′35″ E), 2 ♀♀ on Ricinus communis L. (Euphorbiaceae), 1/XI/2018; Belle Rive (aasl 158 m, lat. 20°19′24″ S, long. 57°42′08″ E), 4 ♀♀ on Acalypha hispida Burman (Euphorbiaceae), 1/XI/2018; Pamplemousses, Botanical Garden (aasl 41 m, lat. 20°06′24″ S, long. 57°34′49″ E), 1 ♀ + 1 ♂ on Terminalia arjuna (Roxburgh) Wight et Arnott (Combretaceae), 1 ♂ on Acacia glauca (L.) Moench (Fabaceae) and 2 ♀♂ on Saraca indica (Roxburgh) Wilddenow (Fabaceae), 3/XI/2018; Curepipe, Bid Pasteur (aasl 510 m, lat. 20°19′21″ S, long. 57°31′45″ E), 4 ♀♀ on Sphaeroperis cooperi (Hooker ex F. Mueller) R.M. Tryon (Cytaceae), 1 ♀ on Psidium guajava L. (Myrtaceae), 7 ♀♀ + 1 ♂ on Hibiscus rosa-sinensis L. (Malvaceae), 3 ♀♀ on Ageratum conyzoides L. (Asteraceae), 1 ♀ on Duranta erecta L. (Verbenaceae) and 5 ♀♀ on Terminalia mantaly Perrier (Combretaceae), 4/XI/2018; Réduit, Sugar research institute (aasl 273 m, lat. 20°14′48″ S, long. 57°21′25″ E), 2 ♀♀ + 2 ♂♂ + 1 im. on Acalypha wilkesiana Müller Argoviensis (Euphorbiaceae), 6/XI/2018.

**Remarks:** this species was recently reported from Vietnam (Kreiter et al. 2020b). Morphological and morphometric characters and all measurements of our specimens fit well measurements in Kreiter et al. (2020b). *Euseius ovaloides* is the second most collected species in our study after *A. herbicola* and probably one of the three more common species with *A. herbicola* and *A. passiflorae*.

**Subfamily Phytoseiinae Berlese**

Phytoseiini Berlese 1913: 3; Phytoseiinae Vitzthum 1941: 767.

**Genus Phytoseius Ribaga**

*Phytoseius* Ribaga 1904: 177.

**Phytoseius coheni Swirski & Shechter**

*Phytoseius* (Dubininellus) macropilis coheni Swirski & Shechter 1961: 104.  
*Phytoseius* hawaiiensis Prasad 1968: 1460 (synonymy according to Denmark & Evans 2011).  
*Phytoseius* huangsi Ehara 1970: 62 (synonymy according to Ehara 2002).  
*Phytoseius* jianfengensis Chen, Chu & Zhou 1980: 15 (synonymy according to Wu 1997).

This species belongs to the *horridus* species group as setae *J2* and *R1* are absent (Chant and McMurtry 1994). It was described from Hong-Kong by Swirski and Shechter (1961) collected on a wide range of plants and very common on citrus. Although species of the genus *Phytoseius* are considered to belong to the type III (polyphagous generalist predators) of McMurtry and Croft (1997) and McMurtry *et al.* (2013), its specific biology is totally unknown.
World distribution: Australia, China, Hawaii, Hong-Kong, India, Indonesia, Japan, Malaysia, Mauritius, Papua New Guinea, Philippines, Singapore, Taiwan, Thailand, USA.

Specimens examined: 4 ♀♀ and 1 ♂ in total. Curepipe, Bld Pasteur (aasl 510 m, lat. 20°19’21″ S, long. 57°31’45″ E), 4 ♀♀ and 1 ♂ on Sphaeropteris cooperi (Hooker ex F. Mueller) R.M. Tryon (Cyatheaaceae), 4/XI/2018.

Remarks: This species was first reported from Mauritius by Schicha (1984) under the junior synonym name P. hawaiensis. Ferragut and Baumann (2019) recovered the species. Kreiter et al. (2020b) had recently reported this species from Vietnam. Morphological and morphometric characters and all measurements of our specimens fit well measurements in Kreiter et al. (2020b).

