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A MONOGRAPH ON PLANT INHABITING PREDATORY MITES OF INDIA
PART II : ORDER : MESOSTIGMATA

S. K. GUPTA

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A Monograph on Plant Inhabiting Predatory Mites of India

PART II : ORDER : MESOSTIGMATA

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Cover Photograph showing predatory phytoseiid mite, *Amblyseius alstoniae* Gupta, in association with phytophagous mite, *Tetranychus urticae* Koch (Courtesy : Dr. P. K. Sarkar, BCKV, Kalyani)

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CONTENTS

GENERAL INTRODUCTION

1. Importance

The plant inhabiting predatory mites under the Order Mesostigmata which have so far been recorded in India belong to four families, *viz.* Ascidae, Laelapidae, Otopheidomenidae and Phytoseiidae. Of these, the members of the family Phytoseiidae are most abundant, followed by Ascidae while the occurrence of the other two families on plants is rather scarce and accidental. Some of the phytoseiid species were found to be feeding upon phytophagous mites in the field and thereby could keep their population under check. In view of this importance, these mites have drawn attention of the acarologists and entomologists and work on diverse aspects have been undertaken specially with regard to the promising predatory species.

In Part-II of this Monograph dealing with plant inhabiting predatory mites under Order Mesostigmata, 185 species, including 3 new ones, belonging to 4 families and 18 genera have been treated. For each species, synonymies, descriptions, illustrations, collection records, habitats, distributions and wherever known, the name of prey species upon which those have been recorded feeding in the field along with keys to genera, subgenera (where such categories have been recognised by this author) and species have been given.

Since Gupta (1986) in his Fauna of India : Phytoseiidae Volume, had given detailed synonymies and descriptions for 139 species known till then, only those synonymies which are important or those appeared subsequently and salient features of descriptions have been provided here, to avoid repetition.

In Part-I of this Monograph, exhaustive historical review along with relevant references and keys to families of Mesostigmata inhabiting plants in India have been given and hence those have not been included in this Part of the Monograph.

A Chapter "Bio-ecology" has also been provided dealing with life cycle, seasonal occurrence, food preference, feeding potentiality, predator-prey interaction, effect of pesticides on predatory mites, mass culture, etc. in respect of species for which such informations are available.

Lastly, a State-wise list of mites giving distributions of all the 319 species of predatory mites so far known from India under Orders : Prostigmata, Astigmata, Cryptostigmata and Mesostigmata has also been appended.

All the measurements given in the text are in microns.

It is believed that this Monograph providing a comprehensive account of the predatory mites of India will prove useful to the future workers not only in their identifications but also to know what is the present state of knowledge as regards predatory mites of India and what are the gaps needing bridging-up.

SYSTEMATIC ACCOUNT

Family 1. ASCIDAE Voigts & Oudemans

1958. Ascidae, Evans, *Proc. Zool. Soc. Lond.*, **131** : 177.

1960. Ascidae, Evans & Hyatt, *Bull. Brit. Mus. (Nat. Hist.) Zool.*, **6**(2) : 25.

1963. Ascidae, Bernhard, *Beitrage zur. Systematik und. Okologii Milt. Acar. Z. Sec.*, **3** : 177.

1963. Ascidae, Hurlbutt, *Acarologia*, **5** : 481.

1963. Ascidae, Chant, *Can. J. Zool.*, **41** : 243.

1965. Ascidae, Wood, *N. Z. J. Sci.*, **8**(1) : 129.

1968. Ascidae, Bhattacharyya, *Acarologia*, **10** : 528.

1969. Ascidae, Loots & Ryke, Separatade N. 81 das Publicacoes Culturais de companhiade Diamcutes de Angola, p. 85.

1976. Ascidae, Hughes, *The mites of stored food and houses. Min. Agri. Fish Food Lond. Tech. Bull.*, **9** : 313.

1979. Ascidae, Evans & Till, *Trans. Zool. Soc. Lond.*, **35** : 189.

1979. Ascidae, Karg, *Mitt. Zool. Mus. Berl.*, **55** : 242.

1985. Ascidae, Gupta, Handbk, *Plant mites of India*, **329**.

1993. Ascidae, Walter, Halliday & Lindquist, *Invert. Taxonomy*, **7** : 1327.

1994. Ascidae, Karg, *Mitt. Zool. Mus. Berl.*, **70** : 113.

1994. Ascidae, Papadoulis, *Internat. J. Acarol.*, **20** : 183.

1996. Ascidae, Karg, *Mitt. Zool. Mus. Berl.*, **72** : 157.

Diagnosis : Tritosternum present. Chaetotaxy of trochanter, femur and genu 2-5-6. Chelicera of female chelate, dentate. Male chelicera with spermatophoral process. Anal, ventrianal, hologastric or holoventral shields in adults not fused with dorsal shield, posterior coxae without setigerous spurs in both sexes. Dorsum with holodorsal or schizodorsal shield. Conrniculi horn-like, strongly sclerotized. Hypostome grooved in both sexes with 5-7 transverse rows of denticles. Adults with distinct podonotal or opisthonotal shields.

Type *Asca* Von Heyden, 1826

Key to genera of Ascidae known to occur on plants in India (after Evans & Till, 1979)

1. Fixed digit of chelicera with a membranous lobe in place of *pilus dentilis*, movable digit usually with a ventral mucro, females with an anal shield bearing one pair of ventral setae 2
- Fixed digit of chelicera with a setiform *Pilus dentilis*, movable digit with a ventral mucro, females typically with a ventroanal shield bearing 2–7 pairs of ventral setae, rarely with anal shield. 3
2. Females with 15 pairs of setae on opisthosomal region on the holodorsal shield, R setae situated on the lateral membrane. ..... *Melichares*
- Females with 18–22 pairs of setae on opisthosomal region of the holodorsal shield, 3–7 pairs of R setae being located on the lateral margin of shield. ..... *Proctolaelaps*
3. Adults with 2 dorsal shields (podonotal and opisthonotal). Without transverse line (across surface at level of z_6 and j_1) on the podonotal and opisthonotal shield, genu IV and tibia IV with 9 and 10 setae, respectively. .... *Gamasellodes*
- Adults with holodorsal or schizodorsal shield 4
4. Corniculi slender, approximating, rows of hypognathal denticles narrow, each with few denticles, female with humeral setae (r_3), lying off holodrosal shield ..... *Blattisocius*
- Corniculi of normal length, well separated, parallel rows of hypognathal denticles wider, multidenticulate, females with humeral setae (r_3) situated on dorsal shield.

  Adults with 3–9 pairs of R setae on membrane lateral to holodorsal shield, male with sternogenital and ventroanal shields, genu II with 8 or 9 setae. ..... *Lasioseius*

Genus 1. ***Blattisocius*** Keegan

1944. *Blattisocius* Keegan, *J. Parasitol.*, **30** : 181.

1951. *Paragarmania* Nesbitt, *Zool. Verh.*, **12** : 49.

1958. *Melichares (Blattisocius)* Evans, *Proc. Zool. Soc. Lond.*, **131** : 208.

1961. *Blattisocius*, Athias-Henriot, *Acarologia*, **3** : 451.

1965. *Blattisocius*, Lindquist & Evans, *Mem. Ent. Soc. Canada*, **47** : 48.

1992. *Blattisocius*, Karg, *Zool. Jb. Syst. Bd.*, **109** : 196.

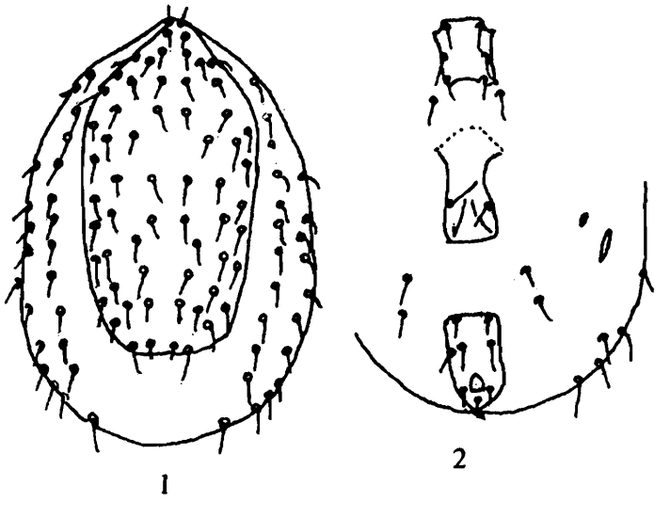
Diagnosis : According to Lindquist & Evans (1965), females with 46–56 pairs of setae, 17–21 pairs on anterior region, 15 pairs on posterior region of dorsal shield, 9–12 pairs of marginals on lateral membrane and 5–11 pairs of submerginals on ventrolateral membrane of posterior region. Dorsal setae of adults simple, smooth or slightly serrate, r_3 on lateral membrane. Sternal shield with 3 pairs of setae, 4th pair on membrane. Genital shield truncate posteriorly. Ventrianal shield with 3–4 pairs of preanal setae, ZV_1, JV_5 on membrane. Peritrematal shield free anteriorly or united to dorsal shield well anterior of humeral seta. Spermatheca with well sclerotized cervix, long accessory duct not evident. Male with

spermatophoral process abruptly angled downward beyond tip of movable chela and with pointed projection on ventral surface subapically. Corniculi slender, approximal. Fixed digit of chelicera well separated or reduced in length, with *pilus dentilis* short or very long, with few or no teeth.

Type ***Blattisocius triodons*** Keegan, 1944
(by original designation)
(= *Lasioseius tarsalis* Berlese)

1. ***Blattisocius tarsalis*** (Berlese)
(Figs. 1–2)

1918. *Lasioseius (L.) tarsalis* Berlese, *Redia,* **13** : 134.
1949. *Lasioseius similis* Schweizer, *Res. Rech. Scient Parc. Nat. Suisse,* **2** : 49.
1951. *Blattisocius lineivorus* Nesbitt, *Zool. Verh.*, **12** : 51.
1959. *Melichares (B.) tarsalis*, Athias-Henriot, *Bull. Soc. Hist. Nat. Afr. Nord.*, **5** : 162.
1963. *Blattisocius tarsalis*, Chant, *Can. J. Zool.*, **41** : 298.
1997. *Blattisocius* sp., Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 522.



Figs. 1-2 : *Blattisocius tarsalis* (Berlese) (F) : 1-Dorsal shield, 2-Ventral surface (after Chant, 1963).

Female : Dorsal shield smaller than idiosoma, with 33 pairs of simple setae, of which 18 pairs on anterior region. Marginal setae 11 pairs on interscutal membrane. Sternal shield narrow with lateral extensions between coxae I and II, 4th pair of sternal setae on integument. Genital shield narrow, truncated, with a pair of setae, a fold present between genital and ventrianal shields. Ventrianal shield rectangular, much longer than wide with 3 pairs of preanal setae. Peritrematal shield fused posteriorly with exopodal shield. Metapodal plates 2 pairs. Tectum variable. Fixed digit of chelicera without tooth, *pilus dentilis* present, movable digit with 3 teeth. Spermatheca globular.

Male : Similar as in female.

Collection Records : It has been collected earlier on insect culture, stored food material and sometimes parasitic on moths in stored food. In India, it has been collected on malformed mango in Delhi.

Habitat : Malformed mango.

Distribution : India (Delhi), U.S.A., Canada.

Remarks : Gupta & Chetterjee (1997) reported this as *Blattisocius* sp. on malformed mango and subsequently it has been identified as *B. tarsalis*.

Genus 2. ***Gamasellodes*** Athias-Henriot

1961. *Gamasellodes* Athias-Henriot, *Acarologia,* **3** : 480.
1965. *Gamasellodes*, Lindquist & Evans, *Mem. Ent. Soc. Canada,* **47** : 42.
1995. *Gamasellodes* sp., Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya*, Part 2, p. 41.

Diagnosis : According to Lindquist & Evans (1965), dorsal shield of adults and nymphs completely divided in two, dorsal shields without one or two transverse lines extending completely across surface, posterior dorsal shield without pair of prominent posterolateral tubercles, Z_4, S_5 well spaced. Female with 42–44 pairs of setae, 16–17 pairs on anterodorsal shield, 15 pairs on posterodorsal shield, 11–12 pairs on lateral membrane, no submerginals on ventrolateral membrane of posterior region. First pair of sternal setae presternal. Genital shield truncated posteriorly. Ventrianal shield with 4 pairs of setae, preanal setae placed closer to posterior than to anterior margin of anus. Tectum triramous. Fixed digit of chelicera without hyaline flap near *pilus dentilis*, movable digit without pointed ventral projection.

Type *Gamasellodes vulgatior* Athias-Henriot, 1961

(by original designation)

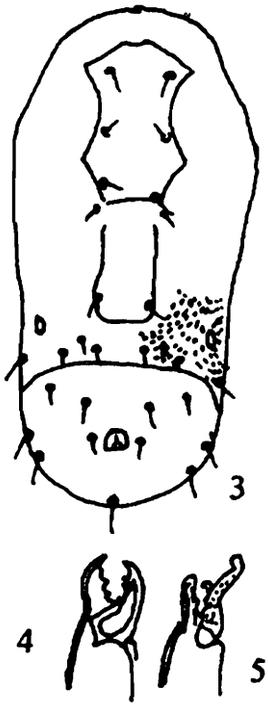
2. *Gamasellodes bicolor* Berlese

(Figs. 3–5)

1918. *Gamasellodes (Digamasellus) bicolor* Berlese, *Redia*, **13** : 135.

1978. *Gamasellodes bicolor*, Bhattacharyya, *Indian J. Acar.*, 2(2) : 80-82.

1995. *Gamasellodes* sp., Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya*, Part 2, p. 41.



Figs. 3-5 : *Gamasellodes bicolor* Berlese (F) : 3-Ventral surface 4. Chelicera, 5-Chelicera (M).

Female : According to Bhattacharyya (1978), tritosternum biramous, base longer than wide, with lacinae pilose. Sternal shield with 3 pairs of setae, metasternal setae on interscutal membrane between coxae III. Genital shield with a pair of setae. Ventrianal shield with 4 pairs of setae. Peritreme extends in sinuate line close to ventrianal margin. Tectum 3 tines. Gnathosoma ventrally with 4 pairs of setae. Each leg with a pulvillus and 2 claws.

Male : Bhattacharyya (1978) described it.

Collection Records : Originally it was described from Italy and thereafter has also been recorded from Austria, Spain, Israel, Germany and in India, its record is from West Bengal in soil.

Habitat : Soil near *Acacia arabica.*

Distribution : India (West Bengal), Italy, Germany, Austria, Spain, Israel.

Remarks : Gupta (1995) reported this as *Gamasellodes* sp. which later turned out to be *G. bicolor.*

Genus 3. *Lasioseius* Berlese

1916. *Lasioseius* Berlese, *Redia*, **12** : 34.

1941. *Aceosejus* Sellnick, *Zool. Anz.*, **133** : 149.

1946. *Borinquolaelaps* Fox, *J. Parasitol.*, **32** : 450.

1958. *Lasioseius*, Evans, *Proc. Zool. Soc. Lond.*, **131** : 189.

1960. *Lasioseius*, Evans & Hyatt, *Bull. Brit. Mus. (Nat. Hist.) Zool.*, **6** : 29.

1961. *Lasioseius*, Athias-Henriot, *Acarologia*, **3** : 458.

1963. *Lasioseius*, Chant, *Can. J. Zool.*, **41** : 249.

1965. *Lasioseius*, Lindquist & Evans, *Mem. Ent. Soc. Canada*, **47** : 21.

1972. *Lasioseius*, Hurlbutt, *Acarologia*, **13** : 289.

1979. *Lasioseius*, Evans & Till, *Trans. Zool. Soc. Lond.*, **35** : 182.

1985. *Lasioseius*, Gupta, *Handbk. Plant mites of India*, p. 330.

1994. *Lasioseius*, Karg, *Mitt. Zool. Mus. Berl.*, **70** : 124.

Diagnosis : According to Chant (1963), members of this genus resemble *Melichares* in the chaetotaxy of dorsum and in ventral sclerotization. However, in *Lasioseius*, the corniculi of the gnathosoma are relatively short and widely separated distally whereas in *Melichares*, they are long, slender and convergent and lie close to one another. Marginal series of setae may be reduced but always present in *Lasioseius* in posterior region as free in lateral integument, though some may lie on dorsal shield in anterior region. Fixed digit of chelicera normally multidentate, movable digit with 2–4 teeth. Sternal shield with 3 pairs of setae. Genital shield with a pair of setae. Ventrianal shield with 2, 4 or 6 pairs of preanal setae. Tectum tridentate.

Type *Seius muricatus* Berlese, 1887
(by original designation)

Key to species of *Lasioseius* known to inhabit plants in India

1. Ventrianal shield as long as wide. 2
– Ventrianal shield wider than long. 3
2. Dorsal shield with 31 pairs of setae, faintly scluptured, ventrianal shield with 4 pairs of preanal setae. ..... *quadrisetosus*
– Dorsal shield with 35 pairs of setae, smooth, ventrianal shield with 5 pairs of preanal setae. ..... *bengalensis*
3. Dorsal shield with 22 pairs of simple setae. ..... *terrestris*
– Dorsal shield with 23 pairs of simple setae. ..... *mcgregori*

3. *Lasioseius bengalensis* Chatterjee & Gupta, sp. nov.
(Figs. 6–9)

Female : Dorsal shield 344 long, 188 wide, smooth, with 35 pairs of setae of which 21 pairs situated on anterior shield. All setae appear to be thicker and tip slightly flattened, 3 pairs of marginal setae present on interscutal membrane, Z_4 and Z_5 relatively longer measuring 31 and 59, respectively, other setae vary between 19–24 long. First 2 pairs of marginal setae much shorter and thinner than other lateral setae; JV_5 also short. Sternal shield 81 long, posterior margin slightly lobed, with 3 pairs of setae. Genital shield truncated posteriorly with a pair of setae. A number of folds present between genital and ventrianal shields. Ventrianal shield with 5 pairs of setae, in addition to a pair of paraanal and postanal setae. Metapodal plates not discernible. Spermatheca as illustrated. Legs normal. Macrosetae present on tibia IV and basitarsus IV, measuring 38 and 40, respectively, that on genu not distinguishable from other setae.

Holotype : Female, India, West Bengal, Dist. South 24 Parganas, Govindapura, ex. *Ficus cunea*, 28.1.1995 (coll. K. Chatterjee).

Paratype : 1 female, data same as for holotype.

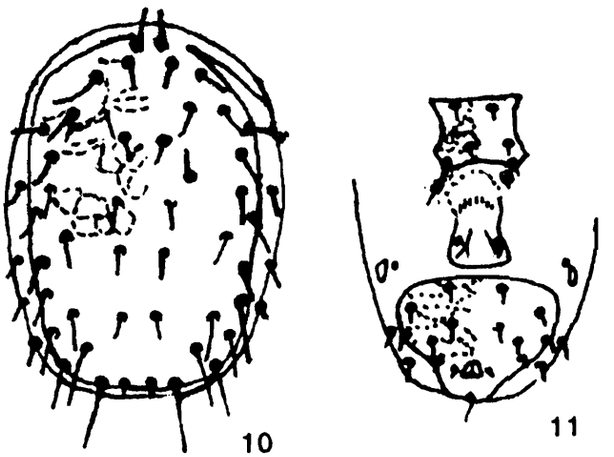
Remarks : This species is close to *Lasioseius quadrisetosus* Chant (1963) in having large ventrianal shield, presence of 2 macrosetae on leg IV, but differs in having 35 pairs of setae on dorsal shield and 5 pairs of setae on ventrianal shield.

Figs. 6-9 : *Lasioseius bengalensis* Chatterjee & Gupta sp. nov. (F) : 6-Dorsal shield, 7-Ventral surface, 8-Genu, tibia, basitarsus of leg IV, 9-Spermatheca.

4. *Lasioseius mcgregori* Chant
(Figs. 10–11)

1963. *Lasioseius mcgregori* Chant, *Can. J. Zool.*, **41** : 276.
1999. *Lasioseius mcgregori*, Dhooria, *J. Acarol.*, **14** : 88-89.

Female : Body 515 long, 300 wide. Dorsal shield reticulated with 23 pairs of simple setae, 10 pairs of



Figs. 10-11 : *Lasioseius mcgregori* Chant (F) : 10-Dorsal shield, 11-Ventral surface (after Chant, 1963).

which are on posterior region. Marginal setae on interscutal membrane, only one pair on anterior region of dorsum, 3 pairs on posterior region. Sternal shield with 3 pairs of setae, 4th pair on small metasternal plate. Genital plate well sclerotized with a pair of setae. Ventrianal shield 195 long, 250 wide, sculptured with 6 pairs of preanal setae; 3 pairs of setae on membrane around ventrianal shield. Metapodal plates 2 pairs. Fixed digit of chelicera multidentate, movable digit with 3 teeth. Macrosetae present on basitarsus IV.

Male : Unknown.

Collection Records : This species was described from U.S.A. collected on almond bark. Besides, it was also collected on grass in U.S.A. The Indian material has been reported on ornamental plant in Punjab.

Habitat : India : Ornamental plant. Elsewhere : almond bark, grass.

Distribution : India (Punjab), U.S.A.

Remarks : Dhooria (1999) reported this mite as predator on phytophagous mites infesting ornamental plant.

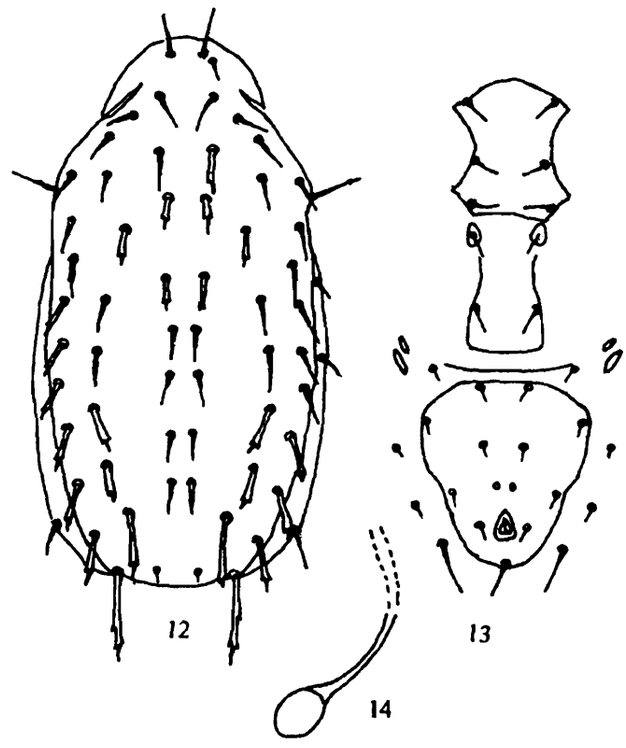
5. *Lasioseius quadrisetosus* Chant
(Figs. 12–14)

1960. *Lasioseius quadrisetosus* Chant, *Can. Ent.*, **92** : 64.

1985. *Lasioseius quadrisetosus*, Gupta, *Handbk. Plant mites of India*, p. 330.

Female : Body 370 long, 180 wide. Dorsal shield faintly sculptured, with 31 pairs of setae, of which 15 pairs on posterior dorsal shield. Sternal, metasternal and genital shields normal. Ventrianal shield large, as wide as long (115), triangular, with 4 pairs of small preanal setae; 4 pairs of setae around ventrianal shield; 2 pairs of broad metapodal plates present. Leg IV with macrosetae on tarsus and basitarsus. Fixed digit of chelicara multidentate, movable digit with 2–3 teeth. Tectum smooth.

Male : Dorsal setae shorter than those in female. Spermatophoral process present as usual on movable digit of chelicera. Ventrianal shield with 7 pairs of preanal setae.



Figs. 12-14 : *Lasioseius quadrisetosus* Chant (F) : 12-Dorsal shield, 13-Ventral surface, 14-Spermatheca (after Chant, 1960).

Collection Records : This species was described from India, collected on citrus.

Habitat : Citrus.

Distribution : India (Assam).

6. *Lasioseius terrestris* Menon & Ghai
(Figs. 15–19a)

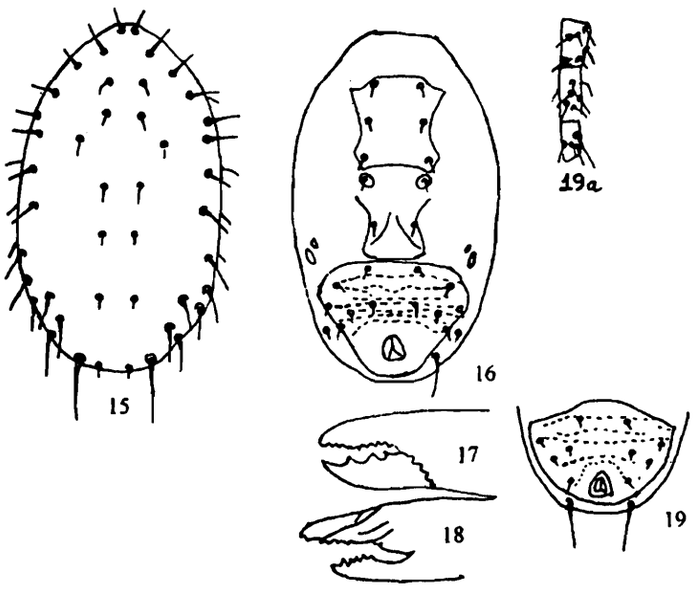
1968. *Lasioseius terrestris* Menon & Ghai, *Indian J. Ent.*, **30** : 77–79.

1985. *Lasioseius terrestris*, Gupta, *Handbk. Plant mites of India*, p. 331.

1997. *Lasioseius terrestris*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 522-523.

Female : Dorsal shield slightly reticulated, with 32 pairs of setae, 10 pairs of which are on posterior region, marginal setae not on interscutal membrane, 3 pairs on the anterior and 3 pairs on the posterior region. Sternal, genital and ventrianal shields normal. Ventrianal shield 135 long, 170 wide, sclerotized, reticulate with 6 pairs of preanal setae. Metapodal plates 2 pairs. Peritrematal shield fused posteriorly

with exopodal shield. Fixed digit of chelicera multidentate, movable digit with 2 teeth.



Figs. 15-19a : *Lasioseius terrestris* Menon & Ghai (F) : 15-Dorsal shield, 16-Ventral surface, 17-Chelicera, 18-chelicera (M), 19-Ventrianal shield (M) 19a-genu, tibia pasitarsus of leg IV. (after Menon & Ghai, 1968).

Male : Length 300, width 185. Chaetotaxy of dorsal shield as in female.

Collection Records : This species was described from Delhi, collected on wheat crop.

Habitat : Wheat.

Distribution : India (Delhi).

Remarks : Menon & Ghai (1968) found this species on wheat crop in association with *Petrobia latens*, a serious pest of wheat.

7. *Lasioseius* spp.

1992. *Lasioseius* sp., Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1992. *Lasioseius* sp., Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 185.

1995. *Lasioseius* sp., Gupta In : *State Fauna Ser. 4, Fauna of Meghalaya*, Part 2, p. 41.

1999. *Lasioseius* sp., Rather, *J. Acarol.*, **15** : 20.

2000. *Lasioseius* sp., Gupta, In : *State Fauna Ser. 7, Fauna of Tripura*, Part 2, p. 19.

In Press. *Lasioseius* sp., Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Collection Records : Some undetermined species of *Lasioseius* were reported from several places in India as from Arunachal Pradesh on arum, West Bengal on *Nerium* and jute, Meghalaya on an undetermined plant, Tripura on *Dolichos lablab*, Mizoram on Tiurel (local name in Mizoram) and Jammu & Kashmir on grape vines.

Habitat : Arum, *Nerium*, undertermined plant, *Dolichos lablab*, Tiurel, grape vines.

Distribution : India (Arunachal Pradesh, Meghalaya, Mizoram, Tripura, West Bengal, Jammu & Kashmir).

Genus 4. *Melichares* Hering

1839. *Melichares* Hering, *Verb. Kais. Leop. Car. Akad. Natur.*, **18** : 626.

1951. *Garmania* Nesbitt, *Zool. Verh.*, **12** : 43.

1963. *Melichares*, Chant, *Can. J. Zool.*, **41** : 295.

1965. *Melichares*, Lindquist & Evans, *Mem. Ent. Soc. Canada*, **47** : 51-52.

1976. *Melichares*, Karg, *Zool. Jb. Syst. Bd.*, **103** : 508.

1985. *Melichares*, Gupta, *Handbk. Plant mites of India*, p. 329.

Diagnosis : According to Chant (1963), marginal setae free on lateral integument. Peritrematal shield not fused posteriorly with exopodal shield. Female with one anal shield. Posterior region of dorsal shield bears 14 or 15 pairs of setae, number of setae on anterior region of dorsal shield variable. Peritreme extends anteriorly upto verticals. Chelicerae with few teeth. Female with anal shield only. Sternal shield with 3 pairs of setae.

Type ***Melichares agilis*** Hering, 1838

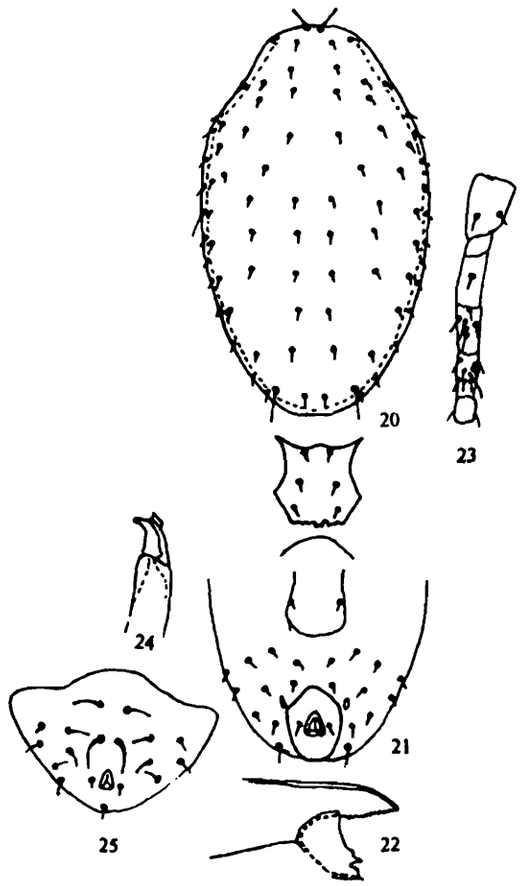
8. *Melichares (Melichares) fici* Narayanan & Ghai (Figs. 20–25)

1964. *Melichares (Melichares) fici* Narayanan & Ghai, *Proc. Nat. Inst. Sci. India*, **29B**(5) : 549-550.

1985. *Melichares (Melichares) fici*, Gupta, *Handbk. Plant mites of India*, p. 330.

1997. *Melichares fici*, Gupta & Chatterjee, *State Fauna Ser. 6, Fauna of Delhi*, p. 522.

Female : Dorsal shield 401 long, 242 wide, with 28 pairs of simple setae, almost of same length (16), Z_5 being longest, 35. Anterior dorsal shield with 14 pairs of setae of same length, 14 pairs of setae present on interscutal membrane surrounding dorsal shield, of those 7 pairs lie on anterior dorsal shield. Sternal shield with lateral extension between coxae I and II, metasternal shield absent. Anal shield slightly roundish in shape, longer than broad with 3 setae. Leg IV without macroseta.



Figs. 20-25 : *Melichares (Melichares) fici* Narayanan & Ghai (F) : 20-Dorsal shield, 21-Ventral surface, 22-Chelicera, 23-Leg IV, 24-Chelicera (M). 25-Ventrianal shield (M). (after Ghai & Menon, 1963)

Male : Chaetotaxy of dorsal shield and lateral interscutal membrane same as in female.

Collection Records : The description of this species was based upon material collected on fig in Delhi.

Habitat : Fig.

Distribution : India (Delhi).

Remarks : Narayanan & Ghai (1964) collected this species associated with hymenopterous insect inside fruits of *Ficus infectoria*.

Genus 5. *Proctolaelaps* Berlese

1923. *Proctolaelaps* Berlese, *Redia*, **15** : 255.
1923. *Seiopsis* Berlese, *Redia*, **15** : 255.
1936. *Jordensia* Oudemans, *K. H. O. A.*, **3A** : 214.
1956. *Blattilaelaps* Womersley, *J. Linn. Soc. Lond.*, **12** : 566.
1958. *Proctolaelaps*, Evans, *Proc. Zool. Soc. Lond.*, **131** : 197.
1963. *Proctolaelaps*, Chant, *Can. J. Zool.*, **41** : 258.
1965. *Proctolaelaps*, Lindquist & Evans, *Mem. Ent. Soc. Canada*, **47** : 53.
1976. *Proctolaelaps*, Karg, *Zool. Jb. Syst. Bd.*, **103** : 508.

Diagnosis : Females with 42–52 pairs of setae of which, 19 or more pairs of setae on posterior region of dorsal shield and marginal setae on shield instead of on the lateral interscutal membrane. Peritrematal shield free posteriorly. Only one anal plate present. Corniculi normally straight, separable, subparallel. Tectum smooth or minutely dentate or may be bi or tridentate. Fixed digit of chelicera may be multidentate or no teeth or few teeth, movable digit with 1–3 teeth.

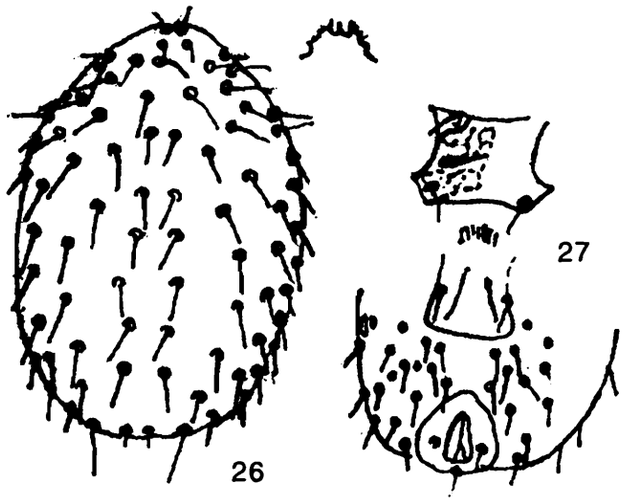
Type *Proctolaelaps productus* Berlese, 1923

9. *Proctolaelaps pygmaeus* (Muller) (Figs. 26–27)

1859. *Gamasus pygmaeus* Muller, *Zeit. Nat.*, **9**(2) : 29-30.
1860. *Holoaspis pygmaeus* Muller, *Zeit. Nat.*, **10**(3) : 51.
1918. *Lasioseius innumerabilis* Berlese, *Redia*, **13** : 132.
1954. *Garmania hypudaei* Evans, *Proc. Zool. Soc. Lond.*, **123** : 794.
1961. *Proctolaelaps pygmaeus*, Athias-Henriot, *Acarologia*, **3**(4) : 451.
1964. *Proctolaelaps pygmaeus*, Ehara, *J. Fac. Sci. Hokkaido Univ.*, (6)**15**(3) : 387.
1992. *Proctolaelaps* sp., Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 185.

Female : Dorsal shield with 43 pairs of simple setae, 20 of which on posterior region. Setae of J series slightly longer than distance between their bases. Marginal setae of posterior half of shield arise from shield not from interscutal membrane. Anterior margin of tectum minutely denticulate. Corniculi sinous. Fixed digit of chelicera with

uneven row of teeth. First pair of rostral setae spine-like. Anal shield almost round with 3 anal setae. Peritrematal shield not fused with exopodal shield posteriorly.



Figs. 26-27 : *Proctolaelaps pygmaeus* (Muller) (F) : 26-Dorsal shield, 27-Ventral surface (after Chant, 1963)

Male : Ventrianal shield with 5 pairs of setae. J_1–23, Z_1–29, Z_5–38, VL_1–25. Macrosetae on basitarsus IV–59.

Collection Records : In abroad, this mite has been recorded on various habitats like orchard, mushroom, soil, rotting bulbs, grass compost, mamalian nests and also in squirrel nests, poultry litter, dampy houses.

Habitat : As above.

Distribution : India (West Bengal), North America, New Zealand, Canada, Japan.

Remarks : It has been reported associated with citrus rust mite, *Aculus pelekassi* (Hughes, 1976). Ehara (1964) also reported this as important predatory mite. Earlier, this species was reported from West Bengal on an undetermined species and the same later was found to be *P. pygmaeus*.

Family 2. LAELAPIDAE Berlese

1892. Laelapidae Berlese, *Acari. Myriapoda et Scorpiones hucusque in Italia reperta, Ordo Mesostigmata* (Gamasidae), *Padova.*

1966. Laelapidae, Bhattacharyya, *Zool. Anz.*, **177**(2) : 154.

1977. Laelapidae, Evans & Till, *Trans. Zool. Soc. Lond.*, **35** : 190.

1991. Laelapidae, Fain, *Entomologie*, **61** : 183.

Diagnosis : Free living or associated with birds, scavengers, mammals, insects or nest associated, some are inhabitants of soil and mosses. Opisthonotal region of dorsal shield in both sexes lack Z_x setae and unpaired setae J_x in region of J series. Adults with holodorsal or schizodorsal shield. Corniculi horn-like, strongly or weakly sclerotized. Chelicerae in female chelate, dentate.

Type ***Laelaps*** Koch, 1839
(Type species ***Acarus muris*** Ljungh, 1799)
(= ***Laelaps agilis*** Koch, 1839)

Genus 6. ***Hypoaspis*** Canestrini

1884. *Hypoaspis* Canestrini, *Atti 'Ist Veneto*, (6)**2** : 1569.

1885. *Hypoaspis*, Canestrini, *Acarofauna ital.*, Part **1** : 55.

1966. *Hypoaspis*, Evans & Till, *Bull. Brit. Mus. (Nat. Hist.)*, **14**(5) : 158.

1976. *Hypoaspis*, Hughes, *The mites of stored food and houses. Min. Agri. Fish & Food, Bull.*, **No. 9**, p. 292.

1979. *Hypoaspis*, Evans & Till, *Trans. Zool. Soc. Lond.*, **35** : 242.

Diagnosis : According to Evans & Till (1966) : Chelicerae typically chelate, dentate, movable digit bidentate in female, rarely digits edentate. *Pilus dentilis* normally short, setiform; chelicerae of male edentate, movable digit unidentate, spermatodactyle free, distally groved, never completely fused with movable digit. Gnathosomal ventral chaetotaxy normal, apotele two or three tined. Corniculi horn-like. Tectum capituli with anterior margin smooth or denticulate. Ambulacra of all legs have paired claws. Tritosternum normal, bipartite. Sternal shield in female with 3 pairs of setae. Genital shield flask shaped. Genitoventral shield variously inflated.

Type ***Gamasus krameri*** Canestrini, 1881

10. ***Hypoaspis calcuttaensis*** (Bhattacharyya)

1966. *Cosmolaelaps calcuttaensis* Bhattacharyya, *Zool. Anz.*, **177** : 151-157.

1967. *Cosmolaelaps indicus* Bhattacharyya, *Proc. Zool. Soc. Calcutta*, **20** : 131-132.

1971. *Hypoaspis calcuttaensis*, Bhattacharyya, *Oriental Ins.*, **5** : 50.

1994. *Hypoaspis calcuttaensis*, Walia & Mathur, *Indian J. Nematology*, **24** : 243-245.

1995. *Hypoaspis calcuttaensis*, Walia & Mathur, *Nematologia Mediterranea*, **23**(2) : 255-261.

1996. *Hypoaspis calcuttaensis*, Bhattacharyya, *et al.*, *Env. & Ecol.*, **14** : 151.

Collection Records : This species was originally described from soil under grass in West Bengal. Later, it was also reported from Haryana.

Habitat : Soil under grass.

Distribution : India (West Bengal, Haryana).

Remarks : Walia & Mathur (1994) reported this species preying upon *Aphelinchoides compositicola* and *Meloidogyne javanica* and commented that it is a potential biocontrol agent.

11. ***Hypoaspis dubium*** Costa

1995. *Hypoaspis dubium* Costa, Butani & Kapadia, *Abst. V Nat. Symp. Acarology*, p. 12.

Collection Records : Butani & Kapadia (1995) reported this species feeding on rhinoceros beetle, *Oryctes rhinoceros*.

Family 3. OTOPHEIDOMENIDAE Treat

1955. Otopheidomenidae Treat, *J. Parasitol.*, **41** : 555-556.

1965. Otopheidomeninae, Chant, *Can. Ent.*, **97** : 353.

1976. Otopheidomeninae, Karg, *Zool. Jb. Syst. Bd.*, **103** : 507.

Diagnosis : According to Chant (1965) : Dorsal shield entire, incised mediolaterally or divided into 2 subequal shields, with 13–15 pairs of simple setae. Sternal shield poorly sclerotized, may be reduced, metapodal plates absent. Genital shield longer than wide, truncate posteriorly, with or without a pair of setae. Ventrianal or anal shield present. If ventrianal shield present, with 1 or 2 pairs of preanal setae, anal opening terminal, para and anal setae anterior to forward edge of anus. Tritosternum present or absent. Fixed digit of chelicera reduced or absent, movable digit edentate. These are normally parasitic on insects.

Type ***Otopheidomenis*** Treat, 1955

Genus 7. ***Hemipteroseius*** Evans

1963. *Hemipteroseius* Evans, *Ann. Mag. nat. Hist.*, (13)**5** : 612-616.

1965. *Hemipteroseius*, Chant, *Can. Ent.*, **97** : 355-356.

1976. *Hemipteroseius*, Karg, *Zool. Jb. Syst. Bd.*, **103** : 508.

Diagnosis : Dorsal shield divided into anterior and posterior subequal portions, with 13 or 14 pairs of simple setae, 9 pairs on podonotal region, 4 or 5 pairs on opisthonotal region. Setae r3, R_1, s_7 on lateral integument. Tritosternum minute or normal in size with lacinae. Sternal shield weakly sclerotized with a pair of setae, metasternal plate absent. Genital shield broadly truncate. Ventrianal shield with one pair of preanal setae; anus terminal in position; 5 pairs of setae present around ventrianal shield, metapodal plates may or may not be present. Peritrematal shield reduced, not fused with dorsal shield or with exopodal plate; peritreme very broad extends anteriorly upto coxae III or to posterior margin of coxae II. Fixed digit of chelicera reduced to small protuberance, movable digit long, slender with 2 teeth. Palp tibia without seta. Chaetotaxy of legs : femora I–IV : 10, 8, 5, 4; genu I–IV : 6, 4, 4, 3; tibia I–IV : 6 or 7, 6, 5, 3.

Type ***Hemipteroseius womersleyi*** Evans, 1963 (by original designation)

12. ***Hemipteroseius indicus*** Krantz & Khot (Figs. 28–29)

1962. *Hemipteroseius indicus* Krantz & Khot, *Acarologia*, **4** : 532-542.

1965. *Hemipteroseius indicus*, Chant, *Can. Ent.*, **97** : 356.

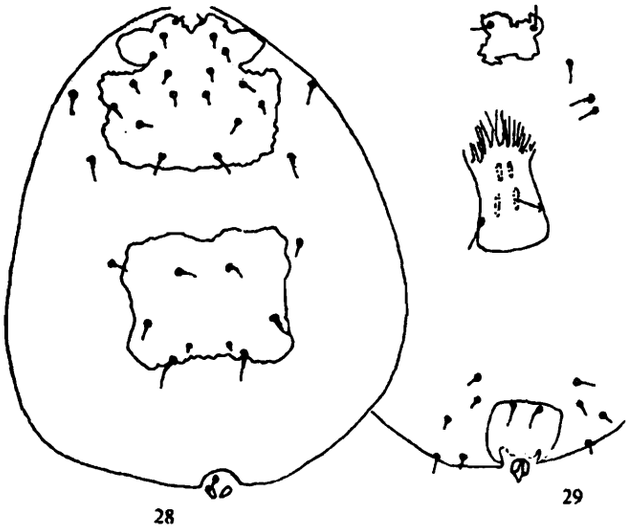
1974. *Hemipteroseius indicus*, Prasad, p. 176.

1980. *Hemipteroseius indicus*, Banerjee & Dutta, *Indian J. Ent.*, **42** : 265-267.

1997. *Hemipteroseius indicus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 523.

Female : Dorsal shield divided, 500 long, 160 wide, with 14 pairs of setae. Measurements of setae : j_1–8, j_4–12, j_5–12, j_6–18, J_2–12, J_5–8, j_3–12, z_2–19, z_4–17, s_4–13, Z_1–11, S_4–13, Z_5–28, z_5–17,

r_3–14, R_1–20. Sternal shield with one pair of sternal setae, other 3 pairs on integument, lateral margins of sternal shield deeply grooved. Genital shield with a pair of setae. Ventrianal shield 64 long, 60 wide, with a pair of setae, auns terminal. Movable digit of chelicera long with 2 teeth, 4 pairs of setae present around ventrinal shield. Macrosetae on genu II-24, genu III-20, genu IV-28.



Figs. 28-29 : *Hemipteroseius indicus* Krantz & Khot (F) : 28-Dorsal shield, 29-Ventral surface. (after Chant, 1965).

Male : ?

Collection Records : The holotype material was collected on *Dysdercus koenigii* in India : Delhi. The other Indian collection is on the same insect infesting on cotton in West Bengal.

Habitat : *Dysdercus koenigii* on cotton.

Distribution : India (West Bengal, Delhi).

Remarks : Banerjee & Dutta (1980) reported that this mite feeding on *Dysdercus koenigii*, a serious pest of cotton in India.

Family 4. PHYTOSEIIDAE Berlese

1913. Phytoseiini Berlese, *Acaroth. Ital.*, p. 11.

1941. Phytoseiinae Vitzthum *Das Tierreich.*, **5**(4) : 767.

1952. Phytoseiidae Baker & Wharton, *An Introduction to Acarology*, p. 87.

1959. Phytoseiidae, Chant, *Can. Ent.*, **91**(Suppl. 12) : 48.

1982. Phytoseiidae, Karg, *Zool. Jb. Syst. Bd.*, **103** : 507.

1984. Phytoseiidae, Wei-nan, *Acarology VI*, **1** : 222-227.

1986. Phytoseiidae, Chant & Yoshida-Shaul, *Can. J. Zool.*, **65** : 1770.

1986. Phytoseiidae, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 31.

1987. Phytoseiidae, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **No. 95** : 3.

1989. Phytoseiidae, Cobanoglu, *Turk. Ent. derg.*, **13** : 163-178.

1989. Phytoseiidae, Denmark & Muma, *Occ. Pap. Fla. St. Colk. of Arthropods*, **4** : 4.

1990. Phytoseiidae, Denmark & Kolodochka, *Internat. J. Acarol.*, **16**(4) : 219.

1991. Phytoseiidae, Gupta, *Rec. Zool. Surv. India*, **81** : 3.

1991. Phytoseiidae, Papadoulis & Emmanouel, *Ent. Hell.*, **9** : 35.

1992. Phytoseiidae, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 177.

1992. Phytoseiidae, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 149.

1992. Phytoseiidae, Ryu & Lee, *Korean J. Ent.*, **22** : 24.

1993. Phytoseiidae, Takahashi & Chant, *Internat. J. Acarol.*, **19** : 15-22.

1995. Phytoseiidae, Amitai, *Entomol. Hell.*, **10** : 19-20.

1995. Phytoseiidae, Yoshida-Shaul & Chant, *Acarologia*, **36** : 1.

1997. Phytoseiidae, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 521.

Diagnosis : Palp tarsus with 2 tined apotele, chelicera chelate, undifferentiated hypostomal setae, a smooth or indistinctly serrate tectum, an entire or transversely divided dorsal shield with less than 19 pairs of setae, 1–3 pairs of sublateral setae, preitreme extends anteriorly from mesolateral stigmata, anus ventral, legs with pretarsus and ambulacra. Genital shield truncate posteriorly with a pair of setae, a pair of spermatheca open between coxae III and IV; ventrianal shield elongate, square type or pentagonal with 1–7 pairs of preanal setae in addition to para and postanals. Movable digit of male chelicera with spermatophoral process; genital aperture of male placed anteriorly on the sternitigenital shield. Ventrianal shield with 2–7 pairs of preanal setae and a pair of caudal setae.

Type *Phytoseius* Ribaga, 1904

Key to the subfamilies of Phytoseiidae

1. Prolateral setae 4 pairs, in all 6–9 pairs of lateral setae, preanal setae 3 pairs..... ..... Amblyseiinae
– Prolateral setae 5 or moe pairs, in all 9–12 pairs of lateral setae, preanal setae 3–7 pairs. 2
2. Sublateral setae 3 pairs, lateral setae 12 pairs, preanal setae 6–7 pairs..... ..... Gnoriminae
– Sublateral setae 1–2 pairs, lateral setae 8–11 pairs, preanal setae 2–4 pairs..... ..... Phytoseiinae

Subfamily 1. AMBLYSEIINAE Muma

1961. Amblyseiinae Muma, *Bull. Fla. St. Mus.*, **5**(7) : 273.
1963. Amblyseiinae, Schuster & Pritchard, *Hilgardia*, **34**(7) : 225.
1965. Phytoseiinae, Chant, *Can. Ent.*, **97**(4) : 359 (in part).
1984. Amblyseiinae, Gupta, *Handbk. Plant mites of India*, p. 333.
1986. Amblyseiinae, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 32.
1987. Amblyseiinae, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 4.
1989. Amblyseiinae, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 169.
1989. Amblyseiinae, Gupta, In : *Progress in Acarology*, **1** : 404.
1990. Amblyseiinae, El-Banhawy & Abou-Awad, *Insect Sci. Appl.*, **11** : 899-901.
1992. Amblyseiinae, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 150.
1993. Amblyseiinae, Schicha & O'Dowd, *J. Aust. Ent. Soc. Indooropilly*, **32** : 297-305.
1995. Amblyseiinae, Amitai, *Entomol. Hell.*, **10** : 19-20.

Diagnosis : Dorsal shield undivided with 4–6 pairs of setae on dorsocentral series; 1–2 pairs of median setae, 6–9 pairs of lateral setae (4 of those on prolateral series), 1–2 pairs of sublateral setae, 1–3 pairs of preanal setae on ventrianal shield, 1–3 macrosetae on leg IV; males with fragmented or entire ventrianal shield with 3–4 pairs of preanal setae, 2 pairs of sublateral setae both placed on dorsal shield.

Type *Amblyseius* Berlese, 1915

Key to the genera of Amblyseiinae known to inhabit plants in India

1. Ventrianal shield absent or indistinctly demarcated, only preanal setae distinctly present. ..... *Indoseiulus*
– Ventrianal shield distinctly present. 2
2. Sublateral setae R_1 absent. ... *Platyseiella*
– Sublateral setae R_1 present. 3
3. R_1 on dorsal shield. ..... *Okiseius*
– R_1 on lateral integument. 4
4. Lateral integument sclerotized so that r_3 and R_1 though on usual lateral position appear to be on lateroventral extension of dorsal shield. ..... *Iphiseius*
– Lateral integument not sclerotized as above. 5
5. Metapodal plate large, single paired, triangular, genital shield very broad and punctate, ventrianal shield massive, genu III with 6 setae. ..... *Paraamblyseius*
– Metapodal plates 2 paired, slender elongate, genital and ventrianal shields usually narrow, genu III with 7 setae. ..... *Amblyseius*

Genus 8. ***Amblyseius*** Berlese

1914. *Amblyseius* Berlese, *Redia*, **10** : 143.
1984. *Amblyseius*, Wei-nan & Zhao-quan, *Acta Entomologica Sinica*, **9** : 44-48.
1985. *Amblyseius*, Gupta, *Handbk. Plant mites of India*, p. 333.
1986. *Amblyseius*, Gupta, *Fauna of India*, p. 33.
1986. *Amblyseius*, Moraes & McMurtry, *EMBRAPA*, p. 353.
1987. *Amblyseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 4.
1989. *Amblyseius*, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 169.
1989. *Amblyseius*, Denmark & Muma, *Occ. Pap. Fla. St. Coll. of Arnhropods*, **4** : 4.
1988. *Amblyseius*, Gupta, In : *Progress in Acarology*, **1** : 403-410.
1990. *Amblyseius*, Arbabi & Singh, *Abst. IV Nat. Symp. Acarology, Calicut*, p. 7.

1990. *Amblyseius*, El-banhawy & Abou-Awad, *Insect Sci. Appl.*, **11** : 899-901.

1992. *Amblyseius*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18** : 178-193.

1992. *Amblyseius*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 150-151.

1992. *Amblyseius*, Ryu & Lee, *Korean J. Entomol.*, **22** : 23-42.

1993. *Amblyseius*, Schicha & O'Dowd, *J. Aust. Ent. Soc. Indooropilly*, **32** : 197-305.

1997. *Amblyseius*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 524.

Diagnosis : Dorsal shield with 13–17 pairs of setae, 4 pairs of those on prolateral series; setae variable in length. Sublateral setae on lateral integument. Sternal shield with 3 pairs of setae, 4th pair on integument or on metasternal shield; genital shield with a pair of setae, ventrianal shield entire, fragmented or of variable shape, with 3 pairs of preanal setae; 4 pairs of setae around ventrianal shield; metapodal plates 1–2 pairs, elongate. Chelicera uni, bi or tridentate.

Type ***Zercon obtusus*** Koch, 1890
(by original designation)

Key to subgenera of *Amblyseius* Berlese known to inhabit plants in India

1. Dorsal shield with 5 pairs of postlateral setae. 4
– Dorsal shield with less than 5 pairs of postlateral setae 2
2. Seta Z_1 present 3
– Seta Z_1 absent ..... *Proprioseius*
3. Seta S_2 present ..... *Asperoseius*
– Seta S_2 absent ..... *Paraphytoseius*
4. Ventrianal shield massive covering major portion of posteroventral portion 5
– Ventrianal shield not like above 6
5. Seta J_5 present ..... *Proprioseiopsis*
– Seta J_5 absent ..... *Phytoscutella*
6. Stea Z_5, s_4, Z_4 long and whip-like, longer than distance between their bases; leg IV with macrosetae on genu and erect seta on tarsus. ..... *Amblyseius*
– Seta Z_5 shorter, at most as long as distance between their bases, leg I with no macroseta or only one on genu, no erect seta on tarsus 7
7. Sternal shield distinct and straight or concave posteriorly, ventrianal shield approximately shield shaped or pentagonal 8
– Sternal shield indistinct, may be trilobate posteriorly, ventrianal shield elongate, vase shaped or concave laterally 9
8. Z_5 and Z_4 indistinctly serrate, sternal shield as wide as or wider than long, macroseta may be present on genu I and present on genu II and III ..... *Typhlodromips*
– Z_5 and Z_4 indistinctly serrate, sternal shield longer than wide, genu I, II, III without macrosetae ..... *Neoseiulus*
9. Peritreme extends anteriorly upto j_3; anterior pair of preanal setae adjacent to anterior margin of ventrianal shield ..... *Typhlodromalus*
– Peritreme not extends upto j_3; anterior pair of preanal setae removed from anterior margin of ventrianal shield ..... *Euseius*

Subgenus 1. ***Amblyseius*** Berlese

1914. *Amblyseius* Berlese, *Redia*, **10** : 143.

1961. *Amblyseius (Amblyseius)*, Muma, *Bull. Fla. St. Mus.*, **5**(7) : 287.

1984. *Amblyseius (Amblyseius)*, Wei-nan, *Zootaxonomica Sinica*, **9** : 156-158.

1984. *Amblyseius (Amblyseius)*, Wei-nan, *Acarology VI*, **1** : 222-227.

1986. *Amblyseius (Amblyseius)*, Gupta, *Fauna of India*, Phytoseiidae p. 35.

1987. *Amblyseius (Amblyseius)*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 6.

1988. *Amblyseius (Amblyseius)*, Gupta, *Progress in Acarology*, **1** : 403-410.

1990. *Amblyseius (Amblyseius)*, Arbabi & Singh, *Abst. IV Nat. Symp. Acarology, Calicut*, p. 7.

1990. *Amblyseius (Amblyseius)*, El-banhawy & Abou-Awad, *Insect Sci. Appl.*, **11** : 889-901.

1991. *Amblyseius (Amblyseius)*, Papadoulis & Emmanouel, *Entomol. Hell*, **9** : 35.

1992. *Amblyseius (Amblyseius)*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 179.

1992. *Amblyseius (Amblyseius)*, Ryu & Lee, *Korean J. Entomol.*, **22**(1) : 23-42.

1992. *Amblyseius (Amblyseius)*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal*, Part 3, p. 151.

Diagnosis : Dorsal shield smooth, well sclerotized, with 17 pairs of setae, 6 pairs on dorsocentral, 2 pairs on median, 9 pairs on laterals. Setae Z_5, s_4, Z_4 long, whip like, may be serrate minutely. J_1, j_3 also long. Sternal shield smooth, as wide as or wider than long, with 3 pairs of sternal setae. Peritreme extends anteriorly upto j_1. Fixed digit of chelicera multidentate with long *pilus dentilis*, movable digit with 1–4 teeth. Leg IV with macrosetae on genu, tibia, basitarsus, that on genu being longest.

Type ***Zercon obtusus*** Koch, 1839
(by indication)

Key to species of *Amblyseius (Amblyseius)* known to inhabit plants in India

1. Dorsal shield notched at the level of R_1. ..... *excelsus*
– Dorsal shield not notched as above. 2
2. Ventrianal sheild vase shaped with lateral margins concave. 3
– Ventrianal shield pentagonal or squarish... 6
3. Spermatheca saucer shaped or cup shaped. 4
– Spermatheca elongated or fundibuliform 5
– Supermatheca corniform ..... *cucurbitae*
4. Cervix of spermatheca saucer shaped .... *hapoliensis*
– Cervix of spermatheca cup shaped .... *indirae*
5. Cervix of spermatheca elongated of parallel diameter ..... *largoensis*
– Cervix of spermatheca fundibuliform..... ..... *herbicolus*
6. Z_5 over 200 microns in length 9
– Z_5 much less than 200 microns in length 7
7. s_4 and Z_4 of same length 8
– s_4 longer than Z_4 ..... *neorykei*
8. Spermatheca elongated, tubular .... *mcmurtryi*
– Spermatheca cup shaped ..... *shoreae*
9. z_2 and z_4 equal 11
– z_2 and z_4 unequal 10
10. z_2 longer than z_4 ..... *aerialis*
– z_2 shorter than z_4 ..... *orientalis*
11. Cervix of spermatheca looped .... *paraaerialis*
– Cervix of spermatheca not looped..... 12
12. Macrosetae on tibia and basitarsus IV almost equal 13
– Macrosetae on tibia and basitarsus IV unequal 14
13. Cervix 11 long with large differentiated atrium, Z_5 about 90-100 long ..... *kulini*
– Cervix 15-18 long with small differentiated atrium ..... *raoiellus*
14. Ventrianal shield reticulate .... *muraleedharani*
– Ventrianal shield smooth 15
15. Ventrianal shield almost triangular, macrosetae on basitarsus IV longer than that on tibia IV ..... *adhatodae*
– Ventrianal shield almost pentagonal, macrosetae on basitarsus IV shorter than that on tibia IV ..... *channabasavannai*

13. *Amblyseius* (*Amblyseius*) adhatodae Muma (Figs. 30–32)

1967. *Amblyseius adhatodae* Muma, *Fla. Ent.*, **50** : 268-270.

