ENTOMON 39(4): 191-196 (2014)
Article No. ent. 39403

A new species of predatory mite (Acari: Phytoseiidae) from Kerala, India

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ABSTRACT: Mites belonging to the family Phytoseiidae are renowned biocontrol agents of the plant feeding mites and other phytophagous insects. A survey conducted in different districts of North Kerala revealed a new species of predatory mite under the family Phytoseiidae from Thrissur district. The new species viz., *Amblyseius perseani* sp. nov. is described with appropriate illustrations.

KEYWORDS: *Amblyseius,* Mesostigmata, Kerala, India, new species.

INTRODUCTION

Phytoseiid mites (Acari: Mesostigmata) constitute a large family of predatory mites. They are fast movers that have extensively exploited the foliage of higher plants (Chant and McMurty, 2007). They are seen mostly feeding on spider mites but can also survive on small insects, nematodes, fungi, honeydew and pollen (McMurty and Croft, 1997; Van Rijin *et al*., 2002; Nomikou *et al*., 2003).The importance of the mite family Phytoseiidae in biological and integrated control of injurious plant mite has stimulated taxonomic and ecological work on the group and has led to the discoverey and descriptions of more than 2280 species from the world (Chant and McMurty, 2007; Tixier *et al*., 2012).

Genus *Amblyseius* was erected by Berlese in 1914 and *Zercon obtuses* Koch (1839) was designated as its type species. The status of subgenus to genus *Amblyseius* was given by Chant (1959). Pritchard and Baker (1962) also recognized it as a genus. They divided it into groups and described 20 species in it. Denmark and Muma (1989) revised the genus and described 136 species.

Based on several different characters, genus *Amblyseius* consists of five different groups and

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they are the *americanus, largoensis, obtusus, pusillus* and *sundi* . The *americanus* group with z4 longer; the *largoensis* group with the female ventrianal shield vase shaped or divided into separate ventral and anal shield; the *obstusus* group with setae z4 shorter ;the *pusillus* group with seta J2 absent ; and the *sundi* group with setae Z1 absent (Chant and Mc Murty, 2004).

The genus *Amblyseius* is further diagnosed in having a lightly sclerotized dorsal shield, female ventrianal shield with variety of shapes, chelicerae with many teeth, leg I, II, III with macrosetae, spermatheca highly variable in form, seta s4, Z4 and Z5 usually greatly elongated with a few exceptions and caudoventral seta ZV3 unstable and absent on a number of species (Chant and McMurty, 2007).

Amblyseius is the largest group of species in the subfamily Amblyseiinae with 367 nominal species and out of them 25 are known from India (Chant and McMurty, 2007).The research work of Chant and Baker (1965), Chant and Hansell (1971), De Leon (1966), Ehara (1959,1966), Khan *et al*., (2000), Muma and Denmark (1970), Schuster and Pritchard (1963), Tuovinen (1993), Wainstein and Arutunjan (1970), on the genus *Amblyseius* is worth mentioning. Despite of this, there is only a meagre contribution to the acarine fauna from the region of Kerala and the new species described here is a result of the rapid surveys taken to explore the diversity of predatory mites from various districts of Kerala.

The specimens under study were collected from infested parts of economically important plants by beating or shaking methods. Specimens were cleared in lactic acid and permanent slides were prepared using Hoyer Cs medium (Walter and Krantz, 2009). Detailed structural studies and illustrations were made using Wild Leitz GMBH microscope. All measurements are given in microns. The classification system used is that of Chant and McMurty (2007). The setal nomenclature is of Rowell *et al*. (1978).

All the type specimens are kept in the Department of Zoology, Malabar Christian College but eventually will be transferred to the National Zoological Collection of the Zoological Survey of India, Calicut, Kerala.