Phytoseius crinitus Swirski & Shechter


This species belongs to the horridus species group (Chant and McMurtry 1994). It was recorded in several countries of Asia, in Burundi, Madagascar (Demite et al. 2020) and La Réunion (Quilici et al. 2000). The biology of P. crinitus remains totally unknown.

World distribution: Burundi, China, Hong Kong, India, Indonesia, Japan, Madagascar Island, Philippines, La Réunion Island, Singapore, Taiwan.

Specimens examined: 21 ♀♀ in total. Curepipe, Anderson street (aasl 560 m, lat. 20°19’11″ S, long. 57°31’52″ E), 13 ♀♀ on Litsea glutinosa (Loureiro) Robinson (Lauraceae), 27/X/2018; Curepipe, Botanical Garden (aasl 540 m, lat. 20°19’28″ S, long. 57°30’50″ E), 1 ♀ on Vernicia montana Loureiro (Euphorbiaceae), 29/X/2018; Nouvelle-France (aasl 442 m, lat. 20°22’34″ S, long. 57°35’58″ E), 1 ♀ on Camelia sinensis (L.) Kuntze (Theaceae), 31/X/2018; Belle Rive (aasl 158 m, lat. 20°19’24″ S, long. 57°42’08″ E), 1 ♀ on Acalypha hispida Burman (Euphorbiaceae), 1/XI/2018; Baie du Cap, sea front (aasl 158 m, lat. 20°30’14″ S, long. 57°23’02″ E), 3 ♀♀ on Casuarina equisetifolia L. (Casuarinaceae), 5/XI/2018; Morne-Brabant (aasl 249 m, lat. 20°22’05″ S, long. 57°29’31″ E), 2 ♀♀ on Chromolaena odorata (L.) R.M. King and H. Robinson (Asteraceae), 5/XI/2018.

Remarks: this species is the more numerous species of Phytoseius collected in the present study. This was also the case with Ferragut and Baumann (2019) along with Phytoseius haroldi. It was reported for the first time by these authors from Mauritius, but was already reported by Quilici et al. (2000) from Mascareignes Archipelago in La Réunion Island where Kreiter et al. (2020c) had recovered high numbers of the species. Morphological and morphometric characters and all measurements of our specimens fit well measurements in Kreiter et al. (2020c).

Phytoseius duplus Ueckermann & Loots


This species belongs to the horridus species group. Its biology is unknown, this is the single report of that species since the original description and is the first report of that species from Mauritius Island.

World distribution: South Africa.

Specimens examined: 4 ♀♀ in total. Plaisance (aasl 55 m, lat. 20°25’50″ S, long. 57°40’44″ E), 4 ♀♀ on Litsea monopetala (Roxburgh) Person (Lauraceae), 31/X/2018.

Remarks: this is the first mention of this species from Indian Ocean. The measurements of specimens collected in Mauritius Island (Table 4) are very close to those given by Ueckermann and Loots (1985) for two specimens in the original description, except for the shorter dimensions of the ventral shields (Table 4).
Phytoseius haroldi Ueckermann & Kreiter


This species belongs to the horridus species group as setae J2 and R1 are absent (Chant and McMurtry 1994). It was described by Ueckermann and Kreiter in Kreiter et al. (2002). It was abundant on lower vegetation in a study of companion plants in citrus orchards in La Réunion Island (Kreiter et al. 2020c). It seems that this species prefers low plants, but despite this observation has to be confirmed, its biology remains totally unknown. This is the second report in Mauritius after recent report by Ferragut and Baumann (2019).

**World distribution**: La Réunion Island, Mauritius Island.

**Specimens examined**: 2 ♀♀ and 1 ♂ in total. Plaisance (aasl 55 m, lat. 20°25′59″ S, long. 57°40′44″ E), 2 ♀♀ on Litsea monopetala (Roxburgh) Person (Lauraceae), 31/X/2018; Morne-Brabant (aasl 249 m, lat. 20°22′05″ S, long. 57°29′31″ E), 1 ♂ on Lantana camara L. (Verbenaceae), 5/XI/2018.