1986. *Amblyseius (Amblyseius) adhadodae*, Gupta, *Fauna of India : Phytoseiidae*, p. 37.

1987. *Amblyseius (Amblyseius) adhatodae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 7.

1989. *Amblyseius adhatodae*, Denmark & Muma, *Fla. State Coll. of Arthropods, Occ. Pap.* **4** : 63-64.

Female : Dorsal shield 375 long, 275 wide, with 17 pairs of setae. Mesurements of setae : j_1–42, j_3–56, s_4–127, Z_5–306, Z_4–153, other setae minute. Sternal shield 68 long, 80 wide, with 3 pairs of sternal setae, metasternal plates with seta present. Genital shield 85 wide. Ventrianal shield 134 long, 103 wide, with 3 pairs of preanal setae, 4 pairs of setae present around ventrianal shield. Fixed digit of chelicera with 10–11 teeth, movable digit with one tooth. Spermatheca with slender elongated cervix. Macrosetae on leg IV : genu–100, tibia– 76, basitarsus– 89, genu III–56, tibia III– 33, genu II– 33, genu I– 44. Leg chaetotactic formula : Genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$.

Male : Dorsal chaetotaxy similar as in female. Spermatophoral process as illustrated.

Collection Records : This was described on the basis of collection made from Maharashtra on *Ipomoea* sp. as well as from Pakistan on *Adhatoda vasica.*

Habitat : India : *Ipomoea* sp., elsewhere : *Adhatoda vasica.*

Distribution : India (Maharashtra), Pakistan.

14. *Amblyseius* (*Amblyseius*) *aerialis* (Muma) (Figs. 33–37)

1955. *Amblyseiopsis aerialis* Muma, *Ann. Ent. Soc. Amer.*, **48** : 264-266.

1986. *Amblyseius (Amblyseius) aerialis*, Gupta, *Fauna of India : Phytoseiidae*, p. 39.

1987. *Amblyseius (Amblyseius) aerialis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 7.

1989. *Amblyseius aerialis*, Denmark & Muma, *Fla. St. Coll. Arthropods Occ. Pap.* **4** : 15-16.

1992. *Amblyseius (Amblyseius) aerialis*, Gupta, In : *Contributions to Acarelogical Researches in India*, p. 442.

Female : Dorsal shield 360 long, 140 wide. Measurements of setae : j_1–34-36, j_3–51-56, s_4–120-125, Z_5–290-330, Z_4–150-170. remaining setae 5–10 long. Sternal shield smooth with 3 pairs of sternal setae. Genital shield 85 wide. Ventrianal shield 115–122 long, 80–95 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 4 teeth. Spermatheca with tubular cervix and swollen atrium. Macrosetae on leg IV : genu–135–150, tibia–100–105, basitarsus–75–76. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$, tibia III $1\ \frac{2}{1}\ \frac{1}{1}\ 1$.

Male : Chaetotaxy of dorsal shield similar as in female.

Collection Records : This species was described from Florida collected on citrus. Thereafter, it has been recorded on a number of plants in many parts of the world. In India, its records are on *Bauhinia* in Arunachal Pradesh and on citrus in Karnataka and Bihar.

Habitat : India : *Bauhinia*, citrus. elsewhere : citrus.

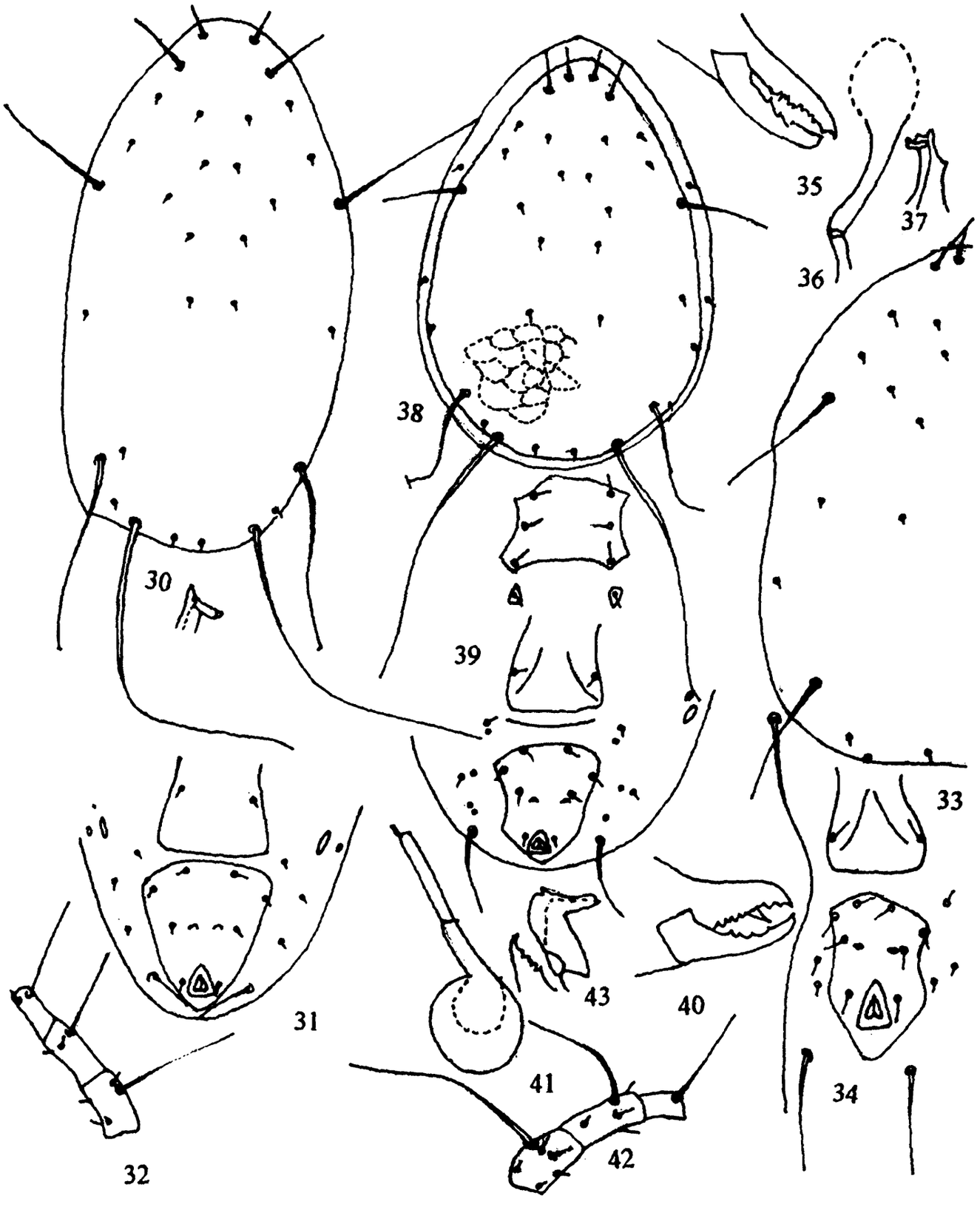
Distribution : India (Arunachal Pradesh, Bihar, Karnataka), U.S.A. Galapagos Isls., Mexico, Hondurus, Jamaica, Brazil, Algeria.

Remarks : Reports from abroad indicate that this species fed on citrus mite, *Panonychus citri.* However, in India, its predatory habit has not yet been recorded.

15. *Amblyseius (Amblyseius) channabasavannai* Gupta & Daniel (Figs. 38–43)

1978. *Amblyseius channabasavanni* Gupta & Daniel, *Oriental Ins.* **12** : 328-330.

1986. *Amblyseius (Amblyseius) channabasavannai*, Gupta, *Fauna of India : Phytoseiidae*, p. 41-43.



Figs. 30-32 : *Amblyseius (Amblyseius) adhatodae* Muma (F) : 30-Dorsal shield, 31-Posterior ventral surface, 32-Genu, tibia, basitarsus of leg IV. **Figs. 33-37** : *Amblyseius (Amblyseius) aerialis* (Muma) (F) : 33-Left half of dorsal shield, 34-Posterior ventral surface, 35-Chelicera, 36-Spermatheca, 37-Spermatophoral process (M). **Figs. 38-43** : *Amblyseius (Amblyseius) channabasavannai* Gupta & Daniel (F) : 38-Dorsal shield, 39-Ventral surface, 40-Chelicera, 41-Spermatheca, 42-Leg IV, 43-Spermatophoral process (M).

1987. *Amblyseius (Amblyseius) channabasavannai*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 8.

1989. *Amblyseius channabasavanni*, Denmark & Muma, *Fla. St. Coll. of Arthropods, Occ. Pap.* **4** : 14-15.

1992. *Amblyseius (Amblyseius) channabasavannai*, Gupta, In : *Contributions to Acarological Researches in India*, p. 441.

1992. *Amblyseius (Amblyseius) channavasavannai*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 152.

1995. *Amblyseius (Amblyseius) channabasavannai*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya*, p. 20.

In Press. *Amblyseius (Amblyseius) channabasavannai*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield smooth anteriorly, rugose posteriorly, 320-350 long, 210-230 wide. Measurements of setae : Z_5–212-250, Z_4–76-110, s_4–72-82, j_1–27-28, j_3–36-48, other setae minute. Sternal shield 80–84 long, 70–75 wide, with 3 pairs of sternal setae. Ganital shield 75–80 wide. Ventrianal shield 110–120 long, 80–90 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 4 teeth. Macrosetae on leg IV : genu–80–95, tibia–60–64, basitarsus–52–60. genu I–36–40. genu II–27–32, genu III–33–48. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar to that of female.

Collection Records : This mite was described from Kerala collected on chrysanthemum as well as on Dahlia in Tamil Nadu. Thereafter, this has been recorded from Arunachal Pradesh on *Polyalthia* sp., on undet. plants in West Bengal, on mango, jute, citrus, Neem and an undet. Plant in Meghalaya and on Champa, *Shorea robusta, Lantana* in Sikkim.

Habitat : India : Chrysanthemum, *Dahlia, Polyalthia*, mango, jute, citrus, Neem, Champa, *Shorea robusta, Lantana*, undet. plants.

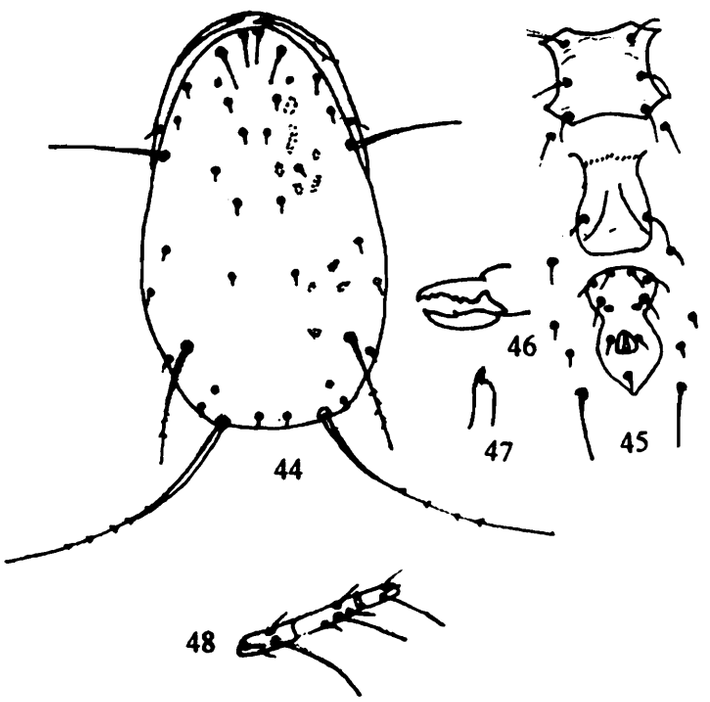
Distribution : India (Arunachal Pradesh, Sikkiim, West Bengal, Meghalaya, Tamil Nadu, Kerala).

Remarks : Daniel (1981) reported this mite feeding upon *Raoiella indica.*

16. *Amblyseius (Amblyseius) cucurbitae* Rather (Figs. 44–48)

1985. *Amblyseius cucurbitae* Rather, *Revista Parasitol.*, **46**(1-2) : 291-293.

1989. *Amblyseius cucurbitae*, Denmark & Muma, *Fla, St. Coll. Arthropods, Occ. Pap.* **4** : 77.



Figs. 44-48 : *Amblyseius (Amblyseius) cucurbitae* Rather (F): 44-Dorsal shield, 45-Ventral surface, 46-Chelicera, 47-Spermatheca, 48-Genu, tibia, basitarsus of leg IV. (after Denmark & Muma, 1989)

Female : Length 365, dorsal shield smooth, with 3-4 medium sized pores. Measurements of setae : j_1–33, j_4–9, j_3–38, s_4–97, Z_5–235, Z_4–109, other setae small. Sternal shield with 3 pairs of setae and 2 pairs of pores. Ventrianal shield with 3 pairs of preanal setae. Fixed digit of chelicera with 8–9 teeth, movable digit with 1 tooth. Macrosetae on genu–137, tibia–74, basitarsus–74. Leg chaetotactic formula : genu II $1\ \begin{smallmatrix}2&2\\1&0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\0&1\end{smallmatrix}\ 1$. Spermatheca with corniform cervix and bifid atrium.

Collection Records : This species was described from Kashmir (India) collected on *Cucurbita* sp.

Habitat : *Cucurbita* sp.

Distribution : India (Jammu & Kashmir).

Remarks : The description provided here is based upon Denmark & Muma (1989)

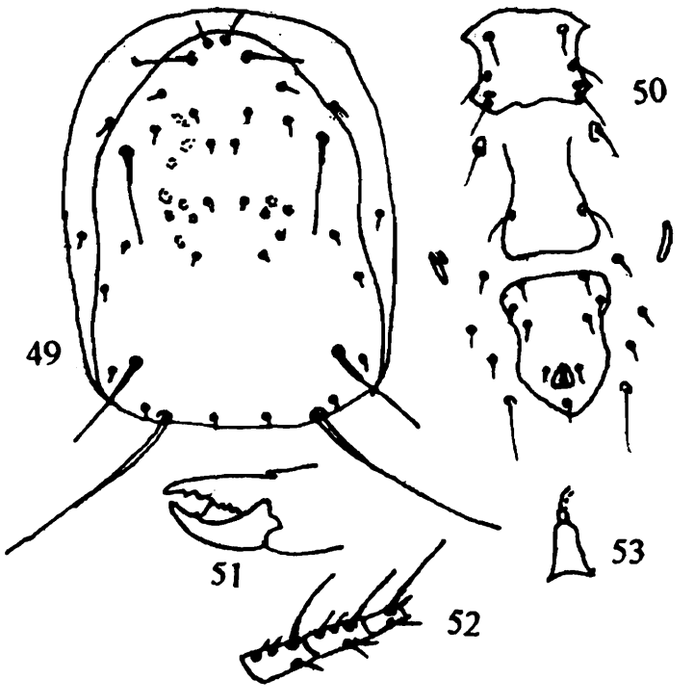
17. ***Amblyseius (Amblyseius) excelsus*** Chaudhri (Figs. 49–53)

1979. *Amblyseius excelsus* Chaudhri, *Studies on leaf inhabiting mites of Pakistan.* Repon Printing Press Ltd. Lahore, p. 68.

1985. *Amblyseius excelsus*, Rather, *Revista Parasitol.*, **46**(1-2) : 291-295.

1989. *Amblyseius excelsus*, Rather, In : *Progress in Acarology*, **2** : 188.

1989. *Amblyseius excelsus*, Denmark & Muma, *Fla. St. Coll. of Arthropods, Occ. Pap.*, 4 : 85-86.



Figs. 49-53 : *Amblyseius (Amblyseius) excelsus* Chaudhri (F) : 49-Dorsal shield, 50-Ventral surface, 51-Chelicera, 52-Genu, tibia, basitarsus of leg IV, 53-Spermatheca. (after Denmark & Muma, 1989)

Female : Dorsal shield 343 long, 239 wide, notched at the level of R_1. Measurements of setae : j_1–31, j_3–43, s_4–81, Z_5–174, Z_4–96, other setae samll. Ventrianal shield pentagonal. Macrosetae on leg IV : genu–75, tibia–63, basitarsus–75. Spermatheca with pocular cervix and nodular atrium, genu II $1\ \begin{matrix}2\\1\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, genu III $1\ \begin{matrix}2\\1\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$.

Male : Unknown.

Collection Records : This species was described from Pakistan collected on *Ricinus communis* and in India, it has been recorded on *Prunus persica.*

Habitat : India : *Prunus persica*, elsewhere : *Ricinus communis.*

Distribution : India (Jammu & Kashmir), Pakistan.

Remarks : The description provided here is based upon Denmark & Muma (1989).

18. ***Amblyseius (Amblyseius) hapoliensis*** Gupta (Figs. 54–58)

1986. *Amblyseius (Amblyseius) hapoliensis* Gupta, *Fauna of India (Acari : Mesistigmata) Family Phytoseiidae*, p. 43-45.

Female : Dorsal shield rugose, 342 long, 268 wide. Measurements of setae : j_1–34, j_3–43, s_4–44, Z_5–112, Z_4–60. Sternal shield 94 long, 78 wide, with 3 pairs of sternal setae. Ventrianal shield vase shaped, 112 long, 68 wide with 3 pairs of preanal seta. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, 3 teeth posterior to it, movable digit with 3 small teeth. Macrosetae on leg IV : genu–80, tibia–62, basitarsus–63. Leg chaetotactic formula : genu II $2\ \begin{matrix}2\\0\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia II $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$, genu III $1\ \begin{matrix}2\\1\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia III $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$.

Male : Unknown.

Collection Records : This species was described from Arunchal Pradesh collected on apple.

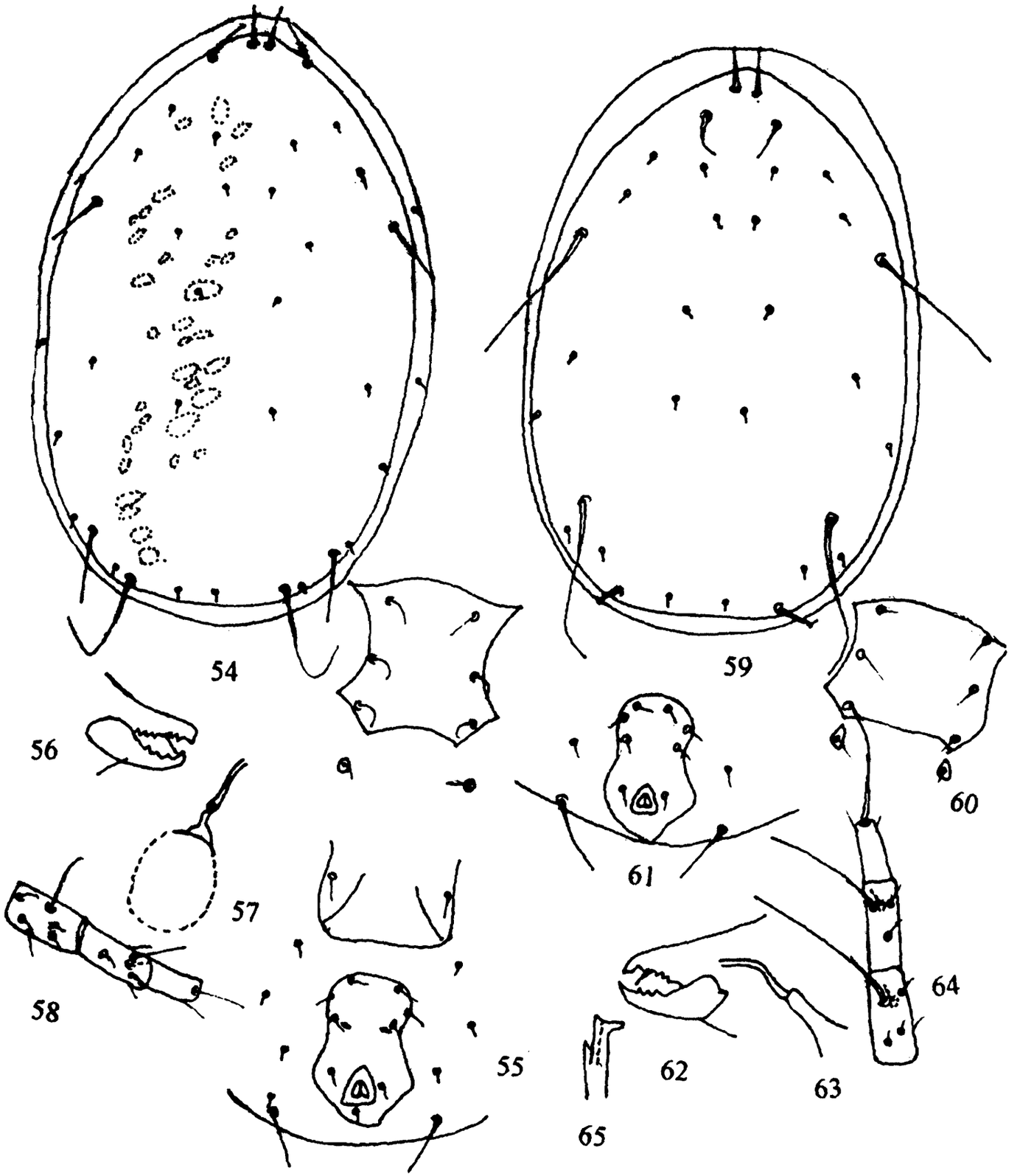
Habitat : Apple.

Distribution : India (Arunachal Pradesh).

19. ***Amblyseius (Amblyseius) herbicolus*** (Chant) (Figs. 59–65)

1959. *Typhlodromus (Amblyseius) herbicolus* Chant, *Can Ent.*, **91** : 84-85.

1961. *Amblyseius (Amblyseiulus) largoensis* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 287 (not *largoensis* Muma, 1955).



Figs. 54-58 : *Amblyseius (Amblyseius) hapoliensis* Gupta (F) : 54-Dorsal shield, 55-Ventral surface, 56-Chelicera, 57-Spermatheca, 58-Leg IV. **Figs. 59-65 :** *Amblyseius (Amblyseius) herbicolus* (Chant) (F) : 59-Dorsal shield, 60-Sternal shield, 61-Ventrianal shield, 62-Chelicera, 63-Spermatheca. 64-Genu, tibia, basitarsus of leg IV, 65-Spermatophoral process (M).

1984. *Amblyseius deleoni*, Wei-nan, *Acarology VI*, **2** : 222.

1985. *Amblyseius deleoni*, Schicha & Gutierrez, *Internat. J. Acarol.*, **11**(3) : 178.

1986. *Amblyseius herbicolus*, Lo, *Pl. Prot. Bull. Taiwan*, **28** : 31-39.

1986. *Amblyseius (Amblyseius) herbicolus*, Gupta, *Fauna of India : Phytoseiidae*, p. 45-47.

1987. *Amblyseius (Amblyseius) herbicolus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 9.

1989. *Amblyseius (Amblyseius) herbicolus*, Singh, Somchoudhury & Mukherjee, In : *Progress in Acarology*, **2** : 361-367.

1989. *Amblyseius herbicolus*, Denmark & Muma, *Fla. St. Coll. of Arthropods Occ. Pap.* **4** : 59-60.

1992. *Amblyseius (Amblyseius) herbicolus*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1992. *Amblyseius (Amblyseius) herbicolus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 152-153.

1992. *Amblyseius herbicolus*, Radhakrishnan, Logonathan & Muraleedharan, *Jour. Pl. Crops*, **20**(Suppl.) 97-102.

1995. *Amblyseius (Amblyseius) herbicolus*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 29-30.

1996. *Amblyseius (Amblyseius) herbicolus*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15**(2) : 25.

1997. *Amblyseius herbicolus*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 36.

2000. *Amblyseius (Amblyseius) herbicolus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 21-22.

In press. *Amblyseius (Amblyseius) herbicolus*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Amblyseius) herbicolus*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 357 long, 255 wide. Measurements of setae : j_1–25, j_3–33, s_4–107, Z_5–205, Z_4–125. Sternal shield slightly shorter (81) than wide (94), with 3 pairs of setae. Genital shield 78 wide. Ventrianal shield 116-120 long, 70-80 wide, with 3 pairs of preanal setae, 2 pairs of metapodal plates. Chelicera 2 teeth on fixed digit anterior to *pilus dentilis*, 3 teeth posterior to that. movable digit with 3 teeth. Macrosetae on leg IV : genu–129, tibia–90, basitarsus–70. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$. Spermatheca with fundibuliform cervix.

Male : Chaetotaxy of male as in female. Spermatophoral process as illustrated.

Collection Records : This species was described from Florida on citrus as well as on grass in British West Indies. Thereafter, it was recorded on a number of plants in other parts of the world. In India, it has been recorded also on a number of plants as listed under Habitats.

Habitat : India : Tea, litchi, mulberry, wood apple, *Nephelium litchi*, bamboo, guava, apple, peach, mango, *Ficus cunea, Shorea robusta*, banana, marigold, cinnamone, coconut, weed, champa, papaya, *Dolichos lablab*, undet. plants, orange, brinjal. cardamom, orchid, rose, *Aporus dioca*, Theint (local name in Mizoram) elsewhere : citrus, grass, *Dioscorea, Phaseolus* sp., *Rosa* sp., *Ficus* sp., *Morus* sp., *Crotolaria* sp.

Distribution : India (West Bengal, Tripura, Mizoram, Sikkim, Tamil Nadu), U.S.A., Philippines, Thailand, Taiwan, China, Papua New Guinea, Australia, Japan, Madagascar, South Africa, Mexico, Brazil, West Indies, Portugal.

Remarks : It appears to be a good predator of a number of mite pests, viz. tea purple mite and tea pink mite in Tamil Nadu (Muraleedharan & Chandrasekharan, 1981), litchi erineum mite in West Bengal, on *Brevipalpus phoenicis*, infesting cardamom and citrus mites, *Eotetranychus* sp. on bamboo in Sikkim and *Tetranychus urticae* on vegetables in Mizoram. Heavily fed females turned reddish.

20. *Amblyseius indirae* Gupta

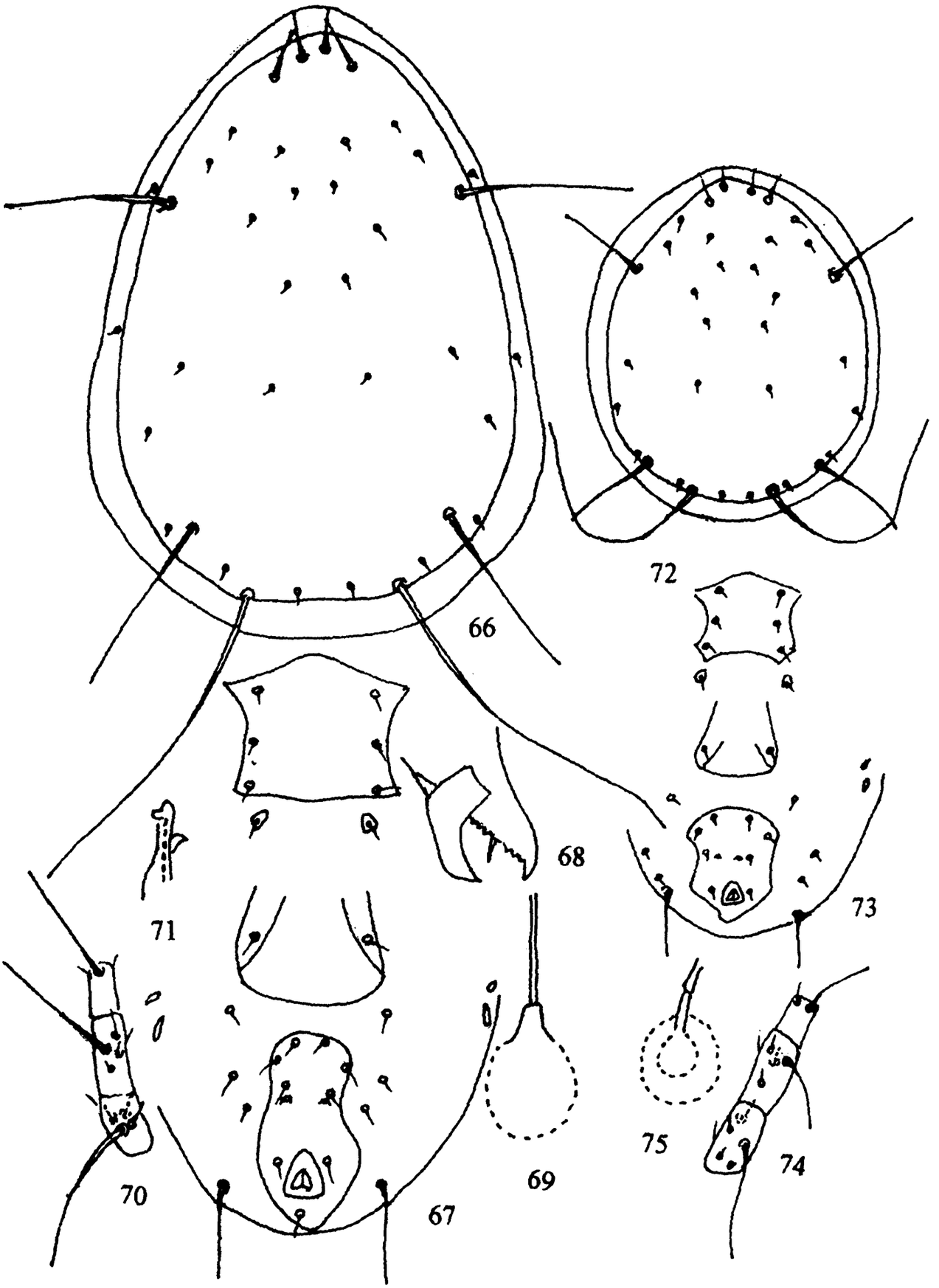
(Figs. 66–71)

1985. *Amblyseius (Amblyseius) indirae* Gupta, *Entomon*, **10**(3) : 209-211.

1986. *Amblyseius (Amblyseius) indirae*, Gupta, *Fauna of India : Phytoseiidae*, p. 47-50.

1987. *Amblyseius (Amblyseius) indirae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 16.

1999. *Amblyseius (Amblyseius) indirae*, Gupta & Chatterjee, *Sci. & Cult.*, **65** : 161.



Figs. 66-71 : *Amblyseius (Amblyseius) indirae* Gupta (F) : 66-Dorsal shield, 67-Ventral surface, 68-Chelicera, 69-Spermatheca, 70-Genu, tibia, basitarsus of leg IV, 71-Spermatophoral process (M). **Figs. 72-75** : *Amblyseius (Amblyseius) kulini* Gupta (F) : 72-Dorsal shield, 73-Ventral surface, 74-Genu, tibia, basitarsus of leg IV, 75. Spermatheca.

Female : Dorsal shield 358 long, 224 wide. Measurements of setae : j_1–33, j_3–36, s_4–105, Z_5–235, Z_4–100. Sternal shield as long (90) as broad, with 3 pairs of sternal setae. Genital shield 67 wide. Ventrianal shield longer (100) than broad (67), with 3 pairs of preanal setae. Fixed digit of chelicera with 4 teeth anterior to *pilus dentilis*, 4–5 teeth posterior to it. Movable digit toothless. Macrosetae on leg IV : genu–117, tibia–94, basitarsus–71. Spermatheca with long duct. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar to that of female.

Collection Records : This mite was described from Karnataka collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Karnataka).

21. ***Amblyseius (Amblyseius) kulini*** Gupta (Figs. 72–75)

1978. *Amblyseius kulini* Gupta, *Indian J. Acar.*, **2**(2) : 62-65.

1986. *Amblyseius (Amblyseius) kulini*, Gupta, *Fauna of India : Phytoseiidae*, p. 50.

1987. *Amblyseius (Amblyseius) kulini*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 10.

1989. *Amblyseius kulini*, Denmark & Muma, *Fla. St. Coll. of Arthroods Occ. Pap.*, **4** : 30-31.

1995. *Amblyseius (Amblyseius) kulini*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 30-31.

Female : Dorsal shield 300 long, 220 wide. Setae j_1, j_3, s_4, Z_5 and Z_4 long measure respectively 28, 44, 80, 200 and 85. Other setae minute. Sternal shield shorter (72) than wide, with 3 paris of setae. Genital shield 80 wide with a pair of setae. Ventrianal shield pentagonal 104 long, 72 wide, with 3 pairs of preanal setae. Macrosetae on leg IV : genu–80, tibia–64, basitarsus–62.

Male : Unknown.

Collection Records : This species was described from Assam on *Bambusa* sp. and from Meghalaya collected on jackfruit.

Habitat : *Bambusa* sp., jackfruit.

Distribution : India (Assam, Meghalaya).

22. ***Amblyseius (Amblyseius) largoensis*** (Muma) (Figs. 76–81)

1955. *Amblyseiopsis largoensis* Muma, *Ann. Ent. Soc. Amer.*, **48** : 266.

1984. *Amblyseius largoensis*, Wei-nan, *Acarology VI*, **1** : 222.

1984. *Amblyseius largoensis*, Gutierrez & Schicha, *Internat. J. Ent.*, **26**(4) : 386.

1986. *Amblyseius (Amblyseius) largoensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 51-55.

1987. *Amblyseius (Amblyseius) largoensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 10-11.

1989. *Amblyseius largoensis*, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 170.

1989. *Amblyseius largoensis*, Rather, In : *Progress in Acarology*, **2** : 188.

1989. *Amblyseius largoensis*, Denmark & Muma, *Fla. St. Coll. of Arghropods Occ. Pap.*, **4** : 55-56.

1989. *Amblyseius (Amblyseius) largoensis*, Singh *et al.*, In : *Progress in Acarology*, **2** : 361-367.

1992. *Amblyseius (Amblyseius) largoensis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 153-154.

1994. *Amblyseius (Amblyseius) largoensis*, Singh, *Shashpa*, **1**(2) : 67.

1995. *Amblyseius (Amblyseius) largoensis*, Gupta, In : *State Fauna Ser. 4, Fauna of Maghalaya, Part 2*, p. 30.

1996. *Amblyseius (Amblyseius) largoensis*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15**(2) : 25.

1999. *Amblyseius (Amblyseius) largoensis*, Gupta & Chatterjee, *Sci. & Cult.*, **65** : 161-162.

2000. *Amblyseius (Amblyseius) largoensis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 22.

In press. *Amblyseius (Amblyseius) largoensis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Amblyseius) largoensis*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

1997. *Amblyseius largoensis*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 39.

Female : Dorsal shield 370–380 long, 260–275 wide. Measurements of setae : j_1–30–36, j_3–45–49, s_4–94–100, Z_5–247–268, Z_4–95–106. Sternal shield longer (86) than broad (74), with 3 pairs of

setae. Genital shiels 85 wide. Ventrianal shield longer (105–110) than broad (70–75), with 3 pairs of preanal setae, 2 pairs of metapodal plates. Fixed digit of chelicera with 3–4 teeth anterior to *pilus dentilis*, 3 teeth posterior to it, movable digit with 2 sharp teeth. Spermatheca with tubular cervix having parallel walls. Macrosetae on leg IV : genu–95–105, tibia–67–76, basitarsus–40–54. Leg chaetotactic formula genu II 2 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2&2\\1&0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1.

Male : Dorsal chaetotaxy similar to female. Spermatophoral process as illustrated.

Collection Records : This species was described on collection from lime tree in U.S.A. Subsequently, in abroad, it has been recorded on a number of plants, the list of which is too lengthy to give here. From India, it has been reported on a number of plants as listed under Habitat.

Habitat : Mango, *Calophyllum inophyllum, Musandra corymbosa, Tabernaemontana coronaria*, castor, beans, citrus, pomegranate, *Dalbergia*, eucalyptus, *Tectona grandis*, black berry, sugarcane, *Cassia*, cashewnut, bamboo, arecanut, *Eugenia*, fig, guava, pepper, *Nerium*, litchi, plum, *Manglistia insignis*, chilli, *Shorea* sp., papaya, *Musa* sp., *Bauhinia acuminata*, poppy, pine cone, grass, dahlia, "kanku", peach, *Cassia fistula, Citrus medica, Basicophia javanica*, china rose, undet, plants, cucurbits, *Phoenix paludosa, Jasminum sambac, Bougainvillea spectabilis, Mallotus* sp., *Alstonia scholaris*, cucumber, coconut, *Calotropis, Anona squamosa*, banana, ornamental plant, palm, banyan, *Suaeda nufiflora*, Gamar, peach, apple, tea, sapota, jackfruit, wood apple, money plant, cotton, *Shorea robusta*, arum.

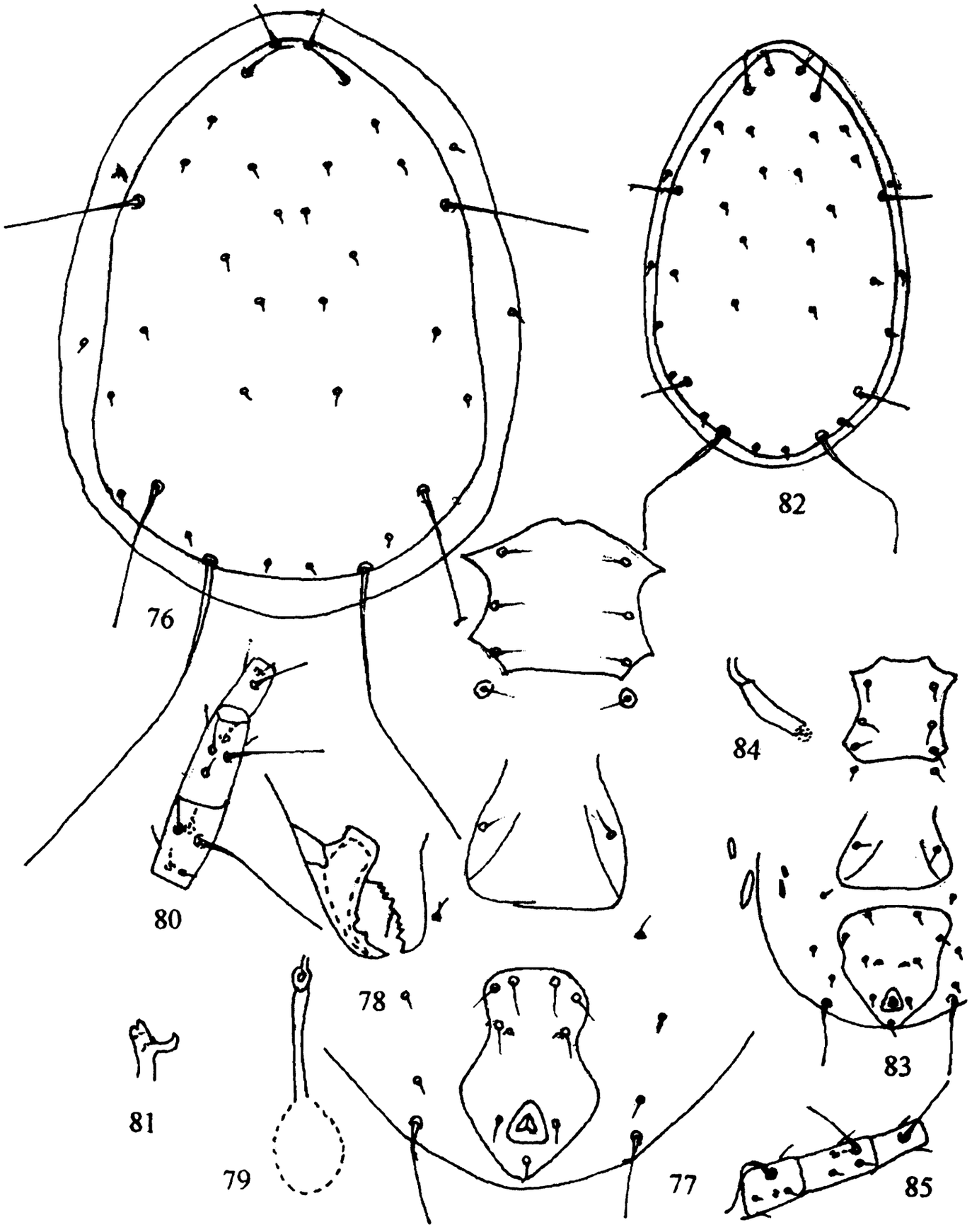
Distribution : India (West Bengal, Manipur, Tripura, Nagaland, Arunachal Pradesh, Assam, Orissa, Sikkim, Andhra Pradesh, Tamil Nadu, Pondicherry, Kerala, Uttar Pradesh, Punjab, Himachal Pradesh, Jammu & Kashmir, Gujarat, Andaman & Nicobar Isls., Lakshadwip Isls., Mizoram, Bihar, Meghalaya, Karnataka). Japan, Guatemala, Hondurus, Puerto Rico, Brazil, Costa Rica, New Zealand, Mexico, Jamaica, Trinidad, South Africa, Kenyia, U.S.A., Israel, Western & Norther Iran, Hong Kong, Philippines, Taiwan, Thailand, China, Papua New Guinea, New Caledonia.

Remarks : Several reports regarding feeding of this mite on phytophagous species are available in India, *viz.* on *Panonychus citri* on citrus, in Karnataka (Rao & Rao, 1964), on *Eutetranychus* sp. on citrus in Andaman Isl. (Gupta, 1977), on *Oligonychus mangiferus* in Bihar (Gupta & Nahar, 1981), *Aceria litchii* on litchi in West Bengal (Singh *et al.*, 1989), on *Oligonychus mangiferus* on mango in West Bengal (Gupta & Gupta, 1992) and on *Brevipalpus lewisi* infesting *Calotropis* in West Bengal (Chatterjee & Gupta, 1996). Besides, it was also reported associated with *Tetranychus urticae* on an undet. Plant in Himachal Pradesh (Gupta *et al.*, 1971) and *Eutetranychus orientalis* infesting citrus in Punjab (Dhooria, 1990). Hence, this phytoseiid species has proved potentiality in biological control, needs to be conserved and used profitably.

23. ***Amblyseius (Amblyseius) mcmurtryi*** Muma (Figs. 82–85)

1967. *Amblyseius mcmurtryi* Muma, *Fla. Ent.*, **50** : 270.
1984. *Amblyseius mcmurtryi*, Wei-nan, *Acarology VI*, **1** : 222.
1986. *Amblyseius (Amblyseius) mcmurtryi*, Gupta, *Fauna of India : Phytoseiidae*, p. 55.
1987. *Amblyseius (Amblyseius) mcmurtryi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 11-12.
1989. *Amblyseius mcmurtryi*, Denmark & Muma, *Fla. St. Coll. of Arthropods Occ. Pap.*, **4** : 104-105.
1992. *Amblyseius (Amblyseius) mcmurtryi*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 31.
1999. *Amblyseius (Amblyseius) mcmurtryi*, Gupta & Chatterjee, *Sci. & Cult.*, **65** : 162.

Female : Dorsal shield 330–360 long, 200–210 wide. Setae j_1, j_3, s_4, Z_4, Z_5 measure 25, 36, 58, 60, 140, respectively. Sternal shield as long as wide with 3 pairs of sternal setae. Ventrianal shield



Figs. 76-81 : *Amblyseius (Amblyseius) largoensis* (Muma) (F) : 76-Dorsal shield, 77-Ventral surface, 78-Chelicera, 79-Spermatheca, 80-Genu, tibia, basitarsus of leg IV, 81-Spermatophoral process (M). **Figs. 82-85 :** *Amblyseius (Amblyseius) mcmurtryi* Muma (F) : 82-Dorsal shield, 83-Ventral surface, 84-Spermatheca, 85-Genu, tibia, basitarsus of leg IV.

almost pentagonal, 108 long, 90 wide, with 3 pairs of preanal setae, 2 pairs of metapodal plates present. Spermatheca short with tubular cervix. Fixed digit of chelicera with 8–9 teeth, movable digit with 3 teeth. Macrosetae on leg IV : genu–50, tibia–40, basitarsus–46. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$.

Male : Unknown.

Collection Records : This species was described from Assam collected on citrus. Thereafter, it has been recorded on guava from Meghalaya and brinjal from Lakshadwip.

Habitat : Citrus, guava, brinjal.

Distribution : India (Assam, Meghalaya, Lakshadwip). Western and Northern Iran.

24. *Amblyseius (Amblyseius) muraleedharani* Gupta

(Figs. 86–90)

1986. *Amblyseius (Amblyseius) muraleedharani* Gupta, *Fauna of India : Phytoseiidae*, p. 57-59.

1987. *Amblyseius (Amblyseius) muraleedharani*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 13-14.

Female : Dorsal shield 403 long, 247 wide. Setae j_1, j_3, s_4, Z_5, Z_4 measure 27, 47, 103, 319, 156, respectively. Sternal shield 78 long, 112 wide, with 3 pairs of setae. Ventrianal shield reticulate, 134 long, 125 wide with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with one tooth. Macrosetae on leg IV : genu–112, tibia– 94, basitarsus– 74.

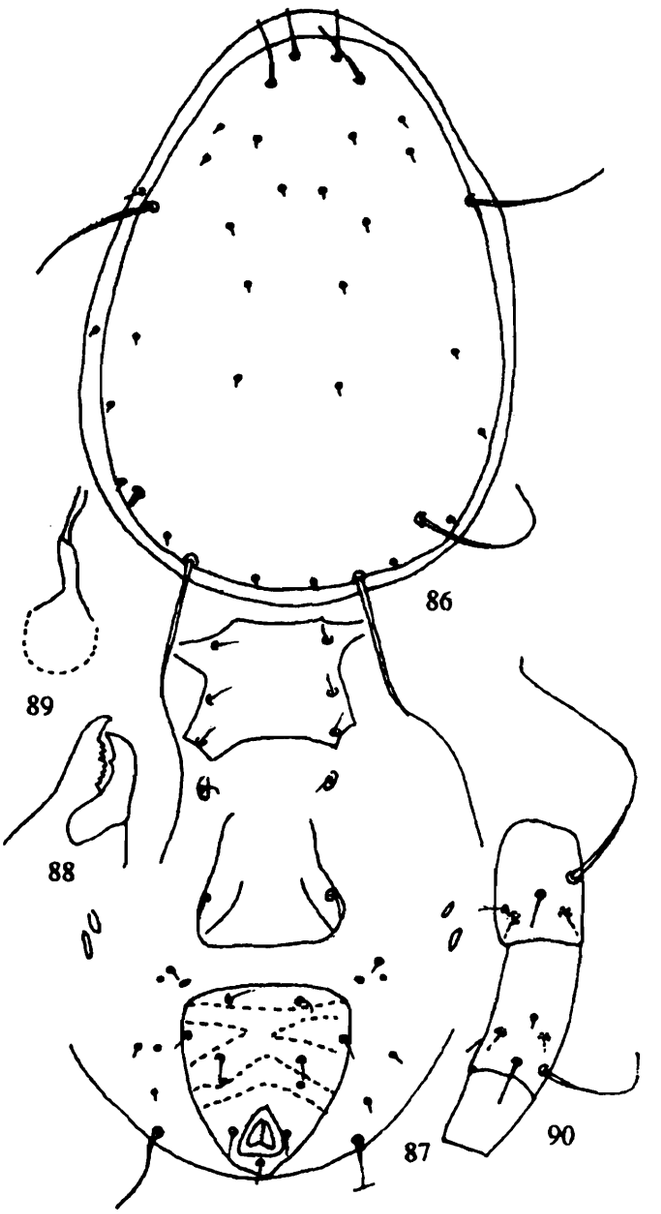
Male : Unknown.

Collection Records : This species was described on the basis of material collected on tea in Tamil Nadu.

Habitat : Tea.

Distribution : India (Tamil Nadu).

Remarks : This mite was associated with *Oligonychus coffeae* on tea in Tamil Nadu (Gupta, 1989).



Figs. 86-90 : *Amblyseius (Amblyseius) muraleedharani* Gupta (F) : 86-Dorsal shield, 87-Ventral surface, 88-Chelicera, 89-Spermatheca, 90-Genu, tibia, basitarsus of leg IV.

25. *Amblyseius (Amblyseius) neorykei* Gupta

(Figs. 91–95)

1977. *Amblyseius neorykei* Gupta, *Ent. mon. Mag.*, **112** : 56.

1986. *Amblyseius (Amblyseius) neorykei*, Gupta, *Fauna of India : Phytoseiidae*, p. 59.

1987. *Amblyseius (Amblyseius) neorykei*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 12.

1992. *Amblyseius (Amblyseius) neorykei*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1996. *Amblyseius (Amblyseius) neorykei*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15**(2) : 25.

In press. *Amblyseius (Amblyseius) neorykei*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield 325–340 long, 210–215 wide. Measurements of setae : j1 27–29, j3–46, s4–90–92, Z5–135, Z4–83–85. Sternal shield as long as broad, with 3 pairs of setae. Genital shield 85 wide. Ventrianal shield 110–120 long, 85–90 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, 2 teeth posterior to it, movable digit with one tooth. Spermatheca as illustrated. Macrosetae on leg IV : genu–70, tibia–50, basitarsus–72. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1.

Male : Unknown.

Collection Records : This species was described from West Bengal collected on chrysanthemum and thereafter it has been recorded on mulberry from Arunachal Pradesh, on Neem, guava, *Chrysanthemum coronarium* from West Bengal and on Champa, banana from Sikkim.

Habitat : *Chrysanthemum coronarium*, Neem, guava, Champa, banana.

Distribution : India : West Bengal, Arunachal Pradesh, Sikkim.

26. ***Amblyseius (Amblyseius) orientalis*** Ehara (Figs. 96–100)

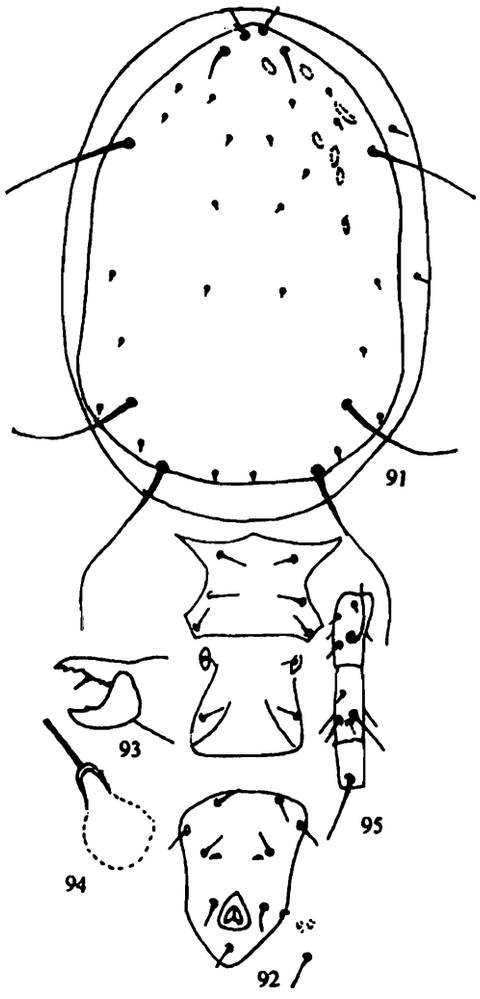
1958. *Amblyseius* sp. Ehara, *Annot. Zool. Jap.*, **31**(1) : 55.

1959. *Amblyseius orientalis* Ehara, *Acarologia*, **1** : 291-293.

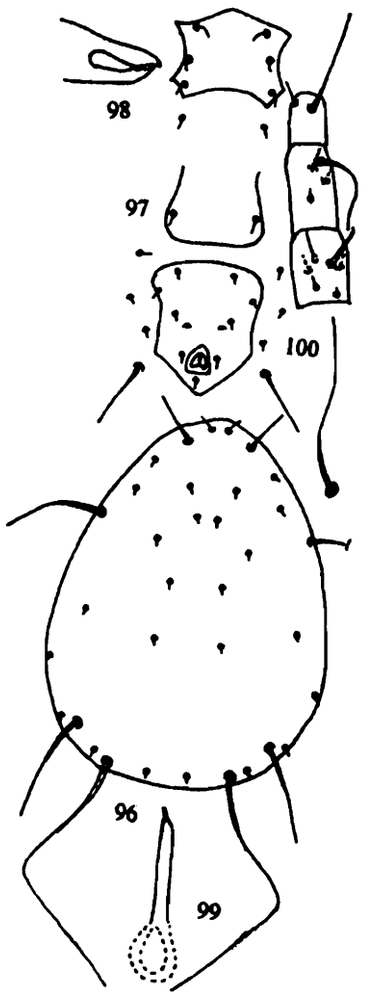
1986. *Amblyseius (Amblyseius) orientalis*, Gupta, *Fauna of India : Phytoseiidae*, p. 61.

1987. *Amblyseius (Amblyseius) orientalis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 13.

Female : Dorsal shield 340 long, 245 wide. Measurements of setae : j_1–28, j_3–56, s_4–95–100, Z_5–250–280, Z_4–110–115. Sternal shield wider



Figs. 91-95 : *Amblyseius (Amblyseius) neorykei* Gupta (F) : 91-Dorsal shield, 92-Ventral surface, 93-Chelicera, 94-Spermatheca, 95-Genu, tibia, basitarsus of leg IV.



Figs. 96-100 : *Amblyseius (Amblyseius) orientalis* Ehara (F) : 96-Dorsal shield, 97-Ventral surface, 98-Chelicera, 99-Spermatheca, 100-Genu, tibia, basitarsus of leg IV.

than long with 3 pairs of setae. Ventrianal shield 124 long, 80 wide with 3 pairs of preanal setae Fixed digit of chelicera with at least 8–10 teeth, movable digit with 3–4 teeth. Spermatheca as illustrated. Macrosetae on leg IV : genu–112, tibia–64, basitarsus–72.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process slightly bifurcate at distal end.

Collection Records : This species was described from Japan collected on *Quercus crispula* and the Indian record of this species is from Assam on an undet. plant.

Habitat : India : Undet. plant, elsewhere : *Quercus crispula.*

Distribution : India (Assam), Japan.

27. ***Amblyseius (Amblyseius) paraaerialis*** Muma (Figs. 101–105a)

1967. *Amblyseius paraaerialis* Muma, *Fla. Ent.*, **50** : 270-271.

1986. *Amblyseius (Amblyseius) paraaerialis*, Gupta, *Fauna of India : Phytoseiidae*, p. 63.

1987. *Amblyseius (Amblyseius) paraaerialis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 15.

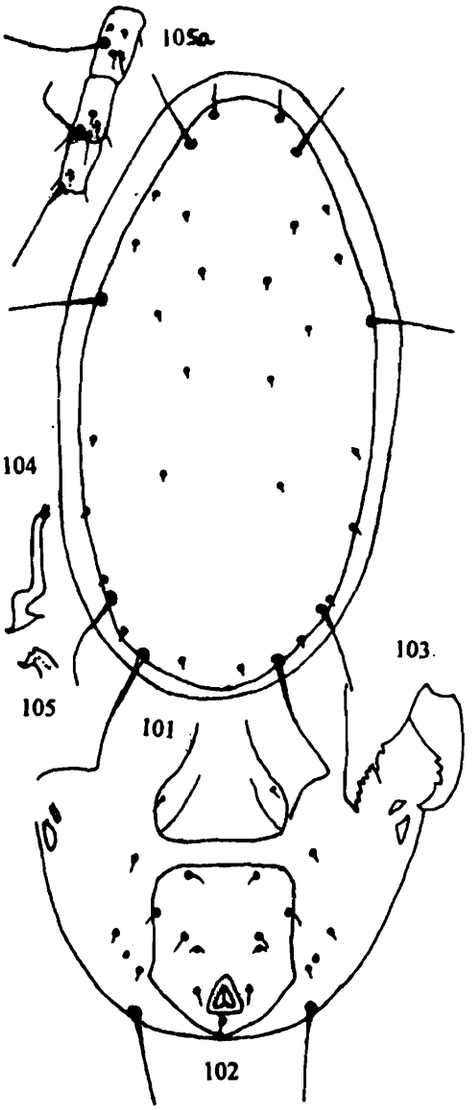
1989. *Amblyseius paraaerialis*, Denmark & Muma *Fla. St. Coll. of Arthropods Occ. Pap.*, **4** : 128-129.

1992. *Amblyseius (Amblyseius) paraaerialis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1995. *Amblyseius (Amblyseius) paraaerialis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 31.

In press. *Amblyseius (Amblyseius) paraaerialis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield 350 long, 255 wide. Measurements of setae j_1–27, j_3–50, s_4–72, Z_5–161, Z_4–89. Sternal shield with 3 pairs of setae. Genital shield 90 wide, with a pair of setae. Ventrianal shield 128 long, 101 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 4–5 teeth anterior to strong *pilus dentilis*. Macrosetae on leg IV : genu–73, tibia–46, basitarsus–56. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}|\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.



Figs. 101-105a : *Amblyseius (Amblyseius) paraaerialis* Muma (F) : 101-Dorsal shield, 102-Post ventral surface, 103-Chelicera, 104-Spermatheca, 105-Spermatophoral process (M), 105a-Genu, tibia, basitarsus of leg IV.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.

Collection Records : The description of this species is based upon material collected on citrus in Kerala. Afterwards, it has also been collected from Arunachal Pradesh on grass, from Meghalaya on palm and grass, from Assam on the same plants, from Sikkim on bamboo, grass.