***Amblyseius perseani* sp.nov. (Fig .1)**

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Material examined

Holotype: Female marked on the slide, "INDIA: Kerala: Mannuthy, 10.52891Ú N 76.262412Ú E, Thrissur district, 24.iv.2013, ex. *Persea americana* Mill, coll. Sajna (No.C.25/9)".

Paratype: Three paratype slides, collection details same as holotype (No.C 25/6, 25/7, 25/8).

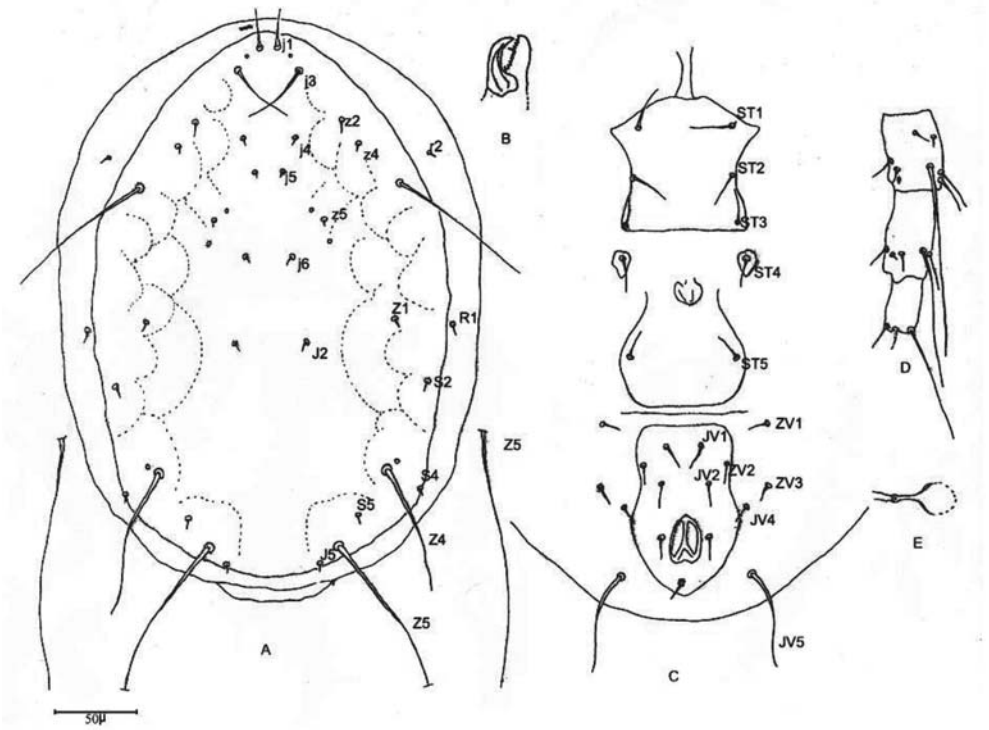

Fig. 1. *Amblyseius perseani* sp. nov. (female)
A-Dorsal view; B-Chelicera; C-Ventral view; D-Let IV; E-Spermatheca

Female

Dorsum. Dorsal shield gently reticulate specially at the posterior region and indistinct at the anterior region, with 4 pairs of lyrifissures, 17 pairs of setae present, all being smooth. Shield **363** 359 (355–363) long and **257** 253 (249–257) wide. Setae *j1* **32** 29 (26–32), *j3* **45** 40 (36–45), *j4* **5** 4 (3–5), *j5* **3** 3 (2–3), *j6* **5** 4 (3–5), *J2* **6** 5 (4–6), *J5* **5** 4 (3–5), *z2* **8** 7 (6–8), *z4* **5** 4 (3–5), *z5* **4** 4 (3–4), *Z1* **6** 5 (4–6), *Z4* **84** 79 (75–84), *Z5* **157** 154(152–157), *s4* **95** 94 (92–95), *S2* **6** 5 (4–6), *S4* **5** 4 (3–5), *S5* **6** 5 (4–6), *r3* **6** 5 (4–6), *R1* **8** 7 (6–8). Distances between *j1* **10** 9 (8–10), *j3* **41** 39 (37–41), *S5* **6** 5 (4–6) and *S4* **5** 4 (3–5).