**Remarks**: this species was described by Ueckermann and Kreiter in Kreiter et al. (2002) from La Réunion Island. Morphological and morphometric characters and all measurements of our specimens fit well measurements of the original description in Kreiter et al. (2002).

### Table 4 Character measurements of adult females of Phytoseius duplus collected in this study and those reported in previous studies (localities followed by the number of specimens measured between brackets).

<table>
<thead>
<tr>
<th>Characters</th>
<th>Mauritius (4, this study)</th>
<th>South Africa (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dsl</td>
<td>288 (280 – 290)</td>
<td>280 – 315</td>
</tr>
<tr>
<td>Dsw</td>
<td>136 (125 – 142)</td>
<td>–</td>
</tr>
<tr>
<td>j1</td>
<td>25 (23 – 25)</td>
<td>22 – 25</td>
</tr>
<tr>
<td>j3</td>
<td>18 (15 – 20)</td>
<td>22 – 25</td>
</tr>
<tr>
<td>j4</td>
<td>5 (4 – 5)</td>
<td>9</td>
</tr>
<tr>
<td>j5</td>
<td>5 (4 – 5)</td>
<td>9</td>
</tr>
<tr>
<td>j6</td>
<td>5 (5 – 6)</td>
<td>9</td>
</tr>
<tr>
<td>J5</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>r3</td>
<td>39 (38 – 40)</td>
<td>35 – 41</td>
</tr>
<tr>
<td>s4</td>
<td>63 (60 – 65)</td>
<td>61 – 69</td>
</tr>
<tr>
<td>s6</td>
<td>77 (75 – 83)</td>
<td>76 – 88</td>
</tr>
<tr>
<td>z2</td>
<td>21 (20 – 25)</td>
<td>22 – 25</td>
</tr>
<tr>
<td>z3</td>
<td>32 (30 – 33)</td>
<td>28 – 38</td>
</tr>
<tr>
<td>z4</td>
<td>15 (13 – 15)</td>
<td>16 – 22</td>
</tr>
<tr>
<td>z5</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Z4</td>
<td>77 (75 – 83)</td>
<td>79 – 91</td>
</tr>
<tr>
<td>Z5</td>
<td>67 (63 – 70)</td>
<td>63</td>
</tr>
<tr>
<td>st1-st1</td>
<td>47 (45 – 48)</td>
<td>–</td>
</tr>
<tr>
<td>st2-st2</td>
<td>56 (55 – 60)</td>
<td>69 – 76</td>
</tr>
<tr>
<td>st3-st3</td>
<td>71 (60 – 75)</td>
<td>–</td>
</tr>
<tr>
<td>st4-st4</td>
<td>77 (58 – 88)</td>
<td>–</td>
</tr>
</tbody>
</table>

**Characters** Mauritius (4, this study) South Africa (2)

dssl 102 (100 – 108) –
st5-st5 66 (63 – 68) 76 – 82
gensw post. cor. 79 (73 – 85) –
Lisl 18 (15 – 20) –
Lisw 8 –
Vsl 84 (80 – 90) 85 – 88
Vsw ZV2 33 (30 – 35) 44 – 57
Vsw anus 51 (40 – 55) –
JV5 34 (33 – 35) 32 – 38
Sc 11 (8 – 15) –
Scw 10 (8 – 13) –
SgeIV – –
StIV – –
SglIIV – –
StIV – –
SttIV 19 (18 – 20) 19 – 22
Fdl 17 (15 – 18) –
Md 17 (15 – 18) –
Fdl 17 (15 – 18) –
Md 17 (15 – 18) –

Sources of measurements – South Africa: Ueckermann & Loots (1985); – : not provided.

concerning specimens from La Réunion Island, Ferragut and Baumann (2019) for specimens from Mauritius, and Kreiter et al. (2020c) for additional specimens from La Réunion Island.

**Subfamily Typhlodrominae** Wainstein


**Genus Typhlodromus** *(Anthoseius)* Scheuten


*Typhlodromus (Anthoseius) lobatus* Zannou, Moraes & Oliveira in Ueckermann et al. 2008: 59.

This species belongs to the large *rhenanus* species group (Chant and McMurtry 1994). Its biology is totally unknown and this is the first report of *T. (A.)* lobatus from Mauritius.