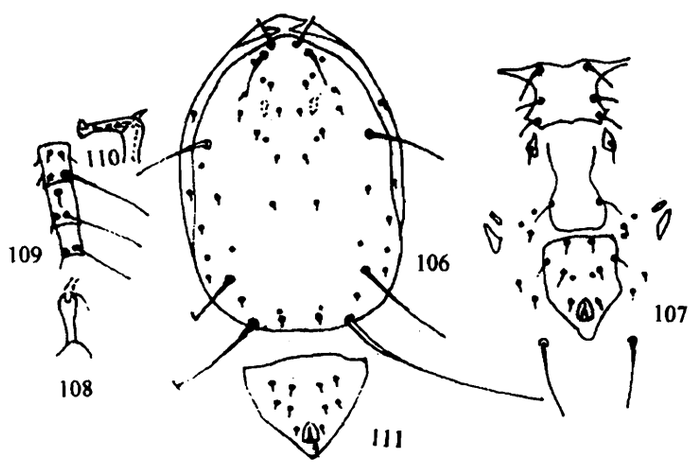
Habitat : Citrus, grass, palm, bamboo.

Distribution : India (Arunachal Pradesh, Assam, Meghalaya, Sikkim, Kerala), Thailand.

28. *Amblyseius (Amblyseius) raoiellus* Denmark & Muma
(Figs. 106–111)

1989. *Amblyseius raoiellus* Denmark & Muma, *Fla, St. Coll. of Arthropods Occ. Pap.* **4** : 31.

Female : Dorsal shield 346 long, 217 wide. Measurements of setae : j_1–36, j_3–53, s_4–95, Z_5–220–235, Z_4–122. Ventrianal shield with 3 pairs of preanal setae. Fixed digit of chelicera with 10 teeth, movable digit with 4 teeth. Macrosetae on leg IV : genu–105–113, tibia–72–80, basitarsus–62–74. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$. Spermatheca with sacular pocular cervix and distinct atrium.



Figs. 106-111 : *Amblyseius (Amblyseius) raoiellus* Denmark & Muma (F) : 106-Dorsal shield, 107-Ventral surface, 108-Spermatheca, 109-Genu, tibia, basitarsus of leg IV, 110-Spermatophoral process (M), 111-Ventrianal shield (M). (after Denmark & Muma, 1989)

Male : Similar to female.

Collection Records : The description of this species was based on collection on *Raoiella indica* in Karnataka.

Habitat : *Raoiella indica.*

Distribution : India (Karnataka).

Remarks : The description as given here is after Denmark & Muna (1989).

29. *Amblyseius (Amblyseius) shoreae* Gupta
(Figs. 112–115)

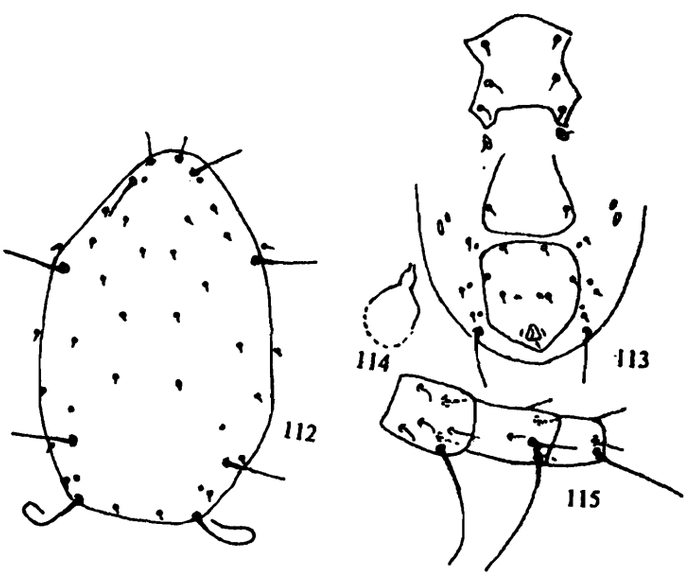
1977. *Amblyseius shoreae* Gupta, *Ent. mon. Mag.*, **112** : 57.

1986. *Amblyseius (Amblyseius) shoreae*, Gupta, *Fauna of India : Phytoseiidae*, p. 65-67.

1987. *Amblyseius (Amblyseius) shoreae*, Gupta, *Rec. Zool. Surv. India Occ. Pap.*, **95** : 14.

Female : Dorsal shield 335 long, 205 wide. Measurements of setae : j_1–27, j_3–50, s_4–60, Z_5–96, Z_4–60. Sternal shield almost as long as broad, with 3 pairs of sternal setae. Ventrianal shield 100 long, 84 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–73, tibia–44, bastitarsus–56. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{2}{0}\ \frac{2}{1}\ 1$, genu III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Unknown.



Figs. 112-115 : *Amblyseius (Amblyseius) shoreae* Gupta (F) : 112-Dorsal shield, 113-Ventral surface, 114-Spermatheca, 115-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon materal collected from West Bengal on *Shorea robusta.*

Habitat : *Shorea robusta.*

Distribution : India (West Bengal).

Subgenus 2. *Asperoseius* Chant

1957. *Asperoseius* Chant, *Can. Ent.*, **89** : 360.

1984. *Amblyseius (Asperoseius)*, Wei-nan, & Zhao-quan, *Acta Entomologica Sinica*, **27**(1) : 99.

1986. *Asperoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 67.

1987. *Asperoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 18.

Diagnosis : Dorsal shield moderately sclerotized with 5 pairs of dorsocentral, 2 pairs of median, 7 pairs of lateral and 2 pairs of sublateral setae, the latter two are on lateral integument. Seta J_2 absent, j_1, j_3, s_4, Z_5, Z_4, r_3, R_1 being long, thick and serrate. Sternal shield with 3 pairs of setae. Leg IV macrosetae present on genu, tibia and basitarsus, mostly spatulate and knobbed.

Type ***Asperoseius africanus*** Chant

Key to the species of subgenus *Asperoseius* known to inhabit plants in India

1. Seta S_5 present ..... *hyauliangensis*
– Seta S_5 absent 2
2. Macroseta on genu IV and tibia IV equal, all being subcapitate, ventrianal shield much longer than wide ..... *heveae*
– Macrosetae on genu IV, longer than that on tibia IV, macrosetae knobbed, ventrianal shield only slightly longer than wide .... *nucifera*

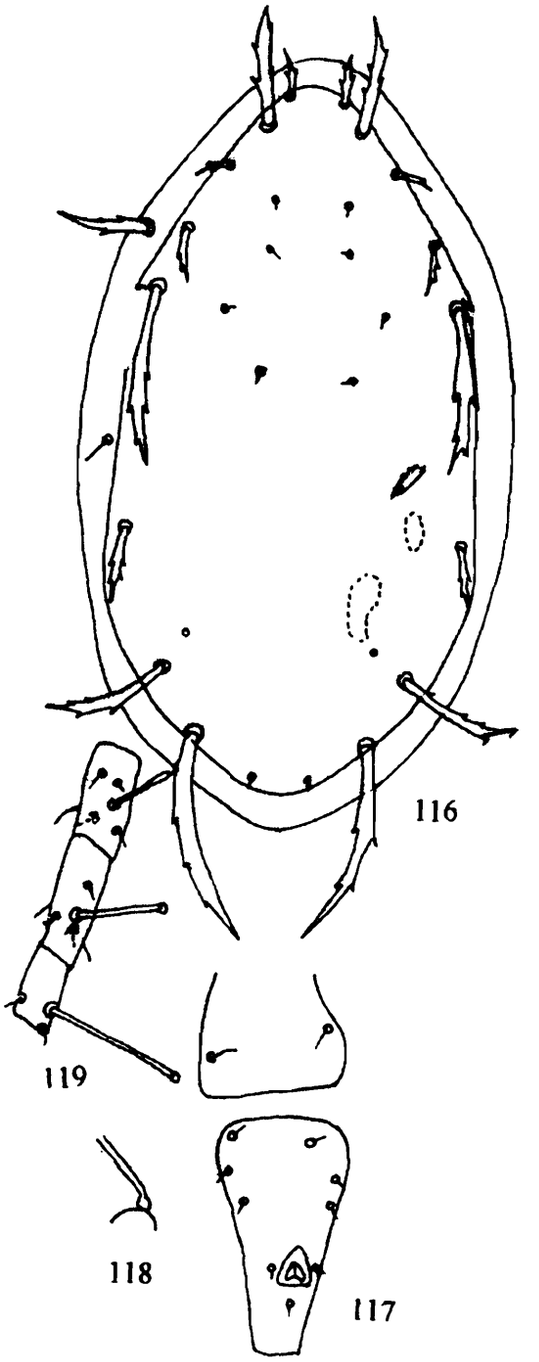
30. *Amblyseius (Asperoseius) heveae* (Oudemans)

(Figs. 116–119)

1930. *Typhlodromus heveae* Oudemans, *Can. Ent.*, **8** : 97.
1986. *Amblyseius (Asperoseius) heveae*, Gupta, *Fauna of India : Phytoseiidae*, p. 67.
1987. *Amblyseius (Asperoseius) heveae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 18–19.
1992. *Amblyseius heveae*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 180.

Female : Dorsal shield rugose, notched at the level of s_4. Measurements of setae : j_1–31, j_4–j_5–6 each, j_6–12, J_5–6, j_3–63, z_2–18, z_4–34, s_4–90, Z_1–9, S_2–40, Z_5–71, z_5–6, Z_4–60, r_3–47, R_1–23. Sternal shield longer than wide, with 3 pairs of sternal setae. Ventrianal shield elongate, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–44, tibia–43, basitarsus–80, distitarsus–42.

Male : Unknown.



Figs. 116-119 : *Amblyseius (Asperoseius) heveae* (Oudemans) (F) : 116-Dorsal shield, 117-Genital and ventrianal shields, 118-Spermatheca, 119-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described based on material collected on *Heveae* sp. from Indonesia. The Indian record is from an undet. plant in Arunachal Pradesh.

Habitat : India : Undet. plant, elsewhere : *Heveae* sp.

Distribution : India (Arunachal Pradesh), Indonesia., Thailand.

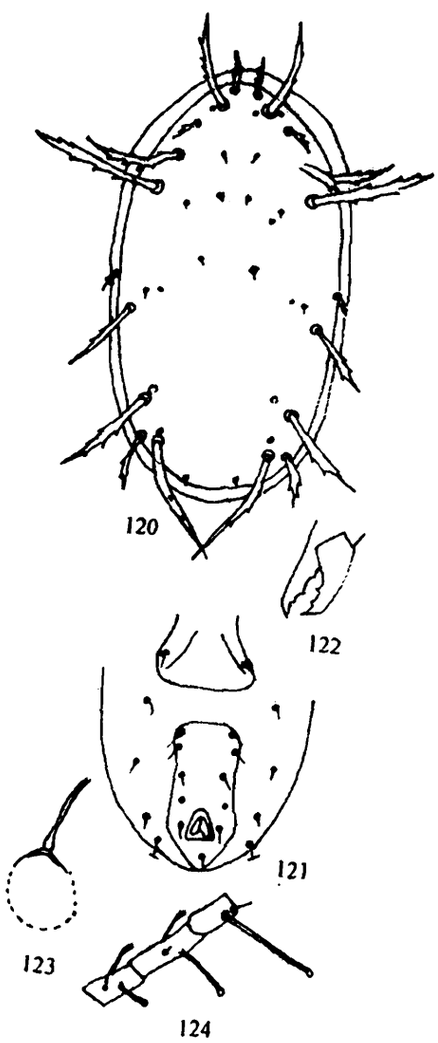
31 ***Amblyseius (Asperoseius) hyauliangensis*** Gupta

(Figs. 120–124)

1986. *Amblyseius (Asperoseius) hyauliangensis* Gupta, *Fauna of India : Phytoseiidae*, p. 69-71.

1987. *Amblyseius (Asperoseius) hyayliangensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 19-20.

Female : Dorsal shield 336 long, 150 wide. Measurements of setae : j_1. 36, j_4, j_5–minute, j_6–16, J_5–minute, j_3–84–88, z_2–24, z_4–40, s_4–123, Z_1–13, S_2–80, S_5–30, Z_5–106, z_5–minute, Z_4–100, r_3–56, R_1–33. Sternal shield 89 long, 79 wide, with 3 pairs of sternal setae. Genital shield 78 wide, with a pair of setae. Ventrianal shield 100 long, 56 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth placed anteriorly, 1–2 teeth placed posteriorly, movable digit with 2 teeth.



Figs. 120-124 : *Amblyseius (Asperoseius) hyauliangensis* Gupta (F) 120-Dorsal shield, 121-Post ventral surface, 122-Chelicera, 123-Spermatheca, 124-Genu, tibia, basitarsus of leg IV.

Macrosetae on leg IV : genu–26, tibia–49, basitarsus–89, all being knobbed. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}2\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1.

Male : Unknown.

Collection Records : This species was described from Arunachal Pradesh collected on an undet. plant.

Habitat : Undet, plant.

Distribution : India (Arunachal Pradesh).

Remarks : Gupta (1986) while dealing with this species in the Fauna Vol. cited the original reference of this species as in "Oriental Ins." However, since the description of this species appeared first in the Fauna Vol. (Gupta, 1986), the description of this species communicated in "Oriental Ins." was withdrawn. Therefore, the original reference of this species should be treated as given here and not as cited in Fauna Vol.

32. ***Amblyseius (Asperoseius) nucifera*** (Gupta)

(Figs. 125–128)

1979. *Paraphytoseius (Tropicoseius) nucifera* Gupta, *Bull. Zool. Surv. India*, **2**(1) : 80-81.

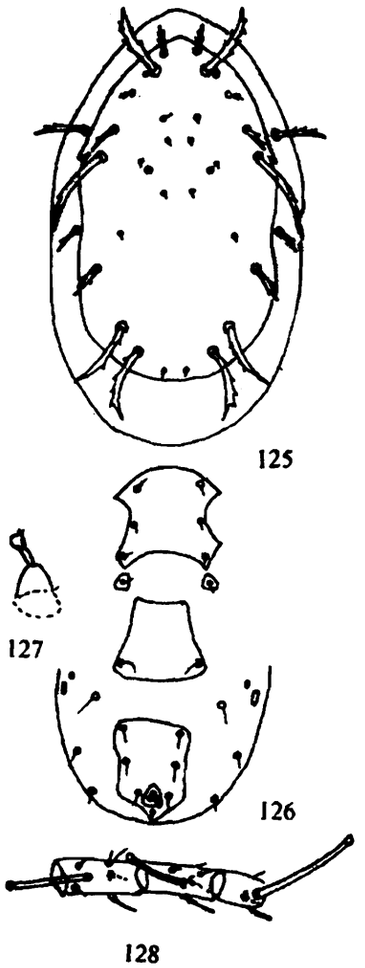
1986. *Amblyseius (Asperoseius) nucifera*, Gupta. *Fauna of India : Phytoseiidae*, p. 71.

1987. *Amblyseius (Asperoseius) nucifera*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 19.

Female : Dorsal shield 305 long, 165 wide. Measurements of setae : j_1–28, j_4–j_6–4 each, J_5–4, j_3–68, z_2–16, z_4–32, s_4–80, Z_1–4, S_2–40, Z_5–76, z_5–4, Z_4–68, r_3–56, R_1–28. Sternal shield weakly sclerotized, as long (80) as wide, with 3 pairs of sternal setae. Ventrianal shield 80 long, 60 wide with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, tooth on movable digit not discernible. Macrosetae on leg IV : genu–44, tibia–36, basitarsus–64, distitarsus–40, all with knobbed

tip. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}2\\1\end{smallmatrix}$ $\begin{smallmatrix}1\\1\end{smallmatrix}$ 1.

Male : Unknown.



Figs. 125-128 : *Amblyseius (Asperoseius) nucifera* Gupta (F) : 125-Dorsal shield, 126-Ventral surface, 127-Spermatheca, 128-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon material collected on *Cocos nucifera* in Kerala. Thereafter, it has also been collected on jute in West Bengal.

Habitat : *Cocos nucifora.* jute.

Distribution : India (Kerala, West Bengal).

Subgenus 3. *Euseius* Wainstein

1962. *Amblyseius (Amblyseius)* Sec. *Euseius* Wainstein, *Acarologia,* **4** : 15.

1979. *Euseius*, Chaudhri *et al., Univ. Agr. Faisalabad,* p. 56.

1982. *Euseius*, Karg, *Zool. Jb. Syst. Bd.*, **109** : 196.

1986. *Euseius*, Gupta, *Fauna of India : Phytoseiidae,* p 78-80.

1987. *Euseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 20.

1989. *Euseius*, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 164.

1992. *Euseius*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 154.

1995. *Euseius*, Amitai, *Entomol. Hell.*, **10** : 19-20.

1997. *Euseius*, Gupta & Chatterjee, In : *State Fauna Ser. 6. Fauna of Delhi,* p. 520.

Diagnosis : Dorsal shield with 6 pairs of dorsocentral setae, 9 pairs of laterals and 2 pairs of median setae, Z_5 being longest. Chelicera small, fixed digit with 0–2 teeth distal to medially located *pilus dentilis*, Sternal shield wider than long, indistinctly lobate posteriorly. Peritreme extends upto j_1. Ventrianal shield elongate, frequently vase shaped, preanal setae more or less arranged in two transverse curved rows; genu, tibia and basitarsus of leg IV always with macrosetae, the latter being the longest.

Type ***Seiulus finlandicus*** Oudemans, 1915 (by indication, Wainstein, 1962)

Key to the species of subgenus *Euseius* known to inhabit plants in India*

1. All setae on dorsal shield minute except j_1 and Z_5 2
– Besides Z_5 and j_1 some other setae also long 5
2. S_2–S_5 equal 3
– S_2–S_5 unequal 4
3. Macrosetae on leg IV knobbed .... *macrospatulatus*
– Macrosetae on leg IV simple ..... *ovalis*
4. S_4 longer than S_2 and S_5, which two are equal ..... *rhododendronis*
– S_4 and S_5 equal and longer than S_2 .... *sacchari*
5. j_1, j_3 either equal or j_3 longer than j_1 6
– j_1 longer than j_3 12
6. j_3 longer than j_1 7
– j_3 as long as j_1 10

**insanus* is not included in this key for want of adequate description of this species.

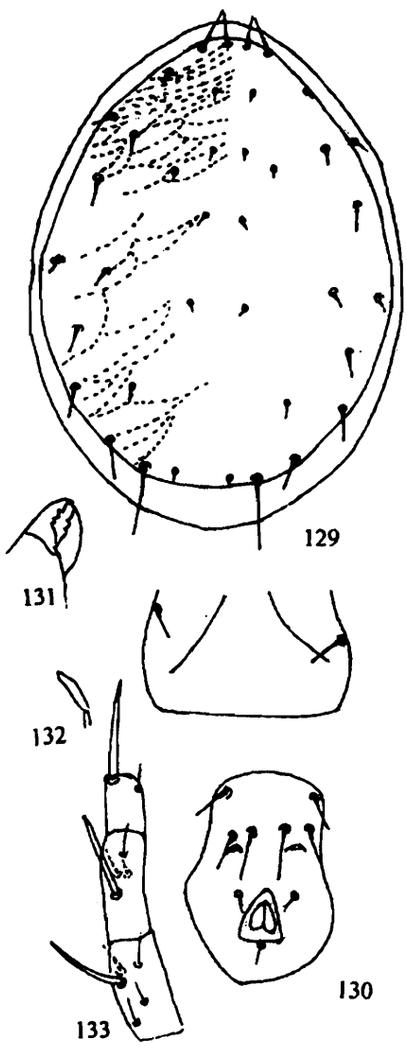
7. S_2 noticeably longer than Z_1 8
- S_2 and Z_1 almost equal 9
8. Spermatheca tubular as figured .... *ahaioensis*
- Spermatheca as figured in 137 .... *alstoniae*
- Spermatheca as figured in 212 .... *scutalis*
9. Width of anterior margin of ventrianal shield almost half of width of ventrianal shield at anal region ..... *delhiensis*
- Width of anterior margin of ventrianal shield almost as much as width of ventrianal shield at anal region ..... *concordis*
10. Macroseta on leg IV acuminate .... *eucalypti*
- Macrosetae on leg IV capitate 11
11. Spermatheca as figured in 149 .... *coccineae*
- Spermatheca as figured in 154 .... *coccosocius*
12. j_3 and z_2 almost equal ..... *neococcineae*
- j_3 noticeably longer than z_2 13
13. S_5 longer than S_4 15
- S_5 as long as or shorter than S_4 14
14. Macrosetae on genu IV about 1/2 of that on basitarsus IV ..... *vignus*
- Macrosetae on genu IV only slightly smaller than that on basitarsus IV ..... *bambusae*
15. Spermatheca and spermatophoral process as in figs. 196 and figs. 198 ..... *pruni*
- Spermatheca and spermatophoral process as in fig. 174 and fig. 176 ..... *finlandicus*

33. ***Amblyseius (Euseius) ahaioensis*** Gupta (Figs. 129–133)

1992. *Amblyseius (Euseius) ahaioensis* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 160-161.

Female : Dorsal shield 302 long, 212 wide. Measurements of setae : j_1–29, j_4–9, j_6–11, z_2–9, S_2–16, S_4–20, S_5–22, Z_5–63, z_5–9, Z_4–12, r_3, R_1–11 each. Sternal shield with 3 pairs of setae. Ventrianal shield pitcher shaped, 76 long, 67 wide, with 3 pairs of preanal setae. Chelicera with 3 teeth on fixed digit, 2 teeth on movable digit. Macrosetae on leg IV : genu–33, tibia–31, basitarsus–44, all with spatulate tip.

Male : Unknown.



Figs. 129-133 : *Amblyseius (Euseius) ahaioensis* Gupta (F) : 129-Dorsal shield, 130-Genital and Ventrianal shield, 131-Chelicera, 132-Spermatheca, 133-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from West Bengal collected on custard apple.

Habitat : Custard apple.

Distribution : India (West Bengal).

34. ***Amblyseius (Euseius) alstoniae*** Gupta (Figs. 134–139)

1975. *Amblyseius alstoniae* Gupta, *Internat. J. Acarol.*, 1(2) : 31-32.

1986. *Amblyseius (Euseius) alstoniae*, Gupta, *Fauna of India : Phytoseiidae*, p. 74-76.

1987. *Amblyseius (Euseius) alstoniae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 21.

1989. *Amblyseius alstoniae*, Jose, Shah & Patel, In : *Progress in Acarology*, **2** : 357-360.

1990. *Amblyseius alstoniae*, Dhooria, *Acar. Newsl.*, **17-18** : 17.

1992. *Amblyseius (Euseius) alstoniae*, Gupta, In : *Contributions to Acarological Researches in India.* p. 442.

1992. *Amblyseius (Euseius) alstoniae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 155.

1993. *Amblyseius (Euseius) alstoniae*, Mukherjee & Singh, *J. Insect Sci.*, **6**(1) : 136.

1995. *Amblyseius (Euseius) alstoniae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 31.

1995. *Amblyseius (Euseius) alstoniae*, Singh, *Adv. Agri. Res., India*, **3** : 189.

1995. *Amblyseius alstoniae*, Mathur & Mathur, *Abst. V Nat. Symp. Acarology, Bangalore*, p. 14.

1995. *Amblyseius alstoniae*, Kumari & Sadana, *Indian J. Acar.*, **13** : 55.

1995. *Amblyseius alstoniae*, Jagadish *et al.*, *Abst. V Nat. Symp. Acarology, Bangalore*, p. 17.

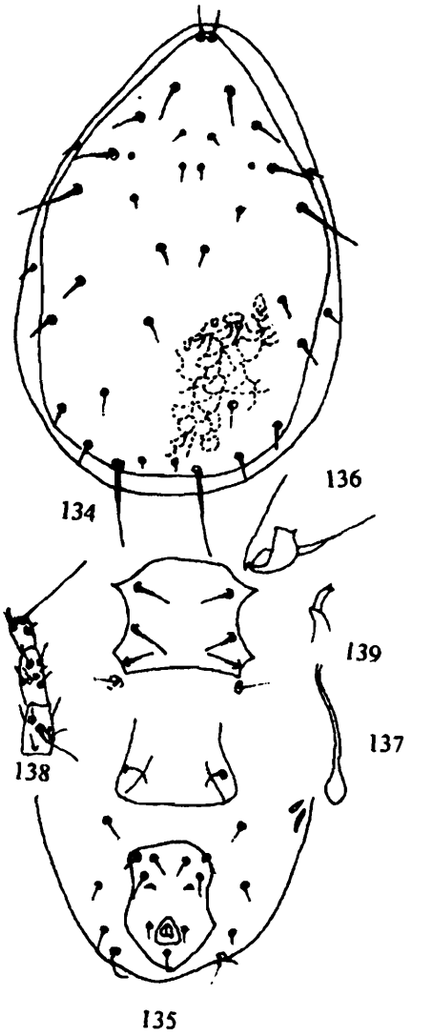
1996. *Amblyseius (Euseius) alstoniae*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)* : **15**(2) : 25.

1997. *Amblyseius (Euseius) alstoniae*, Gupta, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 524.

2000. *Amblyseius (Euseius) alstoniae*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura. Part 2*, p. 22.

Female : Dorsal shield smooth anteriorly, rugose posteriorly. Measurements of setae : j_1–25, j_4–8–13, j_5–8–13, j_6–26–31, J_2–26–31, J_5–5–6, j_3–28–33, z_2–26–28, z_4–31–38, s_4–48–56, Z_1–20–22, S_2–26–31, S_4–18–22, S_5–28–34, Z_5–56–63, (weakly serrate), z_5–18, Z_4–27–29, r_3–15–18, R_1–15–18. Sternal shield as long as wide, with 3 paris of setae. Genital shield as wide as greatest width of ventrianal shield. Ventrianal shield longer (90) than broad (78) with 3 pairs of preanal setae. Spermatheca as figured. Chelicera with 2–3 teeth on fixed digit, movable digit with one tooth. Macrosetae on leg IV : genu–48–52, tibia–32–36, basitarsus–67–76. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.



Figs. 134-139 : *Amblyseius (Euseius) alstoniae* Gupta (F) : 134-Dorsal shield, 135-Ventral surface, 136-Chelicera, 137-Spermatheca, 138-Genu, tibia, basitarsus of leg IV, 139-Spermatophoral process (M).

Collection Records : This species was described from West Bengal collected on *Alstonia scholaris*. Thereafter, it has been reported on a number of plants throughout India, the details of plant species are listed under Habitat.

Habitat : *Alstonia scholaris, Zinia,* sapota, chilli, cotton, *Acacia,* date palm, *Nerium indicum,* cucurbits, pomegranate, *Tabernaemontana coronaria,* palm, maize, pear, sugarcane, *Dalbergia sissoo, Butea monosperma,* grass, rose, *Nyctanthes arbortristis,* guava, *Ficus,* citrus, ornamental plants, grape vines, beans, mulberry, sunflower, *Pyrus malus, Feronia elephanta,* papaya, *Malus sylvestris,* wood apple,

Ficus glomerata, peach, bitter gourd, sweet gourd, *Terminalia arjuna*, *Lantana*, *Cassia occidentalis*, *Magnolia grandiflora*, *Calotropis procera*, *sugarcane*, *mango*.

Distribution : India (Arunachal Pradesh, Meghalaya, Tripura, West Bengal, Orissa, Bihar, Tamil Nadu, Karnataka, Gujarat, Haryana, Punjab, Uttar Pradesh, Madhya Pradesh, Jammu & Kashmir Rajasthan).

Remarks : Reports regarding feeding of this mite upon various pest species were available as : on *Eutetranychus orientalis* on citrus in Punjab (Dhooria, 1980, 1982), on *Tetranychus macfarlanei* infesting cotton in Gujarat (Sha *et al.*, 1986, Jose *et al.*, 1989), on *Brevipalpus phoenicis* in Punjab (Kumari & Sadana, 1995), on an undet. plant feeding mite in Haryana (Mathur *et al.*, 1995), on *Petrobia latens* infesting wheat in Rajasthan (Anon. 1994-95) and *Bevipalpus deleoni* infesting guava in West Bengal (Chatterjee & Gupta, 1996). Besides, it was also found associated with *T. urticae* on cotton, with *Eutetranychus orientalis* on *Dalbergia sissoo* and pear and *Oligonychus indicus* on pigeonpea (Dhooria, 1990).

35. *Amblyseius (Euseius) bambusae* Ghai & Menon

(Figs. 140–145)

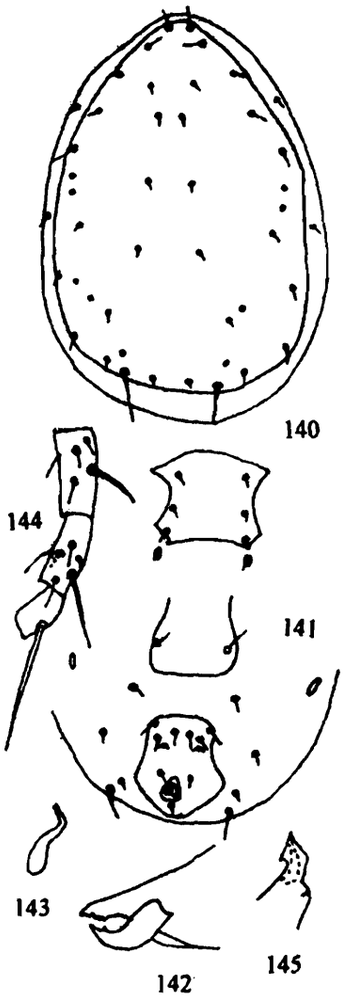
1967. *Amblyseius bambusae* Ghai & Menon, *Oriental Ins.*, **1** : 66-67.

1986. *Amblyseius (Euseius) bambusae*, Gupta, *Fauna of India : Phytoseiidae*, p. 76.

1987. *Amblyseius (Euseius) bambusae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 22.

Female : Dorsal shield 360 long, 260 wide. Measurements of setae : j_1–32, j_4, j_5–5 each, j_6, J_2–11 each, J_5–4, j_9–24, z_2–20, z_4–20, s_4–30, Z_1–12, S_2–16, S_4–20, S_5–17, Z_5–50, z_5–4, Z_4–12, r_3–9, R_1–12. Sternal shield slightly longer (86) than wide with 3 pairs of sternal setae. Genital shield almost as wide as greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 100 long, 76 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3–4 apical teeth, movable digit with one tooth. Spermatheca as illustrated. Macrosetae on leg IV : genu–55, tibia–45, basitarsus–70. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&1\\1&1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as illustrated.



Figs. 140-145 : *Amblyseius (Euseius) bambusae* Ghai & Menon (F) : 140-Dorsal shield, 141-Ventral surface, 142-Chelicera, 143-Spermatheca, 144-Genu, tibia, basitarsus of leg IV, 145-Spermatophoral process.

Collection Records : This species was described from Karnataka collected on *Bambusa* sp. along with eriophyid mites. Thereafter, the collection was made from Darjeeling in West Bengal on an undet. plant; from Tripura on bamboo; from Tamil Nadu on *Pyrus communis*, *Butea monosperma*, *Dalbergia* sp., *Ficus religiosa*, *Coffea arabica*, pear; from Kerela; from Andhra Pradesh and Karnataka on undet. plants.

Habitat : Bamboo, *Pyrus communis, Butea monosperma, Dalbergia* sp., *Ficus religiosa, Coffea arabica,* undet. plants.

Distribution : India (Tripura, West Bengal, Karnataka, Tamil Nadu, Andhra Pradesh, Kerala).

36. *Amblyseius (Euseius) coccineae* Gupta (Figs. 146–151)

1975. *Amblyseius coccineae* Gupta, *Indian J. Acar.*, **1** : 30.

1986. *Amblyseius (Euseius) coccineae*, Gupta, *Fauna of India : Phytoseiidae*, p. 80.

1987. *Amblyseius (Euseius) coccineae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 22-23.

1992. *Amblyseius (Euseius) coccineae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 156.

1992. *Amblyseius (Euseius) coccineae*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1994. *Amblyseius (Euseius) coccineae*, Singh, *Shashpa*, **1**(2) : 67.

1995. *Amblyseius (Euseius) coccineae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 32.

1996. *Amblyseius (Euseius) coccineae*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15**(2) : 26.

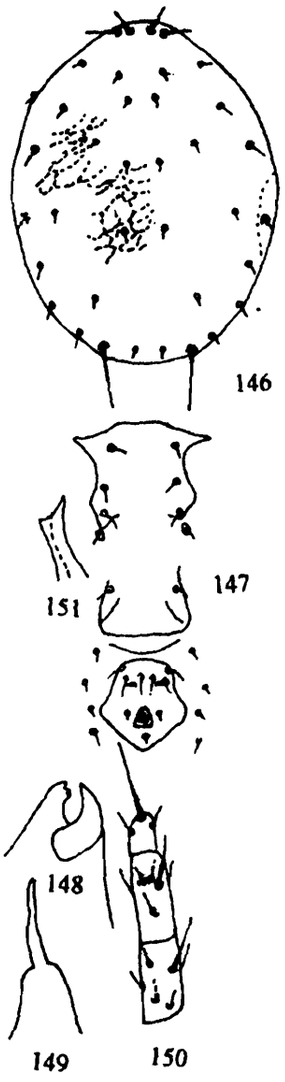
2000. *Amblyseius (Euseius) coccineae*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 23.

In press. *Amblyseius (Euseius) coccineae*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield 303 long, 210 wide. Measurements of setae : j_1–25, j_4–j_5–10–20 each, J_2–15, J_5–6, j_3–30, z_2–19–20, z_4–20–21, s_4–31–36, Z_1–11–14, S_2–21–22, S_4–19–24, S_5–22–28, Z_5–58–60, z_5–9, Z_4–13, r_3, R_1–12–13 each. Sternal shield 76 long, 81 wide, with 3 pairs of sternal setae. Genital shield 84 wide. Ventrianal shield 85 long, 76 wide, with 3 pairs of preanal setae. Chelicera with 2 teeth on fixed digit and none on the movable digit. Spermatheca as figured. Macrosetae on leg IV : genu–37–47, tibia–33–37, basitarsus 48–55, all with thickened tip. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}1\\1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar as in female. Spermatophoral process as figured.

Collection Records : The description of this species was made from West Bengal collected on



Figs. 146-151 : *Amblyseius (Euseius) coccineae* Gupta (F) : 146-Dorsal shield, 147-Ventral surface, 148-Chelicera, 149-Spermatheca, 150-Genu, tibia, basitarsus of leg IV, 151-Spermatophoral process (M).

Coccinea indica. Thereafter, it has been recorded on a number of plants like : *Colocasia antiquorum* in Uttar Pradesh; guava from Arunachal Pradesh; jackfruit, *Shorea robusta,* mango, mulberry, blackberry, Sissoo, cotton, tea, *Sonnertia alba, Antegonen leptopus* in West Bengal; arum and an undet, plant in Assam and Meghalaya; *Schima wallachi,* guava from Tripura; china rose from Sikkim; mango and castor from Gujarat; jackfruit, cashew, bamboo, *Terminalia arjuna, Eugenia* from Orissa; an undet. plant from Pondicherry; marigold and *Tebernaemontana coronaria* from Tamil Nadu; cashewnut from Andhra Pradesh; papaya, mango, jackfruit, sugarcane in Bihar and some undet. plants in Jammu & Kashmir and Madhya Pradesh.

Habitat : *Coccinae indica,* citrus, marigold, *Tabernaemontana coronaria,* cashewnut, mango, castor, jackfruit, bamboo, *Terminalia arjuna, Eugenia* sp., arum, *Ficus, Polianthes tuburosa, Shorea robusta, Eucalyptus* sp., Fig, guava, *Bougainvillea* sp., pear, mulberry, papaya, *Schima wallachi,* sugarcane, cotton, tea, *Sonnertia alba, Antegonen leptopus,* china rose, sissoo.

Distribution : India (Arunachal Pradesh, Sikkim, Meghalaya, Tripura, Assam, West Bengal, Orissa, Bihar, Pondicherry, Tamil Nadu, Andhra Pradesh, Gujarat, Madhya Pradesh, Jammu & Kashmir Uttar Pradesh.

Remarks : Gupta (1977) reported this species feeding on eggs of *Oligonychus mangiferus* and sucked its contents. It also fed upon citrus mite, *Eutetranychus orientalis* and found associated with *Tetranychus urticae* on papaya in Bihar (Gupta & Nahar, 1981).

37. *Amblyseius (Euseius) coccosocius* Ghai & Menon

(Figs. 152–155)

1967. *Amblyseius coccosocius* Ghai & Menon, *Oriental Ins.*, **1** : 67-68.

1986. *Amblyseius (Euseius) coccosocius*, Gupta, *Fauna of India Phytoseiidae,* p. 80.

1987. *Amblyseius (Euseius) coccosocius*, Gupta, *Rec. zool. Surv India, Occ. Pap.*, **95** : 23.

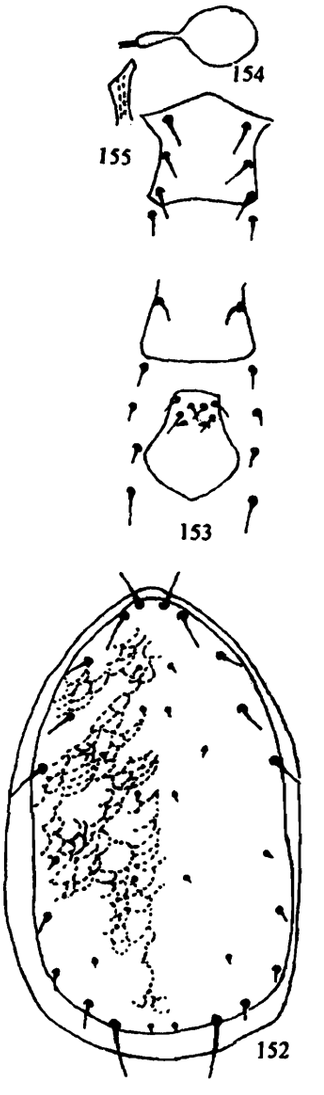
1990. *Amblyseius coccosocius*, Sadana *et al., Acar. Newsl.*, **17-18** : 16.

1992. *Amblyseius (Euseius) coccosocius*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 156-157.

1999. *Amblyseius (Euseius) coccosocius*, Gupta & Chatterjee, *Sci. & Cult.*, **65**(5-6) : 162.

Female : Dorsal shield reticulate, 320 long, 200 wide. Measurements of setae : j_1–32, j_4–9, j_5–11, j_6–13, J_2–13, J_5–7, j_3–32, z_2–18, z_4–25, s_4–31, Z_1–13, S_2–20, S_4–22, S_5–29, Z_5–56, r_3, R_1–14 each. Sternal shield as long as broad, with 3 pairs of sternal setae. Ventranal shield 80 long, 76 wide, with 3 pairs of preanal setae. Spermatheca as figured. Chelicera with fixed digit having at least 3 apical teeth, movable digit with one small tooth. Macrosetae on leg IV : genu–44, tibia–30, basitarsus–48, all with broad tip. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\0&1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal shield with chaetotaxy as in female. Spermatophoral process as figured.



Figs. 152-155 : *Amblyseius (Euseius) coccosocius* Ghai & Menon (F) : 152-Dorsal shield, 153-Ventral surface. 154-Spermatheca, 155-Spermatophoral process (M).

Collection Records : This species was described from Bangalore collected on mango associated with scale insects. Thereafter, this species was collected from Lakshadwip on coconut and papaya; from Punjab on guava and papaya; from West Bengal on *Alstonia scholaris, Clerodendron macrosiphon*; from Tripura on an undet. plant and also from Pondicherry, Tamil Nadu, Kerala and Andhra Pradesh on undet plants.

Habitat : Mango, papaya, guava, *Alstonia scholaris,* coconut, *Clerodendron macrosiphon,* undet. plants.

Distribution : India (Karnataka, Pondicherry, Tamil Nadu, Kerala, Andhra Pradesh, Punjab, West Bengal, Lakshadwip, Tripura).

Remarks : While describing this species the authors reported its association with mango scale insects. Sadana *et al.* (1990) reported its feeding upon *Brevipalpus rugulosus* infesting papaya in laboratory in Punjab. Saha *et al.* (1998) also reported this species as important biocontrolling agent of tea red spider mite, *O. coffeae.*

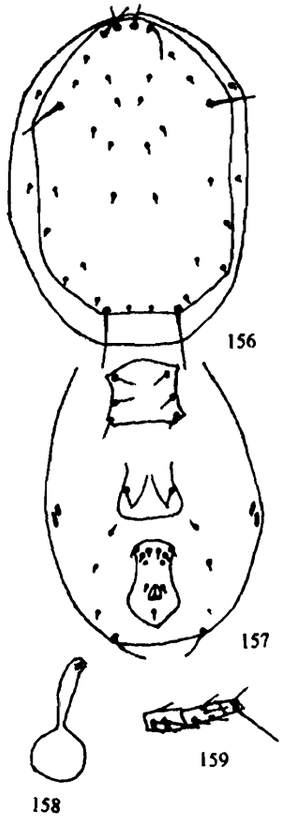
38. *Amblyseius (Euseius) concordis* (Chant)
(Figs. 156–159)

1959. *Typhlodromus (Amblyseius) concordis* Chant, *Can. Ent., 91 (Suppl. 12)* : 69.

1994. *Euseius concordis,* Jagadish *et al., Mysore J. agric. Sci.,* **28**(3) : 244-245.

1995. *Euseius concordis,* Jagadish *et al., Abst. V Nat. Symp. Acarology, Bangalore,* p. 32.

1995. *Euseius concordis,* Jagadish & Nageshchandra, *Abst. V Nat. Symp. Acarology, Bangalore,* p. 71.



Figs. 156-159 : *Amblyseius (Euseius) concordis* (Chant) (F) : 156-Dorsal shield, 157-Ventral surface, 158-Spermatheca, 159-Genu, tibia basitarsus of leg IV. (after Chant & Baker, 1965)

Female : Length 316, width 176, Setae j_1, j_3, Z_4–27 each, s_4–41, Z_5–59 Z_1, S_4 short, almost equal in length. Sternal shield with 3 pairs of setae. Genital shield normal. Ventrianal shield 104 long, 50 wide, vase shaped, with 3 pairs of preanal setae and a pair of pores, metapodal plates one paired. Macrosetae present on genu, tibia and basitarsus of leg IV.

Male : Unknown.

Collection Records : This species was described on material collected from Argentina on citrus. The Indian record of this species is from Karnaraka on castor.

Habitat : India : Castor, elsewhere : Citrus.

Distribution : India (Karnataka), Central America, Argentina.

Remarks : Jagadish *et al.* (1995) reported that it fed upon species of Tetranychidae, Tenuipalpidae, Eriophyidae infesting castor in Karnataka.

39. *Amblyseius (Euseius) delhiensis* (Narayanan & Kaur)
(Figs. 160–166)

1960. *Typhlodromus (Amblyseius) delhiensis* Narayanan & Kaur, *Proc. Indian Acad. Sci.,* **51** : 5-7.

1986. *Amblyseius (Euseius) delhiensis,* Gupta, *Fauna of India : Phytoseiidae,* p. 82-84.

1987. *Amblyseius (Euseius) delhiensis,* Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 23-24.

1990. *Amblyseius delhiensis,* Sadana *et al., Acar. Newsl.,* **17-18** : 16.

1990. *Amblyseius delhiensis,* Mallikarjunappa & Nageshchandra, *Curr. Res.,* **19**(2) : 31-33.

1990. *Amblyseius (Euseius) delhiensis,* Dhooria, *Acar. Newsl.,* **17-18** : 17.

1992. *Amblyseius (Euseius) delhiensis,* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 157.

1993. *Amblyseius (Euseius) delhiensis,* Mukherjee & Singh, *J., Insect Sci.,* **6**(1) : 136.

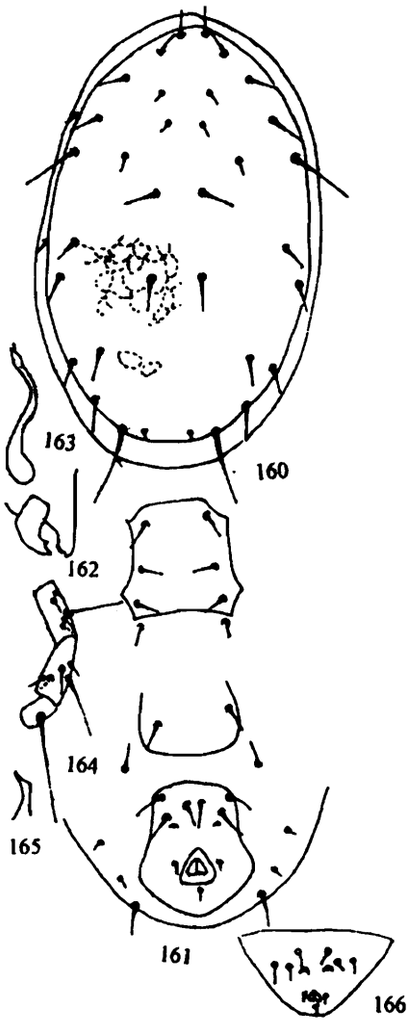
1994. *Amblyseius (Euseius) delhiensis,* Singh, *Shashpa,* **1**(2) : 67.

1995. *Amblyseius delhiensis,* Mathur *et al. Abst. V Nat. Symp. Acarology,* p. 14.

1995. *Amblyseius (Euseius) delhiensis*, Singh, *Adv. Agri. Res. in India*, **3** : 189.

1997. *Amblyseius (Euseius) delhiensis*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 525.

In press. *Amblyseius (Euseius) delhiensis*, Gupta. In : *State Fauna Ser. 9, Fauna of Sikkim.*



Figs. 160-166 : *Amblyseius (Euseius) delhiensis* (Narayanan & Kaur) (F) : 160-Dorsal shield, 161-Ventral surface, 162-Chelicera, 163-Spermatheca, 164-Genu, tibia, basitarsus of leg IV, 165-Spermatophoral process (M), 166-Ventrianal shield (M).

Female : Dorsal shield with 17 pairs of setae. Measurements of setae : j_1–34–38, j_4–18–22, j_5–22, j_6–34, J_2–34, J_5–7, j_3–40–45, z_2–35–40, z_4–45–51, s_4–60–65, Z_1–31–32, S_2–35, S_4–27–29, S_5–36–40, Z_5–67–72, z_5–18, Z_4–31–34, r_3–22, R_1–14. Sternal shield longer than broad, with 3 pairs of sternal setae. Genital shield 90 wide, with a pair of setae. Ventrianal shield 100 long, 73 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 apical teeth, movable digit with one tooth. Spermatheca as figured. Macrosetae on leg IV : genu–52–57, tibia–36–45, basitarsus–73–76. Leg chaetotactic formula genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Chaetotaxy on dorsal shield similar as in female. Spermatophoral process as illustrated.

Collection Records : This mite was described from Delhi collected on *Abelmoschus esculentus.* Thereafter, it has been reported on a number of plants in different parts of the country, the details of which are given under Habitat.

Habitat : *Abelmoschus esculentus, Gossypium sp., Hibiscus rosa-sinensis,* grape vines, guava, maize, *Syzygium javanicum,* castor, citrus, *Bougainvillea* sp., beans, *Phaseolus vulgaris, Punica granatum, Citrullus lanatus,* sapota, litchi, undet. plants, pear, sugarcane, mulberry.

Distribution : India (Delhi, Uttar Pradesh, Punjab, Haryana, West Bengal, Orissa, Sikkim, Karnataka.

Remarks : This is a good predator of a number of phytophagous mites, viz. *Oligonychus indicus* on maize in Punjab (Gupta *et al.*, 1971). *Eutetranychus orientalis* on citrus in Punjab (Gupta *et al.*, 1971a), *Brevipalpus phoenicis* on grape vines in Pubjab (Gupta & Dhooria, 1972), *Oligonychus* sp. on maize in Punjab (Sandhu *et al.*, 1973), *Oligonuchus* sp. and *Tetranychus* sp. on litchi in West Bengal (Gupta, 1975), *Tetranychus urticae* on castor in Punjab (Gupta, Dhooria & Sidhu, 1976), jassid, *Amrasca biguttula biguttula* on cotton in Delhi (Somchoudhury, 1981), *Eotetranychus hicoriae* on a fruit tree in Karnataka (Mallikarjunappa & Nageshchandra, 1990) and on an undet. phytophagous mite in Haryana (Mathur *et al.*, 1995). In addition, it was also associated with *Oligonychus indicus. Schizotetranychus andropogoni* and *Eotetranychus suginamensis* infesting mulberry in Punjab (Dhooria, 1990).

From the above it may be concluded that this mite is having good potentiality of acting as an efficient biocontrolling agent and hence needs to be conserved and judiciously used.

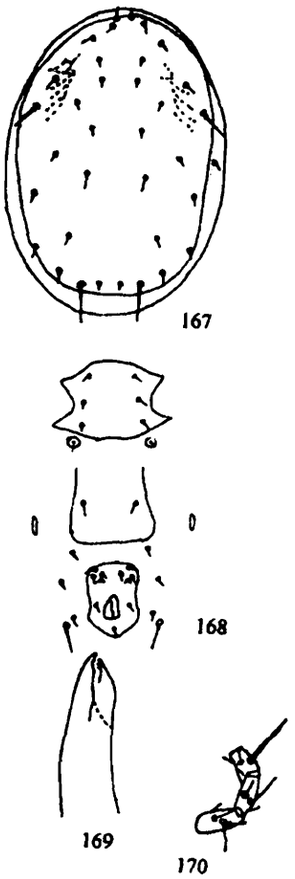
40. *Amblyseius (Euseius) eucalypti* Ghai & Menon

(Figs. 167–170)

1967. *Amblyseius eucalypti* Ghai & Menon, *Oriental Ins.*, **1** : 69-70.

1986. *Amblyseius (Euseius) eucalypti*, Gupta, *Fauna of India : Phytoseiidae*, p. 84.

1987. *Amblyseius (Euseius) eucalypti*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 24.



Figs. 167-170 : *Amblyseius (Euseius) eucalypti* Ghai & Menon (F) : 167-Dorsal shield, 168-Ventral surface, 169-Chelicera, 170-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield with 17 pairs of setae. Measurements of setae : $s_4 > j_1 = j_3 = z_2 = z_4$, j_4, j_5, J_5, Z_4 short, $Z_1 = S_2 = S_4$; Z_5 longest. Sternal shield as long as broad. Genital shield much wider than greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 80 long, 60 wide, with 3 pairs of preanal setae. Fixed digit of chelicera dentate. Leg IV with pointed macroseta on each of genu, tibia and basitarsus.

Male : Unknown.

Collection Records : The description of this species was based on material collected on *Eucalyptus* sp. from Karnataka.

Habitat : *Eucalyptus* sp.

Distribution : India (Karnataka).

41. *Amblyseius (Euseius) finlandicus* (Oudemans)

(Figs. 171–176)

1915. *Seiulus finlandicus* Oudemans, *Ent. Ber.*, **4** : 183.

1958. *Amblyseius finlandicus*, Athias-Henriot, *Bull. Soc. Hist. Nat. Afr. Nord.*, **49** : 24, 36.

1983. *Amblyseius finlandicus*, Rishi & Rather, *J. Ent. Res.*, **7**(1) : 39-42.

1985. *Amblyseius finlandicus*, Sharma & Sadana, *J. Acar.*, **9** : 57.

1986. *Amblyseius (Euseius) finlandicus*, Gupta, *Fauna of India : Phytoseiidae*, p. 86-88.

1987. *Amblyseius finlandicus*, Sharma & Sadana, *Entomon*, **12**(3) : 191-195.

1987. *Amblyseius (Euseius) finlandicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 24-25.

1989. *Amblyseius finlandicus*, Sadana & Sharma, *Indian J. Acar.*, **10** : 65.

1989. *Amblyseius finlandicus*, Sharma & Sadana, *Indian J. Acar.*, **11** : 51.

1990. *Amblyseius finlandicus*, Rishi, *Abst. V Nat. Symp. Acarology*, p. 32-33.

1990. *Amblyseius finlandicus*, Sadana *et al.*, *Acar. Newsl.*, **17-18** : 16.

1990. *Amblyseius finlandicus*, Dhooria, *Acar. Newsl.*, **17-18** : 17.

1990. *Amblyseius hibisci*, Dhooria, *Acar. Newsl.*, **17-18** : 17.

1990. *Amblyseius finlandicus*, Sharma & Sadana, *Acar. Newsl.*, **17-18** : 15.

1992. *Amblyseius (Euseius) finlandicus*, Gupta, In : *State Fauna Ser 3, Fauna of West Bengal, Part 3*, p. 157-158.

1995. *Amblyseius (Euseius) finlandicus*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 32-33.

1995. *Amblyseius finlandicus*, Jagadish *et al.*, *Abst. V Nat. Symp. Acarology*, p. 17.

1997. *Amblyseius (Euseius) finlandicus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 525.

1999. *Amblyseius (Euseius) finlandicus*, Gupta & Chatterjee, *Sci. & Cult.*, **65**(5-6) : 162.

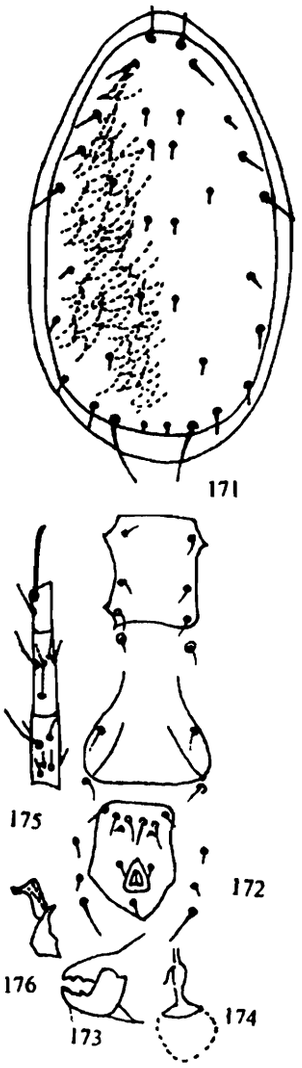
2000. *Amblyseius (Euseius) finlandicus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 23.

In press. *Amblyseius (Euseius) finlandicus*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Euseius) finlandicus*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 308 long, 200 wide. Measurements of setae : j_1–28, j_4, j_6, J_2–10–13 each, J_5–6, j_3–24, z_2–16, z_4–16, s_4–28, Z_1–12–16, S_2–18–22, S_4–20–26, S_5–25–31, Z_5–48–56, z_5–10–13, Z_4–16–20, Sternal shield longer (74) than wide with 3 pairs of sternal setae. Genital shield 80–86 wide. Ventrianal shield 84–90 long, 68–74 wide, with 3 pairs of preanal setae. Chelicera with 2 teeth on fixed digit, one on the movable digit. Spermatheca as illustrated. Macrosetae on leg IV : genu–30–40, tibia–27–30, basitarsus–47–50, all with broadened tip. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, tibia III $1\ \frac{2}{1}\ \frac{1}{1}\ 1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.



Figs. 171-176 : *Amblyseius (Euseius) finlandicus* (Oudemans) (F) : 171-Dorsal shield, 172-Ventral surface, 173-Chelicera, 174-Spermatheca, 175-Genu, tibia, basitarsus of leg IV, 176-Spermatophoral process (M).

Collection Records : This species was described from Finland collected on *Salix caprea*. Thereafter, this has been recorded on a number of plants throughout the world. Those plants which have been reported to harbour this mite in India are listed under Habitat.

Habitat : Hedge plant, *Pyrus communis*, maize, chinar, grape vines, tea, peach, pine, cucurbitaceous plants, dahlia, chrysanthemum, citrus, apple, wood apple, castor, bamboo, *Nerium*, cotton, arum, cashewnut, mango, mulberry, "Akashmani", *Shorea robusta*, paddy, palm, coconut, date palm, fig, *Coleus* sp., papaya, *Amaranthus*, *Ipomoea*, undet plants, banana, orchid, cardamom, *Ficus racemosa*, lemon, "Thint", Kinow.

Distribution : India (Karnataka, West Bengal, Bihar, Meghalaya, Tripura, Sikkim, Mizoram, Uttar Pradesh, Himachal Pradesh, Punjab, Jammu & Kashmir, Lakshadwip Isl.), Pakistan, Europe, Canada, Mexico, U.S.A., Russia, Africa, South America, Indonesia, Japan.

Remarks : Its feeding upon phytophagous mites has been reported by a number of workers as : on *Eutetranychus orientalis* infesting citrus in Punjab (Gupta *et al.*, 1971; Sharma & Sadana, 1990; Sadana *et al.*, 1990) an undet. Phytophagous mite on maize in Punjab (Sandhu, Kaushal & Gupta, 1973), on *Tetranychus urticae* on castor in Punjab (Gupta *et al.*, 1976), on *Oligonychus mangiferus* infesting mango and grape vines in Punjab (Sadana *et al.*, 1990), on undet. Tetranychids in abandoned orchards in Kashmir (Rishi, 1990), on *Tetranychus urticae, T. neocaledonicus*, nymphs of white fly infesting cotton in Punjab (Dhooria, 1990), on *Eutetranychus orientalis* on papaya and *Brevipalpus phoenicis* on cardamom in Sikkim.

In addition, it was also reported associated with *Aponychus corpuzae* on *Nerium indicum* in Bihar (Gupta & Nahar, 1981) and *E. orientalis* on pear in Punjab (Dhooria, 1990). In abroad also, it has been reported to be good predator of a number of phytophagous mites. Considering all these, this species appears to be a good biocontrolling agent and deserves to be conserved and used profitably.

42. *Amblyseius (Euseius) insanus* Khan & Chaudhri

1969. *Amblyseius insanus* Khan & Chaudhri, *Pak. J. agric. Sci.*, **6**(1-2) : 52-60.

1985. *Amblyseius insanus*, Rather, *Rivista Parasit.*, **46**(1-2) : 292.

1989. *Amblyseius insanus*, Rather, *Progress in Acarology*, **2** : 188.

1999. *Euseius insanus*, Rather, *J. Acarol.*, **15** : 20.

Habitat : India : *Juglans rigia*, grape vines.

Distribution : India (Jammu & Kashmir), Pakistan.

Remarks : Due to novavailability of full descriptions, the same could not be included here. Rather (1985) recorded it for the first time from Kashmir on *Juglans rigia* and subsequently he (Rather, 1989) reported this species feeding upon actively on eggs and nymphs of *Tetranychus urticae* and *Oligonychus mangiferus*.

43. *Amblyseius (Euseius) macrospatulatus* Gupta

(Figs. 177–181)

1986. *Amblyseius (Euseius) macrospatulatus* Gupta, *Fauna of India : Phytoseiidae*, p. 89-90.

1987. *Amblyseius (Euseius) macrospatulatus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 31.