Venter. Ventrally sternal shield **89** 86 (82–89) long, **88** 84 (82–88) wide, smooth, slightly concave anteriorly. Setae *ST1* **28** 25 (24–28), *ST2* **27** 23 (21–27), *ST3* **22** 19 (17–22), *ST4* **21** 17 (14–21), *ST5* **17** 15 (13–17), *ST4* on metasternal plate measuring **18** 15 (13–18). Distance between *ST1–ST2* **59** 56 (54–59), *ST2–ST2* **61** 58 (57–61), *ST3–ST3* **71** 69 (67–71), *ST5–ST5* **68** 66 (64–68). Genital shield smooth measuring **65** 63(60–65) wide and with *ST5*. Genital and ventrianal shield separated by a membranous fold in between them. Ventrianal shield **104** 101 (100–104)

long and **55** 51 (49–55) wide with three pairs of preanal setae measuring *JV1* **17** 16 (13–17), *ZV2* **12** 10 (9–12), *JV2* **17** 15 (13–17) long. Setae *ZV1* **12** 10 (9–12), *ZV3* **12** 10 (9–12), *JV4* **13** 11 (10–13), *JV5* **62** 59 (57–62) long, anal setae *a1* **14** 11 (10–14), *a2* **14** 12 (10–14), *a3* **12** 10 (9–12).

Peritreme. Extends anteriorly upto the base of *j1*.

Spermatheca. Spermatheca with tubular cervix and short atrium, major duct quite wide, minor duct invisible.

Chelicera. Fixed digit on chelicera **27** 26 (24–27) long, smooth, movable digit **31** 29 (25–31) long with six teeth anterior to *pilus dentilus* and four teeth posterior to that.

Legs. Macroseta present on leg IV: genu IV **113** 111 (109–113), tibia **81** 78 (75–81), basitarsus **69** 67 (65–69).

Leg chaetotactic formula: Genu II 2 2/0 2/0 1 ; Tibia II 1 2/1 1/1 1

Genu III 1 1/1 2/1 2 ; Tibia III 1 2/1 2/0 1

Etymology. The nomenclature of this new species is based on the name of the host plant *Persea americana* Mill. from which the specimen was collected.

Male: Unknown.

Habitat: *Persea americana* Mill, family Lauraceae.

Remarks: This species resembles *Amblyseius largoensis* (Muma, 1955) in having almost similar lengths of dorsal setae but it can be separated by following characters:

1. Fixed digit of chelicerae with six teeth anterior to *pilus dentilus* against four teeth in *largoensis.*

2. Difference in chaetotactic formula with regard to genu III, tibia III and Tibia II.

3. Cervix of spermatheca also differs in length being shorter in this species as compared to that of *largoensis.*

4. Length of macrosetae also differs in the two species with regard to the length of macrosetae on tibia and basitarsus.

This new species is also seen related to *Amblyseius phillipsi* (McMurty and Schicha, 1987) but differs distinctly in following characters.

1. Shape of sternal shield is lacking notch on the posterior margin as is present in case of *phillipsi.*

2. Setae Z5 smaller in this new species as compared to that in *phillipsi*.

3. Macrosetae on leg IV being smaller in this new species as it is longer in the case of *phillipsi.*

ACKNOWLEDGEMENTS

The authors are grateful to the Principal and Management, Malabar Christian College, Calicut, for the facilities provided. Thanks are also due to the invaluable support in confirming the species identification extended by Dr. S.K. Gupta, Emeritus Scientist (MoEF), Colleges under Calcutta University, West Bengal. The first author is thankful to UGC for the financial assistance provided in the form of Maulana Azad National Fellowship.

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(Received 19 May 2015; accepted 01 January 2015)