**World distribution:** Ghana.

**Specimens examined:** 2 ♀♀ and 1 ♂ in total. Chamouny (asl 192 m, lat. 20°28′42″ S, long. 57°29′11″ E), 1 ♀ on Cupressus sempervirens L. (Cupressaceae), 31/X/2018; Morne-Brabant (asl 249 m, lat. 20°22′05″ S, long. 57°29′31″ E), 1 ♀ and 1 ♂ on Chromolaena odorata (L.) R.M. King and H. Robinson (Asteraceae), 5/XI/2018.

**Remarks:** morphological and morphometric characters and all measurements of our specimens fit well measurements of the original description by Zannou, Moraes and Oliveira in Ueckermann et al. (2008) concerning specimens from Ghana, in Western Africa.

*Typhlodromus (Anthoseius) muliebris* van der Merwe


Amblydromella muliebris, Moraes et al. 1986: 168.

Amblydromella (Amblydromella) muliebris, Denmark & Welbourn 2002: 308.

This species belongs to the large *rhenanus* species group (Chant and McMurtry 1994). It was described by van der Merwe (1968) from South Africa and then reported by El-Banhawy and Knapp (2011) from Kenya. The biology of this species is totally unknown. This is the first report of this species from Mauritius and from a country outside the Africa continent.

**World distribution:** Kenya, South Africa.

**Specimens examined:** 3 ♀♀ in total. Chamouny (asl 192 m, lat. 20°28′42″ S, long. 57°29′11″ E), 3 ♀♀ on Solanum torvum Swartz (Solanaceae), 31/X/2018.

**Remarks:** morphological and morphometric characters and all measurements of our specimens fit well measurements of the original description by van der Merwe (1968) and new descriptions by Ueckermann et al. (2008) and El-Banhawy and Knapp (2011) concerning specimens from South Africa and Kenya, respectively.

*Typhlodromus (Anthoseius) recurvitremus* Ferragut


As underlined by Ferragut and Baumann (2019), this species can hardly be accommodated in any of the species groups proposed by Chant and McMurtry (1994) for the subgenus *Typhlodromus* *(Anthoseius).* It seems most closely related to *Typhlodromus (Anthoseius) elaeis* Zannou, Moraes and Oliveira described from Cameroon (Ueckermann et al. 2008) which can be probably raised as a new species group for the subgenus *Typhlodromus* *(Anthoseius)*...
including the two species (to be called elaeis species group). The biology of this species is totally unknown. This is the second report of *T. (A.) recurvitremus* from Mauritius.

**World distribution:** Mauritius.

**Specimens examined:** 4 ♀♀ and 2 ♂♂ in total. Chamouny (aasl 192 m, lat. 20°28′42″ S, long. 57°29′11″ E), 4 ♀♀ and 2 ♂♂ on Agarista salicifolia (Commerson ex Lam) G. Don (Ericaceae), 31/X/2018.

**Remarks:** morphological and morphometric characters and all measurements of our female and male specimens fit well measurements of the original description of Ferragut and Baumann (2019).

**Conclusion**

The results of an additional survey made in 2018 in Mauritius Island is presented in this paper. A total of 12 new records: nine Amblyseiinae, one Phytoseiinae and two Typhlodrominae, have been obtained, namely *Neoseiulus houstoni*, *Paraphytoseius horrifer*, *Amblyseius haleakalus*, *A. herbicolus*, *A. neolargoensis*, *Typhlodromalus spinosus*, *Euseius gallicus*, *E. hima*, *E.ovaloides*, *Phytoseius duplus*, *Typhlodromus* (*Anthoseius*) *lobatus* and *T. (A.) muliebris*.

The fauna of Mauritius after our study is composed of 27 species: 20 Amblyseiinae, four Phytoseiinae and three Typhlodrominae.

Among the 12 newly recorded species, at least 3 species (*A. herbicolus*, *E. gallicus* and *E. ovaloides*) are known as BCAs. In addition to the intrinsic value of phytoseiid mite biodiversity in tropical environments, demonstration of the natural occurrence of efficient BCAs in a developing country such as Mauritius is of great agricultural, commercial and strategic interests for the country.

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**References**