Female : Dorsal shield 414 long, 291 wide. Measurements of setae : j1–51, j4–7, j5–9, j6–11, J2–15, J5–6, j3–12, z2–13, z4–17, s4–29, Z1–15, S2–17, S4–17, S5–17, Z5–68, z5–9, Z4–16, r3–12, R1–12. Sternal shield margins indistinct, with 3 pairs of sternal setae. Ventrianal shield oval, 123 long, 100 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–47, tibia–45, basitarsus–69, all with spatulate tip. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Unknown.

Collection Records : This species was described from Arunachal Pradesh collected on an undet. plant.

Habitat : Undet. plant.

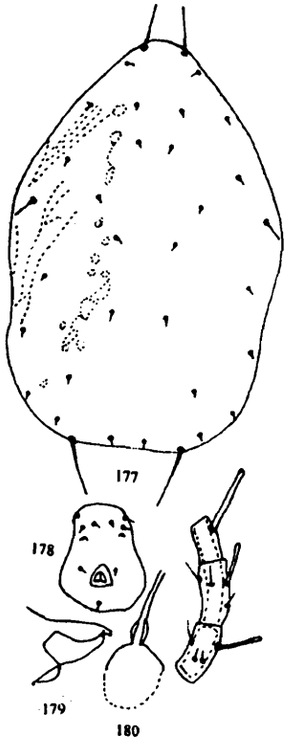
Distribution : India (Arunachal Pradesh).

44. *Amblyseius (Euseius) neococcineae* Gupta

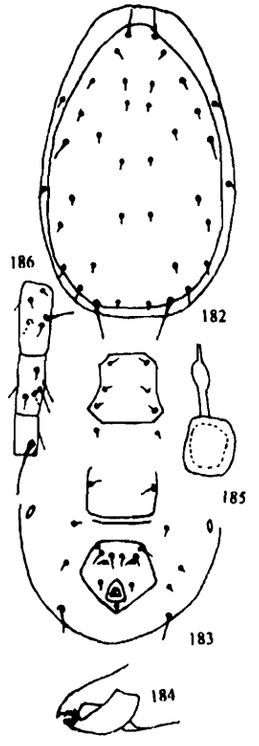
(Figs. 182–186)

1978. *Amblyseius neococcineae* Gupta, *Indian J. Acar.*, **2**(2) : 60.

1986. *Amblyseius (Euseius) neococcineae*, Gupta, *Fauna of India : Phytoseiidae*, p. 90.



Figs. 177-181 : *Amblyseius (Euseius) macrospatulatus* Gupta (F) : 177-Dorsal shield, 178-Ventrianal shield, 179-Chelicera, 180-Spermatheca, 181-Genu, tibia, basitarsus of leg IV.



Figs. 182-186 : *Amblyseius (Euseius) neococcineae* Gupta (F) : 182-Dorsal shield, 183-Ventral surface, 184-Chelicera, 185-Spermatheca, 186-Genu, tibia, basitarsus of leg IV.

1987. *Amblyseius (Euseius) neococcineae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 25-26.

1995. *Amblyseius (Euseius) neococcineae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 34.

Female : Dorsal shield 265 long, 145 wide. Measurements of setae : j_1–26, j_4, j_5–8 each, j_6, J_2–12 each, J_5–5, j_3–12, z_2–12, z_4–16, s_4–24, Z_1–12, S_2, S_4–16 each, S_5–18, Z_5–45, z_5–12, Z_4–16, r_3–16, R_1–12. Sternal shield with 3 pairs of sternal setae, Ventrianal shield 60 long, 40 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth and *pilus dentilis*, movable digit with one tooth. Spermatheca as illustrated. Macrosetae on leg IV : genu–29, tibia–24, basitarsus–47.

Male : Unknown.

Collection Records : The description of this species was based upon material collected on *Syzygium cumini* in Meghalaya.

Habitat : *Syzygium cumini.*

Distribution : India (Meghalaya).

45. ***Amblyseius (Euseius) ovalis*** (Evans) (Figs. 187–192)

1953. *Typhlodromus ovalis* Evans, *Ann. Mag. Nat. Hist.*, **6** : 458-461.

1960. *Typhlodromus (Amblyseius) ovalis*, Narayanan *et al.*, *Proc. Nat. Inst. Sci.*, **26B**(6) : 388-389.

1986. *Amblyseius (Euseius) ovalis*, Gupta, *Fauna of India : Phytoseiidae*, p. 92-94.

1986. *Amblyseius ovalis*, Lo, *Pl. Prot. Bull. Taiwan*, **28** : 31-39.

1987. *Amblyseius (Euseius) ovalis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 27-28.

1989. *Amblyseius ovalis*, Hariyappa & Kulkarni, *J. Biol. Contr.*, **3**(1) : 31-32.

1989. *Amblyseius ovalis*, Borah & Rai, *Progress in Acarology*, **2** : 375-379.

1990. *Amblyseius ovalis*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1990. *Amblyseius ovalis*, Nangia *et al.*, *Acar. Newsl.*, **17-18** : 22.

1992. *Amblyseius (Euseius) ovalis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 158.

1992. *Amblyseius (Euseius) ovalis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1994. *Amblyseius (Euseius) ovalis*, Singh, *Shashpa*, **1**(2) : 68.

1995. *Amblyseius (Euseius) ovalis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya*, p. 33.

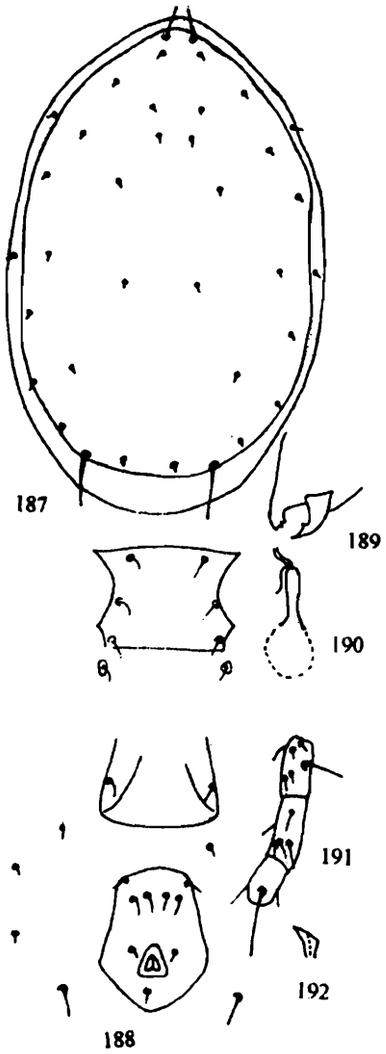
1996. *Amblyseius (Euseius) ovalis*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15**(2) : 26.

1999. *Amblyseius (Euseius) ovalis*, Gupta & Chatterjee, *Sci. & Cult.*, **65**(5-6) : 162.

2000. *Amblyseius (Euseius) ovalis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 23.

In press. *Amblyseius (Euseius) ovalis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Euseius) ovalis*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*



Figs. 187-192 : *Amblyseius (Euseius) ovalis* (Evans) (F) : 187-Dorsal shield, 188-Ventral surface, 189-Chelicera, 190-Spermatheca, 191-Genu, tibia, basitarsus of leg IV, 192-Spermatophoral process (M).

Female : Dorsal shield 340–360 long, 230–240 wide. Measurements of setae : j_1–29–31, j_4–j_6, J_2–J_5–4–5 each, Z_5–40–55, z_5–4, Z_4–7–8. Sternal shield almost as long (75) as wide, with 3 pairs of sternal setae. Genital shield 90 wide. Ventrianal shield 84–90 long, 72–78 wide, with 3 pairs of

preanal setae. Chelicera with 2 teeth on fixed digit, movable digit with one small tooth. Spermatheca with funnel shaped cervix. Macrosetae on leg IV : genu–32–37, tibia–26–37, basitarsus–44–56, all with broadened tip. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{0}\ \frac{2}{1}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Dorsal chaetotaxy similar as in female. Spermatophoral process as illustrated.

Collection Records : This species was described basing upon material collected on rubber plant in Malay and thereafter throughout the world it has been recorded on a number of plants, the list of which is too big to give here. However, the plants on which this mite has been recorded in India are listed under Habitat.

Habitat : Ficus, *Terminalia arjuna*, banana, *Vitex pubescens*, napier grass, castor, *Nerium*, mango, coconut, oilseed plant, *Bauhinia purpuria*, paddy, sugarcane, cashewnut, *Tabernaemontana*, beans, *Bougainvillea spectabilis*, grass, *Holarrhena antidysenterica*, jackfruit, *Cassia fistula, Macrocos paniculatus*, bamboo, chilli, *Dolichos lablab*, arum, undet. plants, cotton, *Glycosmis pentaphylla,* brinjal, date palm guava, *Luffa acutangula, Ficus religiosa,* "Tiurel", pigeonpea, Napier grass, lucern, cashewnut, ornamental plant.

Distribution : India (Arunachal Pradesh, Assam, Sikkim, Mizoram, Meghalaya, Tripura, West Bengal, Manipur, Bihar, Andhra Pradesh, Karnataka, Tamil Nadu, Pondicherry, Kerala, Maharashtra, Gujarat, Punjab, Andaman & Nicobar Isls., Lakshadwip Isls.), Philippines, Taiwan, Hawaii, Mauritius, Mexico, Malayasia, Hong Kong, Japan, Indonesia, New Zealand, Australia.

Remarks : This mite has been reported by a number of workers to be feeding upon varied groups of phytophagous species as : *Tetranychus urticae* on tea (Rao *et al.,* 1970), *Polyphagotarsonemus latus* on chilli in Tamil Nadu (Karuppuchamy & Mohansundaram, 1987) and also in Karnataka (Hariyappa & Kulkarni, 1989), *Oligonychus coffeae* on tea (Gupta, 1989), *Tetranychus neocaledonicus* infesting papaya (Dhooria, 1990). In addition, it was also reported to be associated with tetranychids infesting various crops (Narayanan *et al.*, 1960), with *Eotetranychus* sp. on pomegranate in Punjab (Dhooria, 1990).

46. ***Amblyseius (Euseius) pruni*** Gupta
(Figs. 193–198)

1970. *Amblyseius pruni* Gupta, *Internat. J. Acarol.*, **1**(2) : 40-42.

1986. *Amblyseius (Euseius) pruni*, Gupta, *Fauna of India : Phytoseiidae*, p. 94-96.

1987. *Amblyseius (Euseius) pruni*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **No. 95** : 28-29.

1990. *Amblyseius pruni*, Sadana *et al.*, *Acar. Newsl.*, **17-18** : 16.

1990. *Amblyseius pruni*, Rishi, *Abst. IV Nat. Symp. Acarology, Calicut*, p. 32-33.

1992. *Amblyseius (Euseius) pruni*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1992. *Amblyseius (Euseius) pruni*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 158-159.

1995. *Amblyseius (Euseius) pruni*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 33.

1999. *Amblyseius (Euseius) pruni*, Gupta & Chatterjee, *Sci. & Cult.*, **(5-6)** : 162.

2000. *Amblyseius (Euseius) pruni*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 24.

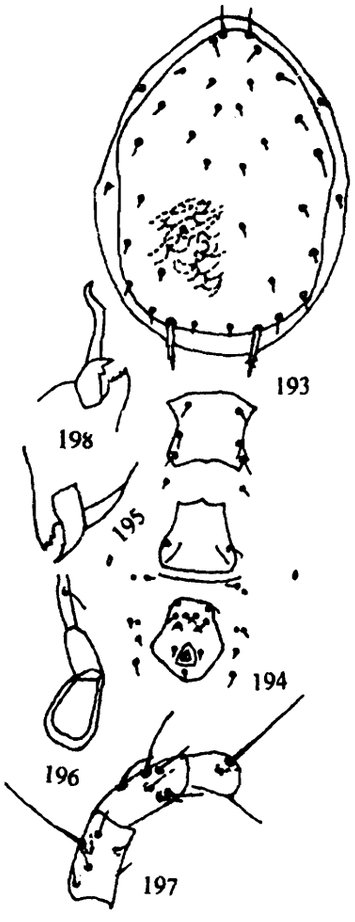
In press. *Amblyseius (Euseius) pruni*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Euseius) pruni*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 315 long, 230 wide. Measurements of setae : j_1–31–36, j_4, j_5, J_2–13–15 each, J_5–6, j_3–27, z_2, z_4–20–22, s_4–33–34, Z_1–13–15, S_2–20–24, S_4–20–22, S_5–23–28, Z_5–60–65 (weakly serrate), z_5–12, Z_4–14. Sternal shield longer than wide with 3 pairs of sternal setae. Genital shield almost as wide as the greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 90 long, 80 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Chelicera with 1 or 2 big tooth followed by 2–3 minute teeth on

fixed digit, movable digit with 1 tooth. Macrosetae on leg IV : genu–40, tibia–36, basitarsus–58. Leg chaetotactic formula : genu II 2 $\frac{2}{0}$ $\frac{2}{0}$ 1, tibia II 1 $\frac{1}{1}$ $\frac{2}{1}$ 1, genu III 1 $\frac{2}{0}$ $\frac{2}{0}$ 1, tibia III 1 $\frac{2}{1}$ $\frac{2}{1}$ 1.

Male : Dorsal chaetotaxy similar as in female. Spermatophoral process as illustrated.



Figs. 193-198 : *Amblyseius (Euseius) pruni* Gupta (F) : 193-Dorsal shield, 194-Ventral surface, 195-Chelicera, 196-Spermatheca, 197-Genu, tibia, basitarsus of leg IV, 198-Spermatophoral process (M).

Collection Records : This species was described on the basis of material collected on *Prunus persica* in West Bengal. Subsequently, it has been reported on Croton in Arunachal Pradesh; sugarcane, bamboo, *Glycosmis*, cotton, *Shorea robusta* from West Bengal; pear, fig, blackberry from Meghalaya; coconut, *Nerium* from Lakshadwip; *Bauhinia*, *Carica papaya*, from Tripura; arum, undet. plant, cardamom, guava, mango from Sikkim; *Cynodon dactylon* from Mizoram; pear from Punjab; undet. plant from Assam and ababdoned orchard from Kashmir and Himachal Pradesh.

Habitat : India : *Prunus persica*, pear, *Bauhinia acuminata*, apple, chrysanthemum, apricot, white lilly, cherry, beans, peach, *Erythrina ovalifolia*, jute, *Anthocephalus indicus*, *Bignonia mangifera*, *Mangifera indica*, papaya, *Croton*, guava, undet. plant, tea, citrus, sugarcane, bamboo, *Glycosmis*, cotton, *Shorea robusta*, fig, blackberry, coconut, *Nerium*, *Cynodon dactylon*, arum, cardamom, abandoned orchard.

Distribution : India (West Bengal, Arunachal Pradesh, Assam, Meghalaya, Tripura, Mizoram, Jammu & Kashmir, Himachal Pradesh, Punjab, Lakshadwip, Sikkim).

Remarks : The predatory nature of this species was reported by Gupta & Chatterjee on *Schizotetranychus andropogoni* in Mizoram (Gupta & Chatterjee, in press), on tetranychids in abandoned orchard in Jammu & Kashmir (Rishi, 1990). Besides, it was reported associated with *Eutetranychus orientalis* on pear in Pubjab. This appears to be a moderately good predator and is widely distributed in India.

47. ***Amblyseius (Euseius) rhododendronis*** Gupta

(Figs. 199–203)

1970. *Amblyseius rhododendronis* Gupta, *Oriental Ins.*, **4** : 187-188.

1983. *Amblyseius rhododendronis*, Krishnamoorthy, *Acar. Newsl.*, **13** : 2.

1986. *Amblyseius (Euseius) rhododendronis*, Gupta, *Fauna of India : Phytoseiidae*, p. 96-98.

1987. *Amblyseius (Euseius) rhododendronis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 29.

1992. *Amblyseius (Euseius) rhododendronis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 160.

2000. *Amblyseius (Euseius) rhododendronis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 24.

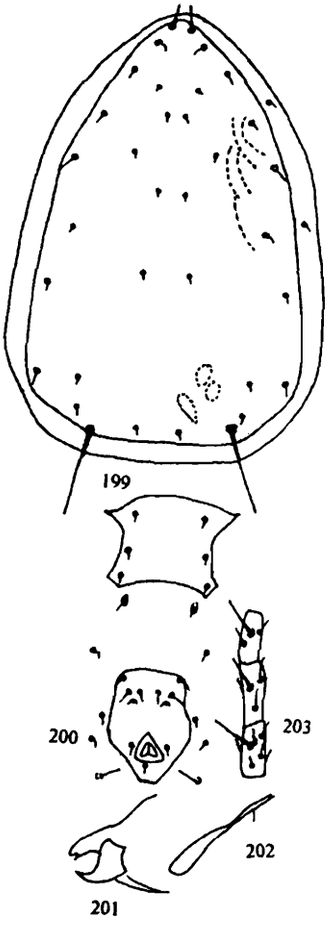
In press. *Amblyseius (Euseius) rhododendronis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Euseius) rhododendronis*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 325–330 long, 220–230 wide. Measurements of setae : j_1–27, j_4–j_5–8–9

each, j_6–J_2–10–11 each, J_5–4, j_3–16–18, z_2–z_4–10–12 each, s_4–20–25, Z_1–8, S_2–11–12, S_4–17, S_5–10–12, Z_5–55–60, z_5–6, Z_4–9–10, r_3, R_1–9 each. Sternal shield as long as broad with 3 pairs of setae. Genital shield 80–85 wide. Ventrianal shield 95–100 long, 72–78 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth, movable digit toothless. Spermatheca with elongated cervix. Macrosetae on leg IV : genu–35–40, tibia–23–30, basitarsus–40–42. Leg chaetotactic formula : genu II $1\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.

Male : Unknown.



Figs. 199-203 : *Amblyseius (Euseius) rhododendronis* Gupta (F) : 199-Dorsal shield, 200-Post ventral surface, 201-Chelicera, 202-Spermatheca, 203-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based on specimen collected on *Rhododendron* sp. and *Shorea robusta* from West Bengal. The subsequent records are from undet. plants in West Bengal and Tripura; on coffee from Sikkim, a plant locally called "Tiurel" in Mizoram and on pear in Tamil Nadu.

Habitat : *Rhododendron* sp., *Shorea robusta*, litchi, undet. plant, "Tiurel", pear, coffee.

Distribution : India (West Bengal, Tripura, Sikkim, Mizoram, Tamil Nadu, Karnataka), Thailand.

48. *Amblyseius (Euseius) sacchari* Ghai & Menon
(Figs. 204–209)

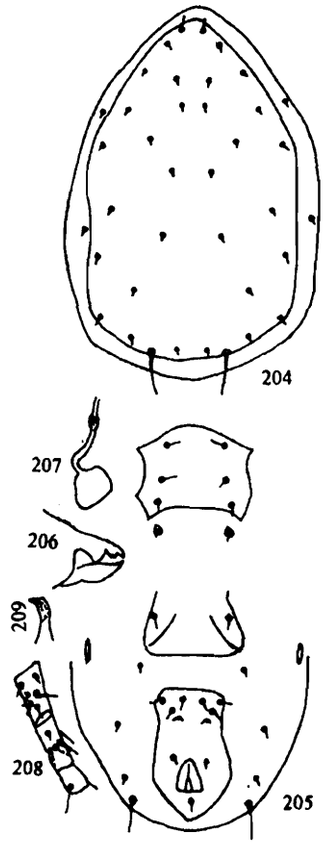
1967. *Amblyseius sacchari* Ghai & Menon, *Oriental Ins.*, **1** : 75-76.

1986. *Amblyseius (Euseius) sacchari*, Gupta, *Fauna of India : Phytoseiidae*, p. 98-100.

1987. *Amblyseius (Euseius) sacchari*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 29-30.

1992. *Amblyseius (Euseius) sacchari*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 160.

1992. *Amblyseius (Euseius) sacchari*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.



Figs. 204-209 : *Amblyseius (Euseius) sacchari* Ghai & Menon (F) : 204-Dorsal shield, 205-Ventral surface, 206-Chelicera, 207-Spermatheca, 208-Genu, tibia, basitarsus of leg IV, 209-Spermatophoral process (M).

Female : Dorsal shield 350–360 long, 230–250 wide. Measurements of setae : j_1–33, j_4–j_5–5–6 each, j_6, J_2–10 each, J_5–5, j_3–, z_2, z_4–8 each, s_4–15, Z_1–12, S_2–15, S_4–16–18, Z_5–40–45, z_5–7,

Z_4–11, r_3, R_1–11 each. Sternal shield 92 long 82 wide, with 3 pairs of sternal setae. Genital shield 90–95 wide. Ventrianal shield 90–100 long, 70–80 wide, with 3 pairs of preanal setae. Chelicera with 2 teeth on fixed digit, none on movable digit. Spermatheca as figured. Macrosetae on leg IV : genu–25–30, tibia–30–35, basitarsus–45–60. Leg chaetotactic formula : genu II 2 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\0\end{matrix}$ 1, tibia II 1 $\begin{matrix}1\\1\end{matrix}$ $\begin{matrix}2\\1\end{matrix}$ 1, genu III 1 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\1\end{matrix}$ 1, tibia III 1 $\begin{matrix}1\\1\end{matrix}$ $\begin{matrix}2\\1\end{matrix}$ 1.

Male : Dorsal shield chaetotaxy as in female. Spermatophoral process as figured.

Collection Records : The description of this species was based upon material collected on sugarcane in Karnataka. Subsequently, it was also collected on *Bauhinia* in Arunachal Pradesh; undet. plant, sugarcane and cotton in West Bengal; sugarcane in Gujarat, Tamil Nadu, Bihar, Punjab and Himachal Pradesh.

Habitat : Sugarcane, *Bauhinia,* undet. plant, cotton.

Distribution : India (Arunachal Pradesh, West Bengal, Bihar, Tamil Nadu, Gujarat, Punjab, Himachal Pradesh, Karnataka).

Remarks : It was seen associated with sugarcane blister mite, *Abacarus sacchari.*

49. *Amblyseius (Euseius) scutalis* Athias-Henriot

(Figs. 210–213)

1958. *Amblyseius scutalis* Athias-Henriot, *Bull. Soc. Hist. Nat. Afr. Nord.,* **49**(1) : 23-43.

1966. *Amblyseius scutalis*, Athias Henriot, *Bull. Scientifique de Bourgogne,* **24** : 221.

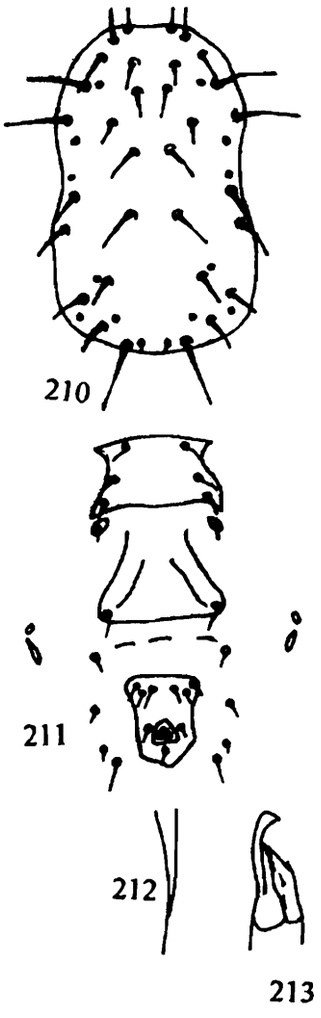
1989. *Euseius scutalis*, Cobonoglu, *Turk. Entomol. derg.,* 13(3) : 164-166.

1999. *Euseius scutalis*, Rather. *J. Acarol.,* **15** : 20.

Female : Dorsal shield 340 long, 250 wide. Measurements of setae : s_4–70, Z_5–66, J_2–45, z_5–19, Z_4–40. Macrosetae on leg IV : genu–61, tibia–43, basitarsus–76.

Collection Records : In India, this mite was recorded from Kashmir on grape vines.

Habitat : India : *Ceratonia setiqua,* grape vines.



Figs. 210-213 : *Amblyseius (Euseius) scutalis* Athias-Henriot (F) : 210-Dorsal shield, 211-Ventral surface, 212-Spermatheca, 213-Spermatophoral process (M). (after Cobanoglu, 1989)

Distribution : India (Jammu & Kashmir), Algeria, Africa, Turkey.

Remarks : Due to nonavailability of full description, the same could not be included here. Rather (1999) reported this mite feeding upon grape vine mite in Kashmir. In Turkey, Cohanoglu (1989) reported this species feeding upon *Bemesia tabaci.*

50. *Amblyseius (Euseius) vignus* (Rishi & Rather)

(Figs. 214–215)

1983. *Euseius vignus* Rishi & Rather, *Entomon,* **8**(3) : 303-305.

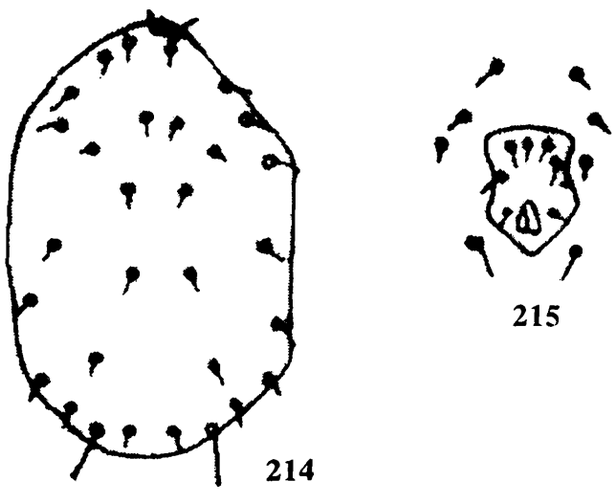
1989. *Euseius vignus*, Rather, *Progress in Acarology,* **2** : 188.

1990. *Euseius vignus*, Rishi, *Abst. IV Nat. Symp. Acarology,* Calicut, p. 32-33.

1999. *Euseius vignus*, Rather, *J. Acarol.,* **15** : 20.

Female : Dorsal shield 320 long, 195 wide. Measurements of setae : j_1–36, j_4–14, j_5–17, j_6–16, J_2–19, J_5–5, j_3–33, z_2–24, Z_4–27, s_4–38, Z_1, S_2–24 each, S_4–28, S_5–20, Z_5–74, z_5–14, Z_4–22, r_3–26, R_1–20. Sternal shield slightly longer than wide, with 3 pairs of sternal setae. Ventrianal shield longer than wide with 3 pairs of preanal setae. Fixed digit of chelicera bidentate, movable digit multidentate. Spermatheca with tubular cervix. Macrosetae on leg IV : genu–23, tibia–36, basitarsus–58. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&1\end{smallmatrix}\ 1$

Male : Unknown.



Figs. 214-215 : *Amblyseius (Euseius) vignus* (Rishi & Rather) (F) : 214-Dorsal shield, 215-Ventrianal shield. (after Rishi & Rather, 1983)

Collection Records : This mite was described from Kashmir collected on *Vigna aconitifolia*. Besides, this was also collected on several other plants as listed under Habitat.

Habitat : *Vigna aconotifolia, Trifolium pratense, Prunus* sp., *Prunus armeniaca Morus alba, Cucumis sativus, Datura stramonium, Salix wallichiana, Juglans regia, Cucurbita pepo, Phaseolus vulgaris, Prunus persica, Prunus domestica, Quercus dilatata, Humulus lupulus, Vigna cylindrica, Ficus* sp., *Lallydrus sativus, Ficus* sp., *Platanus orientalis, Catalapha begnonoides, Solanum miniatum, Breea arvensis, Vitis vinifera, Strobilanthus alatus, Pafrotriopsis jacquemontiana, Titia* sp., *Lonicera japonica, Zea mays*.

Distribution : India (Jammu & Kashmir).

Remarks : Rishi (1990) and Rather (1999) reported this species feeding upon tetranychids in abandoned orchards and on grape vine mites, respectively in Kashmir.

Subgenus 4. *Neoseiulus* Hughes

1948. *Neoseiulus* Hughes, p. 141.

1949. *Typhlodromus (Typhlodromopsis)* De Leon, *Ent. News.*, **70** : 133 (in part).

1986. *Neoseiulus*, Gupta, *Fauna of India : Phytoseiidae*, p. 100.

1987. *Neoseiulus*, Gupta, *Rec. zool. Surv. India Occ. Pap.*, **95** : 33-34.

1987. *Neoseiulus*, Daneshvar, *Ent. Phyt. Appliq.*, **54(1-2)** : 13.

1992. *Neoseiulus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 161.

Diagnosis : Dorsal shield well sclerotized, smooth or reticulate with 17 pairs of setae. Chelicera with 4–8 teeth on fixed digit. Sternal shield as long as or longer than wide, with 3 pairs of setae. Ventrianal shield elongate, pentagonal, shield shaped or nearly quadrate with 3 pairs of preanal setae. No distinguishable macrosetae on leg I, II, II but always present on basitarsus IV, sometimes it may be also present on genu and tibia IV.

Type ***Neoseiulus barkeri*** Hughes, 1948
(by designation)

Key to the species of subgenus *Neoseiulus* known to inhabit plants in India

1. All setae on dorsal shield tiny (about 10–12 microns), except Z_5, which is quite long .. .. *assamensis*
– Setae on dorsal shield of diverse length 2
2. Setate on dorsal shield of same length or uniformly long, none greatly longer than others 3
– Some setae on dorsal shield appreciably longer, others being small or very small 6
3. All setae very long, except S_5 which is minute .....*longispinosus*
– All setate of uniforml length 4

4. Setae on dorsal hexagonal area longer than interval between their bases ..... *fallacis*
– Setae on dorsal hexagonal area shorter than interval between their bases 5
5. j_3 extends beyond the base of z_2, spermatheca as figured ..... *imbricatus*
– j_3 shorter than distance between its base and that of z_2, spermatheca as figured .... *cucumeris*
6. Ventrianal shield much longer than wide .. 9
– Ventrianal shield almost as long as wide... 7
7. Z_4 very long, almost as long as Z_5 .... *fraterculus*
– Z_4 not so long 8
8. Leg IV with macroseta on genu, tibia and basitarsus ..... *cynodonae*
– Leg IV with macroseta only on basitarsus ..... *reticulatus*
9. Ventrianal shiled triangular .... *rangatensis*
– Ventrianal shield not triangular, rather elongated or pentagonal 20
10. All setae on dorsal shield very small, measuring 10–15 ..... *aceriae*
– Setae relatively longer than above..... 11
11. j_1 shorter than j_3 13
– j_1 as long as j_3 12
12. Posterior region of sternal shield with postlateral angulation ..... *paspalivorus*
– Sternal shield without such angulation ....*baraki*
13. S_2 about one and half times of Z_1 .... *indicus*
– S_2 almost equal or only slightly longer than Z_1 ..... *oahuensis*

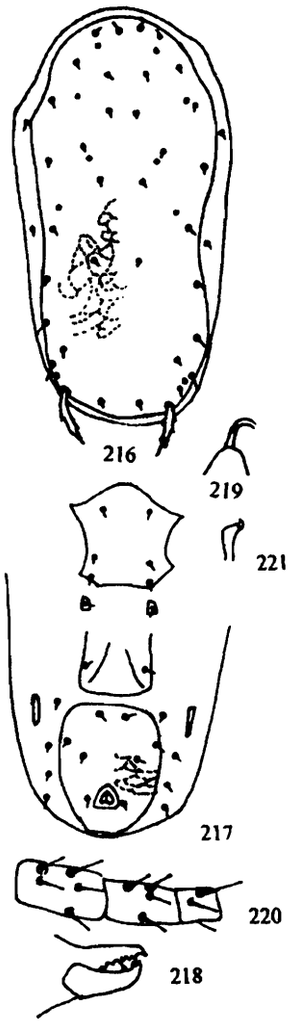
51 *Amblyseius (Neoseiulus) aceriae* Gupta (Figs. 216-221)

1975. *Amblyseius aceriae* Gupta, *Internat. J. Acarol.*, **1(2)** : 30-31.

1986. *Amblyseius (Neoseiulus) aceriae*, Gupta, *Fauna of India, Phytoseiidae*, p. 102-103.

1987. *Amblyseius (Neoseiulus) aceriae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 34.

1992. *Amblyseius (Neoseiulus) aceriae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 161.



Figs. 216-221 : *Amblyseius (Neoseiulus) aceriae* Gupta (F) : 216-Dorsal shield, 217-Ventral surface, 218-Chelicera, 219-Spermatheca, 220-Genu, tibia, basitarsus of leg IV, 221-Spermatophoral process (M).

Female : Dorsal shield imbricate, slender, elongated, 340 long, 170 wide. Measurements of setae : j_1–8, j_4, j_6, J_2, J_5–8–10 each, j_3–10, z_2, z_4, s_4, Z_1, S_2–8–10 each, S_4–S_5–12–15 each, Z_5–68, Z_4–16, Sternal shield 80 long, 72 wide, with 3 pairs of sternal setae. Ventrianal shield 87–100 long, 76–80 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Macrosetae on leg IV : basitarsus–20. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, genu I $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1.

Male : Spermatophoral process as figured. Dorsal chaetotaxy similar to that of female.

Collection Records : The description of this species was based upon collection on mango from West Bengal and thereafter it was collected from Gujarat on chrysanthemum.

Habitat : Mango, chrysanthemum.

Distribution : India (West Bengal, Gujarat).

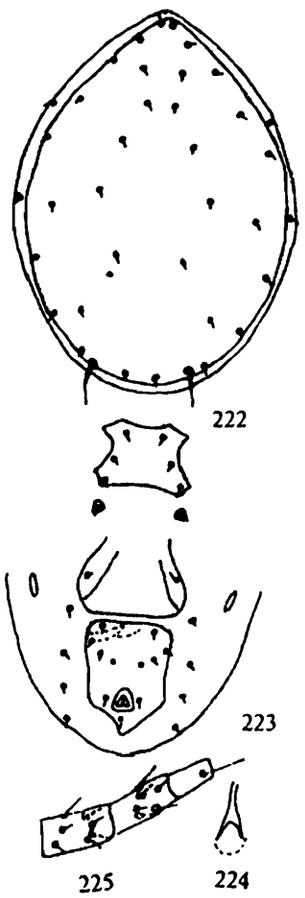
52. *Amblyseius (Neoseiulus) assamensis* (Chant)

(Figs. 222-225)

1960. *Typhlodromus (Amblyseius) assamensis* Chant, *Can. Ent.*, **92** : 60.

1986. *Amblyseius (Neoseiulus) assamensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 104-105.

1987. *Amblyseius (Neoseiulus) assamensis*, Gupta, *Rec. zool. Surv. India*, **95** : 35.



Figs. 222-225 : *Amblyseius (Neoseiulus) assamensis* (Chant) (F) : 222-Dorsal shield, 223-Ventral surface, 224-Spermatheca, 225-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 360 long, 260 wide, rugose. Measurements of setae : j_1–8, j_3–12, Z_5–40, other setae minute. Sternal shield longer than wide, with 3 pairs of sternal setae. Genital shield slightly wider than greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 104 long, 76 wide, pentagonal, lateral margins concave, with 3 pairs of preanal setae. Spermatheca as figured. Chelicera with fixed digit multidentate, movable digit toothless. Macroseta on leg IV : genu–12, tibia–20, basitarsus–32.

Male : Unknown.

Collection Records : This species was described from Assam collected on citrus.

Habitat : Citrus.

Distribution : India (Assam).

53. *Amblyseius (Neoseiulus) baraki* Athias-Henriot

(Figs. 226-231)

1966. *Amblyseius baraki* Athias-Henriot, *Sci. d. Bourgogne* **25** : 211-212.

1986. *Amblyseius (Neoseiulus) baraki*, Gupta, *Fauna of India : Phytoseiidae*, p. 105-107.

1987. *Amblyseius (Neoseiulus) baraki*, Gupta *Rec. zool. Surv. India, Occ. Pap.*, **95** : 35.

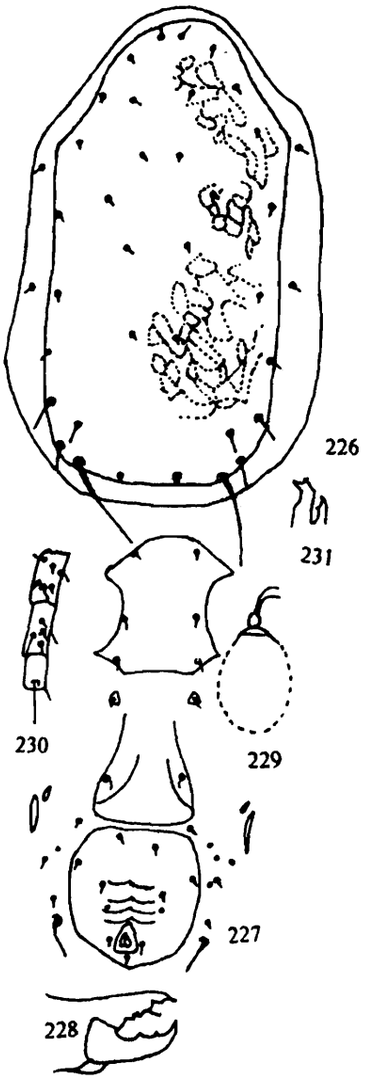
1989. *Amblyseius (Neoseiulus) baraki*, Naidu & Channa Basavanna, In : *Progress in Acarology*, **2** : 133.

1990. *Amblyseius (Neoseiulus) baraki*, Dhooria, *Acar. Newsl.*, **17-18** : 17.

1992. *Amblyseius baraki*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 105-106.

Female : Dorsal shield reticulate, 408 long, 172 wide. Measurements of setae : j_1–13–17, j_4–10–12, j_5–12–14, j_6–13–14, J_2–12, J_5–12, j_3–12–15, z_2–z_4–10–13 each, s_4–12–16, Z_1–12, S_2–12, S_4–24–29, S_5–24–29, Z_5–75–82, z_5–10, Z_4–37, r_3, R_1–14 each. Sternal shield reticulate, 96–110 long, 60–65 wide, with 3 pairs of preanal setae. Ventrianal shield reticulate, 110–122 long, 98–102 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 sharp teeth anterior to strong *pilus dentilis*, 3 teeth posterior to it, movable digit with 2 teeth. Spermatheca as figured. Macroseta on basitarsus IV–48 long. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$ genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as figured.



Figs. 226-231 : *Amblyseius (Neoseiulus) baraki* Athias-Henriot (F) : 226-Dorsal shield, 227-Ventral surface, 228-Chelicera, 229-Spermatheca, 230-Genu, tibia, basitarsus of leg IV, 231-Spermatophoral process (M).

Collection Records : This species was described from Baraki on *Phalaris* sp. and the Indian records are on sugarcane in Punjab and on citronella grass in Karnataka.

Habitat : Sugarcane, Citronella grass, elsewhere : *Phalaris* sp. sugarcane.

Distribution : India (Punjab, Karnataka), Algeria, Thailand, China.

Remarks : This mite fed on *Eriophyes cymbopogonis* eggs, nymphs and adults infesting citronella grass in Karnataka (Naidu & Channa Basavanna, 1989).

54. *Amblyseius (Neoseiulus) cucumeris* (Oudemans)

(Figs. 232-235)

1930. *Typhlodromus cucumeris* Oudemans, *Ent. Ber.*, **8** : 69-70.

1951. *Typhlodromus cucumeris*, Nesbitt, *Zool. Verh.*, **12** : 2-3.

1959. *Typhlodsromus (Amblyseius) cucumeris*, Chant, *Can. Ent.*, **91** (Suppl. 12) : 626-630.

1959. *Amblyseius cucumeris*, Narayanan & Khot, *Proc. Indian Sci. Congr.*, **46** : 411.

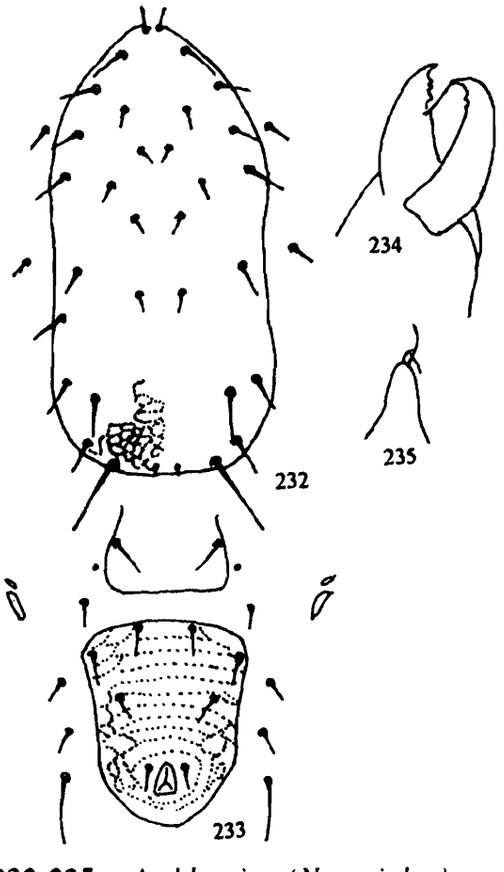
1963. *Amblyseius cucumeris*, Schuster & Gonzalez, *Acarologia*, **2** : 185-186.

1971. *Amblyseius cucumeris*, Sadana & Kanta, *Sci. & Cult.*, **37**(1) : 530.

1977. *Amblyseius cucumeris*, Ragusa, *Acarologia*, **18**(3) : 385.

1995. *Amblyseius cucumeris*, Manjunath *et al.*, *Abst. V Nat. Symp. Acarology*, Bangalore, p. 25.

1997. *Amblyseius (Neoseiulus) cucumeris*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 525.



Figs. 232-235 : *Amblyseius (Neoseiulus) cucumeris* (Oudemans) (F) : 232-Dorsal shield, 233-Ventral surface, 234-Chelicera, 235-Spermatheca. (after Schuster & Gonzalez, 1963)

Female : Dorsal shield 380 long, 200 wide. Measurements of setae : j_1–25, j_5–17, j_6–23, J_2–25, J_5–12, j_3–34, z_2–30, z_4–30, s_4–40, Z_1–30,

S_2–39, S_5–36, Z_5–72, z_5–18, R_1–30. Ventrianal shield triangular, 120 long, 100 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth, movable digit of chelicera without tooth. Macroseta present only on basitarsus IV.

Male : ?

Collection Records : In India, it was recorded on citrus in Punjab and on chrysanthemum in Karnataka.

Habitat : India : Citrus, chrysanthemum, elsewhere : on several plants.

Distribution : India (Punjab, Karnataka), Europe, Canada, U. S. A., Mexico, Egypt, Australia, New Zealand, Africa.

Remarks : Dhooria (1990) reported this mite feeding upon *Eutetranychus orientalis* and *Brevipalpus phoenicis*, both infesting citrus in Punjab. The predator preferred larvae and nymphal stages of prey.

55. *Amblyseius (Neoseiulus) cynodonae* Gupta

(Figs. 236–240)

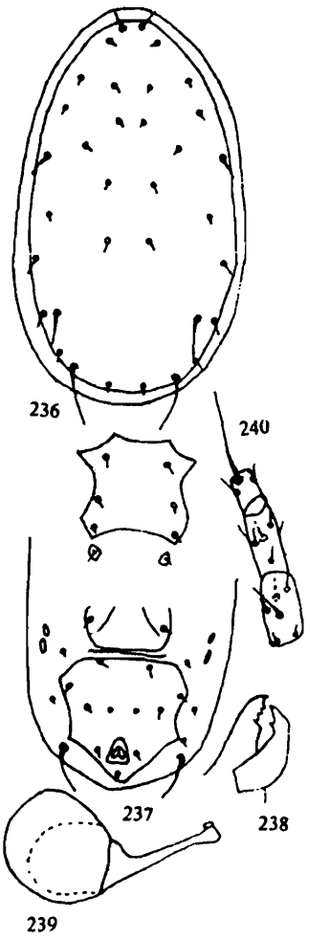
1977. *Amblyseius cynodonae* Gupta, *Oriental Ins.*, **11** : 626-627.

1986. *Amblyseius (Neoseiulus) cynodonae*, Gupta, *Fauna of India : Phytoseiidae*, p. 107-108.

1987. *Amblyseius (Neoseiulus) cynodonae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 36.

Female : Dorsal shield 325 long, 180 wide. Measurements of setae : j_1–17, j_4–j_6, J_5–5 each, J_2–10, j_3–12, z_2, z_4–10 each, s_4–25, Z_1–10, S_2–16, S_4–12, S_5–10, Z_5–67, z_5–7, Z_4–36, r_3, R_1 on lateral integument. Sternal shield reticulate anteriorly, with 3 pairs of setae. Genital shield narrower than greatest width of ventrianal shield, with a pair of setae. Ventrianal shield as long (92) as wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, movable digit with 1 tooth. Spermatheca as figured. Macrosetae on leg IV : genu–40, tibia–18, basitarsus–55. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.



Figs. 236-240 : *Amblyseius (Neoseiulus) cynodonae* Gupta (F) : 236-Dorsal shield, 237-Ventral surface, 238-Chelicera, 239-Spermatheca, 240-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Andaman & Nicobar Isls. collected on *Cynodon dactylon*.

Habitat : *Cynodon dactylon*.

Distribution : India (Andaman & Nicobar Isld.).

56. *Amblyseius (Neoseiulus) fallacis* (Garman)

(Figs. 241-246)

1948. *Iphidulus fallacis* Garman, *Bull. Conn. Agr. Expt. Sta.*, **520** : 13.

1986. *Amblyseius (Neoseiulus) fallacis*, Gupta, *Fauna of India : Phytoseiidae*, p. 109-111.

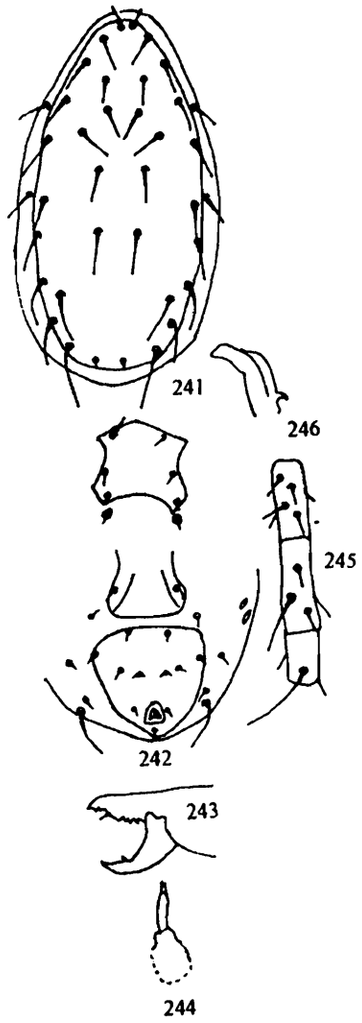
1987. *Amblyseius (Neoseiulus) fallacis*, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 37.

1987. *Amblyseius fallacis*, Bradenburg. & Kennedy, *Agr. Zool. Rev.*, **2** : 201.

1992. *Amblyseius (Neoseiulus) fallacis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 162.

1995. *Amblyseius (Neoseiulus) fallacis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 35.

1997. *Amblyseius fallacis*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 48.



Figs. 241-246 : *Amblyseius (Neoseiulus) fallaeis* (Garman) (F) : 241-Dorsal shield, 242-Ventral surface, 243-Chelicera, 244-Spermatheca, 245-Genu, tibia, basitarsus of leg IV, 246-Spermatophoral process (M).

Female : Dorsal shield 380 long, 163 wide. Measurements of setae j_1–23–24, j_4–40, j_5–40, j_6–40, J_2–45–50, J_5–11, j_3–40–60, z_2–35–45, z_4–35–45, s_4–45–55, Z_1–45–60, S_2–45–55, S_4–50, S_5–40–48, Z_5–68–76, z_5–23–29. Z_4–60–65, r_3– 30–40, R_1–35–40. Sternal shield with posterior margin slightly concave with 3 pairs of setae. Genital shield 70 wide with a pair of setae. Ventrianal shield pentagonal, 120 long, 110 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate with a strong *pilus dentilis*, movable digit with 1 tooth. Macrosetae on leg IV : genu–17, tibia–32, basitarsus–50. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}2\\1\end{smallmatrix}$ $\begin{smallmatrix}1\\1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as illustrated.

Collection Records : This species was described from Connecticut U.S.A. collected on apple and thereafter it was recorded on several other plants. In India, its records are from *Colocasia antiquorum* from Assam; pineapple, *Dacus carota* from Meghalaya; *Dolichos lablab*, coconut from Lakkshdwip Isl., grass from Tamil Nadu, paddy from Tripura, West Bengal, Bihar, Assam; sowank from Haryana.

Habitat : Seeds of swank (*Echinichloa crusgalli*), grass, paddy, pineapple, *Colocasia antiquorum*, carrot, *Dolichos lablab*, coconut.

Distribution : India (Assam, Meghalaya, Tripura, West Bengal, Bihar, Haryana, Punjab, Tamil Nadu, Andaman & Nicobar Isl., Lakshadwip Isls), North and Central America, Brazil, Canada, Australia, Europe, China).

Remarks : Feeding or association of this species with phytophagous mites have been reported by several workers in India like on *Schizotetranychus andropogoni* on paddy in Bihar, West Bengal, Andaman Isl. (Gupta, 1975a, 1977); on *Oligonychus indicus* on paddy in Punjab (Gupta *et al.*, 1971; Gupta, 1975); *Tetranychus urticae* on carrot in Punjab (Dhooria, 1990), on *Tetranychus neocaledonicus* on *Dolichos lablab* (Gupta & Chatterjee, 1999).

57. ***Amblyseius (Neoseiulus) fraterculus*** Berlese

(Figs. 247–248)

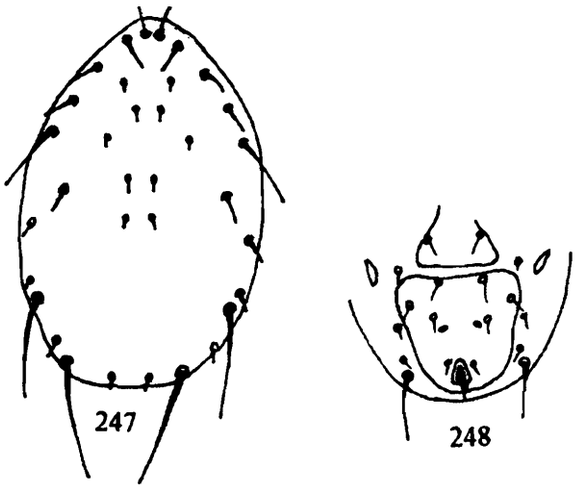
1917. *Amblyseius fraterculus* Berlese, *Redia*, **12** : 172.

1986. *Amblyseius (Neoseiulus) fraterculus*, Gupta, *Fauna of India : Phytoseiidae*, p. 111-112.

1987. *Amblyseius (Neoseiulus) fraterculus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 37-38.

Female : Dorsal shield with 17 pairs of setae. $z_4 > z_2$, $Z_5 > Z_4 > s_4$, $Z_1 = S_2$, $S_4 = S_5$, j_4–j_6, J_2–J_5 very small. Sternal shield with 3 pairs of setae Genital shield narrower than greatest width of ventrianal shield. Ventrianal shield almost as long as broad, with 3 pairs of preanal setae. Macrosetae on leg IV present on genu, tibia and basitarsus.

Male : Unknown.



Figs. 247-248 : *Amblyseius (Neoseiulus) fraterculus* Berlese (F) : 247-Dorsal shield, 248-Post ventral surface.

Collection Records : The description of this species was based on collection from Argentina and the Indian record of this species is on red gram from Tamil Nadu.

Habitat : Red gram.

Distribution : India (Tamil Nadu), Argentina.

58. *Amblyseius (Neoseiulus) imbricatus* Corpuz & Rimando
(Figs. 249–254)

1966. *Amblyseius imbricatus* Corpuz & Rimando. *Philip. Agr.*, **50** : 127.

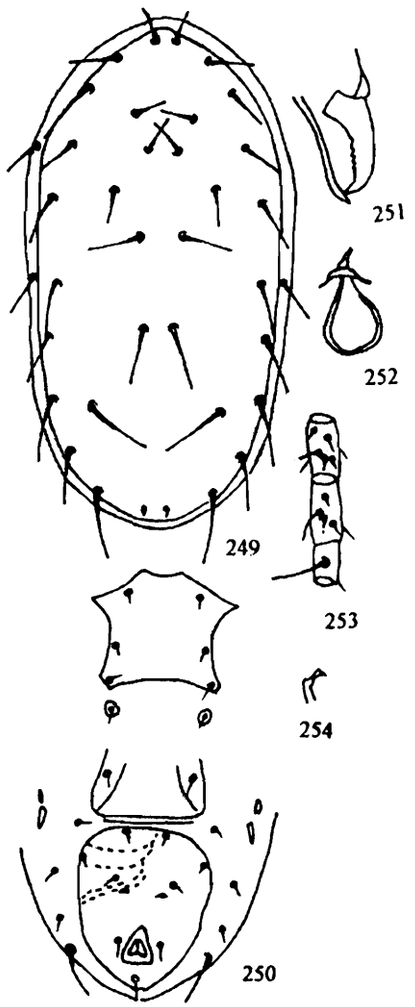
1986. *Amblyseius (Neoseiulus) imbricatus*, Gupta, *Fauna of India : Phytoseiidae*, p. 114-116.

1987. *Amblyseius (Neoseiulus) imbricatus*, Gupta, *Rec. zool. Surv. India*, **95** : 38.

1997. *Amblyseius imbricatus*, Wei-nan, *Economic Insect Fauna of China*, p. 46.

Female : Dorsal shield 292 long; 210 wide. Measurements of setae : j_1–33, j_4–31, j_5–33, j_6–44, J_2–59, J_5–13, j_3–51, z_2–49, z_4–49, s_4–56, Z_1–56, S_2–58, S_4–60, S_5–60; Z_5–80, z_5–36, Z_4–47, r_3–46, R_1–49. Sternal shield 80 long, 72 wide. with 3 pairs of sternal sete. Ventrianal shield 132 long, 100 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3–4 teeth anterior to strong *pilus dentilis*, 3–4 teeth posterior to it. movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–38, tibia–40, basitarsus–67.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as figured.



Figs. 249-254 : *Amblyseius (Neoseiulus) imbricatus* Corpuz & Rimando (F) : 249-Dorsal shield, 250-Ventral surface, 251-Chelicera, 252-Spermatheca, 253-Genu, tibia, basitarsus of leg IV, 254-Spermatophoral process (M).

Collection Records : The original description of this species was from the Philippines collected on *Oryza sativa* as well as *Asparagus plumosus*. The Indian record is from Karnataka on paddy.

Habitat : India : Paddy, elsewhere : paddy, *Asparagus plumosus*.

Distribution : India (Karnataka), West Bengal), China, Philippines, Thailand.

59. *Amblyseius (Neoseiulus) indicus* (Narayanan & Kaur)

(Figs. 255–259)

1960. *Typhlodromus (Amblyseius) indicus* Narayanan & Kaur, *Proc. Indian Acad. Sci.*, **51**(B) : 2-5.

1986. *Amblyseius (Neoseiulus) indicus*, Gupta, *Fauna of India, Phytoseiidae*, p. 112-114.

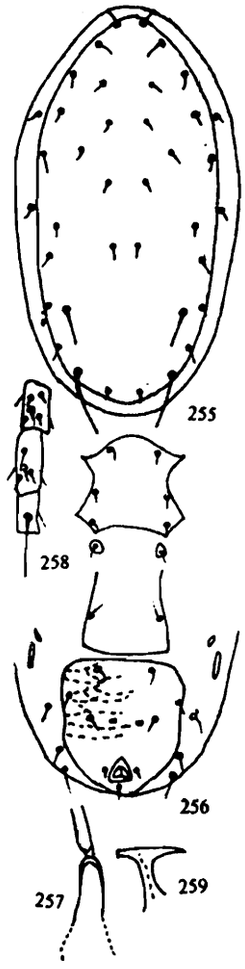
1987. *Amblyseius (Neoseiulus) indicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 38-39.

1990. *Amblyseius indicus*, Dhooria, *Acar. Newsl.*, **17-18** : 17.

1992. *Amblyseius (Neoseiulus) indicus*, Gupta, In : *State Fauna Ser. 3. Fauna of West Bengal, Part 3*, p. 162.

1994. *Amblyseius (Neoseiulus) indicus*, Singh, *Adv. Agri. Res. India*, **3** : 190.

1997. *Amblyseius (Neoseiulus) indicus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 525.



Figs. 255-259 : *Amblyseius (Neoseiulus) indicus* (Narayanan & Kaur) (F) : 255-Dorsal shield, 256-Ventral surface, 257-Spermatheca, 258-Genu, tibia, basitarsus of leg IV, 259-Spermatophoral process.

Female : Dorsal shield 324 long, 168 wide. Measurements of setae : j_1–18, j_4–j_5–16 each, j_6, J_2–21 each, J_5–11, j_3–22, z_2–16–20, z_4–16–20, s_4–20–22, Z_1–13–16, S_2–20–24, S_4–20–22, S_5–18–22, Z_5–48–56, z_5–16–18, Z_4–35–40, r_3, R_1–14–16 each, Sternal shield 85 long, 82 wide, with 3 pairs of sternal setae. Genital shield 72 wide with a pair of setae. Ventrianal shield 115–120 long, 95–105 wide, with 3 pairs of preanal setae, Fixed digit of chelicera tridentate with a strong *pilus dentilis*, movable digit unidentate. Macroseta on basitarsus IV : 60–65. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\0&1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.

Collection Records : This species was described from Delhi on *Gnorimoschema operculella* infested potato feeding upon *Tyrophagus putrescentiae*. Subsequently, it was also reported on *Lageneria vulgaris* and *Solanum tuberosum* from Uttar Pradesh, on brinjal, wheat, maize in Punjab and from maize from West Bengal.

Habitat : *Gnorimoschema operculella* infested potato, *Zea mays*, wheat, carrot, brinjal, *Lageneria vulgaris, Solanum tuberosum.*

Distribution : India (Delhi, West Bengal, Punjab, Uttar Pradesh).

60. *Amblyseius (Neoseiulus) longispinosus* (Evans)

(Figs. 260–265)

1952. *Typhlodromus longispinosus* Evans, *Ann. Mag. Nat. Hist.*, **(12)**5 : 413-416

1983. *Amblyseius longispinosus*, Gupta & Gupta, *Abst. II All India Symp. Acarology*, Pune, p. 23.

1984. *Amblyseius (Amblyseius) longispinosus*, Wei-nan, *Acarology VI*, **1** : 222.

1984. *Amblyseius longispinosus*, Lo, *et al.*, *J. Agri. Res. China*, **33**(4) : 417.

1984. *Amblyseius longispinosus*, Lo, *Acarology VI*, **2** : 703.

1986. *Amblyseius longispinosus*, Lo, *Pl. Prot. Bull., Taiwan*, **28** : 37-39.

1986. *Amblyseius (Neoseiulus) longispinosus*, Gupta, *Fauna of India : Phytoseiidae*, p. 116-117.

1987. *Amblyseius (Neoseiulus) longispinosus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 37-40.

1990. *Amblyseius longispinosus*, Arbabi & Singh, *Abst. IV Nat. Symp. Acarology*, Calicut, p. 8.

1992. *Amblyseius (Neoseiulus) longispionosus*, Gupta, In : *State Fauna Ser. 3. Fauna of West Bengal, Part 3*, p. 162.

1992. *Amblyseius (Neoseiulus) longispinosus*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1994. *Amblyseius (Neoseiulus) longispinosus*, Singh, *Shashpa*, 1(2) : 69.

1995. *Amblyseius longispinosus*, Chandrasekharappa *et al.*, *Abst V Nat. Symp. Acarology*, Bangalore, p. 32, 33.

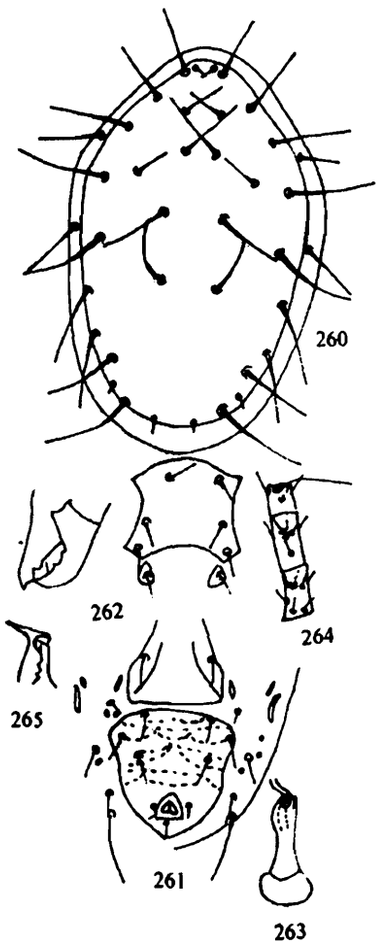
1995. *Amblyseius longispinosus*, Anil *et al.*, *Abst. V Nat. Symp. Acarology*, p. 72.

1995. *Amblyseius longispinosus*, Manjunatha *et al.*, *Abst. V Nat. Symp. Acarology*, p. 72.

1996. *Amblyseius (Neoseiulus) longispinosus*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

1999. *Amblyseius (Neoseiulus) longispinosus*, Gupta & Chatterjee, *Sci. & Cult.*, **65**(5-6) : 162.

2000. *Amblyseiulus (Neoseiulus) longispinosus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 24.



Figs. 260-265 : *Amblyseius (Neoseiulus) longispinosus* (Evans) (F) : 260-Dorsal shield, 261-Ventral surface, 262-Chelicera, 263-Spermatheca, 264-Genu, tibia, basitarsus of leg IV, 265-Spermatophoral process (M).

Female : Dorsal shield 325 long, 180 wide. Measurements of setae : j_1–16–20, j_4–55–62, j_5–67–72, j_6–72, J_2–71–81, J_5–7–10, j_3–50–60, z_2–60, z_4–70–75, s_4–80–82, Z_1–73–76, S_2–76–78, S_4–53–61, S_5–18, Z_5–78–80, z_5–31–36, Z_4–63–69, r_3–58, R_1–67. Sternal shield 78 long, 67 wide, with 3 pairs of preanal setae. Genital shield 72 wide, with a pair of long setae, Ventrianal shield triangular, 107–116 long, 90–95 wide, reticulate, with 3 pairs of long preanal setae. Spermatheca as figured. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, movable digit with 2 sharp teeth. Macroseta on leg IV : basitarsus–60–70 long. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}1\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as figured.

Collection Records : Evans (1952) described this species from Indonesia collected on *Manihot utillisima*. The Indian records of this species are on *Abelmoschus esculentus, Dolichos lablab, Phaseolus vulgaris* in Uttar Pradesh; on mango from Arunachal Pradesh; on castor, bamboo, *Datura, Calotropis,* guava from West Bengal; snake gourd from Lakshadwip; *Luffa acutangula,* grass from Tripura; orchid from Sikkim; on papaya, mulberry from Karnataka; paddy, rose from Bihar and guava in Orissa.

Habitat : India : *Datura, Tabernaemontana coronaria, Bauhinia purpurea,* castor, *Zinia,* lady's finger, paddy, guava, rose, *Dolichos lablab, Phaseolus vulgaris,* mango, *Calotropis,* snake gourd, *Luffa acutangula,* grass, orchid, papaya, mulberry, bamboo. elsewhere : on several plants.

Distribution : India (West Bengal, Orissa, Bihar, Arunachal Pradesh, Sikkim, Tamul Nadu, Karnataka, Pondicherry, Uttar Pradesh, Andaman & Nicobar Isls, Lakshadwip Isl.) Philippines, Taiwan, Indonesia, Japan, Pakistan, Papua New Guinea, Australia, Malayasia, Hong Kong, Hawaii, New Zealand, Jamaica.

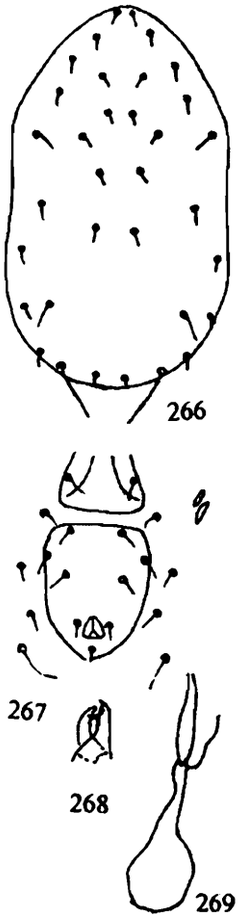
Remarks : This species appears to be an efficient predator of a number of phytophagous species as *Tetranychus* sp. on beans (Gupta, 1975); *Tetranychus ludeni* (Mallik & ChannaBasavanna, 1975); *Raoiella indica* (Nangia, ChannaBasavanna & Jagadish, 1989); *Tetranychus urticae* infesting mulberry (Nangia & ChannaBasavanna, 1990); *Tetranychus neocaledonicus* on papaya in Karnataka (Nangia *et al.*, 1990); *Tetranychus ludeni* (Arbabi & Singh, 1990) and *Tetranychus* spp. infesting *Luffa acutangula* (Gupta, 2000 from Tripura).

61. *Amblyseius (Neoseiulus) oahuensis* Prasad

(Figs. 266–269)

1968. *Amblyseius oahuensis* Prasad, *Ann. Ent. Soc. Amer.*, **61**(6) : 15-18.

1986. *Amblyseius oahuensis* Rather, *Rivista Parasitol.*, **46**(1-2) : 292.



Figs. 266-269 : *Amblyseius (Neoseiulus) oahuensis* Prasad (F) : 266-Dorsal shield, 267-Post ventral surface, 268-Chelicera, 269-Spermatheca. (after Prasad, 1968)

Female : Dorsal Shield 350 long, 220 wide. Measurements of setae : j_1, j_4, j_5 18 each, j_6–20, J_2–22, J_5–12, j_3–25, z_2, z_4–23 each, s_4–27, Z_1–24, S_2–26, S_4–25, S_5–23, Z_5–57 (serrate), z_5–22, Z_4–37, r_3–23, R_1–22. Sternal shield with 3 pairs of setae. Ventrianal shield reticulate with 3 pairs of preanal setae. Spermatheca with long cervix. Fixed digit of chelicera with 5 teeth, movable digit with 1 tooth. Macroseta on basitarsus IV–58 long.

Male : Unknown.

Collection Records : Originally, it was described from Oahu collected on bean leaves and soil litter as well as from sparrow nest and chicken manure. The Indian record is from Kashmir.

Habitat : India : ? elsewhere : bean leaves, sparrow nest, chicken manure, soil litter.

Distribution : India (Jammu & Kashmir), Oahu.

62. *Amblyseius (Neoseiulus) paspalivorus* (DeLeon)

(Figs. 270–274)

1967. *Typhlodromu paspalivorus* DeLeon, *Fla, Ent.*, **40** : 143-144.

1986. *Amblyseius (Neoseiulus) paspalivorus*, Gupta, *Fauna of India : Phytoseiidae*, p. 119-120.

1987. *Amblyseius (Neoseiulus) paspalivorus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 40-41.

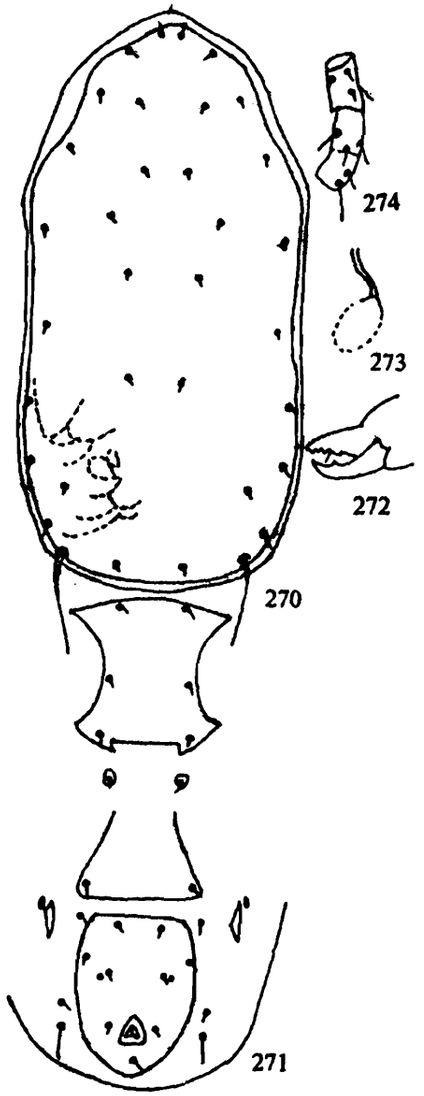
1981. *Amblyseius paspalivorus*, Schicha, *Internat. J. Acarol.*, **7** : 210-211.

1992. *Amblyseius (Neoseiulus) paspalivorus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 163.

Female : Dorsal shield 408 long, 193 wide, imbricate. Measurements of setae : j_1–11, j_4–11, j_6–11, J_2–8, J_5–7–9, j_3–11–12, z_2–10–11, z_4–11, s_4–12–15, Z_1–11–13, S_2–12–16, S_4–20–30, S_5–20–30, Z_5–60–80, z_5–11, Z_4–20–25, r_3–9. Sternal shield 100–107 long, 63–74 wide, with 3 pairs of sternal setae. Genital shield 72–78 wide with a pair of setae. Ventrianal shield 123–134 long, 90–110 wide, imbricate, with 3 pairs of small preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis* and 1 tooth posterior to it, movable digit without sharp tooth. Spermatheca as figured.

Macroseta on basitarsus IV 35–44 long. Leg chaetotactic formula : genu II $2\frac{2}{0}\frac{2}{0}1$, tibia II $1\frac{1}{1}\frac{2}{1}1$, genu III $1\frac{2}{1}\frac{2}{0}1$, tibia III $1\frac{1}{1}\frac{2}{1}1$.

Male : Unknown.



Figs. 270-274 : *Amblyseius (Neoseiulus) paspalivorus* (DeLeon) (F) : 270-Dorsal shield, 271-Ventral surface, 272-Chelicera, 273-Spermatheca, 274-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon material collected on *Paspalum* sp. in Florida. The Indian recored of this species is from paddy in West Bengal and malformed mango tree in Delhi.

Habitat : India : Malformed mango tree, paddy, *Salix elegans*; elsewhere : *Paspalum* sp.

Distribution : India (West Bengal, Delhi), U.S.A., Philippines, Jamaica.

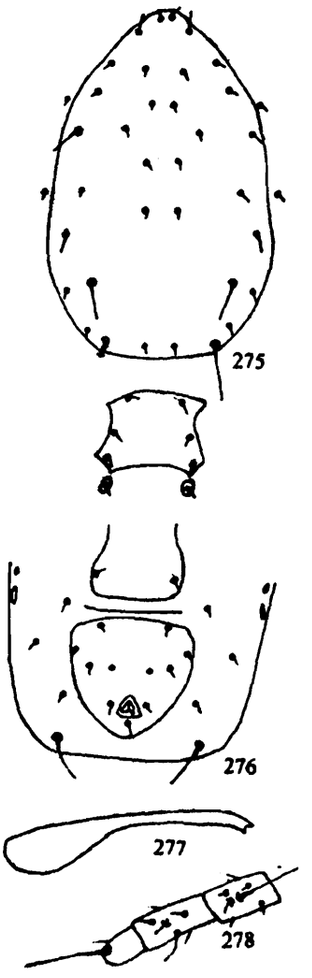
63. *Amblyseius (Neoseiulus) rangatensis* Gupta

(Figs. 275–278)

1977. *Amblyseius rangatensis* Gupta, *Oriental Ins.*, **11** : 632-633.

1986. *Amblyseius (Neoseiulus) rangatensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 121-122.

1987. *Amblyseius (Neoseiulus) rangatensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 41.



Figs. 275-278 : *Amblyseius (Neoseiulus) rangatensis* Gupta (F) : 275-Dorsal shield, 276-Ventral surface, 277-Spermatheca, 278-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 316 long, 200 wide. Measurements of setae : j1–16, j4–j_6, J_2–7 each, j_3–20, z_2, z_4–16 each, s_4–32, Z_1, S_4, S_5–10–12 each, S_2–24, Z_5–60 (weakly serrate), Z_4–40, r_3, R_1–10–12 each. Sternal shield 80 long, 60 wide, with 3 pairs of sternal setae. Genital shield 72 wide with a pair of setae. Ventrianal shield triangular, 100 long, 90 wide with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth, movable digit with 1 tooth. Macrosetae on leg IV : genu–51, tibia–nil, basitarsus–67 long. Chaetotactic

formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The description of this species was based upon material collected from Andaman Isls. on brinjal.

Habitat : Brinjal.

Distribution : India (Andaman & Nicobar Isls.).

64. *Amblyseius (Neoseiulus) reticulatus* (Oudemans) (Figs. 279–282)

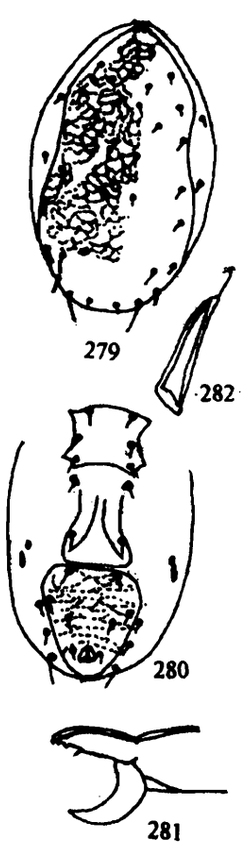
1930. *Typhlodromus reticulatus* Oudemans, *Ent. Ber.*, **8** : 48-49.

1951. *Typhlodromus reticulatus*, Nesbitt, *Zool. Verh.*, **12** : 37.

1959. *Typhlodromus (Amblyseius) reticulatus*, Chant, *Can. Ent.*, **91**(Suppl. 12) : 76-77.

1966. *Amblyseius reticulatus*, Athias-Henriot, *Bull. Sci. de Bourgogne*, **24** : 206.

1990. *Amblyseius reticulatus*, Dhooria, *Acar. Newsl.*, **17-18** : 18.



Figs. 279-282 : *Amblyseius (Neoseiulus) reticulatus* (Oudemans) (F) : 279-Dorsal shield, 280-Ventral surface, 281-Chelicera, 282-Spermatheca. (after Womersley, 1954)

Female : Dorsal shield reticulate. All dorsal setae short. Z_4 much shorter than distance between its base and that of Z_5. Ventrianal shield as wide as long, with 3 pairs of preanal setae. Metapodal plates 2 paired. Macroseta present only on basitarsus IV.

Male : ?

Collection Records : In India, it was collected on sugarcane in Punjab.

Habitat : India : Sugarcane, elsewhere : *Sarothamnus* sp., *Calluna vulgaris*.

Remarks : Although Dhooria (1990) reported this species from Punjab associated with *Oligonychus indicus* on sugarcane but the identity appears to be doubtful.

Subgenus 5. *Paraphytoseius* Swirski & Shechter

1961. *Paraphytoseius* Swirski & Shechter, *Israel J. agric. Res.*, **11** : 113.

1986. *Paraphytoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 122-123.

1987. *Paraphytoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 46.

1989. *Paraphytoseius*, Denmark & Muma, *Fla. St. Coll. of Arthropods Occ. Pap.*, **4** : 44-45.

1992. *Paraphytoseius*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 163.

1997. *Paraphytoseius*, Wei-nan, *Economic Fauna of China : Phytoseiidae*, p. 132.

Diagnosis : Dorsal shield moderately sclerotized with 5 pairs of setae on dorsocentral series, 2 pairs of median and 5–6 pairs of laterals, 2 pairs of sublateral setae on lateral integument. Setae j_1, j_3, s_4, Z_5, Z_4, r_3 and R_1, being long, thick and serrate. Sternal shield with 3 pairs of setae. Leg IV macrosetae on genu, tibia and basitarsus, mostly spatulate or knobbed.

Type ***Paraphytoseius multidentatus*** Swirski & Shechter, 1961 (by designation)

Key to the species of Subgenus *Paraphytoseius* known to inhabit plants in India

1. Setae z_2 and z_4 serrate ..... *scleroticus*
– Setae z_2 and z_4 smooth ..... *multidentatus*

65. *Amblyseius (Paraphytoseius) multidentatus* (Swirski & Shechter)

(Figs. 283–288)

1961. *Paraphytoseius multidentatus* Swirski & Shechter, *Israel J. agric. Res.*, **11**(2) : 114–116.

1960. *Typhlodromus (Amblyseius) orientalis* Narayanan *et al., Proc. Nat. Inst. Sci.*, **26B** : 394.

1984. *Amblyseius (Paraphytoseius) multidentatus*, Wei-nan, *Acarology VI*, **1** : 222.

1985. *Paraphytoseius multidentatus*, Schicha & Corpuz-Raros, *Internat. J. Acarol.*, **11**(2) : 67-69.

1986. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, *Fauna of India : Phytoseiidae*, p. 123-126.

1987. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, *Rec. zool. Surv. India, Occ. pap.*, **95** : 46-47.

1990. *Amblyseius multidentatus*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1990. *Amblyseius narayanani*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1990. *Amblyseius bhadrakaliensis*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, In : *Contributions to Acarological Researches in India*, p. 442.

1992. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 163.

1992. *Amblyseius multidentatus*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 183.

1993. *Amblyseius (Paraphytoseius) multidentatus*, Mukherjee & Singh, *J. Insect Sci.*, **6**(1) : 136.

1994. *Amblyseius (Paraphytoseius) multidentatus*, Singh, *Shashpa*, **1**(2) : 69.

1995. *Amblyseius (Paraphytoseius) multidentatus*, Jagadish *et al., Abst. V Nat. Symp. Acarology*, Bangalore, p. 17.

1995. *Amblyseius (Paraphytoseius) multidentatus*, Singh, *Adv. Agric. Res. India*, **3** : 190.

1995. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 34-35.

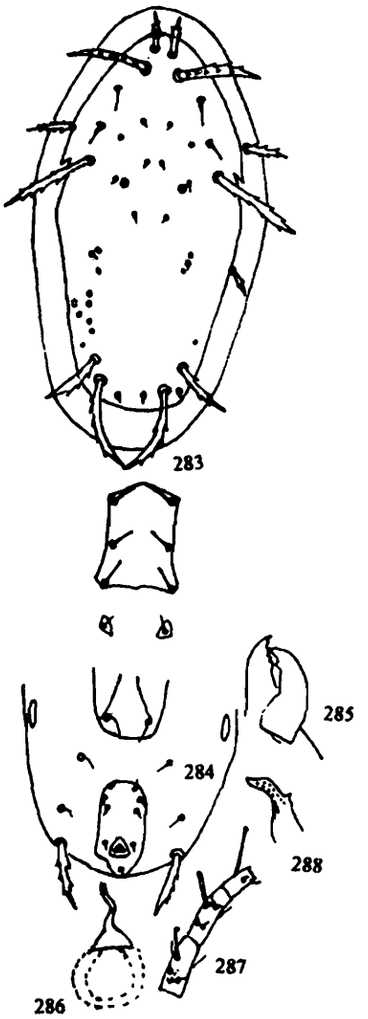
1996. *Amblyseius (Paraphytoseius) multidentatus*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

1997. *Paraphytoseius multidentatus*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 134.

2000. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 25.

In press. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Paraphytoseius) multidentatus*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*



Figs. 283-288 : *Amblyseius (Paraphytoseius) multidentatus* (Swirski & Shechter) (F) : 283-Dorsal shield, 284-Ventral surface, 285-Chelicera, 286-Spermatheca, 287-Genu, tibia, basitarsus of leg IV, 288-Spermatophoral process (M).

Female : Dorsal shield rugose, incised at the level of s_4, 285–300 long, 150–160 wide. Setae j_1, j_3, s_4, Z_5, Z_4 being long, thick and serrate measuring respectively 30–36, 78–88, 115–120, 85–100, 70–82, other setae being 6–9 each; r_3–42–50, R_1–27–40. Sternal shield 90 long, 80 wide, with 3 pairs of sternal setae. Genital shield 80 wide with a pair of setae. Ventrianal shield 80–92 long, 60–70 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–25–30, thibia–35–40, basitarsus–40–50, distitarsus–40–48, all with knobbed tip.

Leg chaetotactic formula : genu II $2\frac{2}{0}\frac{2}{0}1$, tibia II $1\frac{1}{1}\frac{2}{1}1$, genu III $1\frac{2}{1}\frac{2}{0}1$, tibia III $1\frac{1}{1}\frac{2}{1}1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as figured.

Collection Records : The description of this species was based upon collection on *Bambusa* sp. and *Jasminum* sp., *Ageratum houstonianum, Cyclosorus subtescens* from Hong Kong. Thereafter, it was recorded from the world on a number of plants, the list of which is too big to mention here. In India, its records are on plants that are included under Habitat.

Habitat : *Datura metel*, paddy, *Cajanus cajan, Rubus* sp., brinjal, banana, pear, beans, rose, tea, eucalyptus, sunflower, cashewnut, "Kendu", fern, *Shorea robusta, Albizzia lucida, Ipomoea*, cotton, *Eupatorium odoratum, Polygonum* sp., *Hibiscus mutabilis, Vigna unguiculata, Raphanus sativus, Trichosanthes anguind*, mango, jackfruit, sweet gourd, *Eupatorium*, arecanut, *Dolichos lablab, Lantana*, orchid, undet. plant, *Abelmoschus esculentus*.

Distribution : India (Tripura, Arunachal Pradesh, Mizoram, Assam, Sikkim, Meghalaya, West Bengal, Bihar, Maharashtra, Punjab, Tamil Nadu, Karnataka, Uttar Pradesh, Andhra Pradesh, Andaman & Nicobar Isls.), Hong Kong, Thailand, Philippines, Nigeria, Madagascar, Malayasia, China.

Remarks : This mite has been reported by several workers either as good predator of phytophagous mites or was seen associated with them. Some of those reports are : Dhooria (1990) as associated with *Tetranychus urticae* on brinjal and cotton in Punjab and feeding upon *Tetranychus ludeni* infesting lady's finger in Uttar Pradesh (Arbabi & Singh, 1990).

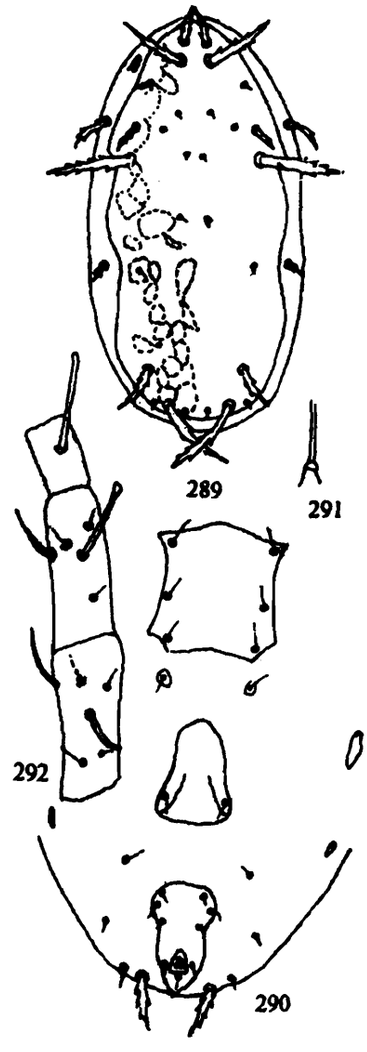
66. *Amblyseius (Paraphytoseius) scleroticus* Gupta & Ray

(Figs. 289–292)

1981. *Amblyseius (Paraphytoseius) scleroticus* Gupta & Ray, *Bull. Zool. Surv. India*, **4** : 42-43.

1986. *Amblyseius (Paraphytoseius) scleroticus*, Gupta, *Fauna of India : Phytoseiidae*, p. 126-127.

1987. *Amblyseius (Paraphytoseius) scleroticus*, Gupta, *Rec. zool. Surv. India*, **95** : 47-48.



Figs. 289-292 : *Amblyseius (Paraphytoseius) scleroticus* Gupta & Ray (F) : 289-Dorsal shield, 290-Ventral surface, 291-Spermatheca, 292-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 260 long, 135 wide. Measurements of setae : j_1–25, j_4–j_6–8 each, J_5–4, j_3–56, z_2–11, z_4–20, s_4–69, Z_1–9, S_5–11, Z_5–77, z_5–7, Z_4–53, r_3–25, R_1–16. Ventrianal shield 90 long, 72 wide, with 3 setae on one side and 2 setae on the other side. Spermatheca as figured. Macrosetae on leg IV : genu–27, tibia–33, basitarsus–42, distitarsus–44, all with knobbed tip.

Male : Unknown.

Collection Records : The description of this species was based upon specimen collected in Uttar Pradesh on an undet. plant.

Distribution : India (Uttar Pradesh).

Subgenus 6. *Phytoscutella* Muma

1961. *Phytoscutella* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 475.
1986. *Phytoscutella*, Gupta, *Fauna of India : Phytoseiidae*, p. 128.
1987. *Phytoscutella*, Gupta, *Rec. Zool. Surv. India Occ. Pap.*, **95** : 48.

Diagnosis : Dorsal shield highly sclerotized, somewhat oval, with 9 pairs of lateral setae, 2 pairs of median setae, 4 pairs of dorsocentral setae, 2 pairs of sublateral setae on lateral integument. J_5, J_2 absent; s_4, j_3, Z_5, Z_4 often considerably long. Sternal shield highly sclerotized, much wider than long with 3 pairs of sternal setae. Ventrianal shield robust, reticulate, highly sclerotized, with 3 pairs of preanal setae; a pair of large metapodal plates present. Macrosetae on leg IV present on genu, tibia and basitarsus.

Type *Typhlodromus (Amblyseius) salebrosus* Chant (1960)

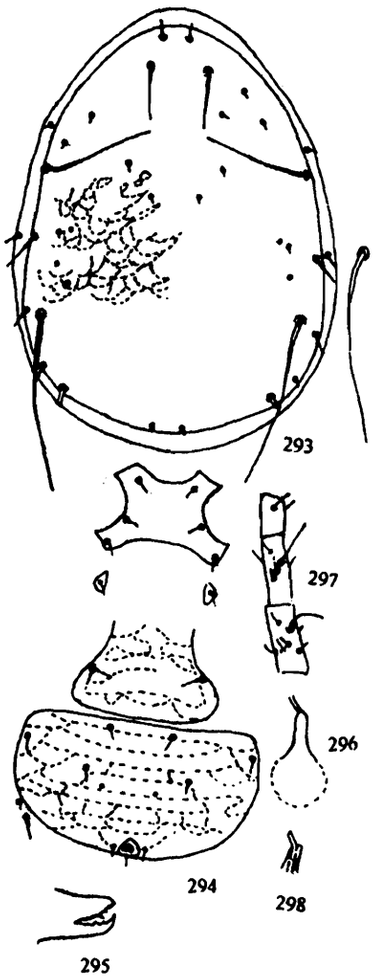
67. *Amblyseius (Phytoscutella) salebrosus* (Chant)

(Figs. 293–298)

1960. *Typhlodromus (Amblyseius) salebrosus* Chant, *Can. Ent.*, **92** : 58-60.
1986. *Amblyseius (Phytoscutella) salebrosus*, Gupta, *Fauna of India : Phytoseiidae*, p. 128.
1987. *Amblyseius (Phytoscutella) salebrosus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 48-49.
1992. *Amblyseius (Phytoscutella) salebrosus*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.
1992. *Amblyseius salebrosus*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 181.
2000. *Amblyseius (Phytoscutella) salebrosus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 25.

Female : Dorsal shield 368 long, 280 wide. Measurements of setae : j_1–22, j_4, j_6, J_5–5–8 long each, j_3–54, z_2–9, z_4–14, s_4–140–150, Z_1–6, S_2–52–56, S_4–16–20, Z_5–202, z_5–5, Z_4–157–170, r_3–9, R_1–11, both on lateral integument. Sternal shield 56 long, 96 wide, with 3 pairs of sternal setae. Genital shield highly sclerotized, 146 wide with a pair of setae. Ventrianal shield robust, reticulate, 146 long, 224 wide, with 3 pairs of preanal setae. Chelicera with 4–5 teeth anterior to strong *pilus dentilis*, 3–4 teeth posterior to it, movable digit with 3 strong teeth. Macrosetae on leg IV : genu–34, tibia–45, basitarsus–24. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.



Figs. 293-298 : *Amblyseius (Phytoscutella) salebrosus* (Chant) (F) : 293-Dorsal shield, 294-Ventral surface, 295-Chelicera, 296-Spermatheca, 297-Genu, tibia, basitarsus of leg IV, 298-Spermatophoral process (M).

Collection Records : It was described from Assam collected on citrus and thereafter, the other Indian records are from Arunachal Pradesh on jackfruit, from Tripura on *Colocasia* and from Meghalaya on jute.

Habitat : Citrus, jute, jackfruit, *Colocasia*.

Distribution : India (Arunachal Pradesh, Assam, Tripura, Meghalaya), Thailand, Taiwan.

Subgenus 7. ***Proprioseiopsis*** Muma

1961. *Proprioseiopsis* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 277.
1982. *Proprioseiopsis*, Karg, *Zool. Jb. Syst. Bd.*, **109** : 196.
1986. *Proprioseiopsis*, Gupta, *Fauna of India : Phytoseiidae*, p. 131.
1987. *Proprioseiopsis*, Gupta, *Rec. Zool. Surv. India Occ. Pap.*, **95** : 49-50.
1987. *Proprioseiopsis*, Daneshvar, *Ent. Phyt. Appliq.*, **54**(1-2) : 22.

Diagnosis : Dorsal shield with 5 pairs of dorsocentral, 2 pairs of median, 9 pairs of lateral setae. Dorsal shield well sclerotized, smooth. Sternal shield as wide as or wider than long, reticulate. Ventrianal shield "shield" shaped or pentagonal, reticulate, with 3 pairs of setae. Fixed digit of chelicera with 6–14 teeth, movable digit with 0–4 teeth. Macrosetae present on genu, tibia and basitarsus of leg IV.

Type ***Typhlodromus (Amblyseius) terrestris*** Chant, 1959
(by designation Muma, 1961)

Key to the species of Subgenus *Proprioseiopsis* known to inhabit plants in India

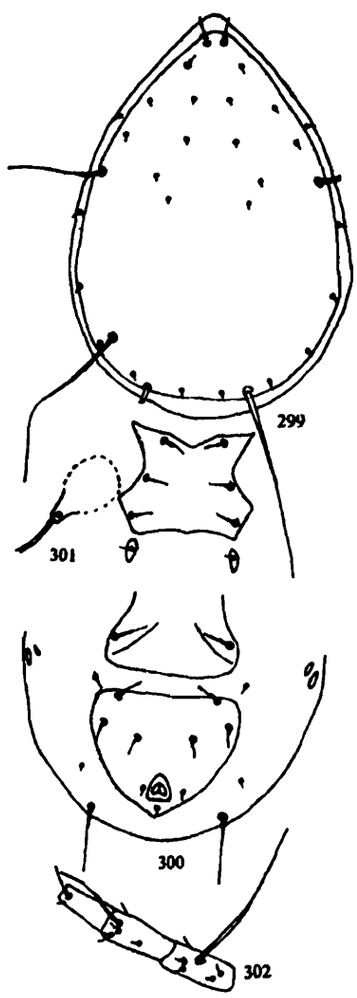
1. Seta Z_5 very long (more than 200 microns) ..... *arunachalensis*
– Seta Z_5 comparatively shorter (much less than 200 microns) 2
2. Z_4 shorter than Z_5, cervix of spermatheca cup shaped ..... *synachattiensis*
– Z_4 longer than Z_5, cervix of spermatheca funnel shaped ..... *peltatus*

68. ***Amblyseius (Proprioseiopsis) arunachalensis*** Gupta
(Figs. 299–302)

1986. *Amblyseius (Proprioseiopsis) arunachalensis* Gupta, *Fauna of India : Phytoseiidae*, p. 132-134.
1987. *Amblyseius (Proprioseiopsis) arunachalensis*, Gupta, *Rec. zool. Surv. India*, **95** : 50.

Female : Dorsal shield 336 long, 245 wide. Measurements of setae : j_1–24, j_4, j_6–munute, j_3–15 (thick), z_2, z_4–8 each, s_4–201, S_2, S_5–minute, Z_5–400, z_5–minute, Z_4–194, r_3, R_1–13 each. Sternal shield 67 long, 100 wide, with 3 pairs of sternal setae. Genital shield 100 wide. Ventrianal shield 112 long, 120 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera multidentate, dentition on movable digit not discernible. Macrosetae on leg IV : genu–138, tibia–67, basitarsus–30, genu II–40, genu III–69, tibia III–49. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 299-302 : *Amblyseius (Proprioseiopsis) arunachalensis* Gupta (F) : 299-Dorsal shield, 300-Ventral surface, 301-Spermatheca, 302-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon collection from Arunachal Pradesh on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Arunachal Pradesh).

69. *Amblyseius (Proprioseiopsis) peltatus* Van der Merwe

(Figs. 303–306)

1968. *Amblyseius (Amblyseius) peltatus* Ven der Merwe, *Ent. Mem. Dept. Agr. Tech. Serv. Rep. S. Afr.*, **18** : 119.

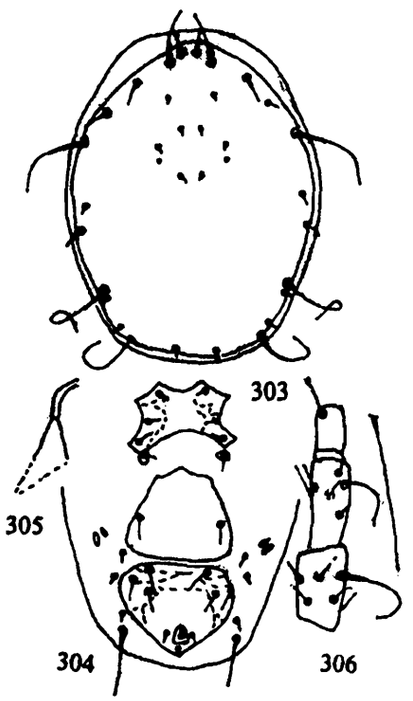
1986. *Amblyseius (Proprioseiopsis) peltatus*, Gupta, *Fauna of India : Phytoseiidae*, p. 134-136.

1983. *Amblyseius peltatus*, Schicha, *Int. J. Ento.*, **22** : 115.

1985. *Amblyseius peltatus*, Schicha & Gutierrez, *Internat. J. Acarol.*, **11** : 179.

1987. *Amblyseius (Proprioseiopsis) peltatus*, Gupta, *Rec. zool. Surv. India, Occ. pap.*, **95** : 49-50.

1992. *Amblyseius (Proprioseiopsis) peltatus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 164.



Figs. 303-306 : *Amblyseius (Proprioseiopsis) peltatus* Van der Merwe (F) : 303-Dorsal shield, 304-Ventral surface, 305-Spermatheca, 306-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 315 long, 232 wide, highly sclerotized. Measurements of setae : j_1–27, j_4, j_6, J_2–4–5 each, j_3–54, z_2–31, z_4–22, s_4–93, Z_1–18, S_2–22, S_4–10, S_5–8, Z_5–80, z_5–5, Z_4–93, r_3, R_1 on lateral integument. Sternal shield reticulate, 45 long, 95 wide, with 3 pairs of sternal setae. Genital shield 103 wide, with a pair of setae. Ventrianal shield highly sclerotized, 90 long, 110 wide with 3 pairs of preanal setae. Fixed digit of chelicera with 4–5 teeth, movable digit with 1 tooth. Macrosetae on leg IV : genu–63, tibia–37, basitarsus–76. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{1}\ \frac{1}{1}\ 1$, tibia III $1\ \frac{2}{1}\ \frac{1}{1}\ 1$.

Male : Unknown.

Collection Records : Originally, it was described from South Africa and later was reported from West Bengal on fern and pomegranate. It was also recorded in Thailand on *Combretum quadrangularae, Achyranthes aspera, Bridella* sp., soy bean, *Dioscorea*, citrus, corn.

Habitat : India : *Punica granatum*, fern, elsewhere : *Combretum quadrangularae*, soy bean, *Diosoorea, Achyranthes aspera, Bridella* sp., citrus, corn. *Carica papaya*, Strawberry.

Distribution : India (West Bengal), South Africa, Thailand, Papua New Guinea, Madagascar, Australia.

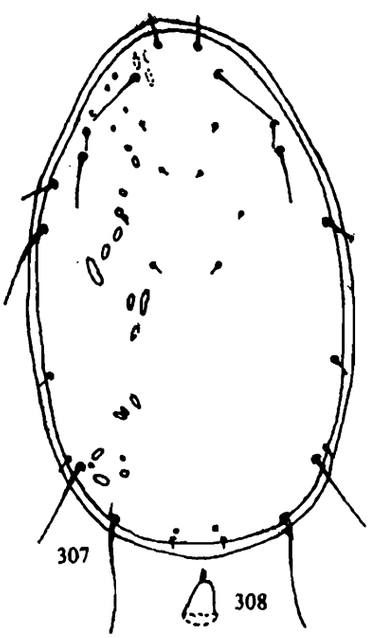
Remarks : Schicha (1983) reported this species feeding upon tetranychid mites in Australia.

70. *Amblyseius (Proprioseiopsis) synachattiensis* Gupta

(Figs. 307–308)

1986. *Amblyseius (Proprioseiopsis) synachattiensis* Gupta, *Fauna of India : Phytoseiidae*, p. 136-138.

1987. *Amblyseius (Proprioseiopsis) synachattiensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 51-52.



Figs. 307-308 : *Amblyseius (Proprioseiopsis) synachattiensis* Gupta (F) : 307-Dorsal shield, 308-Spermatheca.

Female : Dorsal shield 500 long, 295 wide, rugose. Measurements of setae : j_1–34, j_4, j_5–5–6 each, j_6–20, j_3–54, z_2–36, z_4–52, s_4–90, S_2–25, S_4–13, S_5–16, Z_5–121, z_5–8, Z_4–90, r_3–31, R_1–18.

Sternal shield wider than long, with 3 pairs of sternal setae. Genital shield 125 wide, rogose with a pair of setae. Ventrianal shield triangular, reticulate anteriorly, 157 wide, with 3 pairs of preanal setae. Fixed didgit of chelicera multidentate, movable digit with at least 3 teeth. Spermatheca with bell shaped cervix. Macrosetae on leg IV : genu–20, tibia–40, basitarsus–34, all pointed, genu II and III also with macrosetae. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : This species was described from Uttar Pradesh, collected on grass.

Habitat : Grass.

Distribution : India (Uttar Pradesh).

Subgenus 8. ***Proprioseius*** Chant

1967. *Proprioseius* Chant, *Can. Ent.*, **89** : 357.

1986. *Proprioseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 138-140.

1987. *Proprioseius*, Gupta, *Rec. Zool. Surv. India*, **95** : 52.

Diagnosis : Dorsal shield rugose with 5 pairs of dorsocentral, 2 pairs of median, 7 pairs of laterals, some setae distinctly clavate, serrate or weakly plumose. Sternal shield longer than wide, with 3 pairs of sternal setae. Macrosetae on leg IV present on genu, tibia and basitarsus. Ventrianal shield elongate, with 3 pairs of preanal setae. Chelicera with 4–8 teeth on fixed digit, 1–3 theeth on movable digit. Leg with or without macroseta.

Type ***Proprioseius meridionalis*** Chant, 1957 (by designation)

71. ***Amblyseius (Proprioseius) kumaonensis*** Gupta

(Figs. 309–312)

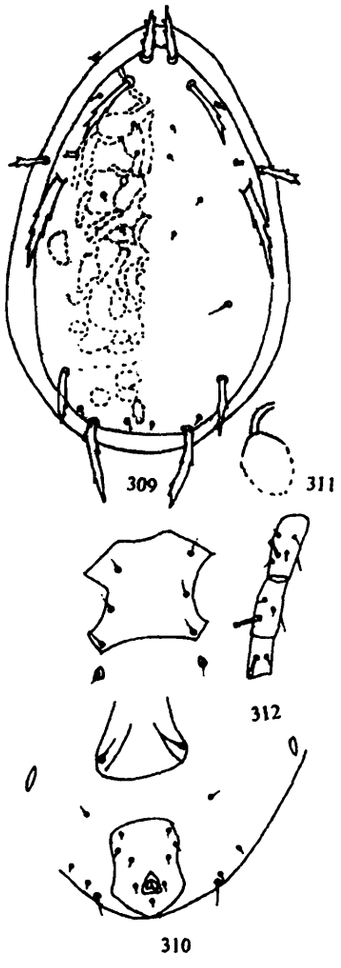
1982. *Proprioseius kumaonensis* Gupta, *Indian J. Acar.*, **6** : 28-29.

1986. *Amblyseius (Proprioseius) kumaonensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 138-140.

1987. *Amblyseius (Proprioseius) kumaonensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 52.

Female : Dorsal shield 312 long, 252 wide. Measurements of setae : j_1–36, j_4, j_5, j_6–5–7 each, J_5–4, j_3–53, z_2–15, z_4–27, s_4–87, S_2–17, S_5–12, Z_5–72, z_5–5, Z_4–50, r_3–20, R_1 absent. Sternal shield with 3 pairs of setae. Ventrianal shield 96 long, 60 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with at least 1 tooth, tooth on movable digit not discernible. Spermatheca as illustrated. Macrosetae on Leg IV : genu–24, tibia–27, basitarsus–19, all spatulate. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 309-312 : *Amblyseius (Proprioseius) kumaonensis* Gupta (F) : 309-Dorsal shield, 310-Ventral surface, 311-Spermatheca, 312-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Uttar Pradesh collected on an undetermined plant.

Habitat : Undet. plant.

Distribution : India (Uttar Pradesh).

Subgenus 9. *Typhlodromalus* Muma

1961. *Amblyseius (Typhlodromalus)* Muma, *Bull. Fla St. Mus.*, **5**(7) : 288.

1986. *Typhlodromalus*, Gupta, *Fauna of India : Phytoseiidae*, p. 140.

1987. *Typhlodromalus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 52.

Diagnosis : Dorsal shield with 6 pairs of dorsocentral, 2 pairs of median, 8–9 pairs of laterals, of those Z_5 being longest. Fixed digit of chelicera multidentate, half of which proximal to *pilus dentilis*. Sternal shield longer than wide, lobate posteriorly. Ventrianal shield elongate, mostly vase shaped, with 3 pairs of preanal setae, anterior pair mostly adjacent to anterior margin of shield. Macrosetae present on genu, tibia and basitarsus of leg IV, the one on basitarsus being longest.

Type : ***Typhlodromalus peregrinus*** Muma, 1955 (by designation Muma, 1961)

Key to the species of subgenus *Typhlodromalus* known to inhabit plants in India

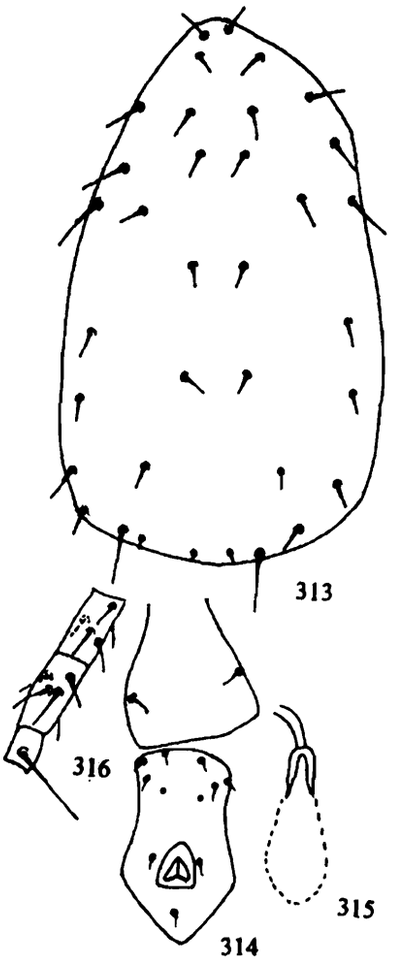
1. Ventrianal shield vase shaped 2
– Ventrianal shield squarish 5
2. s_4 noticeably longer, nearly 2 times the length of z_4 3
– s_4 and z_4 almost of similar length or the latter slightly smaller 4
3. s_4 over 3 times the length of z_4 ..... *jarooa*
– s_4 only 2 times the length of z_4 .... *sorghumae*
4. Spermatheca as in figure 315 .... *chikmagalurensis*
– Spermatheca as in fig 320 .... *chitradurgae*
5. z_2 and z_4 equal 6
– z_2 and z_4 unequal 8
6. Z_5 and Z_4 equal ..... *lablabi*
– Z_5 and Z_4 unequal 7
7. Z_4 almost touches base of S_5 ..... *rosica*
– Z_4 never touches base of S_5 .... *eucalypticus*
8. S_2 2 times the length of Z_1 ..... *laaensis*
– S_2 almost as long as Z_1 9
9. z_4 almost $2^1/_2$ –3 times as long as z_2 .... *manipurensis*
– z_4 only about 2 times of z_2 ..... *ficusi*

72. *Amblyseius (Typhlodromalus) chikmagalurensis* Gupta (Figs. 313–316)

1985. *Amblyseius (Typhlodromalus) chikmagalurensis* Gupta, *Env. & Ecol.*, **3**(3) : 434-435.

1986. *Amblyseius (Typhlodromalus) chikmagalurensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 141-142.

1987. *Amblyseius (Typhlodromalus) chikmagalurensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 56.



Figs. 313-316: *Amblyseius (Typhlodromalus) chikmagalurensis* Gupta (F) : 313-Dorsal shield, 314-Genital and ventrianal shields, 315-Spermatheca, 316-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 274 long, 150 wide. Measurements of setae : j_1–22, j_4–22, j_6–18, J_2–16, J_5–8, j_3–22, z_2–25, z_4–29, s_4–35, Z_1–15, S_2–13, S_4–22, S_5–18, Z_5–45, z_5–21, Z_4–18. Sternal shield margins indistinct, with 3 pairs of sternal setae. Ventrianal shield 78 long, 50 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth, movable digit without tooth. Spermathca as illustrated. Macroseta present only on basitarsus IV–49. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The holotype was from Karnataka collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Karnataka).

73. *Amblyseius (Typhlodromalus) chitradurgae* Gupta

(Figs. 317–322)

1985. *Amblyseius (Typhlodromalus) chitradurgae* Gupta, *Env. & Ecol.*, **3**(3) : 435-436.

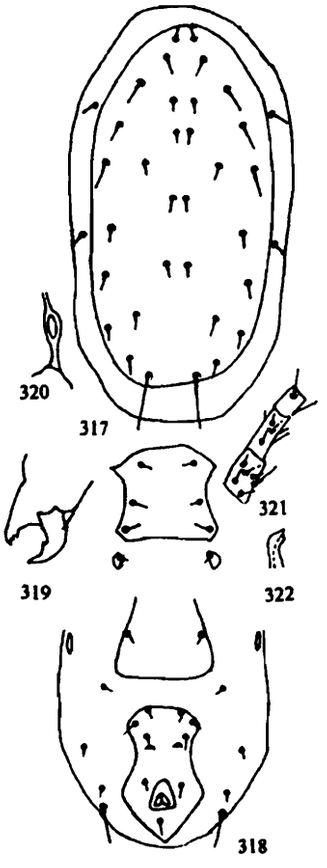
1986. *Amblyseius (Typhlodromalus) chitradurgae*, Gupta, *Fauna of India : Phytoseiidae*, p. 143–144.

1987. *Amblyseius (Typhlodromalus) chitradurgae*, Gupta, *Rec. zool. Surv. India*, **95** : 56.

Female : Dorsal shield 295 long, 145 wide. Measurements of setae : j_1–20, j_4–16, j_5–16, J_2–18, J_5–5, j_3–27, z_2–27, z_4–29, s_4–33, Z_1–18, S_2–25, S_4–20, S_5–22, Z_5–44, z_5–20, Z_4–22, r_3–25, R_1–16. Sternal shield slightly longer than wide, with 3 pairs of sternal setae. Ventrianal shield 78 long, 56 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 apical teeth, movable digit with 1 tooth. Macroseta present only on basitarsus IV : 31. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy similar to that of female.

Collection Records : The holotype was collected from Karnataka collected on chrysanthemum. Subsequently, it was collected on an undet. plant from Lakshadwip Isls.



Figs. 317-322 : *Amblyseius (Typhlodromalus) chitradurgae* Gupta (F) : 317-Dorsal shield, 318-Ventral surface, 319-Chelicera, 320-Spermatheca, 321-Genu, tibia, basitarsus of leg IV, 322-Spermatophoral process (M).

Habitat : Chrysanthemum, undet. plant.

Distribution : India (Karnataka, Lakshadwip Isls.).

74. *Amblyseius (Typhlodromalus) eucalypticus* (Gupta)

(Figs. 323–326)

1978. *Typhlodromalus eucalypticus* Gupta, *Oriental Ins.*, **12** : 330-331.

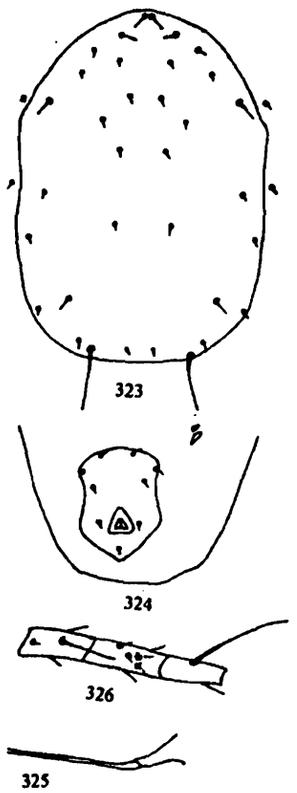
1986. *Amblyseius (Typhlodromalus) eucalypticus*, Gupta, *Fauna of India : Phytoseiidae*. p. 144-146.

1987. *Amblyseius (Typhlodromalus) eucalypticus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 53.

Female : Dorsal shield 350 long, 240 wide. Measurements of setae : j_1–24, j_3–20, s_4–28, Z_5–64, Z_4–24, other setae 5–6 long. Sternal shield with 3 pairs of sternal setae. Genital shield as wide

as greatest width of ventrianal shield. Ventrianal shield 96 long, 76 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–62, tibia–broken, basitarsus–69, all pointed. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&1\end{smallmatrix}1$.

Male : Unknown.



Figs. 323-326 : *Amblyseius (Typhlodromalus) eucalypticus* (Gupta) (F) : 323-Dorsal shield, 324-Ventrianal shield, 325-Spermatheca, 326-Genu, tibia, basitarsus of leg IV.

Collection Records : The holotype was collected from Karnataka on eucalyptus species.

Habitat : *Eucalyptus* sp.

Distribution : India (Karnataka).

75. *Amblyseius (Typhlodromalus) ficusi* Gupta

(Figs. 327–330)

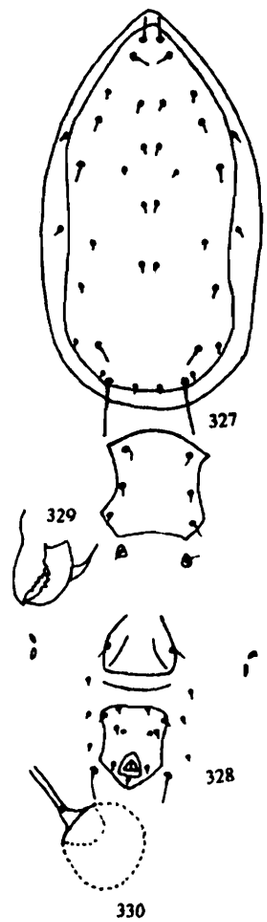
1986. *Amblyseius (Typhlodromalus) ficusi* Gupta, *Fauna of India : Phytoseiidae*, p. 146–147.

1987. *Amblyseius (Typhlodromalus) ficusi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 57.

1992. *Amblyseius (Typhlodromalus) ficusi*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

Female : Dorsal shield 295 long, 165 wide. Measurements of setae : j_1–13, j_4–13, j_5–11, j_6–13, J_2–10, J_5–5, j_3–16, z_2–11, z_4–20, s_4–25, Z_1–11, S_2–13, S_4–9, S_5–9, Z_5–50, z_5–9, Z_4–22, r_3–13, R_1–10. Sternal shield as long (75) as or slightly longer than wide, with 3 pairs of sternal setae. Ventrianal shield 78 long, 50 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–25, tibia–25, basitarsus–48. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$. Fixed digit of chelicera multidentate, movable digit with 2 teeth.

Male : Unknown.



Figs. 327-330 : *Amblyseius (Typhlodromalus) ficusi* Gupta (F) : 327-Dorsal shield, 328-Ventral surface, 329-Chelicera, 330-Spermatheca.

Collection Records : This species was described from Arunachal Pradesh collected on *Ficus* sp.

Habitat : *Ficus* sp.

Distribution : India (Arunachal Pradesh).

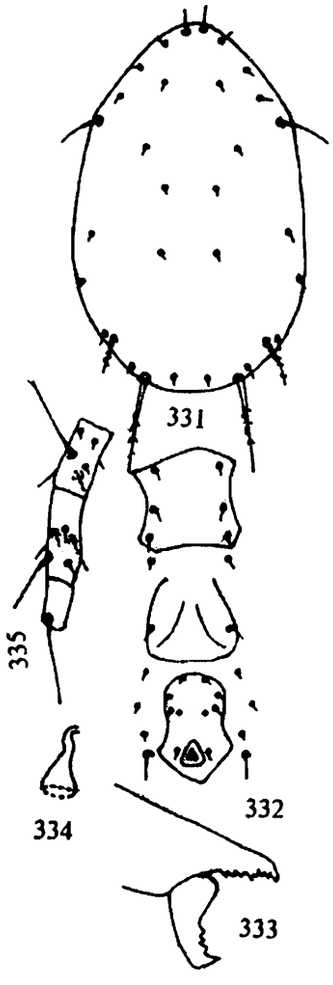
76. *Amblyseius (Typhlodromalus) jarooa* Gupta

(Figs. 331–335)

1977. *Amblyseius (Typhlodromalus) jarooa* Gupta, *Oriental Ins.*, **11** : 629.

1986. *Amblyseius (Typhlodromalus) jarooa*, Gupta, *Fauna of India : Phytoseiidae*, p. 148-150.

1987. *Amblyseius (Typhlodromalus) jarooa*, Gupta, *Rec. Zool. Surv. India Occ. Pap.*, **95** : 53.



Figs. 331-335 : *Amblyseius (Typhlodromalus) jarooa* Gupta (F) : 331-Dorsal shield, 332-Ventral surface, 333-Chelicera, 334-Spermatheca, 335-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 320 long, 180 wide. Measurements of setae : j_1–20–24, j_4–j_6–, J_2–J_5–5–6 each, j_3–20–25, z_2–z_4–8 each, s_4–40–44, Z_1–10, S_2–10–12, S_4, S_5, z_5–5 each, Z_5–100, Z_4–50–55. Sternal shield 80 long, 72 wide, with 3 pairs of sternal setae. Genital shield wide, with a pair of setae. Ventrianal shield 90–100, long, 50–60 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Fixed digit of chelicera multidentate, movable digit with 3 teeth. Macrosetae on leg IV : genu–50–60, tibia–35–45, basitarsus–53–60. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{1}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Dorsal chaetotaxy as in female.

Collection Records : This species was described from the Andaman Isls. collected on *Tectona grandis*.

Habitat : *Tectona grandis*.

Distribution : India (Andaman & Nicobar Isls).

77. *Amblyseius (Typhlodromalus) kalimpongensis* Gupta

(Figs. 336–340)

1969. *Amblyseius kalimpongensis* Gupta, *Bull. Ent. Ent. Soc. India*, **10** : 128-129.

1986. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 150-152.

1987. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 54.

1992. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 164-165.

1994. *Amblyseius (Typhlodromalus) kalimpongensis*, Singh, *Shashpa*, **1**(2) : 69.

1995. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 35.

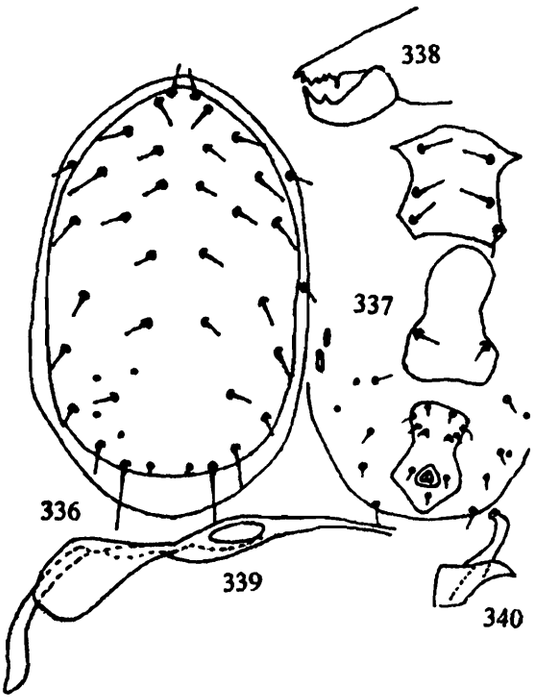
2000. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 25.

In press. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield reticulate, 275–280 long, 160–170 wide. Measurements of setae : j_1–19–22, j_4–18, j_5–18, j_6–18, J_2–18, J_5–6, j_3–27, z_2–24–27, z_4–22–27, s_4–30–32, Z_1–17–18, S_2–20–25, S_4–18–20, S_5–23–25, Z_5–40–47, z_5–16–18, Z_4–20–30, r_3–18, R_1–13. Sternal shield longer than wide, with 3 pairs of setae. Ventrianal shield 80 long, 45 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Fixed digit of chelicera with 2 apical teeth followed by minute denticles and *pilus dentilis*, movable digit unidentate. Macrosetae present only on basitarsus IV–31–34.

Leg chaetotactic formula : genu II $2\frac{2}{0}\frac{2}{0}1$, tibia II $1\frac{1}{1}\frac{2}{1}1$, genu III $1\frac{2}{1}\frac{2}{0}1$, tibia III $1\frac{1}{1}\frac{2}{1}1$.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process as illustrated.



Figs. 336-340 : *Amblyseius (Typhlodromalus) kalimpongensis* Gupta (F) : 336-Dorsal shield, 337-Ventral surface, 338-Chelicera, 339-Spermatheca, 340-Spermatophoral process (M).

Collection Records : This species was described on collection made on *Citrus reticulata* from West Bengal. Subsequently, it has been collected on *Rupellia* sp., *Hibiscus mutabilis, Ficus,* coriander, mango, *Datura,* blackberry from West Bengal; bhendi and brinjal in Uttar Pradesh; jackfruit from Meghalaya; undet. plant from Tripura; guava and orchid from Sikkim; magnolia, maize, lady's finger, *Bougainvillea,* banana, brinjal from Tamil Nadu; undet, plant from Karnataka; *Jasminum* from Bihar; *Shorea robusta,* citrus from Orissa.

Habitat : *Citrus reticulata,* banana, brinjal, dahlia, guava, *Shorea robusta,* cashewnut, citrus, *Rupellia* sp., *Hibiscus mutabilis,* undet. plant, *Ficus,* coriander, mango, *Datura,* blackberry, orchid, magnolia, maize, lady's finger, *Jasminum.*

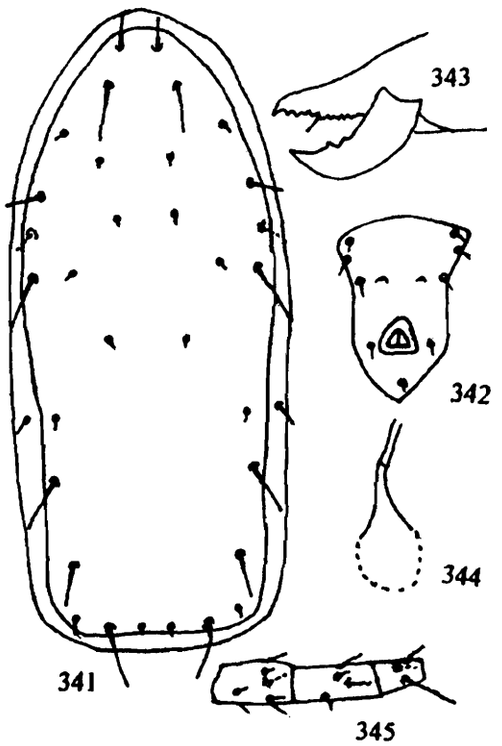
Distribution : India (West Bengal, Bihar, Assam, Tripura, Sikkim, Meghalaya, Orissa, Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat, Uttar Pradesh, Delhi).

78. *Amblyseius (Typhlodromalus) laaensis* Gupta

(Figs. 341–345)

1986. *Amblyseius (Typhlodromalus) laaensis* Gupta, *Fauna of India : Phytoseiidae,* p. 152-154.

1987. *Amblyseius (Typhlodromalus) laaensis,* Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 57.



Figs. 341-345 : *Amblyseius (Typhlodromalus) laaensis* Gupta (F) : 341-Dorsal shield, 342-Ventrianal shield, 343-Chelicera, 344-Spermatheca, 345-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 270 long, 130 wide. Measurements of setae : j_1–16, j_4–j_5–4–5 each, j_6–10, J_5–8, j_3–29, z_2–7, z_4–22, s_4–40, Z_1–13, S_2–27, S_5–13, Z_5–40, z_5–6, Z_4–25, r_3–22, R_1–13. Sternal shield indistinct, 3 pairs sternal setae present. Genital shield much wider than greatest width of ventrianal shield. Ventrianal shield 90 long, 56 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate with strong *pilus dentilis,* movable digit with 2 small teeth. Spermatheca as figured. Macroseta on basitarsus IV : 36.

Male : Unknown.

Collection Records : This species was described from Arunachal Pradesh collected on tea plant.

Habitat : Tea plant.

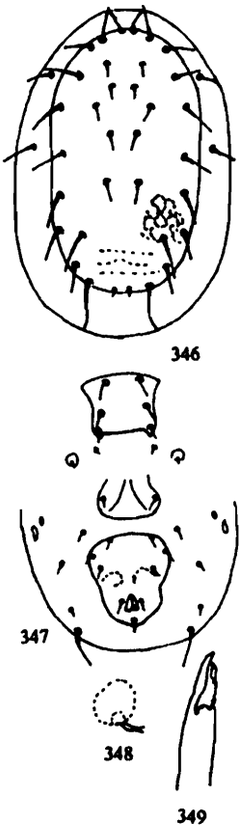
Distribution : India (Arunachal Pradesh).

79. *Amblyseius (Typhlodromalus) lablabi* Ghai & Menon
(Figs. 346–349)

1967. *Amblyseius lablabi* Ghai & Menon, *Oriental Ins.*, **1** : 72-73.

1986. *Amblyseius (Typhlodromalus) lablabi*, Gupta, *Fauna of India : Phytoseiidae*, p. 154-155.

1987. *Amblyseius (Typhlodromalus) lablabi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 54.



Figs. 346-349 : *Amblyseius (Typhlodromalus) lablabi* Ghai & Menon (F) : 346-Dorsal shield, 347-Ventral surface, 348-Spermatheca, 349-Chelicera (after Ghai & Menon, 1967).

Female : Dorsal shield reticulate, Measurements of setae : j_1–33, j_4–18, j_5–18, j_6–30, J_2–33, j_3–45, z_2–33, z_4–36, s_4–54, Z_1–30, S_2–51, S_4–48, S_5–36, Z_5–60, z_5–27, Z_4–60. Sternal shield as long as wide with 3 pairs of setae. Ventrianal shield 140 long, 115 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit unidentate. Leg IV with macrosetae on genu, tibia and basitarsus. Spermatheca as illustrated.

Male : Unknown.

Collection Records : This species was described from Karnataka collected on *Dolichos lablab.*

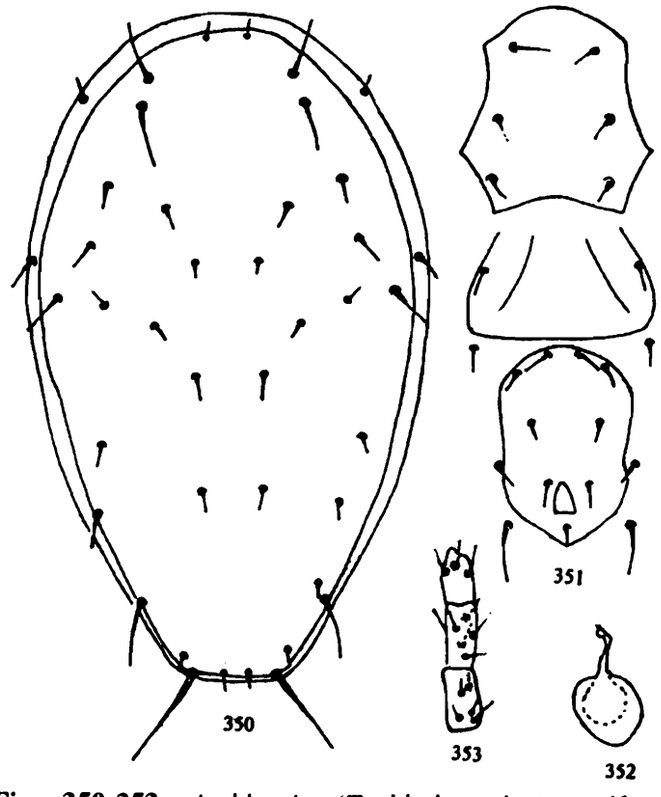
Habitat : *Dolichos lablab.*

Distribution : India (Karnataka).

80. *Amblyseius (Typhlodromalus) mangiferae* Chatterjee & Gupta, sp. nov.
(Figs. 350–353)

Female : Dorsal shield 356 long, 202 wide, reticulated with 19 pairs of setae. Measurements of setae : j_1–18, j_4, j_5, j_6–12 each, J_2–17, J_5–9, j_3–19, z_2–20, z_4–14, s_4–51, Z_1–10, S_2–5, S_5–9, Z_5–59, z_5–4, r_3–14, R_1–10. Peritreme extends anteriorly upto j_1. A pair of pores present little above Z_4 seta. Sternal shield with 3 pairs of setae, 4th pair not discernible. Genital shield with a pair of setae. A fold present between genital and ventrianal shield. Ventrianal shield as illustrated with 3 pairs of preanal setae, 4 pairs of setae present around ventrianal shield. Two pairs of metapodal plates present. Spermatheca as illustrated. Macrosetae present on genu–40, tibia–36, basitarsus–45 of leg IV. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{1}\,\frac{2}{0}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Unknown.



Figs. 350-353 : *Amblyseius (Typhlodromalus) magiferae* Chatterjee & Gupta sp. nov. (F) : 350-Dorsal shield, 351-Ventral surface, 352-Spermatheca, 353-Genu, tibia, basitarsus of leg IV.

Holotype : Female, India : West Bengal, Dist. Nadia, Kalyani, ex *Mangifera indica*, 11. 3. 1995 (coll. K. Chatterjee).

Remarks : This species is quite close to *Amblyseius (Typhlodromalus) ficusi* Gupta (1986) in shape of ventrianal shield, in general pattern of dorsal idiosomal setae and in structure of spermatheca but differs from it in having Z_5 slightly longer, in having Z_4 seta much shorter than that in *ficusi* and also differs in macrosetae of genu IV and tibia IV (macroseta on tibia IV shorter than that on genu IV in this new species.

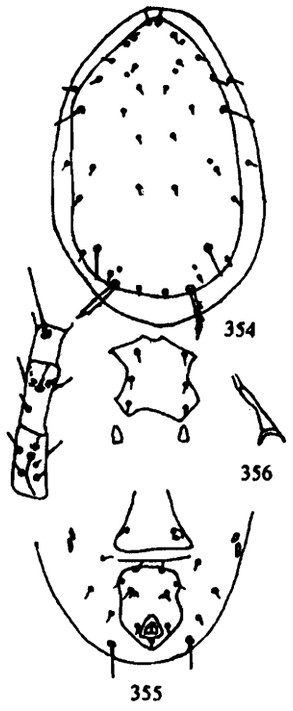
81. *Amblyseius (Typhlodromalus) manipurensis* Gupta

(Figs. 354–356)

1978. *Amblyseius manipurensis* Gupta, *Indian J. Acar.*, **2**(2) : 66-67.

1986. *Amblyseius (Typhlodromalus) manipurensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 156-157.

1987. *Amblyseius (Typhlodromalus) manipurensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 55.



Figs. 354-356 : *Amblyseius (Typhlodromalus) manipurensis* Gupta (F) : 354-Dorsal shield, 355-Ventral surface, 356-Spermatheca, 356a-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 308 long, 180 wide, Measurements of setae : j_1–22, j_4, j_5–6–8 each, J_2–12, J_5–8, j_3–12, z_2–8, z_4–24, s_4–40, Z_1–12, S_2–16, S_4–8, Z_5–68 (faintly serrate), z_5–8, Z_4–48, r_3–15, R_1–9. Sternal shield longer (84) than or as long as wide, with 3 pairs of sternal setae. Genital shield 80 wide with a pair of setae. Ventrianal shield 92 long, 64 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Macrosetae on leg IV : genu–28, tibia–28, basitarsus–64. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The description of this species was from Manipur collected on *Hibiscus esculentus.*

Habitat : *Hibiscus esculentus.*

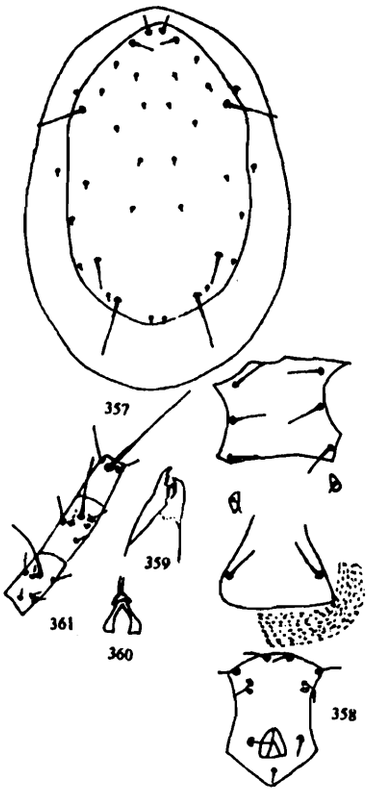
Distribution : India (Manipur).

82. *Amblyseius (Typhlodromalus) rosica* Gupta

(Figs. 357–361)

1992. *Amblyseius (Typhlodromalus) rosica* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 166.

Female : Dorsal shield 314 long, 197 wide. Measurements of setae : j_1–22, j_4–9, j_6–9, J_2–14, J_5–8, j_3–25, z_2, z_4–9 each, s_4–54, Z_1–11, S_2–13, S_4, S_5–9 each, Z_5–67, z_5–9, Z_4–40, r_3–13, R_1–7. Sternal shield 67 long, 78 wide, with 3 pairs of sternal setae. Ventrianal shield 94 long, 60 wide,



Figs. 357-361 : *Amblyseius (Typhlodromalus) rosica* Gupta (F) : 357-Dorsal shield, 358-Ventral surface, 359-Chelicera, 360-Spermatheca, 361-Genu, tibia, basitarsus of leg IV.

with 3 pairs of setae. Fixed digit of chelicera multidentate and a *pilus dentilis*, movable digit with 3 teeth. Macrosetae on leg IV : genu–58, tibia–38, basitarsus–78. Leg chaetotactic formula : genu 2 $\begin{matrix}2&2\\0&0\end{matrix}$ 1, tibia II 1 $\begin{matrix}1&2\\1&1\end{matrix}$ 1, genu III 1 $\begin{matrix}2&2\\1&0\end{matrix}$ 1, tibia III 1 $\begin{matrix}1&2\\1&1\end{matrix}$ 1.

Male : Unknown.

Collection Records : It was described from West Bengal collected on rose.

Habitat : Rose.

Distribution : India (West Bengal).

83. *Amblyseius (Typhlodromalus) sorghumae* Gupta

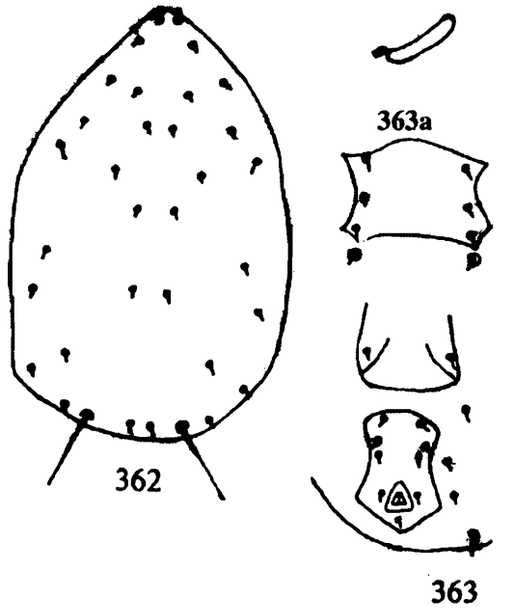
(Figs. 362–363)

1977. *Amblyseius sorghumae* Gupta, *Oriental Ins.*, **11** : 635-636.

1986. *Amblyseius (Typhlodromalus) sorghumae*, Gupta, *Fauna of India : Phytoseiidae*, p. 157-158.

1987. *Amblyseius (Typhlodromalus) sorghumae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 55-56.

Female : Dorsal shield 330 long, 225 wide. Measurements of setae : j_1–18, j_4–j_6, J_2–J_5–6–8 each, j_3–11, z_2, z_4–9 each, s_4–16, Z_1, S_2–S_5–7 each, Z_5–72, z_5–5, Z_4–17, r_3, R_1–6 each. Sternal shield, wider than long with 3 pairs of sternal setae.



Figs. 362-363a : *Amblyseius (Typhlodromalus) sorghumae* Gupta (F) : 362-Dorsal shield, 363-Ventral surface, 363a-Spermatheca.

Genital shield 72 wide, wider than greatest width of ventrianal shield. Ventrianal shield 92 long, 64 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–56, tibia–47, basitarsus–40. Leg chaetotactic formula : genu II 2 $\begin{matrix}2&2\\0&0\end{matrix}$ 1, tibia II 1 $\begin{matrix}2&1\\1&1\end{matrix}$ 1, genu III 1 $\begin{matrix}2&2\\1&0\end{matrix}$ 1, tibia III 1 $\begin{matrix}1&2\\1&1\end{matrix}$ 1.

Male : Unknown.

Collection Records : This species was described from Car Nicobar Isl. collected on maize.

Habitat : Maize.

Distribution : India (Andaman & Nicobar Isls.).

Subgenus 10. *Typhlodromips* De Leon

1959. *Typhlodromips* De Leon, *Ent. News.*, **70** : 133.

1986. *Typhlodromips*, Gupta, *Fauna of India : Phytoseiidae*, p. 159.

1987. *Typhlodromips*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 57.

1987. *Typhlodromips*, Daneshvar. *Ent. Phyt. Applique*, **54** : 20.

Diagnosis : Dorsal shield with 6 pairs of dorsocentral, 2 pairs of median and 9 pairs of laterals, Z_5 and Z_4 serrate or plumose. Fixed digit of chelicera mostly multidentate. Sternal shield as wide as or wider than long. Ventrianal shield pentagonal or shield shaped. Macrosetae may be present on genu and occasionally on tibia of legs I, II and III. Leg IV macroseta present on genu, tibia and basitarsus.

Type ***Typhlodromips simplicissimus*** De Leon, 1965

(by designation, De Leon, 1965)

Key to the species of Subgenus *Typhlodromips* known to inhabit plants in India

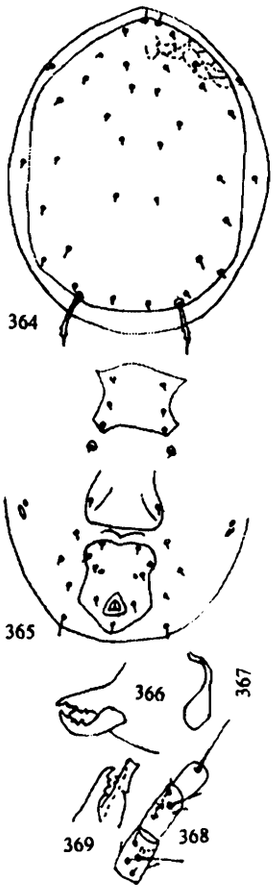
1. Besides Z_5 and Z_4, other setae being subequal 2
– Besides Z_5 and Z_4, there are other long setae 9
2. Z_4 quite long, at least 3 times of S_4 3
– Z_4 not so long 6

3. Z_4 distinctly serrate or weakly serrate ... 4
– Z_4 smooth ... 5
4. Cervix of spermatheca saucer shaped ..... *syzygii*
– Cervix of spermatheca elongated or flask shaped ..... *suknaensis*
5. Spermatheca and spermatophoral process as in figs 367, 369 ..... *arecae*
– Spermatheca and spermatophoral process as in figs 391, 393 ..... *meghalayensis*
6. Ventrianal shield as long as wide ..... *sapienticola*
– Ventrianal shield longer than wide 7
7. Z_5 almost as long as the distance between its bases ..... *neoghanii*
– Z_5 not so long ... 8
8. Spermatheca as in fig 407 ..... *officinaria*
– Spermatheca as in fig 411 ... *polyantheae*
9. z_2 and z_4 unequal ... 10
– z_2 and z_4 equal ... 12
10. S_2 more than 4 times as long as Z_1 ..... *tetranychivorus*
– S_2 only slightly longer than Z_1 11
11. Macroseta on genu and tibia IV almost equal ..... *potentillae*
– Macroseta on genu IV longer than that on tibia IV ..... *mangiferae*
12. Z_4 reaches almost upto base of Z_5 13
– Z_4 shorter than the distance between its base and that of Z_5 ..... *neocrotalariae*
13. Lateral margins of ventrianal shiled concave ... 14
– Lateral margins of ventrianal shield almost straight ... 15
14. Spermatheca with bowl shaped cervix, small platelets absent around ventrianal shield .. .. *sijiensis*
– Spermatheca with flask shaped cervix; small platelets present around ventrianal shield ..... *crotalariae*
15. Spermatheca as in fig 383 ..... *guajavae*
– Spermatheca as in fig 379a ..... *eujeniae*

84. *Amblyseius (Typhlodromips) arecae* Gupta

(Figs. 364-369)

1977. *Amblyseius arecae* Gupta, *Oriental Ins.*, **11** : 624-626.
1986. *Amblyseius (Typhlodromips) arecae*, Gupta, *Fauna of India : Phytoseiidae*, p. 160-162.
1987. *Amblyseius (Typhlodromips) arecae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 59.



Figs. 364-369 : *Amblyseius (Typhlodromips) arecae* Gupta (F) : 364-Dorsal shield, 365-Ventral surface, 366-Chelicera, 367-Spermatheca, 368-Genu, tibia, basitarsus of leg IV, 369-Spermatophoral process (M).

Female : Dorsal shield 308 long, 208 wide. Measurements of setae : j_1–16, j_4–j_6, J_2–J_5–8–10 each, j_3–12, z_2, z_4–8 each, s_4–16, Z_1, S_2–S_5–8 each, Z_5–71, Z_4–26, Sternal shield as long (60) as wide, smooth with 3 pairs of sternal setae. Genital shield 63 wide, with a pair of setae. Ventrianal shield 96 long, 56 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera multidentate, with a strong *pilus dentilis*, movable digit with 3 teeth. Macrosetae on leg IV : genu–40, tibia–29, basitarsus–44, genu III–29, genu II–17. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}1\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.

Collection Records : This species was described from Andaman Isl, collected on arecanut plant.

Habitat : *Areca catechu.*

Distribution : India (Andaman & Nicobar Isls.).

85. *Amblyseius (Typhlodromips) bangalorensis* Karg

1983. *Amblyseius bangalorensis* Karg. *Mitt. Zool. Mus. Berl.*, **52**(2) : 320.

Remarks : Karg (1983) described this species from Karnataka. Since the detailed description is not available with the author, the same could not be included here.

86. *Amblyseius (Typhlodromips) crotalariae* Gupta

(Figs. 370-375)

1977. *Amblyseius crotalariae* Gupta, *Indian J. Acar.*, **2**(2) : 61-62.

1986. *Amblyseius (Typhlodromips) crotalariae*, Gupta, *Fauna of India : Phytoseiidae*, p. 162-164.

1987. *Amblyseius (Typhlodromips) crotalariae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 60.

1992. *Amblyseius (Typhlodromips) crotalariae*, Gupta, In : *Contributions to Acarological Researches in India*, p 443.

1992. *Amblyseius (Typhlodromips) crotalariae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 167.

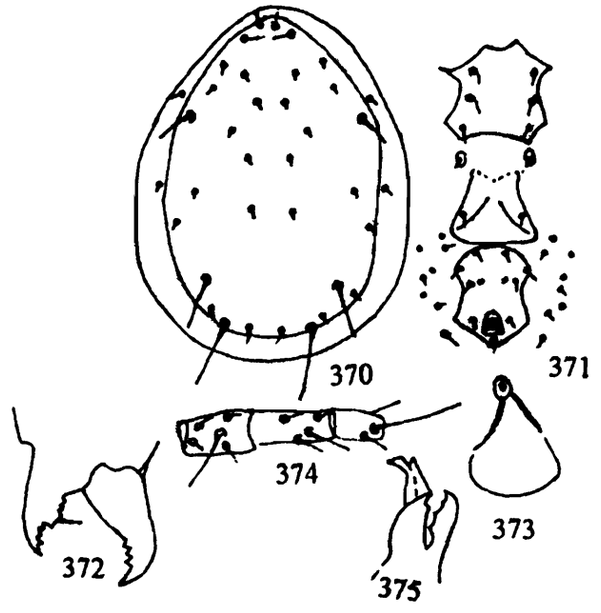
1995. *Amblyseius (Typhlodromips) crotalariae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 35-36.

2000. *Amblyseius (Typhlodromips) crotalariae*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura. Part 2*, p. 25.

In press. *Amblyseius (Typhlodromips) crotalariae*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 300 long, 200 wide. Measurements of setae : j_1–18–22, j_4–j_6, J_2–6–9 each, J_5–5, j_3–22, z_2, z_4–9–10 each, s_4–40–45, Z_1, S_2–S_5–10 each, Z_5–65–75, z_5–5, Z_4–45–50, r_3, R_1–10 each. Sternal shield 90 long, 80 wide, with 3 pairs of sternal setae. Ventrianal shield 90 long, 78 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with at least 4 teeth anterior to *pilus dentilis*, 2 teeth posterior to it, *pilus dentilis* strong, movable digit with2-3 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–45–55, tibia–35–40, basitarsus–55–65, genu I–31, genu II–25, genu III–22. Leg chaetotactic formula genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as illustrated.



Figs. 370-375 : *Amblyseius (Typhlodromips) crotalariae* Gupta (F) : 370-Dorsal shield, 371-Ventral surface, 372-Chelicera, 373-Spermatheca, 374-Genu, tibia, basitarsus of leg IV, 375-Spermatophoral process (M).

Collection Records : This species was described from West Bengal collected on *Crotalaria* sp. Subsequent collections were from fern in Meghalaya, Assam; *Nyctanthes arbortristis* in Tripura; rose in Arunachal Pradesh; undet. plant and a solanaceous plant in West Bengal; paddy in Tripura and *Zinia* in Mizoram.

Habitat : *Crotalaria* sp., fern, *Nyctanthes arbortristis, Zinia,* paddy, Solanaceae, rose, undet. plant.

Distribution : India (Arunachal Pradesh, Assam, Meghalaya, Mizoram, Tripura, West Bengal).

87. *Amblyseius (Typhlodromips) eujeniae* Gupta

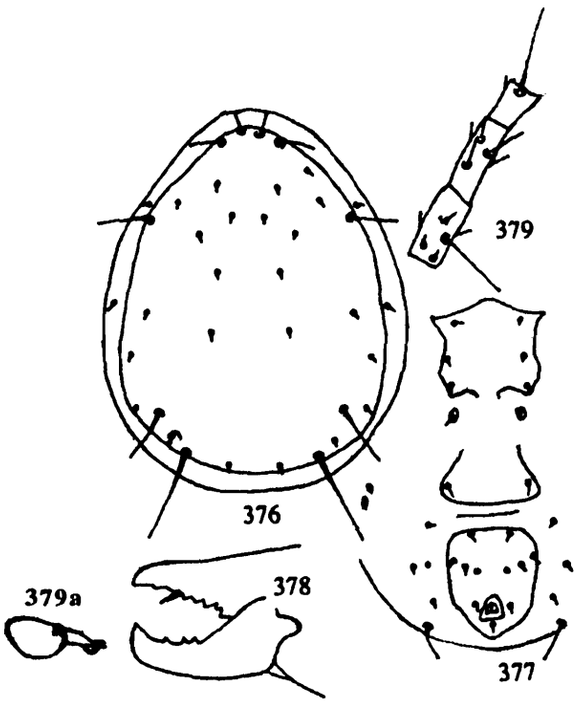
(Figs. 376–379a)

1977. *Amblyseius eujeniae* Gupta, *Oriental Ins.*, **11** : 627-629.

1986. *Amblyseius (Typhlodromips) eujeniae*, Gupta, *Fauna of India : Phytoseiidae*, p. 164-165.

1987. *Amblyseius (Typhlodromips) eujeniae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 60.

Female : Dorsal shield 300–320 long, 190–200 wide, reticulate. Measurements of setae : j_1–20, j_4–j_6–5 each, J_2–10, J_5–5, j_3–37, z_2, z_4–8 each, s_4–66, Z_1, S_2–S_5–8 each, Z_5–92, (weakly serrate), z_5–8, Z_4–66. Sternal shield as long (80) as wide,



Figs. 376-379a : *Amblyseius (Typhlodromips) eujeniae* Gupta (F) : 376-Dorsal shield, 377-Ventral surface, 378-Chelicera, 379-Genu, tibia, basitarsus of leg IV, 379a-Spermatheca.

with 3 pairs of sternal setae. Genital shield 78 wide, with a pair of setae. Ventrianal shield 95–110 long, 70–75 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 2 teeth anterior to strong *pilus dentilis*, 4–5 teeth posterior to it, movable digit with 3 teeth. Macrosetae on leg IV : genu–56, tibia–29, basitarsus–72, genu I–26, genu II–33, genu III–41. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : This mite was described from Andaman Isl. collected on *Eugenia jambolana.*

Habitat : *Eugenia jambolana.*

Distribution : India (Andaman & Nicobar Isl.).

88. *Amblyseius (Typhlodromips) guajavae* Gupta

(Figs. 380–384)

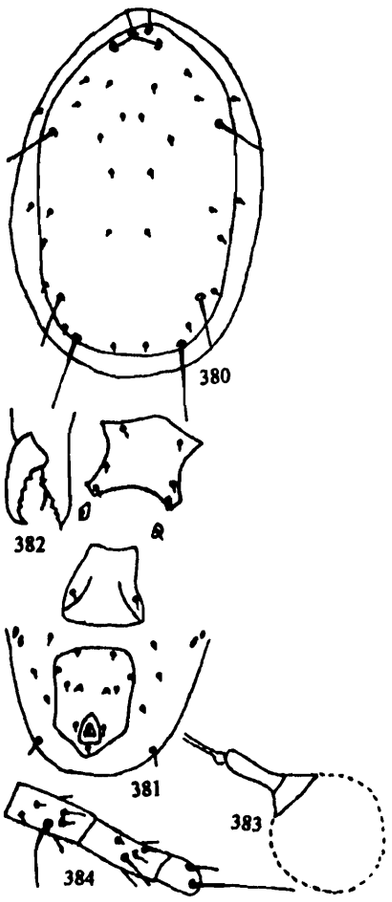
1978. *Amblyseius guajavae* Gupta, *Indian J. Acar.*, **2**(2) : 63.

1986. *Amblyseius (Typhlodromips) guajavae*, Gupta, *Fauna of India : Phytoseiidae*, p. 166.

1987. *Amblyseius (Typhlodromips) guajavae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 61.

1992. *Amblyseius (Typhlodromips) guajavae*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1995. *Amblyseius (Typhlodromips) guajavae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 36.



Figs. 380-384 : *Amblyseius (Typhlodromips) guajavae* Gupta (F) : 380-Dorsal shield, 381-Ventral surface, 382-Chelicera, 383-Spermatheca, 384-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 315–325 long, 215–225 wide. Measurements of setae : j_1–22–28, j_4–j_6, J_2–J_5–6–8, j_3–40, z_2, z_4–6–8 each, s_4–67, Z_1, S_2–S_5–6–8, Z_5–90–98, z_5–6, Z_4–68–71. Sternal shield almost as long (82) as wide, with 3 pairs of setae. Ventrianal shield 108–112 long, 76–85 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 4 teeth anterior to *pilus dentilis* and 3 teeth posterior to it, movable digit with 3 teeth. Macrosetae on leg IV : genu–55–60, tibia–35–40, basitarsus–75–78, genu I–35, genu II–27, genu III–40. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : This species was described from Meghalaya on guava. Subsequently, it was collected from Arunachal Pradesh on orchid.

Habitat : Guava, orchid.

Distribution : India (Arunachal Pradesh, Meghalaya).

89. ***Amblyseius (Typhlodromips) mangiferae*** Ghai & Menon

(Figs. 385–387)

1967. *Amblyseius mangiferae* Ghai & Menon, *Oriental Ins.*, **1** : 74-75.

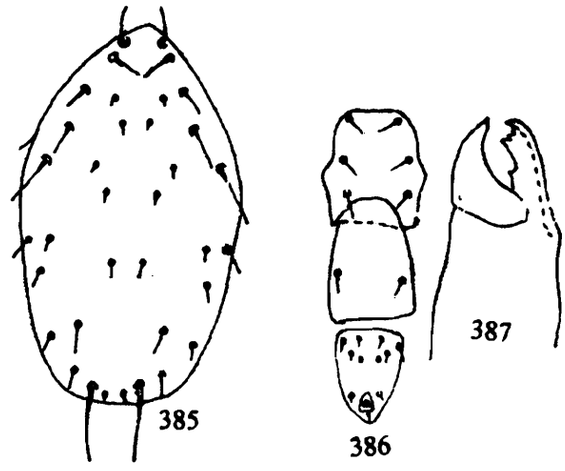
1986. *Amblyseius (Typhlodromips) mangiferae*, Gupta, *Fauna of India : Phytoseiidae*, p. 168-169.

1987. *Amblyseius (Typhlodromips) mangiferae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 63.

1997. *Amblyseius (Typhlodromips) mangiferae*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 525.

Female : Dorsal shield smooth. Setae j_1, j_3, z_2, s_4, j_6, J_2 quite long, others being small. Measurements of setae : Z_5–54, S_5–24, S_4–18, S_2–21, s_4–50, Z_4–30, z_2–21. Sternal shield longer than broad, with 3 pairs of setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield 70 long, 62 wide, with 3 pairs of preanal setae. Leg IV macrosetae on genu–48, tibia–33, basitarsus–60. Fixed digit of chelicera with 3 apical teeth and one subapical tooth, movable digit probably toothless.

Male : Dorsal chaetotaxy similar to that of female.



Figs. 385-387 : *Amblyseius (Typhlodromips) mangiferae* Ghai & Menon (F) : 385-Dorsal shield, 386-Ventral surface, 387-Chelicera (after Ghai & Menon, 1967).

Collection Records : This species was described from Delhi collected on malformed mango tree.

Habitat : Malformed mango tree.

Distribution : India (Delhi).

90. ***Amblyseius (Typhlodromips) meghalayensis*** Gupta

(Figs. 388–393)

1978. *Amblyseius meghalayensis* Gupta, *Indian J. Acar.*, **2**(2) : 67-69.

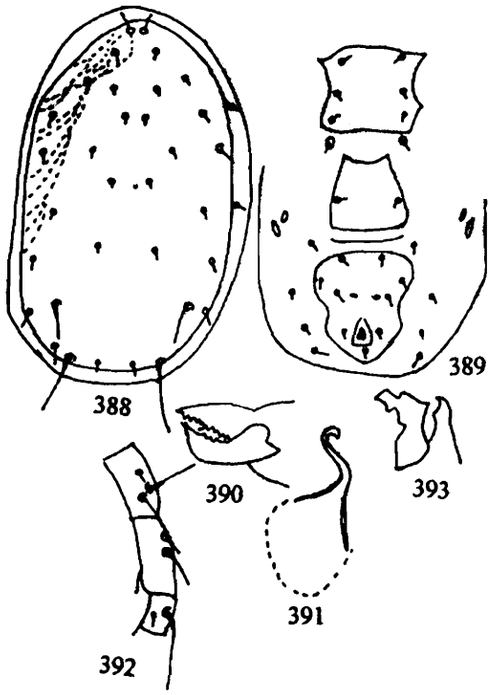
1986. *Amblyseius (Typhlodromips) meghalayensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 170-171.

1987. *Amblyseius (Typhlodromips) meghalayensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 63.

Female : Dorsal shield 300 long, 165 wide. Measurements of setae : j_1–20, j_4–j_6–8–10 each, J_2–10, J_5–6, j_3–15, z_2–10, z_4–16, s_4–24, Z_1–12, S_2–17, S_4–S_5–16 each, Z_5–75, z_5–8, Z_4–56, r_3–16, R_1–12. Sternal shield as long (68) as wide, with 3 pairs of sternal setae. Genital shield narrower (60) than greatest width of ventrianal shield. Ventrianal shield 88 long, 72 wide with 3 pairs of preanal setae. Fixed digit of chelicera with 4 teeth anterior to *pilus dentilis*, 4 teeth posterior to it,

movable digit with 3 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–44, tibia–35, basitarsus–48, genu I–24, genu II–29.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.



Figs. 388-393 : *Amblyseius (Typhlodromips) meghalayensis* Gupta (F) : 388-Dorsal shield, 389-Ventral surface, 390-Chelicera, 391-Spermatheca, 392-Genu, tibia, basitarsus of leg IV, 393-Spermatophoral process (M).

Collection Records : This species was described from Meghalaya collected on guava as well as from Assam on an undet. plant.

Habitat : Guava, undet. plant.

Distribution : India (Assam, Meghalaya).

91. *Amblyseius (Typhlodromips) neocrotalariae* (Gupta)

(Figs. 394–399)

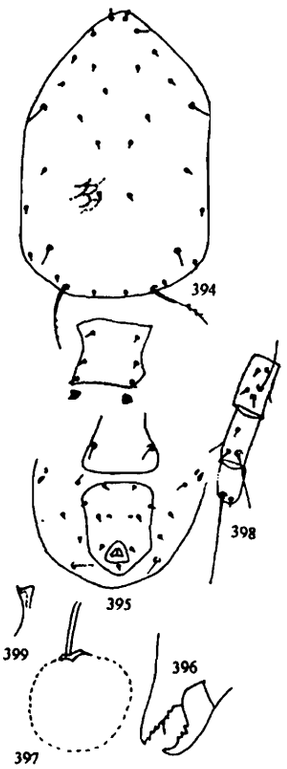
1978. *Typhlodromips neocrotalariae* Gupta, *Oriental Ins.*, **12** : 335.

1986. *Amblyseius (Typhlodromips) neocrotalariae*, Gupta, *Fauna of India : Phytoseiidae*, p. 172-173.

1987. *Amblyseius (Typhlodromips) neocrotalariae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 64.

Female : Dorsal shield 324 long, 212 wide. Measurements of setae : j_1–20, j_4–j_5–8 each, j_6–J_2–12 each, J_5–8, j_3–28, z_2–z_4–9 each, s_4–30–35, Z_1–12, S_2–12, S_4, S_5–8 each, Z_5–68, z_5–8, Z_4–35–40, r_3–20, R_1–10. Sternal shield with 3 pairs of setae. Genital shield as wide as the greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 108 long, 80 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with at least 3 teeth anterior to *pilus dentilis*, 3 teeth posterior to it : movable digit with 3 teeth. Macrosetae on leg IV : genu–52, tibia–40, basitarsus–60, genu II–20, genu III–32. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{1}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.



Figs. 394-399 : *Amblyseius (Typhlodromips) neocrotalariae* Gupta (F) : 394-Dorsal shield, 395-Ventral surface, 396-Chelicera, 397-Spermatheca, 398-Genu, tibia, basitarsus of leg IV, 399-Spermatophoral process (M).

Collection Records : This species was described from Tamil Nadu collected on *Datura*.

Habitat : *Datura* sp.

Distribution : India (Tamil Nadu).

92. *Amblyseius (Typhlodromips) neoghanii* Gupta

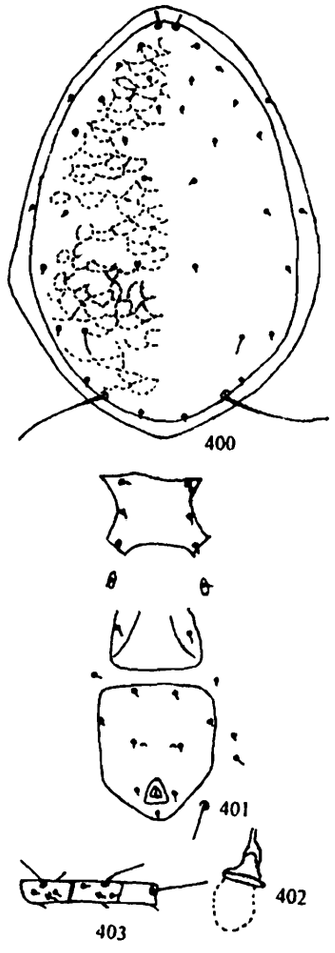
(Figs. 400–403)

1986. *Amblyseius (Typhlodromips) neoghanii* Gupta, *Fauna of India : Phytoseiidae*, p. 174.

1987. *Amblyseius (Typhlodromips) neoghanii*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 70.

Female : Dorsal shield 360 long, 250 wide. Measurements of setae : j_1–18, j_4–j_5–9–10 each, j_6–J_2–12–14 each, J_5–10, j_3–11, z_2–7, z_4–7, s_4–16, Z_1–S_2–S_5–9–11 each, Z_5–95, z_5–9, Z_4–22, r_3, R_1–9 each. Sternal shield 67 long, 86 wide with 3 pairs of setae. Genital shield–55 wide with a pair of setae. Ventrianal shield 134 long, 118 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Macrosetae on leg IV : genu–31, tibia–40, basitarsus–52. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 400-403 : *Amblyseius (Typhlodromips) neoghanii* Gupta (F) : 400-Dorsal shield, 401-Ventral surface, 402-Spermatheca, 403-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was on the basis of specimen collected from Arunachal Pradesh on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Arunachal Pradesh).

93. ***Amblyseius (Typhlodromips) officinaria*** Gupta

(Figs. 404–408)

1975. *Amblyseius officinaria* Gupta, *Internat. J. Acarol.*, **1**(2) : 29.

1986. *Amblyseius (Typhlodromips) officinaria*, Gupta, *Fauna of India : Phytoseiidae*, p. 176-177.

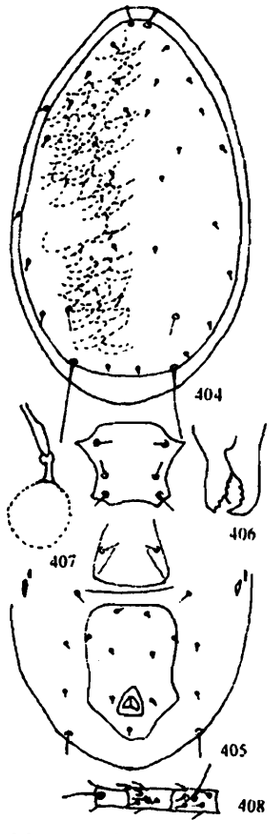
1987. *Amblyseius (Typhlodromips) officinaria*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 65.

1992. *Amblyseius (Typhlodromips) officinaria*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1992. *Amblyseius (Typhlodromips) officinaria*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 167.

2000. *Amblyseius (Typhlodromips) officinaria*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 25.

In press. *Amblyseius (Typhlodromips) officinaria*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*



Figs. 404-408 : *Amblyseius (Typhlodromips) officinaria* Gupta (F) : 404-Dorsal shield, 405-Ventral surface, 406-Chelicera, 407-Spermatheca, 408-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 310 long, 200 wide. Measurements of setae : j_1–18, j_4–j_5–5–6 each, j_6, J_2–11–12 each, J_5–6, z_2, z_4–4–5 each, s_4–16–18, Z_1–4–10, S_2–11–13, S_4–11–13, S_5–11–13, Z_5–85, z_5–8, Z_4–30, r_3, R_1–10–11 each. Sternal shield 75 long, 78 wide, with 3 pairs of setae. Genital shield

83 wide with a pair of setae. Ventrianal shield 106–112 long, 75–85 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth anterior to strong *pilus dentilis*, 3 teeth posterior to it; movable digit with 3 teeth. Spermatheca as figured. Macrosetae on fig IV : genu–36, tibia–28–29, basitarsus–35–44, genu III–24. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : This species was described from West Bengal collected on *Saccharum officinarum*. The other collections are from paddy in Arunachal Pradesh, on an undet. plant in Tripura, on an undet. plant and sweet potato in Sikkim.

Habitat : *Saccharum officinarum*, sweet potato, undet. plant, paddy.

Distribution : India (West Bengal, Arunachal Pradesh, Tripura, Sikkim).

94. *Amblyseius (Typhlodromips) polyantheae* Gupta

(Figs. 409–411)

1975. *Amblyseius polyantheae* Gupta, *Internat. J. Acarol.*, **1**(2) : 42-43.

1986. *Amblyseius (Typhlodromips) polyantheae*, Gupta, *Fauna of India : Phytoseiidae*, p. 178-179.

1987. *Amblyseius (Typhlodromips) polyantheae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 65-66.

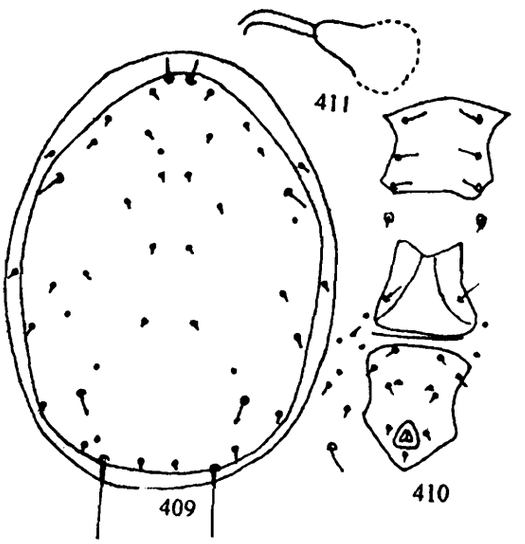
1992. *Amblyseius (Typhlodromips) polyantheae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 167-168.

2000. *Amblyseius (Typhlodromips) polyantheae*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 25-26.

In press. *Amblyseius (Typhlodromips) polyantheae*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 325 long, 250 wide. Measurements of setae : j_1–18, j_4–j_6–6–8 each, J_2–9, J_5–5, j_3–14, z_2–12, z_4–8, s_4–27, Z_1–8, S_2, S_4–14 each, S_5–9, Z_5–58, z_5–6, Z_4–27, r_3, R_1–9 each. Sternal shield as long (77) as wide, with 3 pairs of sternal setae. Genital shield 82 wide with a pair of setae. Ventrianal shield longer (1'04) than broad, with 3 pairs of setae. Macrosetae on leg IV; genu–27, tibia–31, basitarsus–36, genu I–23, genu III–24, tibia III–20.

Male : Unknown.



Figs. 409-411 : *Amblyseius (Typhlodromips) polyantheae* Gupta (F) : 409-Dorsal shield, 410-Ventral surface, 411-Spermatheca.

Collection Records : The holotype was from West Bengal collected on *Polyanthea tuberosa*. The other collections are from Tripura on pigeonpea and on an undet. plant from Mizoram.

Habitat : *Polyanthea tuberosa*, undet. plant, pigeonpea.

Distribution : India (West Bengal, Tripura, Mizoram).

95. *Amblyseius (Typhlodromips) potentillae* (Garman)

(Figs. 412–415)

1958. *Amblyseiopsis potentillae* Garman, *Ann. Ent. Soc. Amer.*, **51** : 76-77.

1986. *Amblyseius (Typhlodromips) potentillae*, Gupta, *Fauna of India : Phytoseiidae*, p. 180-182.

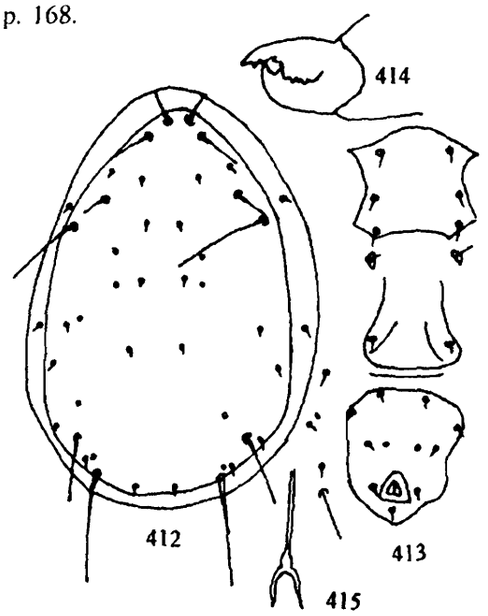
1986. *Amblyseius potentillae*, Dicke & Greneveld, *Ecol. Entomol.*, **11** : 131-138.

1986. *Amblyseius potentillae*, Dicke *et al.*, *Jour. Chem. Ecol.*, **12**(6) : 1389.

1987. *Amblyseius (Typhlodromips) potentillae*, Gupta, *Rec. zool. Surv. India*, **95** : 66.

1989. *Amblyseius potentillae*, Denmark & Muma, *Fla. St. Coll. of Arthropods Occ. Pap.*, **4** : 86.

1992. *Amblyseius (Typhlodromips) potentillae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 168.



Figs. 412-415 : *Amblyseius (Typhlodromips) potentillae* (Garman) (F) : 412-Dorsal shield, 413-Ventral surface, 414-Chelicera, 415-Spermatheca.

Female : Dorsal shield 300 long, 172 wide. Measurements of setae : j_1–20, j_4–j_6, J_2–J_5–6 each, j_3–44, z_2–8, z_4–28, s_4–82, Z_1–5, S_2–11, S_4–S_5–8 each, Z_5–84, Z_4–60, z_5–4, r_3–20, R_1–15. Sternal shield 80 long, 72 wide, with 3 pairs of sternal setae. Genital shield 68 wide. Ventrianal shield 100 long, 80 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–40, tibia–40, basitarsus–60, genu II and genu III also with macrosetae. Leg chaetotactic formula genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&1\\2&1\end{smallmatrix}1$

Male : Not available.

Collection Records : The holotype was from Holland collected on *Potentilla* sp. The Indian records are on *Ficus, Magnoles champa, Callophyllum inophyllum, Punica granatum* from West Bengal, on cucurbitaceous plants in Kashmir.

Habitat : Cucurbitaceous plants, *Magnoles champa, Callophyllum inophyllum, Punica granatum*, elsewhere : *Potentilla* sp.

Distribution : India (West Bengal, Jammu & Kashmir), Holland, New Jersey, Greece, Italy, Turkey.

Remarks : Cobanoglu (1989) reported this species as active predator of *Tetranychus vinnensis* Zacher in Turkey. It preferred larval stages. The feeding potentiality was also worked out.

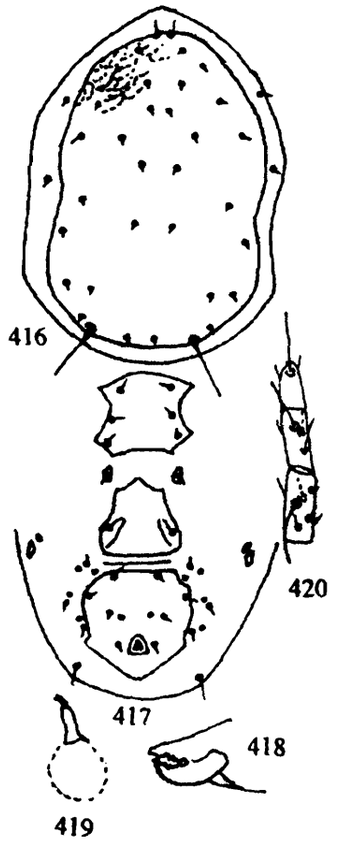
96. *Amblyseius (Typhlodromips) sapienticola* Gupta

(Figs. 416-420)

1977. *Amblyseius sapienticola* Gupta, *Oriental Ins.*, **11** : 633-635.

1986. *Amblyseius (Typhlodromips) sapienticola*, Gupta, *Fauna of India : Phytoseiidae*, p. 182-183.

1987. *Amblyseius (Typhlodromips) sapienticola*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 66-67.



Figs. 416-420 : *Amblyseius (Typhlodromips) sapienticola* Gupta (F) : 416-Dorsal shield, 417-Ventral surface, 418-Chelicera, 419-Spermatheca, 420-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 308 long, 190 wide. Measurements of setae : j_1–16, j_4–j_6, J_2–J_5–8 each, j_3–12, z_2, z_4–8 each, s_4–16, Z_1, S_4–S_5–8 each, S_2–12, Z_5–64, z_5–8, Z_4–18. Sternal shield 62 long,

72 wide, with 3 pairs of setae. Genital shield 72 wide. Ventrianal shield 100 long, 108 wide with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 3 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–48, tibia–40, basitarsus–48, genu I–29, genu III–33. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}2&2\\0&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The holotype was from Andaman Isl. collected on banana.

Habitat : Banana.

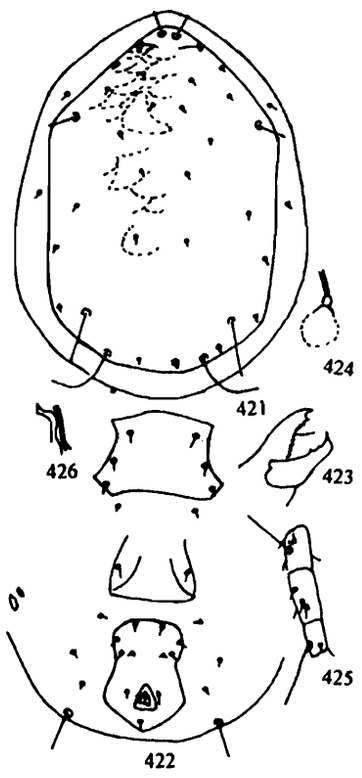
Distribution : India (Andaman & Nicobar Isls.).

97. *Amblyseius (Typhlodromips) sijiensis* Gupta

(Figs. 421-426)

1986. *Amblyseius (Typhlodromips) sijiensis* Gupta, *Fauna of India : Phytoseiidae*, p. 183-185.

1987. *Amblyseius (Typhlodromips) sijiensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 71.



Figs. 421-426 : *Amblyseius (Typhlodromips) sijiensis* Gupta (F) : 421-Dorsal shield, 422-Ventral surface, 423-Chelicera, 424-Spermatheca, 425-Genu, tibia, basitarsus of leg IV, 426-Spermatophoral process (M).

Female : Dorsal shield 360 long, 225 wide. Measurements of setae : j_1–28–30, j_4–j_6, J_2–J_5–6–7 each, j_5–27, s_4–35, Z_1–11, S_2–12, S_4–S_5–7 each, Z_5–91, z_5–6, Z_4–60, r_3–13, R_1–11. Sternal shield 78 long, 89 wide with 3 pairs of sternal setae. Genital shield 67 wide. Ventrianal shield 100 long, 56 wide with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit 2 dentate. Spermatheca as illustrated. Macrosetae on leg IV : genu–78, tibia–51, basitarsus–60, genu I–33, genu III–44. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as illustrated.

Collection Records : Holotype was from Arunachal Pradesh collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Arunachal Pradesh).

98. *Amblyseius (Typhlodromips) suknaensis* Gupta

(Figs. 427-432)

1970. *Amblyseius suknaensis* Gupta, *Oriental Ins.*, **4** : 185-186.

1986. *Amblyseius (Typhlodromips) suknaensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 185-188.

1987. *Amblyseius (Typhlodromips) suknaensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 67.

1992. *Amblyseius (Typhlodromips) suknaensis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 168.

1992. *Amblyseius (Typhlodromips) suknaensis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1994. *Amblyseius (Typhlodromips) suknaensis*, Singh, *Shashpa*, **1**(2) : 70.

1995. *Amblyseius (Typhlodromips) suknaensis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 36-37.

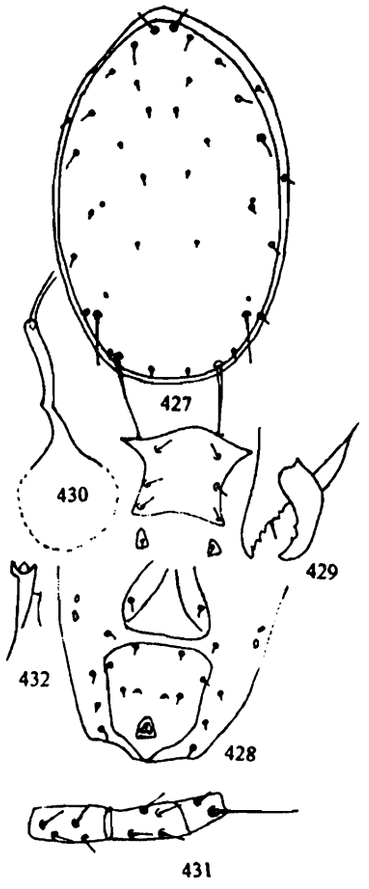
1996. *Amblyseius (Typhlodromips) suknaensis*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

In press. *Amblyseius (Typhlodromips) suknaensis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Typhlodromips) suknaensis*, Gupta & Chatterjee, In : *State Fauna Ser. 11. Fauna of Mizoram.*

Female : Dorsal shield 290–310 long, 170–185 wide. Measurements of setae : j_1–22, j_4–j_6–7–9 each, J_2–11, J_5–6, j_3–18–21, z_2, z_4–12–13, s_4–20–22, Z_1–9–12, S_2–S_5–16 each, Z_5–75, z_5–8, Z_4–56, r_3, R_1–16 each. Sternal shield 78 long, 74 wide, with 3 paris of setae. Genital shield 78 wide with a pair of setae. Ventrianal shield 103 long, 96 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3–4 teeth anterior to *pilus dentilis*, 3 teeth posterior to it, movable digit with 2 teeth. Macrosetae on leg IV : genu–24–30, tibia–20–26, basitarsus–50–65, genu III–22. Spermatheca as figured. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}1&2\\1&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.



Figs. 427-432 : *Amblyseius (Typhlodromips) suknaensis* Gupta (F) : 427-Dorsal shield, 428-Ventral surface, 429-Chelicera, 430-Spermatheca, 431-Genu, tibia, basitarsus of leg IV, 432-Spermatophoral process (M).

Collection Records : Originally, this species was described from West Bengal, collected on *Colocasia* sp. Subsequently, it has been recorded from West Bengal on undet. plants, *Glycosmis,* mango, brinjal, *Datura, Rosa centrifolia,* guava, *Euphorbia* sp., "Siuli", bamboo, citrus, cashew nut, *Azadirachta indica,* wood apple; from Uttar Pradesh, on peach; from Meghalaya, on *Lantana*; bamboo, mango; from Tripura, on bamboo, citrus, *Dolichos*; from Sikkim on maize; from Mizoram on "Tiurel"; from Andaman Isls. on *Tectona grandis*; from Kerala on rose; from Orissa on *Shorea robusta* and from Assam on fern.

Habitat : *Colocasia* sp., *Colocasia esculenta,* peach, *Glycosmis,* mango, brinjal, palm, "Siuli", bamboo, cashewnut, Neem, wood apple, rose, *Tectona grandis, Shorea robusta,* fern, "Hersingher", bitter gourd, "Chulai sag", papaya, mulberry, citrus, *Dolichos lablab,* "Tiurel", *Lantana,* guava, *Euphorbia, Eupatorium odoratum, Datura metel,* fig.

Distribution : India (Arunachal Pradesh, Assam, Sikkim, Mizoram, Tripura, West Bengal, Orissa, Meghalaya, Uttar Pradesh, Andaman & Nicobar Isls., Kerala).

99. *Amblyseius (Typhlodromips) syzygii* Gupta

(Figs. 433-437)

1975. *Amblyseius syzygii* Gupta, *Internat. J. Acarol.,* **1**(2) : 44-45.

1986. *Amblyseius (Typhlodromips) syzygii*, Gupta, *Fauna of India : Phytoseiidae,* p. 188-190.

1987. *Amblyseius (Typhlodromips) syzygii*, Gupta, *Rec. zool. Surv. India,* Occ. Pap. **95** : 68.

1989. *Amblyseius (Typhlodromips) syzygii*, Singh *et al.*, In : *Progress in Acarology,* **2** : 361-367.

1992. *Amblyseius (Typhlodromips) syzygii*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 169.

1995. *Amblyseius (Typhlodromips) syzygii*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2,* p. 37.

1996. *Amblyseius (Typhlodromips) syzygii*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS),* **15** : 26.

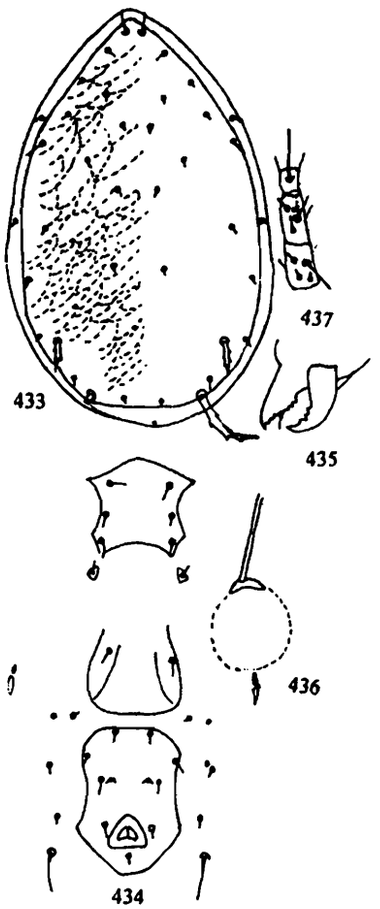
2000. *Amblyseius (Typhlodromips) syzygii*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2,* p. 26.

In press. *Amblyseius (Typhlodromips) syzygii*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Amblyseius (Typhlodromips) syzygii*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 335–345 long, 200–210 wide. Measurements of setae : j_1–15–18, j_4–j_5–8–9 each, J_2, j_6–10–13 each, J_5–8, j_3–13–16, z_2, z_4–11 each. s_4–20–22, Z_1–16, S_2–S_5–11–13 each, Z_5–67 (serrate), z_5–9, Z_4–31–36. Sternal shield 75 long, 70 wide, with 3 pairs of sternal setae. Genital shield 78 wide. Ventrianal shield 110 long, 85 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, 3–4 teeth posterior to it; movable digit with 2–3 teeth. Spermatheca as figured. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$. Macrosetae on leg IV: genu–40–45, tibia–27–31, basitarsus–45–49.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.



Figs. 433-437 : *Amblyseius (Typhlodromips) syzygii* Gupta (F) : 433-Dorsal shield, 434-Ventral surface, 435-Chelicera, 436-Spermatheca, 437-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from West Bengal collected on *Syzygium cumini*. Subsequently, it was reported on a number of plants as listed under "Habitat"

Habitat : *Syzygium cumini*, leaf litter, guava, jute, maize, beans, sugarcane, litchi, undet. plant, mulberry, *Shorea robusta*, *Azadirachta indica*, mango, *Ficus cunea*, tea, bamboo, *Dolichos lablab*, jackfruit, orchid, citrus.

Distribution : India (West Bengal, Orissa, Tripura, Meghalaya, Bihar, Sikkim, Mizoram, Uttar Pradesh), Thailand.

Remarks : The feeding of this mite on phytophagous species has been reported by Singh *et al*, (1989) on litchi erineum mite, *Aceria litchii*.

100. ***Amblyseius (Typhlodromips) tetranychivorus*** (Gupta)

(Figs. 438-443)

1978. *Typhlodromips tetranychivorus* Gupta, *Oriental Ins.*, **12** : 337-338.

1982. *Typhlodtomips tetranychivorus*, Nangia & Channa-Basavanna, *Indian J. Acar.*, **7**(1) : 1.

1982. *Typhlodromips tetranychivorus*, Jagadish & Nageshchandra, *Acar. Newsl.*, **11** : 9.

1983. *Amblyseius tetranychivorus*, Nangia & Muniappa, *Abst. II All India Symp. Acarology*, Pune, p. 30.

1986. *Amblyseius (Typhlodromips) tetranychivorus*, Gupta, *Fauna of India : Phytoseiidae*, p. 190-192.

1987. *Amblyseius (Typhlodromips) tetranychivorus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 68-69.

1989. *Amblyseius tetranychivorus*, Nangia & Channa-Basavanna, *Indian J. Acar.*, **10** : 75.

1990. *Amblyseius tetranychivorus*, Mallikarjunappa *et al.*, *Curr. Res.*, **19**(3) : 45-47.

1990. *Amblyseius tetranychivorus*, Nangia & Channa-Basavanna, *Acar. Newsl.*, **17-18** : 22.

1994. *Amblyseius (Typhlodromips) tetranychivorus*, Singh, *Shashpa*, **1**(2) : 70.

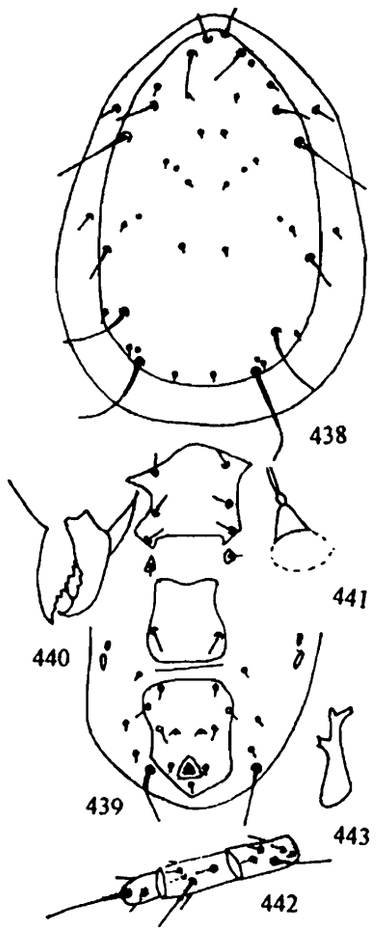
1995. *Amblyseius tetranychivorus*, Nangia & Channa-Basavanna, *Indian J. Acar.*, **13** : 45.

1995. *Amblyseius tetranychivorus*, Nangia & Channa-Basavanna, *Indian J. Acar.*, **13** : 49.

Female : Dorsal shield 330–350 long, 200 wide. Measurements of setae : j_1–25–28, j_4, j_6, J_2–9–13 each, J_5–9, j_3–44, z_2–13–17, z_4–36, s_4–76–78, Z_1–8–11, S_2–36–43, S_4–8, Z_5–76–85, z_5–8, Z_4–68, r_3–22–24, R_1–10. Sternal shield as long (80) as wide with 3 pairs of setae. Genital shield 72 wide with a pair of setae. Ventrianal shield 110–120 long, 90–95 wide, with 3 pairs of preanal setae.

Fixed digit of chelicera with 2–3 teeth anterior to strong *pilus dentilis*, 3 teeth posterior to it. Movable digit with 3 teeth. Spermatheca as illustrated. Macrosetae on leg IV : genu–40–48, tibia–40, basitarsus–68, genu III–24, genu II–24, tibia III–24, tibia II–20. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as illustrated.



Figs. 438-443 : *Amblyseius (Typhlodromips) tetranychivorus* (Gupta) (F) : 438-Dorsal shield, 439-Ventral surface, 440-Chelicera, 441-Spermatheca, 442-Genu, tibia, basitarsus of leg IV, 443-Spermatophoral process (M).

Collection Records : This species was described from Tamil Nadu on brinjal and from Kerala on an undet. plant. Thereafter, it was recorded on several plants in India as listed under Habitat.

Habitat : Brinjal, palm, *Hibiscus mutabilis*, citrus, *Dolichos lablab, Sechium edule*, mulberry, papaya, *Lablab niger.*

Distribution : India (Tamil Nadu, Kerala, Karnataka, Tripura, Bihar, Uttar Pradesh).

Remarks : It is one of the most efficient predators of phytophagous mites from India and has been reported to feed upon *Tetranychus ludeni* (Puttaswamy & ChannaBasavanna, 1979), *Raoiella indica* on palm in Karnataka (Jagadish & Nageshachandra, 1982), *Aceria cajani* on red gram in Karnataka (Nangia & Muniappa, 1983), on *Tetranychus ludeni* (Nangia & ChannaBasavanna, 1983), on *Tetranychus urticae* infesting okra in Tripura (Pande & Majumdar, 1990), on *Aceria mori* and *Tetranychus urticae* on mulberry in Karnataka (Nangia & ChannaBasavana, 1990) and *Tetranychus neocalendonicus* on papaya in Karnataka (Nangia *et al.*, 1990). In addition, it was also reported associated with *Tetranychus urticae* infesting brinjal in Tamil Nadu and *Brevipalpus* sp. on *Hibiscus mutabilis* in Bihar (Gupta & Nahar, 1981). Considering all these, it is apparent that judicious utilisation of this predatory species will be profitable in biological control programme in India.

Genus 9. ***Indoseiulus*** Ehara

1969. *Indoseius* Ghai & Menon, *Oriental Ins.*, **3** : 348.
1982. *Indoseiulus* Ehara, *Appl. Ent. Zool.*, **17**(1) : 40-45.
1986. *Indoseiulus*, Gupta, *Fauna of India : Phytoseiidae*, p. 192.
1986. *Amblyseius (Indoseiulus)*, Moraes *et al.*, *EMBRAPA*, **59**.
1987. *Indoseiulus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 71.
1993. *Indoseiulus*, Denmark & Kolodochka, *Internat. J. Acarol.*, **19**(3) : 249.

Diagnosis : Dorsal shield not covers whole of dorsum with 16 pairs of setae (8 pairs of laterals, 2 pairs of median, 6 pairs dorsocentral), all simple, small. Sternal shield with 3 pairs of sternal setae. Ventrianal shield poorly defined with 3 pairs of preanal setae, 3 pairs of setae present around ventrianal shield. Peritreme extends upto j_3. Spermatheca normal. Leg chaetotaxy as in *Amblyseius*.

Type ***Indoseius ricini*** Ghai & Menon, 1969

Key to species of *Indoseiulus* known to inhabit plants in India

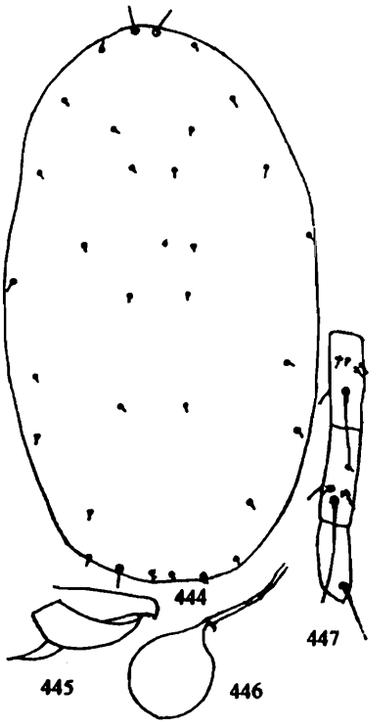
1. Seta j_1 over 3 times than that of j_3 ***eharai***
– Seta j_1 less than 3 times the length of j_3 .. 2
2. Spermatheca with long coiled tubular cervix, approximately 90 long, c-shaped atrium ... ***ricini***
– Spermatheca with stout tubular cervix, 11 long with nodular atrium ..... ***ghaiae***

101. ***Indoseiulus eharai*** Gupta (Figs. 444-447)

1986. *Indoseiulus eharai* Gupta, *Fauna of India : Phytoseiidae*, p. 193-195.

1992. *Indoseiulus eharai*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

Female : Dorsal shield 425 long, 250 wide. Measurements of setae : j_1–26, j_4–9, j_5–7, j_6–11, J_2–11, J_5–4, j_3–7, z_2–10, z_4–9, s_4–13, Z_1–13, S_2, S_5–13 each, Z_5–22, z_5–4, Z_4–15, r_3–14, R_1–12. Margins of sternal shield indistinguishable, with 3 pairs of setae. Ventrianal shield appears to be absent, 3 pairs of preanal setae present.



Figs. 444-447 : *Indoseiulus eharai* Gupta (F) : 444-Dorsal shield, 445-Chelicera, 446-Spermatheca, 447-Genu, tibia, basitarsus of leg IV.

Fixed digit of chelicera with 2 apical teeth, followed by 2 minute denticles, movable digit toothless. Spermatheca as figured. Macrosetae on leg IV : genu–71, tibia–67, basitarsus–56, genu III–44, tibia III–33, genu II–44, genu I with 3 macrosetae 44, 33, 38. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}1\\1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2\\0\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1\\1\end{smallmatrix}$ $\begin{smallmatrix}2\\1\end{smallmatrix}$ 1.

Male : Unknown.

Collection Records : The description of this species was based upon material collected on papaya in Arunachal Pradesh.

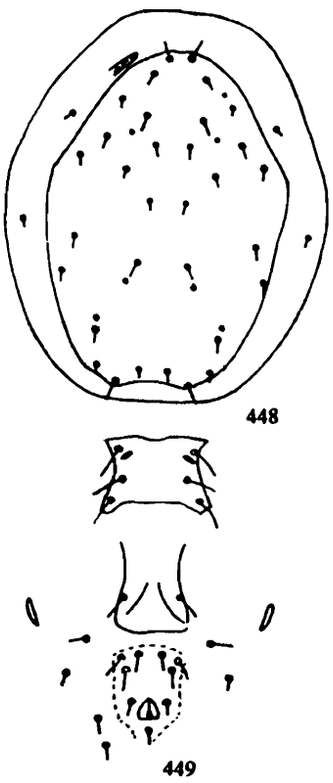
Habitat : Papaya.

Distribution : India (Arunachal Pradesh).

102. ***Indoseiulus ghaiae*** Denmark & Kolodochka (Figs. 448-449)

1993. *Indoseiulus ghaiae* Denmark & Kolodochka, *Internat. J. Acarol.*, **19**(3) : 237.

Female : Body 368 long, 200 wide. Measurements of setae : j_1–27, j_3–16, j_4–j_6–16–17 each, J_2–17, J_5. 8, z_2–z_4–16 each, Z_1–19, Z_4–17, Z_5–28, s_4–19, S_2, S_5–18–19 each, r_3, R_1–15–16 each.



Figs. 448-449 : *Indoseiulus ghaiae* Denmark & Kolodochka (F) : 448-Dorsal shield, 449-Ventral surface. (after Denmark & Kolodochka, 1993)

Sternal shield with 3 pairs of setae. Ventrianal shield with 3 pairs of preanal setae. Fixed digit of chelicera with 9–10 teeth. Macrosetae on leg IV : genu–39, tibia–47, basitarsus–49. Leg chaetotactic formula : genu II 2 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\0\end{matrix}$ 1, genu III 1 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\0\end{matrix}$ 1. Spermatheca with short tubular cervix 11 long with nodular atrium.

Male : Unknown.

Collection Records : The description of this species was based on collection from Tamil Nadu on *Ricinus communis.*

Habitat : *Ricinus communis.*

Distribution : India (Tamil Nadu).

Remarks : The authors described this species from paratype series of Ghai & Menon (1969) who described *I. ricini* from India (Tamil Nadu).

103. ***Indoseiulus ricini*** (Ghai & Menon) (Figs. 450-454)

1969. *Indoseius ricini* Ghai & Menon, *Oriental Ins.*, **3** : 348.

1983. *Indoseiulus ricini*, Denmark & Kolodochka, *Internat. J. Acarol.*, **19**(3) : 253.

1986. *Indoseiulus ricini*, Gupta, *Fauna of India : Phytoseiidae*, p. 195-196.

1987. *Indoseiulus ricini*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 72.

1992. *Indoseiulus ricini*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

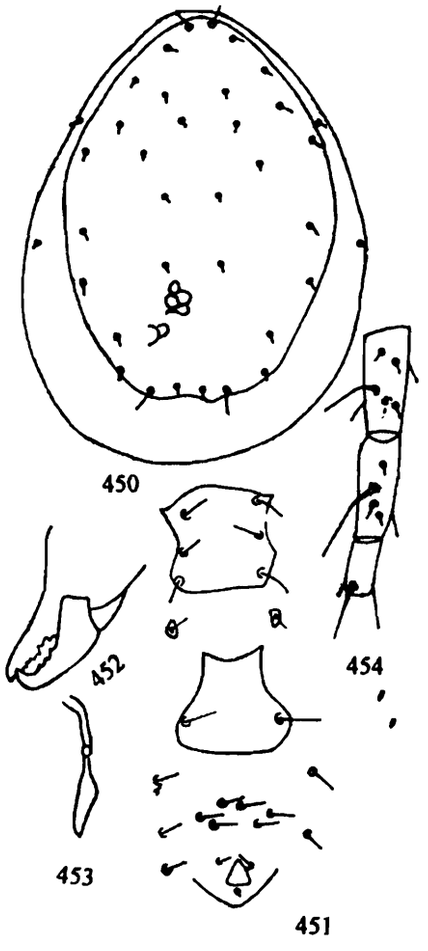
1992. *Indoseiulus ricini*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 169.

2000. *Indoseiulus ricini*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 26.

In press. *Indoseiulus ricini*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield highly sclerotized. Measurements of setae : j_1–21, j_4, j_6, J_2–J_5–8–10 each, j_3–14, z_2, z_4–10–12 each, s_4, Z_1, S_2, S_5–16 each, Z_5–25, z_5–12, Z_4–12–16. Sternal shield with 3 pairs of sternal setae. Ventrianal shield absent, 3 paris of preanal setae present. Spermatheca as figured. Fixed digit of chelicera multidentate, movable digit with 3 teeth. Macrosetae on leg IV : genu–32, tibia–40, basitarsus–36. Leg chaetotactic formula : genu II 2 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\0\end{matrix}$ 1, tibia II 1 $\begin{matrix}2\\1\end{matrix}$ $\begin{matrix}1\\1\end{matrix}$ 1, genu III 1 $\begin{matrix}2\\0\end{matrix}$ $\begin{matrix}2\\1\end{matrix}$ 1, tibia III 1 $\begin{matrix}2\\1\end{matrix}$ $\begin{matrix}1\\1\end{matrix}$ 1.

Male : Unknown.



Figs. 450-454 : *Indoseiulus ricini* (Ghai & Menon) (F) : 450-Dorsal shield, 451-Ventral surface, 452-Chelicera, 453-Spermatheca, 454-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon collection on *Ricinus communis* in Tamil Nadu. Later, this was collected on a number of plants listed under Habitat.

Habitat : *Ricinus communis*, Guava, *Colocasia* sp., sweet gourd, papaya.

Distribution : India (Tamil Nadu, Gujarat, Uttar Pradesh, Himachal Pradesh, Bihar, Arunachal Pradesh, West Bengal, Sikkim, Tripura, Punjab).

Remarks : This mite was seen associated with *Tetranychus urticae* on ornamental plants in Sikkim (Gupta & Gupta, 1992).

Genus 10. *Iphiseius* Berlese

1916. *Iphiseius* Berlese, *Redia*, **12** : 33.

1986. *Iphiseius*, Gupta, *Fauna of India, Phytoseiidae*, p. 197.

1987. *Iphiseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 72.

Diagnosis : Dorsal shield moderately sclerotized with 17 pairs of setae (9 pairs of laterals, 2–3 pairs medians, 4–6 pairs dorsocentrals). Lateral integument scletozed to well below the base of r_3, R_1, but not fused with dorsal shield, and r_3, R_1 present on lateral integument not dorsolaterally on dorsal shield. Female with sternal, genital and either a ventrianal shield or separate ventral and anal shields. Sternal shield with 3 pairs of sternal setae; preanal setae 3 pairs; 4 pairs of setae around ventrianal shield, 2 pairs of metapodal plates. Spermatheca well developed. Legs normal with macrosetae on leg IV.

Type ***Seius degenerans*** Berlese, 1916
(by original designation)

Key to the subgenera of genus *Iphiseius* known to inhabit plants in India

1. Dorsal shield with 6 pairs of dorsocentral setae. ..... *Iphiseius*
– Dorsal shield with 4 pairs of dorsocentral setae, setae J_5 and J_2 absent, postscutum with 3–5 pairs of lateral setae, setae S_2 and S_4 may be present or absent ..... *Trochoseius*

Subgenus 1. *Iphiseius* Berlese

1917. *Iphiseius* Berlese, *Redia*, **12** : 33.

1986. *Iphiseius (Iphiseius)*, Gupta, *Fauna of India : Phytoseiidae*, p. 198.

1987. *Iphiseius (Iphiseius)*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 73.

Diagnosis : Dorsal shield with 6 pairs of setae on dorsocentral setae. Postscutum with 5 pairs of lateral setae.

Type ***Sejus degenerans*** Berlese, 1916

Key to the species of subgenus *Iphiseius* known to inhabit plants in India

1. Z_5 very long (over 30 microns) and stout considerably, longer than other setae on dorsal shield ..... *andamanicus*
– Z5 short (much less than 30 microns, only 12 microns) and almost as long as other setae on dorsal shield ..... *hapoli*

104. *Iphiseius (Iphiseius) andamanicus* Gupta (Figs. 455–460)

1980. *Iphiseius andamanicus* Gupta, *Ent. mon. Mag.*, **115** : 213-214.

1986. *Iphiseius (Iphiseius) andamanicus*, Gupta, *Fauna of India : Phytoseiidae*, p. 198-200.

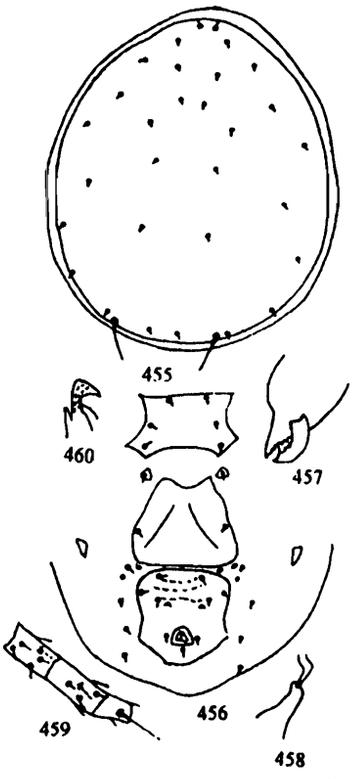
1987. *Iphiseius (Iphiseius) andamanicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 73.

1992. *Iphiseius andamanicus*, Gupta, In : *Contributions to Acarological Researchs in India*, p. 443.

1992. *Iphiseius andamanicus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 170.

1994. *Iphiseius andamanicus*, Singh, *Shashpa*, **1**(2) : 70.

2000. *Iphiseius andamanicus*, Gupta, In : *State Fauna Ser. 7 Fauna of Tripura, Part 2*, p. 26.



Figs. 455-460 : *Iphiseius (Iphiseius) andamanicus* Gupta (F) : 455-Dorsal shield, 456-Ventral surface, 457-Chelicera, 458-Spermatheca, 459-Genu, tibia, basitarsus of leg IV, 460-Spermatophoral process (M).

Female : Dorsal shield 330–350 long, 240–250 wide. Except Z_5 which is long (27–30), other setae minute; r_3 and R_1 also small and lie on sclerotized lateral integument. Sternal shield 45 long, 90 wide with 3 pairs of sternal setae. Genital shield 90 wide with a pair of setae. Ventrianal shield 99–108 long, 70–80 wide, with 3 pairs of preanal setae. Metapodal plates large. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–11–13, tibia–12–14, basitarsus–36–50. Leg chaetotactic formula : genu II $2\ \begin{matrix}2\\0\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia II $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$, genu III $1\ \begin{matrix}2\\1\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia III $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$.

Male : Ventrianal shield and spermatophoral process as figured.

Collection Records : This species was described from Andaman Isl. collected on *Dolichos lablab*. The other collections from India include on paddy in Arunachal Pradesh, on *Suaeda nudiflora* and blackberry in West Bengal and on banana from Tripura.

Habitat : *Dolichos lablab*, paddy, banana, *Suaeda nudiflora*, blackberry.

Distribution : India (Andaman & Nicobar Isls., Karnataka, Arunachal Pradesh, West Bengal, Tripura, Uttar Pradesh).

105. ***Iphiseius (Iphiseius) hapoli*** Gupta

(Figs. 461–466)

1986. *Iphiseius (Iphiseius) hapoli* Gupta, *Fauna of India : Phytoseiidae*, p. 200-201.

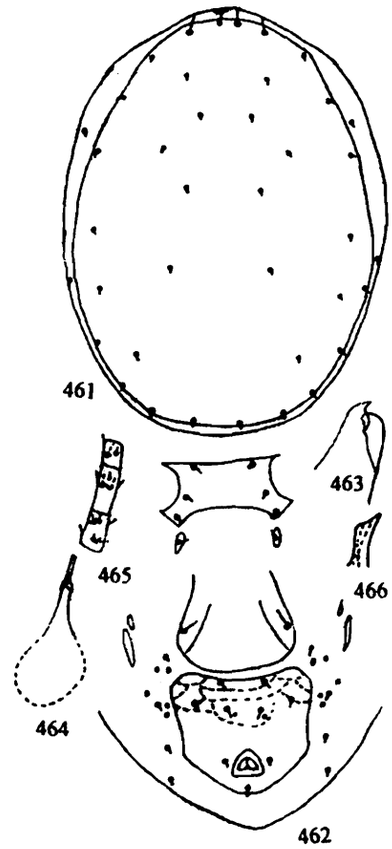
1987. *Iphiseius (Iphiseius) hapoli*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 73.

1992. *Iphiseius hapoli*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

In press. *Iphiseius hapoli*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield highly sclerotized, all setae small except Z_5, j_3, j_1 which are longer and measure 12, 18, 14, respectively. Other setae measure 6–8 long. Sternal shield 44 long, 95 wide, reticulate with 3 pairs of sternal setae. Genital shield 94 wide with a pair of setae. Ventrianal shield reticulate, 100 long, 112 wide, with 3 pairs of preanal setae, 2 pairs of large metapodal plates. Chelicera with 5–6 teeth on the fixed digit and 2–3 teeth on movable digit. Spermatheca as figured. Macrosetae absent on leg IV. Leg chaetotactic formula : genu,II $2\ \begin{matrix}2\\0\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia II $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$, genu III $1\ \begin{matrix}2\\1\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia III $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process and ventrianal shield as figured.



Figs. 461-466 : *Iphiseius (Iphiseius) hapoli* Gupta (F) : 461-Dorsal shield, 462-Ventral surface, 463-Chelicera, 464-Spermatheca, 465-Genu, tibia, basitarsus of leg IV, 466-Spermatophoral process (M).

Collection Records : This species was described from Arunachal Pradesh collected on apple and thereafter was also collected on an undet. plant in Sikkim.

Habitat : Apple, undet. plant.

Distribution : India (Arunachal Pradesh, Sikkim).

Subgenus 2. *Trochoseius* Pritchard & Baker

1962. *Trochoseius* Pritchard & Baker, *Hilgardia*, **33**(7) : 299.

1986. *Trochoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 202.

1987. *Trochoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 73.

Diagnosis : Dorsal shield with 4 pairs of dorsocentral setae, setae J_2, j_5 absent; postscutum with 3 pairs of lateral setae, S_2, S_4 absent.

Type ***Trochoseius gongylus*** Pritchard & Baker, 1962
(by designation)

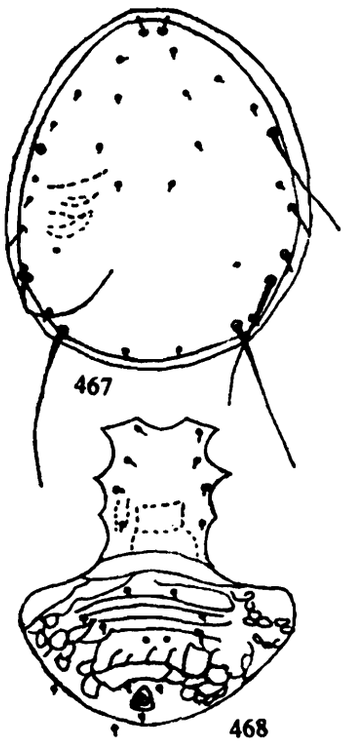
106. *Iphiseius (Trochoseius) bakeri* Gupta (Figs. 467–468)

1980. *Iphiseius bakeri* Gupta, *Ent. mon. Mag.*, **115** : 214-215.

1986. *Iphiseius (Trochoseius) bakeri*, Gupta, *Fauna of India : Phytoseiidae*, p. 202.

1987. *Iphiseius (Trochoseius) bakeri*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 73-74.

Male : Dorsal shield 288 long, 235 wide, highly sclerotized and reticulate, lateral margin sclerotized and appears to be fused with dorsal shield.



Figs. 467-468 : *Iphiseius (Trochoseius) bakeri* Gupta (M) : 467-Dorsal shield, 468-Ventral surface.

Setae j_5, J_2 lacking, s_4, Z_5, Z_4 being long measuring 117, 194, 145, respectively, other setae 4–10, S_2–25, r_3, R_1 present on sclerotized lateral integument. Ventrianal shield reticulate with 3 pairs of preanal setae. Macrosetae on leg IV : genu–60, tibia–53, basitarsus–33.

Female : Unknown.

Collection Records : The original description of this species was from Andaman Isl. collected on arecaunt.

Habitat : Arecanut.

Distribution : India (Andaman & Nicobar Isls.).

Genus 11. *Paraamblyseius* Muma

1962. *Paraamblyseius* Muma, *Fla. Ent.*, **45** : 8.

1986. *Paraamblyseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 202-203.

1987. *Paraamblyseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 174.

Diagnosis : Dorsal shield coarsely punctate with 9 pairs of laterals, 2 pairs of median and 6 pairs on dorsocentral series. Sternal, genital and ventrianal shields well sclerotized, genital shield large, punctate; ventrianal shield massive much broader than long, reticulate, almost touching genital shield with 3 pairs of preanal setae; metapodal plate one paired, triangular. Tibia II–7 setae, genu II–7 setae, genu III–6 setae. Macroseta absent on leg IV.

Type ***Paraamblyseius lunatus*** Muma (1962)
(by designation)

Key to the species of *Paraamblyseius* known to inhabit plants in India

1. Metastarnal plate round, J_2 longer than Z_1, Z_4 shorter than the distance between Z_4 and Z_5; reticulation pattern of ventrianal shield as in fig. 476 ..... *mumai*

– Metasternal plate kidney shaped, J_2 subequal to Z_1, Z_4 reaches base of Z_5; reticulation of ventrianal shield as in fig. 470 ..... *fragariae*

107. ***Paraamblyseius fragariae*** Gupta
(Figs. 469–474)

1970. *Paraamblyseius fragariae* Gupta, *Ent. mon. Mag.*, **115** : 215-216.

1986. *Paraamblyseius fragariae*, Gupta, *Fauna of India : Phytoseiidae*, p. 204-206.

1987. *Paraamblyseius fragariae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 74.

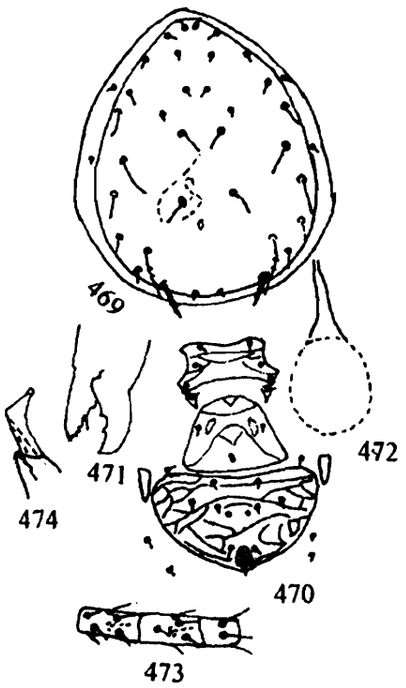
1992. *Paraamblyseius fragariae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 170.

1992. *Paraamblyseius fragariae*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1995. *Paraamblyseius fragariae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 37.

In press. *Paraamblyseius fragariae*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Paraamblyseius fragariae*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*



Figs. 469-474 : *Paraamblyseius fragariae* Gupta (F) : 469-Dorsal shield, 470-Ventral surface, 471-Chelicera, 472-Spermatheca, 473-Genu, tibia, basitarsus of leg IV, 474-Spermatophoral process (M).

Female : Dorsal shield 320 long, 230 wide. Measurements of setae : j_1–12–14, j_4–13–14, j_5–16, j_6–26–33, J_2–38–40, J_5–10–12, j_3–16, z_2–22, z_4–22–27, s_4–33–36, Z_1–38–40, S_2–33–36, S_4–23–29, S_5–22–27, Z_5–38–40, (weakly serrate), z_5–11, Z_4–45–46, r_3, R_1–13 each. Sternal shield 45 long, 95–110 wide, sculptured, with 3 pairs of sternal setae; 4th pair on kidney shaped metasternal shields. Genital shield 123–126 wide, punctate with a pair of genital setae. Ventrianal shield 112–123 long, 170–190 wide with 3 pairs of preanal setae; triangular metapodal plates present, 45 long. Macroseta absent on leg IV; Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Ventrianal shield and spermatophoral process as figured.

Collection Records : This species was described from West Bengal collected on *Fragaria nilgerrensis*. Other collections from India are on turmeric in Arunachal Pradesh; cardamom in Sikkim, citrus in Mizoram.

Habitat : *Fragaria nilgerrensis*, cardamom, citrus; turmeric.

Distribution : India (Arunachal Pradesh, Sikkim, Mizoram, West Bengal).

108. ***Paraamblysius mumai*** Gupta
(Figs. 475–478)

1980. *Paraamblyseius mumai* Gupta, *Ent. mon. Mag.*, **116** : 33-34.

1986. *Paraamblyseius mumai*, Gupta, *Fauna of India : Phytoseiidae*, p. 206.

1987. *Paraamblyseius mumai*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 75.

1992. *Paraamblyseius mumai*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 170-171.

1995. *Paraamblyseius mumai*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 37-38.

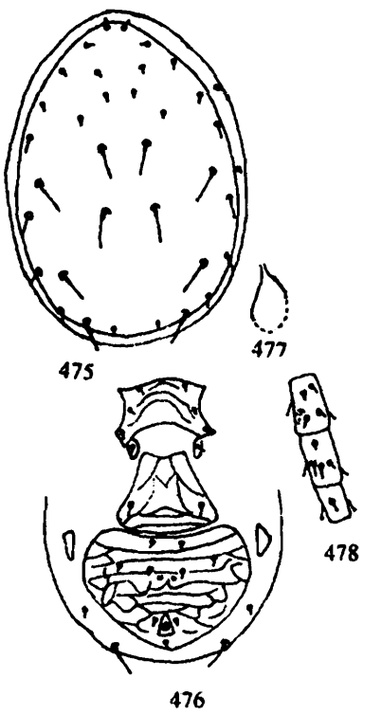
In press. *Paraamblyseius mumai*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Paraamblyseius mumai*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 335 long, 225 wide. Measurements of setae : j_1–16, j_4–16, j_5–16, j_6–40, J_2–45, J_5–12, j_3–14, z_2, z_4–14–16, s_4–24, Z_1–36, S_2–28, S_4–18, S_5–16, Z_5–30, z_5–16, Z_4–40, r_3, R_1–9 each. Sternal shield reticulate, 44 long, 80 wide, with 3 pairs of sternal setae, 4th pair on round metasternal plates. Genital shield 106 wide with a pair of setae. Ventrianal shield massive,

110 long, 168 wide. reticulate, with 3 pairs of preanal setae; a pair of large triangular metapodal plates present. Fixed digit of chelicera multidentate, teeth on movable digit not discernible. Spermatheca as figured. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$.

Male : Unknown.



Figs. 475-478 : *Paraamblyseius mumai* Gupta (F) : 475-Dorsal shield, 476-Ventral surface, 477-Spermatheca, 478-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Meghalaya collected on an undet. plant. It was also reported from West Bengal on rose and on an undet. plant in Sikkim and Mizoram.

Habitat : Undet. plant, rose.

Distribution : India (Meghalaya, Mizoram, Sikkim, West Bengal).

Genus 12. ***Phytoseiulus*** Evans

1952. *Phytoseiulus* Evans, *Bull. Ent. Res.*, **43** : 397.
1959. *Phytoseiulus*, Chant, *Can. Ent.*, **91**(suppl. 12) : 108.
1983. *Phytoseiulus*, Denmark & Schicha, *Internat. J. Acarol.*, **9**(1) : 27.
1984. *Phytoseiulus*, Sabelis *et al.*, *Physiological Entomol.*, **9** : 437-446.
1989. *Phytoseiulus*, Krishnamoorthy, In : *Progress in Acarology*, **2** : 360-374.
1993. *Phytoseiulus*, Takahashi & Chant, *Internat. J. Acarol.*, **19**(1) : 23.
1997. *Phytoseiulus*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 135.

Diagnosis : Dorsal shield small, covers idiosoma incompletely, strongly convex with 12 or 14 pairs of setae. Some dorsocentral setae very long. Out of 6 or 7 pairs of lateral setae, 4 pairs on prolateral series. Sternal shield with 2 or 3 pairs of setae, remaining setae on metasternal shield. Four to six pairs of setae present on posteroventral integument around ventrianal shield. Metapodal plates 2 pairs. Peritrematal shield may be fused anteriorly with dorsal shield or may be free. Spermatheca well developed. Legs usually long.

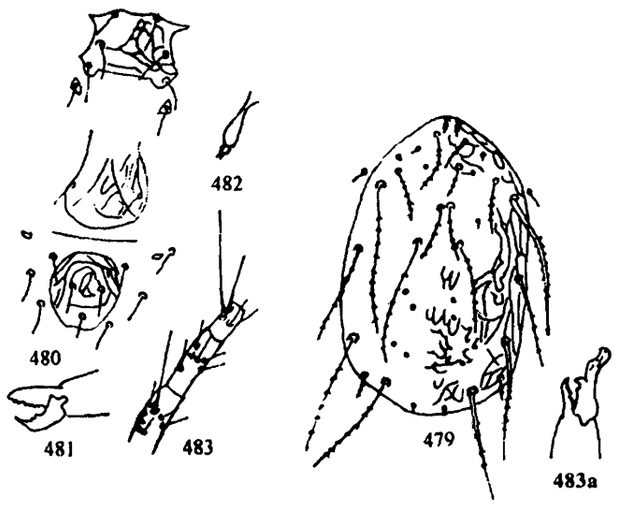
Type ***Phytoseiulus speyeri*** Evans
(= ***Laelaps macropilis*** Banks)
(by designation)

109. ***Phytoseiulus persimilis*** Athias-Henriot
(Figs. 479–483)

1957. *Phytoseiulus persimilis* Athias-Henriot, *Bull. Soc. Hist. Nat, Afr. Nord.*, **48** : 347-348.
1959. *Phytoseiulus persimilis*, Chant, *Can. Ent.*, **91**(Suppl. 12) : 109.
1976. *Phytoseiulus persimilis*, Swirski & Ragusa, *Phytophylactica*, **4**(2) : 119.
1977. *Phytoseiulus persimilis*, Ragusa, *Acarologia*, **18**(3) : 389.
1979. *Phytoseiulus persimilis*, Goodwin & Schicha, *J. Aust. Ent. Soc.*, **18** : 304.
1981. *Phytoseiulus persimilis*, Eveleigh & Chant, *Can. J. Zool.*, 1419.
1983. *Phytoseiulus persimilis*, Denmark & Schicha, *Internat. J. Acarol.*, **9**(1) : 30-32.
1984. *Phytoseiulus persimilis*, Sabelis *et al.*, *Physiological Entomol.*, **9** : 437-446.
1987. *Phytoseiulus persimilis*, Brandenburg & Kennedy, *Agr. Zool. Res.*, **2** : 214.
1989. *Phytoseiulus persimilis*, Krishnamoorthy, In : *Progress in Acarology*, **2** : 369-374.
1997. *Phytoseiulus persimilis*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 135.

Female : Body 320–330 long, 150–170 wide. Measurements of setae : j_1–12–30, j_4–40–55, j_5–45–65, j_6–140–160, J_5–5–10, j_3–32–40, z_2–10–15,

z_4–55–62, s_4–150–180, Z_1–110–120, S_2–130–140, S_5–20–30, Z_5–115–130, z_5–7–10, r_3–24–30, R_1–25–35. Sternal shield with 3 pairs of setae.



Figs. 479-483 : *Phytoseiulus persimilis* Athias-Hentiot (F) : 479-Dorsal shield, 480-Ventral surface, 481-Chelicera, 482-Spermatheca, 483-Genu, tibia, basitarsus of leg IV, 483a-Spermatophoral process (M). (after Wei-nan *et al.*, 1997)

Posterior margin bidentate. Ventrianal shield creased anteriorly, preanal setae absent. Metapodal shield absent; 3 pairs of setae present around ventrianal shield. Fixed digit of chelicera with 8–9 teeth, movable digit with 3 teeth. Macrosetae present on leg IV : genu–75–80, tibia–40–50, basitarsus–120–125. Leg chaetotactic formula : genu II $2\binom{2}{1}\binom{2}{0}1$, genu III $1\binom{2}{1}\binom{2}{0}1$. Spermatheca with undifferentiated atrium.

Male : Chaetotaxy of dorsal shield as in female.

Collection Records : The original description was made on collection from Algeria and Chile. Thereafter, it has been recorded from different parts of the world. However, in India, although this species has not been recorded in nature but attempts were made to introduce this in Karnataka for biological control against *Oligonychus indicus* and *Raoiella indica* on arecanut.

Habitat : India : Arecanut (introduced), elsewhere : several plants.

Distribution : India (Karnataka–introduced), Europe, U.S.A., Canada, Australia, China.

Genus 13. ***Platyseiella*** Muma

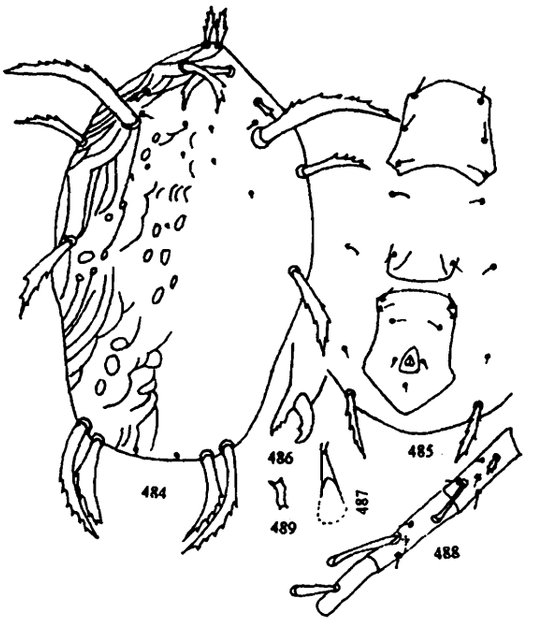
1961. *Platyseiella* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 280.
1986. *Platyseiella*, Gupta, *Fauna of India : Phytoseiidae*, p. 206.
1986. *Platyseiella*, Chant & Yoshida-Shaul, *Can. J. Zool.*, **64**(12) : 2812.

Diagnosis : Dorsal shield rugose, lightly sclerotized, with 5 pairs of dorsocentrals, 2 pairs of median and 6 pairs of laterals; r_3 on dorsal shield, R_1 absent. Sternal shield as long as wide with 3 pairs of setae. Ventrianal shield elongate, vase shaped, with 2–3 pairs of preanal setae. Macrosetae on genu, tibia and basitarsus of leg IV.

Type ***Phytoseius platypilis*** Chant, 1959 (by designation Muma, 1961)

110. ***Platyseiella mumai*** Ray & Gupta (Figs. 484–489)

1981. *Platyseiella mumai* Ray & Gupta, *Bull. Zool. Surv. India*, **4**(3) : 277-279.
1986. *Platyseiella mumai*, Gupta, *Fauna of India : Phytoseiidae*, p. 208.
1987. *Platyseiella mumai*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 75-76.
2000. *Platyseiella mumai*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 26.



Figs. 484-489 : *Platyseiella mumai* Ray & Gupta (F) : 484-Dorsal shield, 485-Ventral surface, 486-Chelicera, 487-Spermatheca, 488-Genu, tibia, basitarsus of leg IV, 489-Spermatophoral process (M).

Female : Dorsal shield rugose, 285 long, 128 wide with 14 pairs of setae. Measurements of setae : j_1–25, j_4–7, j_5–5, j_6–5, J_5–5, j_3–34, z_2–11, z_4–9, s_4–146, Z_1–61, Z_5–85, z_5–5, Z_4–90, r_3–46, R_1–absent. Sternal shield with 3 pairs of setae. Genital shield narrower than greatest width of ventrianal shield. Ventrianal shield 100 long, 67 wide with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–38, tibia–61, basitarsus–34, distitarsus–33, all being spatulate.

Male : Dorsal shield with chaetotaxy pattern as in female. Spermatophoral process as illustrated.

Collection Records : The original description of this species was from Tripura collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Tripura).

Genus 14. *Okiseius* Ehara

1967. *Okiseius* Ehara, *Mushi*, **40**(6) : 77.

1983. *Okiseius*, Wei-nan & Xing, *Entomotaxononica*, **5**(1) : 75.

1986. *Okiseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 210.

1987. *Okiseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 131.

Diagnosis : Dorsal shield convex, highly sclerotized as in *Phytoseius*, with 16 pairs of setae of those, 8 pairs on laterals, 5 pairs on dorsocentrals and 2 pairs on median, r_3 on lateral integument, R_1 on dorsal shield. An incision present on dorsal shield posterior to R_1, or it may be absent. Setae on dorsal shield mostly elongate, thick and serrate as in *Phytoseius*. Genu II with 6 setae, genu III and IV each with 7 setae. Macrosetae present on basitarsus and distitarsus IV, genu and tibia of leg IV may or may not possess macrosetae; macrosetae when present mostly spatulate. Metapodal plates single paired. Spermatheca normal.

Type *Okiseius subtropicus* Ehara, 1967 (by original designation)

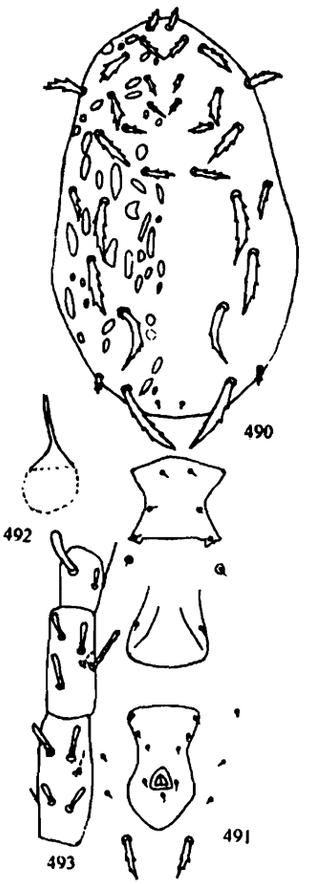
Key to the species of *Okiseius* known to inhabit plants in India

1. Setae j_4 and j_5 very small (6–12 microns), simple 2
– Setae j_4 and j_5 longer than above, serrate ..... *himalayana*
2. Ventrianal shield much more than 1½ times as long as wide, lateral margins distinctly constricted ..... *yazuliensis*
– Ventrianal shield less than 1½ times as long as wide, lateral margins almost straight or only slightly constricted ..... *sikkimensis*

111. *Okiseius himalayana* Gupta (Figs. 490–493)

1986. *Okiseius himalayana* Gupta, *Fauna of India : Phytoseiidae*, p. 211-213.

1987. *Okiseius himalayana*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 77.



Figs. 490-493 : *Okiseius himalayana* Gupta (F) : 490-Dorsal shield, 491-Ventral surface, 492-Spermatheca, 493-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield sclerotized. Measurements of setae : j_1–10, j_4–j_5–16 each, j_6–33, J_5–7, j_3–23, z_2–27, z_4–34, s_4–38, Z_1–40, S_2–40, S_5–16, Z_5–47, z_5–20, Z_4–50, r_3, R_1–27 each. Sternal shield longer than broad with 3 pairs of short sternal setae. Genital shield normal with a pair of setae. Ventrianal shield about 1½ times as long as broad with 3 pairs of preanal seta. Metapodal plates single paired. Fixed digit of chelicera with at least 3 teeth, movable digit with 1 tooth. Spermatheca with bowl shaped cervix and long duct. Macrosetae on leg IV : genu and tibia–indistinguishable that on basitarsus–16, distitarsus–18, both with spatulate tip. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}2&1\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&1\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}2&1\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The original description of this species was from Garhwal Himalaya, Uttar Pradesh collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Uttar Pradesh).

Remarks : The original reference of this species as given in Fauna Volume (Gupta, 1986) is *Indian J. Acar.* (in press). However, before the paper containing description of this species appeared in the said journal, the Gupta (1986) appeared. Hence, the paper communicated to *Indian J. Acar.* was withdrawn and therefore the original reference of this species should be treated as given here and not as given in Funa Vol. (Gupta, 1986).

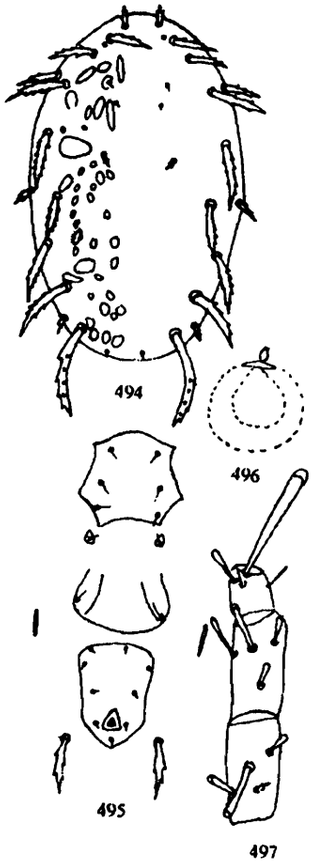
112. *Okiseius sikkimensis* Gupta
(Figs. 494–497)

1986. *Okiseius sikkimensis* Gupta, *Fauna of India : Phytoseiidae*, p. 213-214.

1987. *Okiseius sikkimensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 77.

Female : Dorsal shield highly rugose, sculptured, 333 long, 118 wide. Measurements of setae : j_1–25, j_4–j_5–5 each, j_6–9, J_5–5, j_3–45, z_2–36, z_4–45, s_4–45, Z_1–47, S_2–56, S_5–18, Z_5–83, z_5–6, Z_4–65, r_3–36, R_1–22. Sternal shield 85 long, 55 wide, with 3 pairs of sternal setae. Genital shield slightly wider than greatest width of ventrianal shield, with a pair of setae. Ventrianal shield 105 long, 75 wide with 3 pairs of preanal setae. Metapodal plates single paired. Spermatheca as figured. Macrosetae on leg IV : genu–25, tibia–21, basitarsus–45, all with spatulate tip. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.



Figs. 494-497 : *Okiseius sikkimensis* Gupta (F) : 494-Dorsal shield, 495-Ventral surface, 496-Spermatheca, 497-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon material collected on an undet. plant in Sikkim.

Habitat : Undet. plant.

Distribution : India (Sikkim).

Remarks : Same as given for *O. himalayana.*

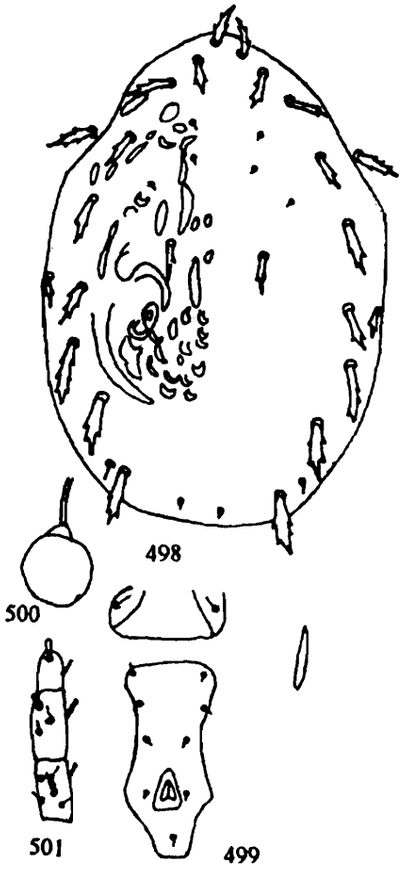
113. *Okiseius yazuliensis* Gupta
(Figs. 498–501)

1986. *Okiseius yazuliensis* Gupta, *Fauna of India : Phytoseiidae*, p. 215.

1987. *Okiseius yazuliensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 78.

Female : Dorsal shield 360 long, 210 wide. Measurements of setae : j_1–22, j_4, j_5–11–12 each, j_6–23, J_5–7, j_3–34, z_2–29, z_4–34, s_4–40, Z_1–38, S_2–45, S_5–16, Z_5–45, z_5–15, Z_4–40, r_3–33, R_1–22. Sternal shield with 3 pairs of sternal setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield much longer (112) than broad (60), with 3 pairs of preanal setae. Metapodal plates single paired. Macrosetae on leg IV : genu–7, tibia–7, basitarsus–23. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 498-501 : *Okiseius yazuliensis* Gupta (F) : 498-Dorsal shield, 499-Genital and ventrianal shield, 500-Spermatheca, 501-Genu, tibia, basitarsus of leg IV.

Collection Records : It was described from Arunachal Pradesh collected on an undet. shrub.

Habitat : Undet. shrub.

Distribution : India (Arunachal Pradesh).

Remarks : Gupta (1986) cited the original reference of this as *Oriental Ins.* (in press). However, by the time the Fauna Volume of Phytoseiidae (Gupta, 1986) giving full description, illustration and indication of the type, etc. was published, the paper containing description of this species sent to Oriental Ins. did not appear. Hence, that paper was withdrawn and original reference of this species should be treated as given here and not *Oriental Ins.* as given in Fauna Volume.

Subfamily 2. PHYTOSEIINAE, Berlese

1916. *Phytoseiinae* Berlese, *Redia*, **12** : 11.

1985. *Phytoseiinae*, Wei-nan & Zhao-quan, *Acta Zootaxonomica*, **10** : 393-398.

1986. *Phytoseiinae*, Gupta, *Fauna of India : Phytoseiidae*, p. 216.

1987. *Phytoseiinae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 78.

1989. *Phytoseiinae*, Cobanoglu, *Turk. Entomol. Derk.*, **13** : 163-178.

1989. *Phytoseiinae*, Wei-nan & Zhao-quan, *Acta Entomologica Sinica*, **27** : 457-461.

1992. *Phytoseiinae*, Denmark, *Fla. St. Coll. of Arthropods Occ. Pap.*, **7**(0) : 3.

1992. *Phytoseiinae*, Ryu Myon & Won Koo Lee, *Korean J. Entomol.*, **22** : 23.

1993. *Phytoseiinae*, Schicha & O'Dowd, *J. Aust. Ent. Soc.*, **32** : 297-305.

1995. *Phytoseiinae*, Yoshida-Shaul & Chant, *Acarologia*, **36** : 3.

Diagnosis : Dorsal shield undivided with 5–6 pairs of dorsocentral setae, 2–3 pairs of median setae, 7–11 pairs of lateral setae, of those 5 pairs of prolateral, 1–2 pairs of sublateral, both may be on interscutal membrane. Ventrianal shield with 1–4 pairs of preanal setae, leg IV macrosetae 0–3. Males with shield shaped ventrianal shield.

Type *Phytoseius* Ribaga, 1904, by indication Berlese, 1916

Key to the genera of Phytoseiinae known to inhabit plants in India

1. Both r_3 and R_1 on dorsal shield .... *Indodromus*
- r_3 may be on dorsal shield, R_1 if present always on lateral integument 2
2. r_3 on dorsal shield, genu II with 7 setae, genu III with 6 setae ..... *Phytoseius*
- r_3 on lateral integument, genu II with 7 or 8 setae, genu III with 6 or 7 setae .... *Typhlodromus*

Genus 15. *Indodromus* Ghai & Menon

1969. *Indodromus* Ghai & Menon, *Oriental Ins.*, **3** : 348.
1986. *Indodromus* Gupta, *Fauna of India : Phytoseiidae*, p. 217.
1987. *Indodromus* Gupta, *Rec. Zool. Surv. India Occ. Pap.*, **95** : 78.

Diagnosis : Dorsal shield reticulate with 18 pairs of setae, of those 5 pairs of prolateral, postlateral setae progressively increase in length upto S_4, S_5 very small, $Z_5 = S_4$; setae S_2, S_4, Z_5, Z_4 being plumose, r_3 and R_1 on dorsal shield. Ventrianal shield with constricted lateral margins, longer than wide, with 4 pairs of preanal setae, 2 pairs of metapodal plates. No macroseta on leg IV.

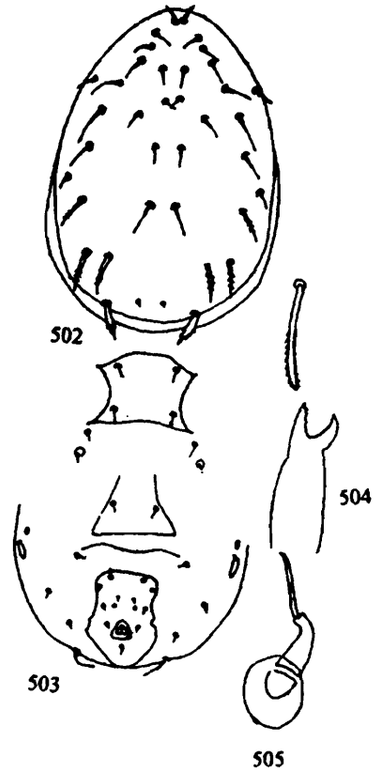
Type ***Indodromus meerutensis*** Ghai & Menon, 1969
(by original designation)

114. *Indodromus meerutensis* Ghai & Menon
(Figs. 502-505)

1969. *Indodromus meerutensis* Ghai & Menon, *Oriental Ins.*, **3**(4) : 349.
1982. *Indodromus meerutensis*, Karg, *Zool. Jb. Syst. Ed.*, **109** : 195.
1986. *Indodromus meerutensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 217-219.
1987. *Indodromus meerutensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 79.

Female : Dorsal shield 330 long, 225 wide with 10 pairs of laterals, 2 pairs of median and 6 pairs of dorsocentrals. Lateral setae progressively longer, S_2, S_4, Z_5, Z_4 plumose, S_5, J_5 minute. Sternal shield shorter than broad. Ventrianal shield 92 long, 57 wide with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit toothless. Leg IV without macroseta.

Male : Unknown.



Figs. 502-505 : *Indodromus meerutensis* Ghai & Menon (F) : 502-Dorsal shield, 503-Ventral surface, 504-Chelicera, 505-Spermatheca (after Ghai & Menon, 1969).

Collection Records : It was described from Uttar Pradesh collected on malformed mango sample.

Habitat : Malformed mango.

Distribution : India (Uttar Pradesh).

Genus 16. *Phytoseius* Ribaga

1904. *Phytoseius* Ribaga, *Riv. Pat. Veg.*, **10** : 177.
1984. *Phytoseius*, Schicha, *Internat. J. Acarol.*, **10**(2) : 177.
1984. *Phytoseius*, Wei-nan, Zhao-quan, *Acta Entomologica Sinica*, **27**(1) : 98-102.
1986. *Phytoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 219.

1987. *Phytoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 79.

1989. *Phytoseius*, Cobanoglu, *Turk. Entomol. Derg.*, **13** : 163-178.

1989. *Phytoseius*, Gupta, In : *Progress in Acarology*, **1** : 403-410.

1992. *Phytoseius*, Denmark, *Fla. St. Coll. of Arthropods, Occ. Pap.* **7** : 1-43.

1992. *Phytoseius*, Ryu Myon & Won Koo Lee, *Korean J. Entomol.*, **22** : 23-42.

1992. *Phytoseius*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(1) : 11.

Diagnosis : Dorsal shield often heavily sclerotized with 15–16 pairs of setae, of those 5–6 pairs on prolateral series, all long setae on dorsal shield heavily serrate. r_3 on dorsal shield, R_1 either on lateral integument or absent. All species with 7 pairs of lateral setae, 2 pairs of median setae and 5–6 pairs of dorsocentral setae. Ventrally, female with sternal, genital and ventrianal shield. Ventrianal shield longer than wide with distinct waist, 1–3 pairs of preanal setae. Macrosetae on leg IV often spatulate. Genu II with 7 setae, genu III–7 setae, tibia III–6 setae.

Type ***Phytoseius ribagai*** Chant & Athias-Henriot (1960)

(= *Gamasus plumifer* C. & F., Ribaga, 1904)

Key to Subgenera of *Phytoseius* known to inhabit plants in India

1. Seta R_1 present ..... *Pennaseius*
– Seta R_1 absent ..... *Phytoseius*

Subgenus 1. ***Pennaseius*** Pritchard & Baker

1962. *Pennaseius* Pritchard & Baker, *Hilgardia*, **33** : 223.

1986. *Pennaseius*, Gupta, *Fauna of India: Phytoseiidae*, p. 220.

1987. *Pennaseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 79.

1989. *Pennaseius*, Gupta, In : *Progress in Acarology*, **1** : 403-410.

Diagnosis : Dorsal shield with 7 pairs of lateral setae, 2 pairs of median and 6 pairs of dorsocentral setae, in addition r_3 also present on shield, R_1 on lateral integument; some of the dorsal setae being long, thick and serrate. Macrosetae on leg IV on genu, tibia and basitarsus, all with flattened tip or spatulate.

Type ***Phytoseius (Ptenoseius) amba*** Pritchard & Baker, 1962

(by designation)

Key to the species of subgenus *Pennaseius* known to inhabit plants in India

1. Dorsal shield notched at the level of r_3 ..... *kapuri*
– Dorsal shield not notched at the level of r_3 2
2. Macroseta on leg IV more or less forked at tip ..... *minutus*
– Macrosetae not forked, but somewhat knobbed ..... *namdaphaensis*

115. ***Phytoseius (Pennaseius) kapuri*** Gupta (Figs. 506-510)

1969. *Phytoseius (Phytoseius) kapuri*, Gupta, *Israel J. agric. Res.*, **19**(3) : 116-117.

1986. *Phytoseius (Pennaseius) kapuri*, Gupta, *Fauna of India: Phytoseiidae*, p. 221-223.

1987. *Phytoseius (Pennaseius) kapuri*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 79.

1990. *Phytoseius (P.) kapuri*, Arbabi & Singh, *Abst. IV Nat. Symp. Acarology, Calicut*, p. 8.

1990. *Phytoseius (P.) kapuri*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Phytoseius (Pennaseius) kapuri*, Gupta, In : *Contributions to Acarological Researches in India*, p. 443.

1992. *Phytoseius (Pennaseius) kapuri*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 171-172.

1994. *Phytoseius (P.) kapuri*, Singh, *Shashpa*, **1**(2) : 70.

1995. *Phytoseius (Pennaseius) kapuri*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 38.

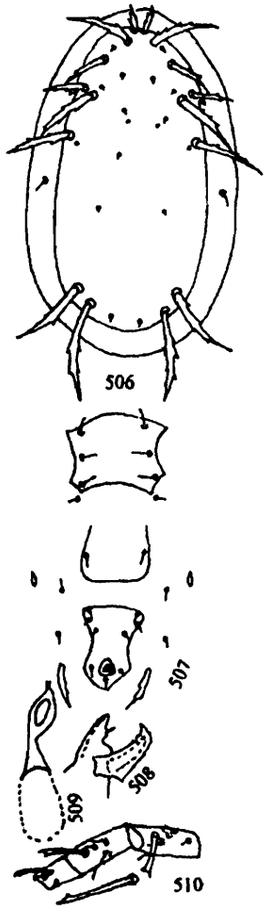
1996. *Phytoseius (Pennaseius) kapuri*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.1

2000. *Phytoseius (Pennaseius) kapuri*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 27.

Female : Dorsal shield 265–280 long, 135–160 wide. Measurements of setae : j_1–26–28, j_4–3–4, j_5–4–5, j_6–4–5, J_2–5–9, J_5–4, j_3–53–63, z_2–11–16, z_3–40–48, z_4–6–9, s_4–88–96, s_6–80–86, Z_5–68–75, z_5–5, Z_4–72–76, r_3–40–45, R_1–12–14. Sternal shield wider (80–85) than long (70–74) with 3 pairs of setae. Genital shield 70–75 wide.

Ventrianal shield 75–92 long, 45–60 wide, with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–24–29, tibia–29–34, basitarsus–24–27. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy as in female.



Figs. 506-510 : *Phytoseius (Pennaseius) kapuri* Gupta (F) : 506-Dorsal shield, 507-Ventral surface, 508-Chelicera, 509-Spermatheca, 510-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was made from West Bengal collected on *Syzygium cumini*. Subsequently, it was recorded on a number of plants as listed under Habitat.

Habitat : *Syzygium cumini, Adantheria pavoniana,* brinjal, wheat, sugarcane, guava, *Datura,* citrus, mango, *Ocimum sanctum, Shorea robusta,* sapota, "Hing", sweet gourd, date palm, "Sirish", *Ficus, Clerodendron,* "Tendu", fig.

Distribution : India (Arunachal Pradesh, Assam, Meghalaya, Tripura, West Bengal, Bihar, Orissa, Tamil Nadu, Pondicherry, Kerala, Gujarat, Rajasthan, Punjab, Uttar Pradesh, Madhya Pradesh, Andaman & Nicobar Isls., Jammu & Kashmir).

Remarks : Some records are available regarding its feeding upon phytophagous mites as Dhooria (1990) on eggs and larvae of *Tetranychus urticae* in Punjab and Arbabi & Singh (1990) on *Eotetranychus hirsti* on fig in Uttar Pradesh.

116. ***Phytoseius (Pennaseius) minunus*** Narayanan, Kaur & Ghai (Figs. 511-514)

1960. *Phytoseius minutus* Narayanan *et al., Proc. Nat. Inst. Sci.,* **26B**(6) : 391-392.

1986. *Phytoseius (Pennaseius) minutus*, Gupta, *Fauna of India : Phytoseiidae,* p. 223-225.

1987. *Phytoseius (Pennaseius) minutus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 82.

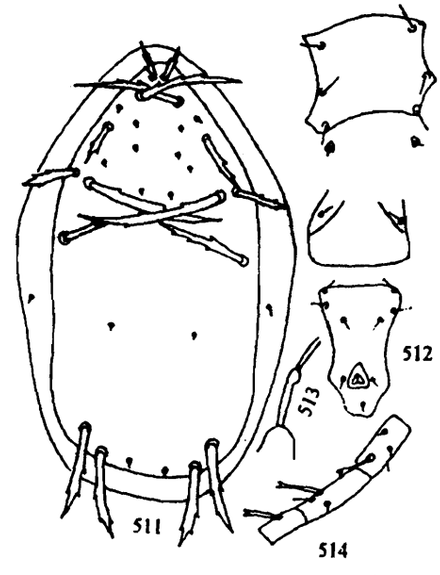
1990. *Phytoseius (P.) minutus*, Arbabi & Singh, *Abst. IV Nat. Symp. Acarology,* p. 8.

1992. *Phytoseius (Pennaseius) minutus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 172.

1994. *Phytoseius (P.) minutus*, Singh, *Shashpa,* **1**(2) : 70.

1995. *Phytoseius (P.) minutus*, Singh, *Adv. Agri. Res. India,* **3** : 189.

1997. *Phytoseius (Pennaseius) minutus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi,* p. 526.



Figs. 511-514 : *Phytoseius (Pennaseius) minutus* Narayanan *et al.* (F) : 511-Dorsal shield, 512-Ventral surface, 513-Spermatheca, 514-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 275–280 long, 135–140 wide. Measurements of setae : j_1–25–30, j_4–j_6–3–5, J_2–8–11, J_5–6, j_3–67–71, z_2–7, z_3–45–52, z_4–6–7, s_4–99–106, s_6–78–86, Z_5–67–79, z_5–7,

Z_4–76–83, r_3–45–49, R_1–18. Sternal shield wider than long with 3 pairs of sternal setae. Genital shield 90 wide. Ventrianal shield 96 long, 63 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera multidentate. Macrosetae on leg IV : genu–30–35, tibia–28–35, basitarsus–27–30.

Male : Ventrianal shield as figured.

Collection Records : This species was described from Delhi on *Hibiscus esculentus*. Subsequently, it has been recorded on other plants as mentioned under Habitat.

Habitat : *Hibiscus esculentus, Solanum melongena, S. tuberosum.*

Distribution : India (Delhi, Punjab, Himachal Pradesh, Uttar Pradesh).

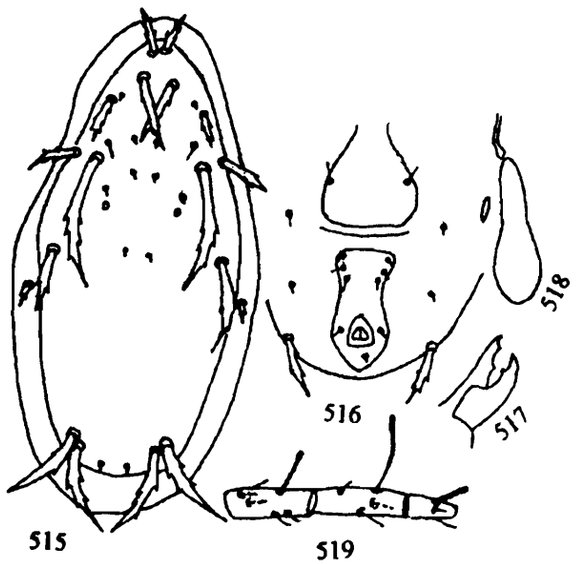
Remarks : It was reported associated with *Tetranychus ludeni* on okra in Uttar Pradesh (Arbabi & Singh, 1990).

117. *Phytoseius (Pennaseius) namdaphaensis* Gupta

(Figs. 515-519)

1986. *Phytoseius (Pennaseius) namdaphaensis* Gupta, *Fauna of India : Phytoseiidae*, p. 225-226.

1987. *Phytoseius (Pennaseius) namdaphaensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 83.



Figs. 515-519 : *Phytoseius (Pennaseius) namdaphaensis* Gupta (F) : 515-Dorsal shield, 516-Post ventral surface, 517-Chelicera, 518-Spermatheca, 519-Genu, tibia, basitarsus of leg IV.

Female : Dorsal shield 302 long, 145 wide. Measurements of setae : j_1–24, j_4, j_6, J_5 very small, j_3–49, z_2–9, z_3–22, z_4–15, s_4–95, s_6–72, Z_5–71, Z_4–80. Sternal shield as long as broad, with 3 pairs of setae. Ventrianal shield 100 long, 56 wide with 3 pairs of preanal setae. Macrosetae on leg IV : genu–24, tibia–56, basitarsus–17, all with broad tip. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : Original description of this species was from Arunachal Pradesh collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Arunachal Pradesh).

Subgenus 2. ***Phytoseius*** Ribaga

1904. *Phytoseius* Ribaga, *Riv. Pat. Veg.*, **10** : 175.

1959. *Dubininellus*, Wainstein, *Ent. Rev.*, **38**(2) : 1361.

1965. *Phytoseius*, Chant, *Can. Ent.*, **92** : 370.

1967. *Phytoseius (Phytoseius)*, Ehara, *J. Fac. Sci. Hokkaido Univ. (6)* **6**(2) : 227.

1968. *Phytoseius*, Muma & Denmark, *Fla. Ent.*, **51** : 236.

1970. *Phytoseius*, Muma & Denmark, *Arthropods of Florida*, **6** : 115.

1986. *Phytoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 227.

1987. *Phytoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 84.

Diagnosis : Dorsal shield rugose with 15 pairs of setae and 1 pair of sublateral setae, R_1 absent. Setae j_1, j_3, z_3, s_4, s_6, Z_5, Z_4 mostly long, thick and serrate. Ventrianal shield longer than wide with 3 pairs of preanal setae. Macrosetae mostly present on genu, tibia and basitarsus of leg IV : genu IV may lack macroseta or macroseta may lack altogether.

Type ***Phytoseius (Dubininellus) corniger*** Wainstein

(by original designation)

Key to the species of subgenus *Phytoseius* known to inhabit plants in India

1. Macroseta absent on leg IV ... *intermedius*
– Macroseta present on leg IV 2

2. s_4 and Z_4 flat and divided 3
– s_4 and Z_4 not flat and divided 5
3. Macroseta on tibia IV double or more than the length of macroseta on basitarsus IV ..... *maldahensis*
– Macroseta on tibia IV less than double of macroseta of basitarsus IV 4
4. Length of ventrianal shield nearly double of its width ..... *crinitus*
– Length of ventrianal shield less than double of its width ..... *neoferox*
5. Genu IV without macroseta 6
– Genu IV with macroseta 12
6. Macroseta on basitarsus IV subequal to that of tibia IV ..... *macrosetosus*
– Macroseta on basitarsus IV smaller than that on tibia IV 7
7. z_2 and z_4 distinctly serrate 8
– z_2 and z_4 smooth 9
8. Sternal shield as long as wide ..... *domesticus*
– Sternal shield wider than long ..... *mixtus*
9. Ventrianal shield 2 times as long as wide ..... *roseus*
– Ventrianal shield less than 2 times as long as wide 10
10. j_3 longer than r_3 ..... *neocorniger*
– j_3 shorter than r_3 11
11. Macroseta on tibia IV 3 times of that of basitarsus IV ..... *nipponicus*
– Macroseta on tibia IV barely 2 times of that on basitarsus IV ..... *jujuba*
12. s_4 longer than s_6 18
– s_4 as long as or shorter than s_6 13
13. j_3 only slightly longer or as long as z_2 ... 14
– j_3 much longer (over 2 times) than z_2 ... 15
14. Spermatheca with bell shaped cervix ..... *brevicrinis*
– Spermatheca with tubular cervix ..... *meyerae*
15. Z_5 longer than Z_4 17
– Z_5 shorter or equal to Z_4 16
16. j_3 and j_1 almost equal ..... *mizoramensis*
– j_3 almost double of j_1 ..... *punjabensis*
17. Macrosetae on genu IV and basitarsus IV equal ..... *indicus*
– Macroseta on genu IV and basitarsus IV unequal ..... *swirskii*
18. z_4 longer than z_2 ..... *wainsteini*
– z_4 almost as long as z_2 19
19. Macroseta on genu IV rarely distinguishable, it is only slightly longer than genual setae ..... *corniger*
– Macroseta on genu IV distinct and spatulate 20
20. Macroseta on genu IV and basitarsus IV almost equal ..... ***bandipurensis***
– Macroseta on genu IV shorter than that on basitarsus IV 21
21. Seta z_3 shorter than j_1 ..... *rachelae*
– Seta z_3 longer or as long as j_1 22
22. Spermatheca with bell shaped cervix ..... *coheni*
– Spermatheca with tubular cervix ..... *macropilis*

118. ***Phytoseius (Phytoseius) bandipurensis*** Gupta

(Figs. 520-523)

1980. *Phytoseius (Dubinenillus) bandipurensis* Gupta, *Bull. Zool. Surv. India*, **3**(1-2) : 53-54.

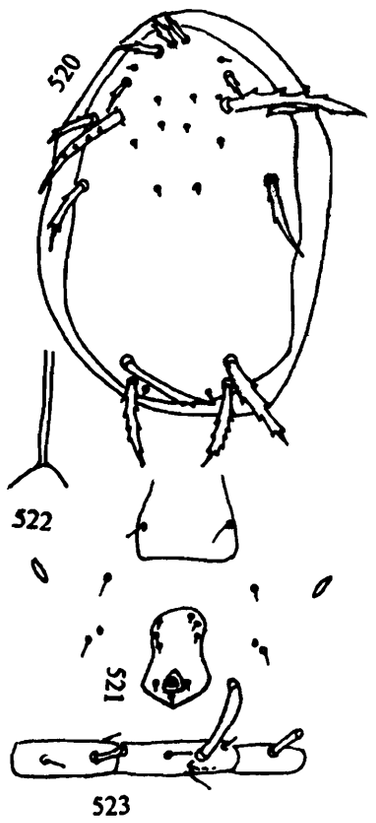
1986. *Phytoseius (Phytoseius) bandipurensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 229-230.

1987. *Phytoseius (Phytoseius) bandipurensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 86.

Female : Dorsal shield highly sclerotized. Measurements of setae : j_1–24, j_4–j_6, J_5, z_5 very small, j_3–28, z_2, z_4–8 each, z_3–28, s_4–100, s_6–56, Z_5–69, Z_4–74, r_3–36. Sternal shield with 3 pairs of setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth,

movable digit with 1 tooth. Macrosetae on leg IV : genu–18, tibia–40, basitarsus–16, distitarsus–20. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 520-523 : *Phytoseius (Phytoseius) bandipurensis* Gupta (F) : 520-Dorsal shield, 521-Post ventral surface, 522-Spermatheca, 523-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based on collection from Karnataka on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Karnataka).

119. *Phytoseius (Phytoseius) brevicrinis* Swirski & Shechter

(Figs. 524-527)

1961. *Phytoseius (Dubininellus) brevicrinis* Swirski & Shechter, *Israel J. agric. Res.*, **11**(2) : 106-108.

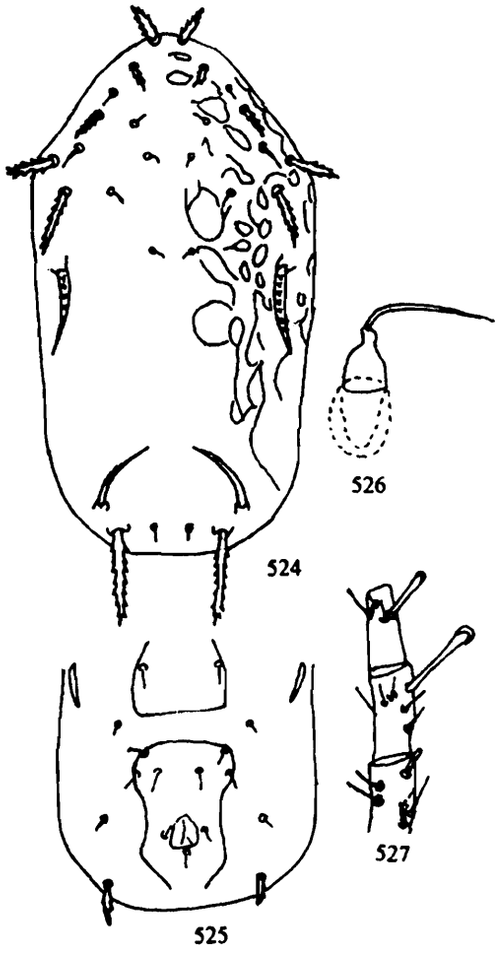
1987. *Phytoseius (Phytoseius) brevicrinis*, Gupta, *Rec. zool. Surv. India, Occ. Pap*, **95** : 86.

1997. *Phytoseius brevicrinis*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 165.

2000. *Phytoseius (Phytoseius) brevicrinis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 27.

Female : Dorsal shield rugose. Measurements of setae : j_1–22, j_4–10, j_5–9, j_6–11, J_5–7, r_3–30, j_3–14, z_2–11, z_3–18, z_4–38, s_6–41, Z_5–44, z_5–8, Z_4–42. Ventrianal shield much longer than wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 subapical and 1 middle tooth, movable digit with 1 tooth. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, Macroseta on leg IV : genu–8, tibia–30, basitarsus–19, distitarsus–19, all with hyaline envelope.

Male : Same as in female.



Figs. 524-527 : *Phytoseius (Phytoseius) brevicrinis* Swirski & Shechter (F) : 524-Dorsal shield, 525-Post ventral surface, 526-Spermatheca, 527-Genu, tibia, basitarsus of leg IV. (after Denmark, 1966)

Collection Records : The original description was made on collection on *Bambusa* sp. in Hong Kong. The Indian record is also from the same plant in Tripura.

Habitat : Bamboo.

Distribution : India (Tripura), Hong Kong. Thailand.

120. *Phytoseius (Phytoseius) coheni* Swirski & Shechter

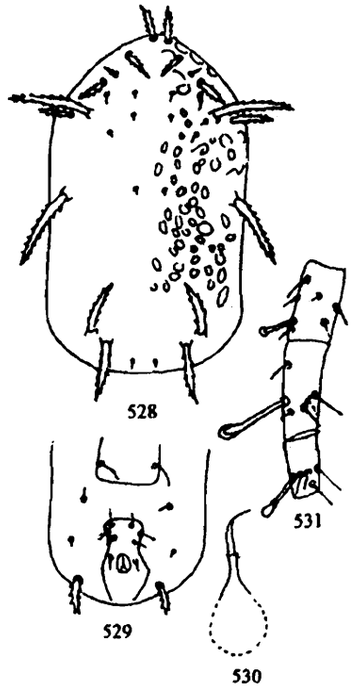
(Figs. 528-531)

1961. *Phytoseius (Dubininellus) macropilis coheni*, *Israel J. agric. Res.*, **11**(3-4) : 104-106.

1970. *Phytoseius (Dubinellus) coheni*, Gupta *et al.*, *Sci. & Cult.*, **37** : 298.

1976. *Phytoseius (Dubininellus) coheni*, Lo. *Bull. sun Yat Sen Cult. Found No.* **5** : 52-54.

1990. *Phytoseius coheni*, Dhooria, *Acar. Newsl.*, **17-18** : 18.



Figs. 528-531 : *Phytoseius (Phytoseius) coheni* Swirski & Shechter (F) : 528-Dorsal shield, 529-Post ventral surface, 530-Spermatheca, 531-Genu, tibia, basitarsus of leg IV. (after Denmark, 1966)

Female : Dorsal shield 295 long, 180 wide, with 15 pairs of setae. Measurements of setae; j_1–29, j_4–7, j_5–6, j_6–9, J_5–8, j_3–28, z_2–14, z_3–29, z_4–15, s_4–90, s_6–82, Z_5–70, Z_4, r_3–41 each. Ventrianal shield longer than wide with 3 pairs of preanal setae. Spermatheca with bell shaped cervix and slightly enlarged atrium.

Male : Chaetotaxy as in female.

Collection Records : The holotype was from Hong Kong collected on Pomelo. The Indian record is from Punjab on guava.

Habitat : India : Guava, elsewhere : Pomelo.

Distribution : India (Punjab), Hong Kong, Taiwan.

121. *Phytoseius (Phytoseius) corniger* Wainstein

(Figs. 532-536)

1959. *Phytoseius (Dubininellus) corniger* Wainstein, *Zool. Zh.*, **38** : 1362-1364.

1966. *Phytoseius (Dubininellus) corniger*, Denmark, *Fla. Dept. Agr. Bull.*, **6** : 85-86.

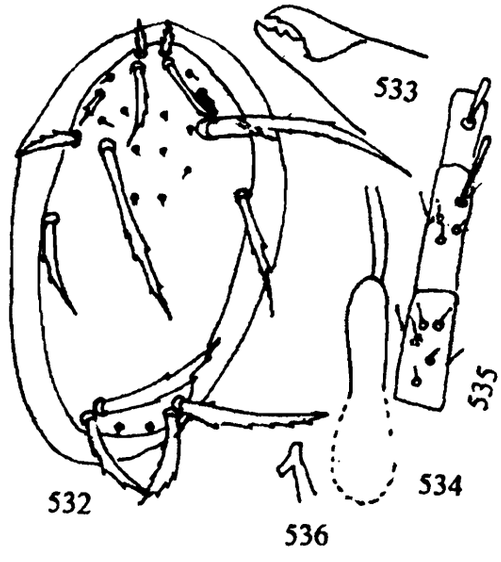
1986. *Phytoseius (Phytoseius) corniger*, Gupta, *Fauna of India, Family Phytoseiidae*, p. 230-232.

1987. *Phytoseius (Phytoseius) corniger*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 87.

1987. *Phytoseius (Phytoseius) corniger*, Daneshvar, *Ento. Phyto. Appliq.*, **54** : 32.

1993. *Phytoseius (Phytoseius) corniger*, Mukherjee & Singh, *J. Insect. Sci.*, **6**(1) : 136.

1995. *Phytoseius (Phytoseius) corniger*, Singh, *Adv. Agr. Res. India*, **3** : 189.



Figs. 532-536 : *Phytoseius (Phytoseius) corniger* Wainstein (F) : 532-Dorsal shield, 533-Chelicera, 534-Spermatheca, 535-Genu, tibia, basitarsus of leg IV, 536-Spermatophoral process (M).

Female : Dorsal shield 260–270 long, 135–140 wide, with 15 pairs of setae. Measurements of setae : j_1–28, j_4, j_6, J_5, z_5–5–6 each, j_3–48–60, z_2–12–14, z_3–29–32, z_4–11–16, s_4–129–141, s_6–72–78, Z_5–64–80, Z_4–84–104, r_3–44–50. Sternal shield 78 long, 58 wide with 3 paris of sternal setae. Genital shield 65–75 wide. Ventraianal shield 78 long, 56 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit with 1 tooth. Spermatheca as figured. Macrosetae on leg IV : genu–16, tibia–58, basitarsus–25–31 long, distitarsus–25–31

Leg chaetotactic formula : genu II 2 $\frac{2}{0}$ $\frac{2}{0}$ 1, tibia II 1 $\frac{1}{1}$ $\frac{2}{1}$ 1, genu III 1 $\frac{2}{0}$ $\frac{2}{0}$ 1, tibia III 1 $\frac{1}{1}$ $\frac{2}{1}$ 1.

Male : Dorsal chaetotaxy as in female.

Collection Records : The types were collected from Tadzikistan, South Kazakhstan and was also collected from Pakistan on fig leaves. The Indian records are from *Pyrus malus* and *Ficus cunea* in Uttar Pradesh.

Habitat : India : Guava, chrysanthemum, fig. *Pyrus malus.*

Distribution : India (Jammu & Kashmir, Uttar Pradesh), Pakistan, Western & Northern Iran, Central Asia, Southern Kazakhstan.

122. ***Phytoseius (Phytoseius) crinitus*** Swirski & Shechter

(Figs. 537-540)

1961. *Phytoseius (Dubininellus) crinitus* Swirski & Shechter, *Israel J. agric. Res.*, **11**(2) : 102-104.

1986. *Phytoseius (Phytoseius) crinitus*, Gupta, *Fauna of India : Phytoseiidae*, p. 232-234.

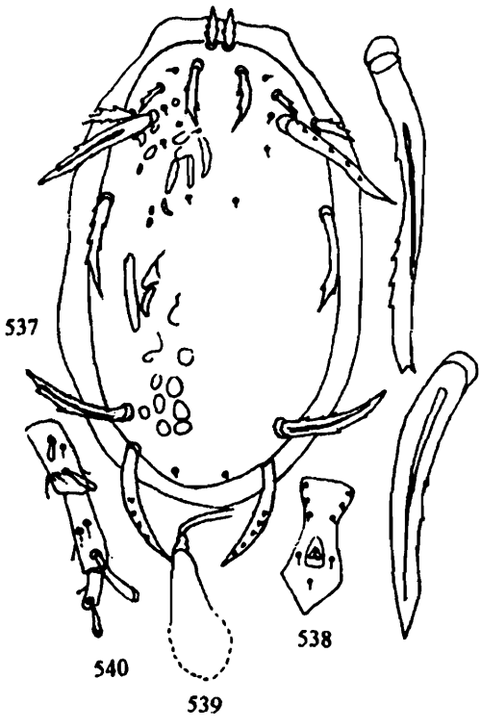
1987. *Phytoseius (Phytoseius) crinitus*, Gupta *Rec. zool. Surv. India, Occ. Pap.*, **95** : 87-88.

1992. *Phytoseius (Phytoseius) crinitus*, Gupta, In : *Fauna of West Bengal, Part 3*, 173.

Female : Dorsal shield 280 long, 170 wide with 15 pairs of setae. Measurements of setae : j_1–33, j_4–j_6, J_5, z_5–4–6 each, j_3–44, z_2–14–18, z_3–23–33, z_4–11–12, s_4–110, s_6–75–85, Z_5–78, Z_4–90, r_3–33–38. Sternal shield wider than long with 3 pairs of setae. Ventrianal shield 90 long, 56 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth and a strong *pilus dentilis*, movable digit with 1 tooth. Macrosetae on leg IV : genu–26, tibia–51, basitarsus–29, distitarsus–29, all spatulate.

Male : Unknown.

Collection Records : Originally, this species was described from Hong Kong collected on *Homalium conchinchinense.* The Indian records are on undet. plant and palm in West Bengal as well as on an undet. plant in Assam.



Figs. 537-540 : *Phytoseius (Phytoseius) crinitus* Swirski & Shechter (F) : 537-Dorsal shield, 538-Ventrianal shield, 539-Spermatheca, 540-Genu, tibia, basitarsus of leg IV.

Habitat : India : Undet. plant, palm; elsewhere : *Homalium conchinchinense.*

Distribution : India (West Bengal, Assam), Hong Kong, Madagascar, Japan, China.

123. ***Phytoseius (Phytoseius) domesticus*** Rather

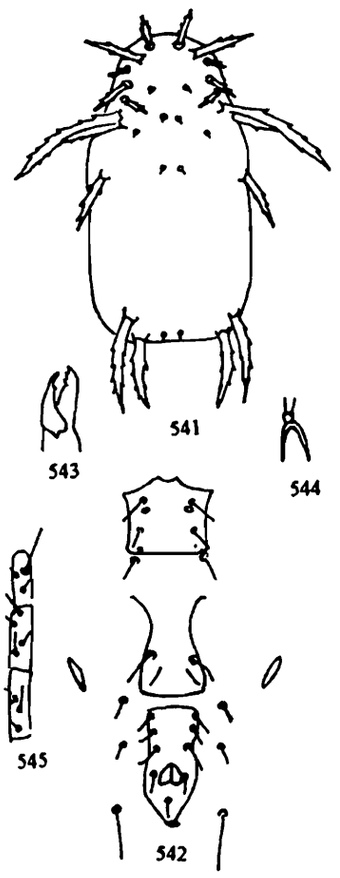
(Figs. 541-545)

1985. *Phytoseius (Phytoseius) domesticus* Rather, *Acarologia*, **26**(1) : 14.

1989. *Phytoseius domesticus*, Rather, In : *Progress in Acarology*, **2** : 188.

Female : Dorsal shield 360 long. Measurements of setae : j_1, j_4, j_6, J_5 about 6–7 long, j_3–89, z_2–17, z_3–36–40, z_4–29, s_4–141–155, s_6–78–82, Z_5–98–105, Z_4–85–90. Sternal shield as long as wide. Ventrianal shield longer than wide, with 3 pairs of preanal setae. Cervix of spermatheca poculiform, 12–14 in diameter. Macrosetae on leg IV : genu–64–70, tibia–29–35, : genu II 2 $\frac{2}{0}$ $\frac{2}{0}$ 1.

Male : ?



Figs. 541-545 : *Phytoseius (Phytoseius) domesticus* Rather (F) : 541-Dorsal shield, 542-Ventral surface, 543-Chelicera, 544-Spermatheca, 545-Genu, tibia, basitarsus of leg IV. (after Rather, 1985)

Collection Records : This species was described from Kashmir collected on *Prunus domesticus* and *Rubus niveus.*

Habitat : *Prunus domesticus, Rubus niveus.*

Distribution : India (Jammu & Kashmir).

124. *Phytoseius (Phytoseius) indicus* Bhattacharyya
(Figs. 546-547)

1969. *Phytoseius (Dubininellus) indicus* Bhattacharyya, *J. Bom. Nat. Hist. Soc.*, **65**(3) : 679-680.

1986. *Phytoseius (Phytoseius) indicus*, Gupta, *Fauna of India : Phytoseiidae*, p. 234.

1987. *Phytoseius (Phytoseius) indicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 92-93.

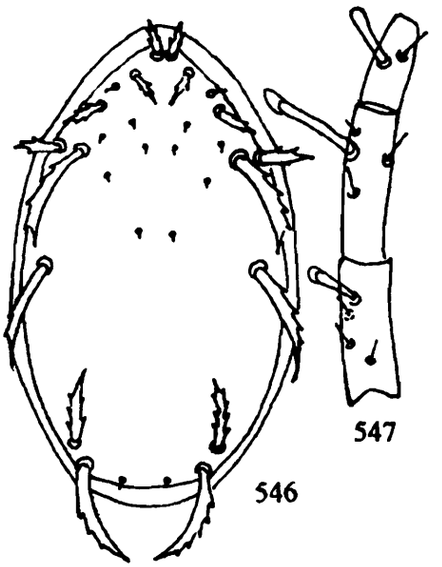
1992. *Phytoseius (Phytoseius) indicus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 173-174.

1992. *Phytoseius indicus*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 180.

2000. *Phytoseius (Phytoseius) indicus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 27.

Female : Dorsal shield 300 long, 145 wide. Measurements of setae : j_1–27, j_4–j_6, J_2, z_5–8–9 each, j_3–27, z_2–10, z_3–29, z_4–10, s_4–72, s_6–72, Z_5–50, Z_4–65, r_3–36. Sternal shield almost as long (63) as broad with 3 pairs of sternal setae. Genital shield 71 wide. Ventrianal shield 90 long, 45 wide with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–18, tibia–40, basitarsus–18, distitarsus–22, the first three being spatulate.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as ilustrated.



Figs. 546-547 : *Phytoseius (Phytoseius) indicus* Bhattacharyya (F) : 546-Dorsal shield, 547-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon collection on *Hibiscus* sp. in West Bengal. The other Indian collections are on *Saraca indica* in West Bengal; *Dolichos lablab, Zizyphus mauritiana* from Tripura.

Habitat : *Hibiscus* sp., *Zizyphus mauritiana, Saraca indica.*

Distribution : India (West Bengal, Tripura, Punjab Himachal Pradesh).

125. *Phytoseius (Phytoseius) intermedius* Evans & Macfarlane
(Figs. 548–552)

1962. *Phytoseius (Dubininellus) intermedius* Evans & Macfarlane, *Ann. Mag. Nat. Hist.*, (13)4 : 587-588.

1986. *Phytoseius (Phytoseius) intermedius*, Gupta, *Fauna of India : Phytoseiidae*, p. 236-238.

1985. *Phytoseius (Phytoseius) intermedius*, Rather, *Acarologia*, **26** : 16.

1987. *Phytoseius (Phytoseius) intermedius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 89.

1990. *Phytoseius (Phytoseius) intermedius*, Sadana *et al.*, *Acar. Newsl.*, **17-18** : 16.

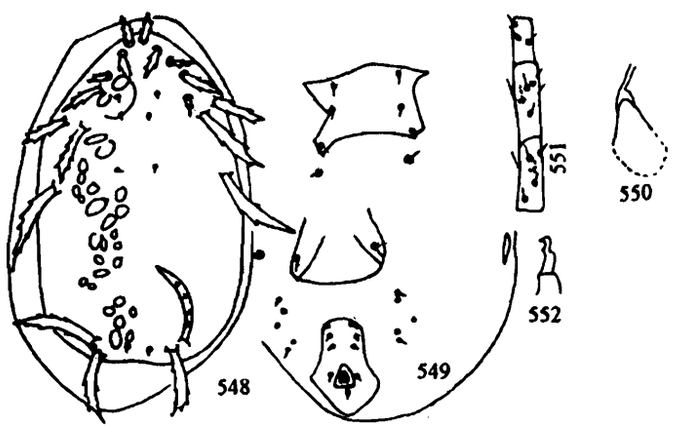
1992. *Phytoseius (Phytoseius) intermedius*, Sharma & Thakur, *Indian J. agric. Sci.*, **62**(3) : 240-243.

1993. *Phytoseius (Phytoseius) intermedius*, Mukherjee & Singh, *J. Insect. Sci.*, **6**(1) : 136.

1995. *Phytoseius (Phytoseius) intermedius*, Singh, *Adv. agric. Res. India*, **3** : 189.

Female : Dorsal shield 275 long, 150 wide with 15 pairs of setae. Measurements of setae : j_1–20–22, j_4–j_6, J_5–5–7 each, j_3–22, z_2–18, z_3–31, z_4–12–13, s_4–54–55, s_6–72–74, Z_5–55, Z_4–76, r_3–30–33. Sternal shield wider than long with 3 pairs of sternal setae. Genital shield 67 wide. Ventrianal shield longer than wide, with 3 pairs of preanal setae. Spermatheca as figured. Leg IV without macrosetae. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.



Figs. 548-552 : *Phytoseius (Phytoseius) intermedius* Evans & Macfarlane (F) : 548-Dorsal shield, 549-Ventral surface, 550-Spermatheca, 551-Genu, tibia, basitarsus of leg IV, 552-Spermatophoral process (M).

Collection Records : The description of this species was from south Rhodesia on *Aloe*. The other collections are from Pakistan on papaya; undet. plant from West Bengal and Andaman Isls.; on litchi in Bihar; on *Zizyphus jujuba* in Uttar Pradesh; *Calotropis procera* in Tripura, fig in Punjab; *Solanum mirialum* and *Datura stramonium* in Jammu & Kashmir.

Habitat : India : Brinjal, *Calotropis procera*, fig, *Solanum mirialum, Datura stramonium*, undet. plant, litchi, *Zizyphus jujuba*, elsewhere : *Aloe*, papaya.

Distribution : India (West Bengal, Tripura, Bihar, Uttar Pradesh, Jammu & Kashmir, Andaman & Nicobar Isls.). Pakistan, Central Africa, South Rhodesia, Belgian Congo, Madagascar, Japan.

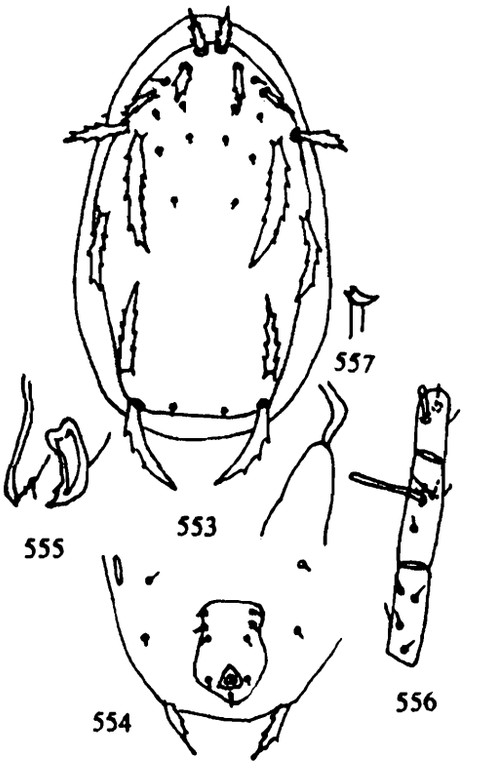
126. ***Phytoseius (Phytoseius) jujuba*** Gupta (Figs. 553–557)

1977. *Phytoseius (Phytoseius) jujuba* Gupta, *Indian J. Acar.*, **1** : 13.

1986. *Phytoseius (Phytoseius) jujuba*, Gupta, *Fauna of India : Phytoseiidae*, p. 238.

1987. *Phytoseius (Phytoseius) jujuba*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 90.

Female : Dorsal shield 270 long, 120–130 wide. Measurements of setae : j_1–25–27, j_4–j_6, z_5, J_5–4–6 each, j_3–35–44, z_2–7–12, z_3–31–34, z_4–6, s_4–95–96, s_6–66–69, Z_5, Z_4–78 each, r_3–40.



Figs. 553-557 : *Phytoseius (Phytoseius) jujuba* Gupta (F) : 553-Dorsal shield, 554-Post ventral surface, 555-Chelicera, 556-Genu, tibia, basitarsus of leg IV, 557-Spermatophoral process (M).

Sternal shield with 3 pairs of sternal setae. Genital shield 72 wide. Ventrianal shield longer (68) than broad (45) with 3 pairs of preanal setae. Spermatheca as figured. Chelicera with 3–4 teeth and a strong *pilis dentilis* on fixed digit, movable digit with 1 tooth. Macrosetae on leg IV : genu–nil, tibia–35–40, basitarsus–20–23. Leg chaetotactic formula : genu II $2\,\frac{2\ 2}{0\ 0}\,1$, tibia II $1\,\frac{1\ 2}{1\ 1}\,1$, genu III $1\,\frac{2\ 2}{0\ 0}\,1$, tibia III $1\,\frac{1\ 2}{1\ 1}\,1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.

Collection Records : This species was described from Gujarat collected on *Zizyphus jujuba*.

Habitat : *Zizyphus jujuba*.

Distribution : India (Gujarat, Rajasthan).

127. ***Phytoseius (Phytoseius) macropilis*** (Banks)

(Figs. 558–562)

1909. *Sejus macropilis* Banks, *Proc. ent. Soc. Wash.*, **11** : 136.

1986. *Phytoseius (Phytoseius) macropilis*, Gupta, *Fauna of India : Phytoseiidae*, p. 240-242.

1987. *Phytoseius (Phytoseius) macropilis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 90.

1992. *Phytoseius (Phytoseius) macropilis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

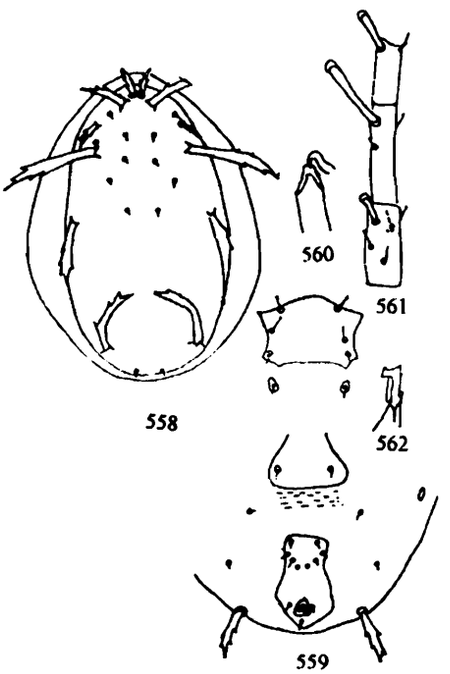
1992. *Phytoseius (Phytoseius) macropilis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 174.

1997. *Phytoseius (Phytoseius) macropilis*, Gupta & Chatterjee, In : *State Fauna Ser. 3, Fauna of Delhi*, p. 526.

In press. *Phytoseius (Phytoseius) macropilis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim*.

Female : Dorsal shield 280–300 long, 160–180 wide with 15 pairs of setae. Measurements of setae : j_1–25–30, j_4–j_6, z_5, J_5–6–12 each, j_3–30–40, z_2–6–10, z_3–25–32, z_4–7–10, s_4–100–120, s_6–76–78, Z_5–70–80, Z_4–70, r_3–45–51. Sternal shield wider (80) than long (76) with 3 pairs of sternal setae. Genital shield 78 wide. Ventrianal shield 85–90 long, 45–50 wide, with 3 pairs of preanal setae. Spermatheca as illustrated. Macrosetae on leg IV : genu–16–22, tibia–50–60, basitarsus–25–32, distitarsus–22, all with spatulate tip. Leg chaetotactic formula : genu II $2\,\frac{2\ 2}{0\ 0}\,1$, tibia II $1\,\frac{2\ 2}{1\ 1}\,1$, genu III $1\,\frac{2\ 2}{0\ 0}\,1$, tibia III $1\,\frac{1\ 2}{1\ 1}\,1$.

Male : Spermatophoral process as illustrated.



Figs. 558-562 : *Phytoseius (Phytoseius) macropilis* (Banks) (F) : 558-Dorsal shield, 559-Ventral surface, 560-Spermatheca, 561-Genu, tibia, basitarsus of leg IV, 562-Spermatophoral process (M).

Collection Records : The description of this species was based on collection from Ontario collected on willow. The Indian records are from Arunachal Pradesh on mango; undet. plant from West Bengal; on fig, Lantana, mulberry in Delhi; bamboo, rose from Sikkim; *Shorea robusta* in Orissa.

Habitat : India : *Shorea robusta*, fig. mulberry, Compositae, *Lantana camara*, mango, undet. plant, bamboo, rose, *Polygonum molle*, wood apple; elsewhere : willow, undet. plant.

Distribution : India (West Bengal, Arunachal Pradesh, Orissa, Delhi, Sikkim), Caribbean Isl., U.S.A., Hawaii, Canada, Mexico, Europe, British West Indies, Australia, Canary Isl., Panama Canal zone, New Burnswick.

128. *Phytoseius (Phytoseius) macrosetosus* Gupta (Figs. 563–567)

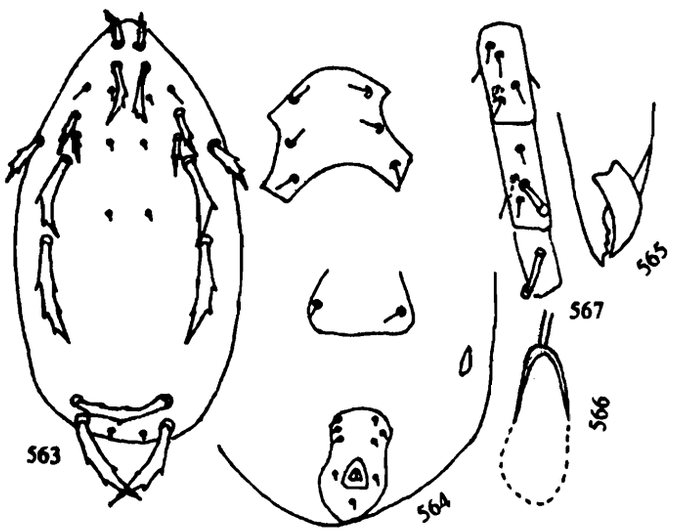
1977. *Phytoseius (Dubininellus) macrosetosus* Gupta, *Indian J. Acar.*, 1 : 16.

1986. *Phytoseius (Phytoseius) macrosetosus*, Gupta, *Fauna of India : Phytoseiidae*, p. 242.

1987. *Phytoseius (Phytoseius) macrosetosus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 91.

Female : Dorsal shield 265 long, 130 wide. Measurements of setae : j_1–20, j_4–j_6, z_5–munute, j_3–36, z_2–16, z_3–32, z_4–24, s_4–62, s_6–64, Z_5–50, Z_4–52, r_3–32. Sternal shield with 3 pairs of setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield 56 long, 40 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 3–4 teeth, those on movable digit not discernible. Macrosetae on leg IV : genu–nil, tibia–18, basitarsus–20.

Male : Unknown.



Figs. 563-567 : *Phytoseius (Phytoseius) macrosetosus* Gupta (F) : 563-Dorsal shield, 564-Ventral surface, 565-Chelicera, 566-Spermatheca, 567-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Madhya Pradesh collected on "Kendu" leaves.

Habitat : Kendu, rose.

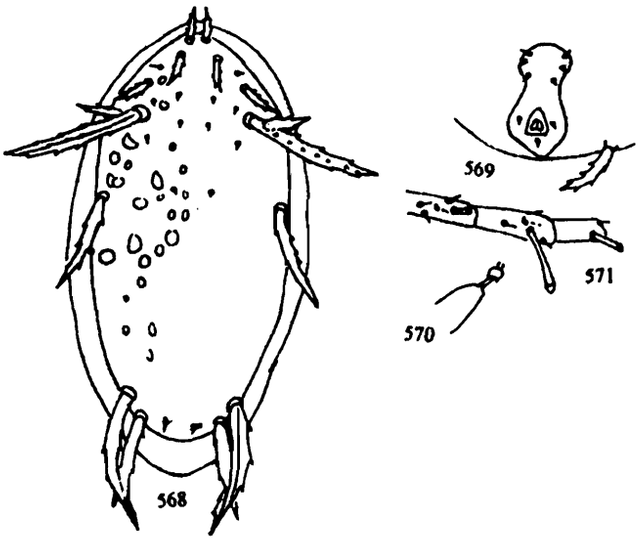
Distribution : India (Madhya Pradesh).

129. *Phytoseius (Phytoseius) maldahensis* Gupta (Figs. 568–571)

1992. *Phytoseius (Phytoseius) maldahensis* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 177.

Female : Dorsal shield 291 long, 170 wide. Measurements of setae : j_1–26, j_4–j_6–4–5 each, j_3–29, z_2–13, z_3–25, z_4–12, s_4–114, s_6–60, Z_5–70, z_5–4, Z_4–85, r_3–40. Sternal shield with 3 pairs of setae. Ventrianal shield 78 long, 45 wide. Macrosetae on leg IV : genu–15, tibia–51, basitarsus–24. Leg chaetotactic formula : genu II $2\,\begin{smallmatrix}2\\0\end{smallmatrix}\,\begin{smallmatrix}2\\0\end{smallmatrix}\,1$, tibia II $1\,\begin{smallmatrix}1\\1\end{smallmatrix}\,\begin{smallmatrix}2\\1\end{smallmatrix}\,1$, genu III $1\,\begin{smallmatrix}2\\0\end{smallmatrix}\,\begin{smallmatrix}2\\1\end{smallmatrix}\,1$, tibia III $1\,\begin{smallmatrix}1\\1\end{smallmatrix}\,\begin{smallmatrix}2\\0\end{smallmatrix}\,1$.

Male : Unknown.



Figs. 568-571 : *Phytoseius (Phytoseius) maldahensis* Gupta (F) : 568-Dorsal shield, 569-Ventrianal shield, 570-Spermatheca, 571-Genu, tibia, basitarsus of leg IV.

Collection Records : The description of this species was based upon material collected on mango in West Bengal.

Habitat : Mango.

Distribution : India (West Bengal).

130. *Phytoseius (Phytoseius) meyerae* Gupta (Figs. 572–575)

1977. *Phytoseius (Dubininellus) meyerae* Gupta, *Indian J. Acar.*, **2** : 7.

1986. *Phytoseius (Phytoseius) meyerae*, Gupta, *Fauna of India : Phytoseiidae*, p. 244.

1987. *Phytoseius (Phytoseius) meyerae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 91-92.

1992. *Phytoseius (Phytoseius) meyerae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 174-175.

1992. *Phytoseius (Phytoseius) meyerae*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1995. *Phytoseius (Phytoseius) meyerae*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya*, p. 38.

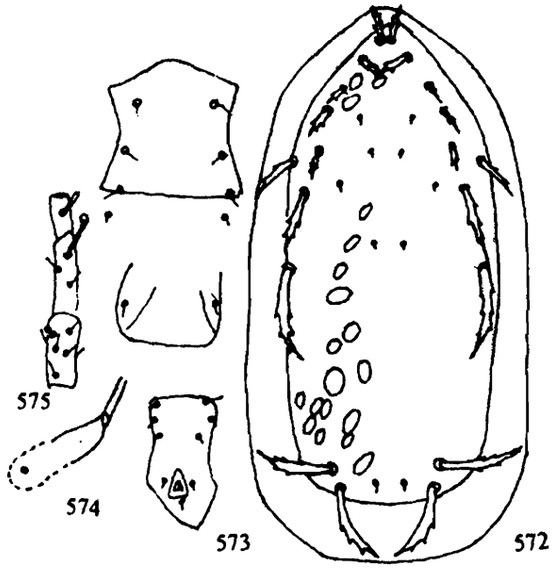
2000. *Phytoseius (Phytoseius) meyerae*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 27.

In press. *Phytoseius (Phytoseius) meyerae*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Phytoseius (Phytoseius) meyerae*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 260–280 long, 160–170 wide, with 15 pairs of setae. Measurements of setae : j_1–20–25, j_4–j_6, J_5–8–12 each, j_3–18–20, z_2–12, z_3–18–20, z_4–18–20, s_4–45, s_6–60, Z_5–40–50, Z_4–44–52, r_3–28–29. Sternal shield almost as long as broad with 3 pairs of sternal setae. Ventrianal shield 78 long, 50 wide with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit with 1 tooth. Spermatheca as figured. Macrosetae on leg IV : genu–7, tibia–31, basitarsus–20–26. Macrosetae on leg IV : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.



Figs. 572-575 : *Phytoseius (Phytoseius) meyerae* Gupta (F) : 572-Dorsal shield, 573-Ventral surface, 574-Spermatheca, 575-Genu, tibia, basitarsus of leg IV.

Collection Records : It was described from Meghalaya collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Meghalaya).

131. *Phytoseius (Phytoseius) mixtus* Chaudhri (Figs. 576–580)

1973. *Phytoseius (Phytoseius) mixtus* Chaudhri, *Pak. J. Zool.*, **5**(1) : 83-85.

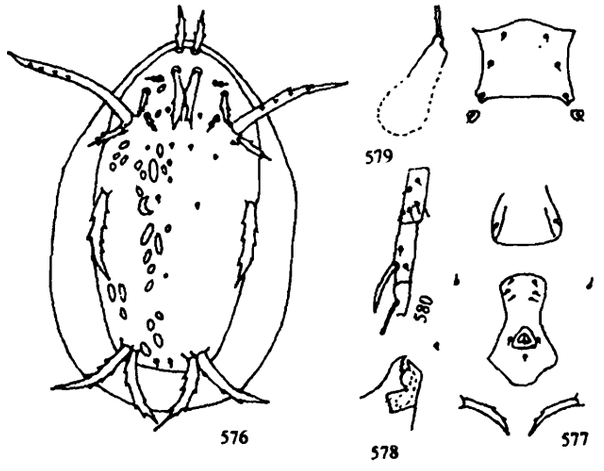
1985. *Phytoseius (Phytoseius) mixtus*, Rather, *Acarologia*, **26**(1) : 15-16.

1986. *Phytoseius (Phytoseius) mixtus*, Gupta, *Fauna of India : Phytoseiidae*, p. 246.

1987. *Phytoseius (Phytoseius) mixtus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 92.

Female : Dorsal shield 280–290 long, 135–145 wide. Measurements of setae : j_1–29–34, j_4–j_6, J_5, z_5–4–5 each, j_3–56–62, z_2–16–18, z_3–36–40, z_4–16–24, s_4–130–150, s_6–80–90, Z_5–75, Z_4–90–115, r_3–44–52. Sternal shield wider (85) than long (67) with 3 pairs of setae. Ventrianal shield 90–100 long, 45–55 wide, with 3 pairs of preanal setae, Chelicera with 2–3 teeth and *pilus dentilis* on fixed digit, 1 tooth on movable digit. Macrosetae on leg IV : genu–nil, tibia–56, basitarsus–29–31, distitarsus–31. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&1\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$.

Male : Unknown.



Figs. 576-580 : *Phytoseius (Phytoseius) mixtus* Chaudhri (F) : 576-Dorsal shield, 577-Ventral surface, 578-Chelicera, 579-Spermatheca, 580-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Pakistan on mulberry. In India, it has been recorded from Kashmir on *Celtis australica*, and several other plants listed under Habitat.

Habitat : India : Grass, *Celtis australica, Lonicera japonica, Ficus* sp., *Rubus niveus,*

Clematis graviolens, Brea arvense, Morus alba, Parrotiopsis jacquemonteana, Trifolium pratense, Desmodium tiliaefolium, Plectranthus rugosus, Rubus ellipticus. elsewhere : mulberry.

Distribution : India (Uttar Pradesh, Jammu & Kashmir), Pakistan.

132. *Phytoseius (Phytoseius) mizoramensis* Gupta & Chatterjee sp. nov. (Figs. 581–584a)

Female : Dorsal shield 380 long, 180 wide. Measurements of setae : j_1–28, j_4–j_6, J_5, z_5–5–8 long, j_3–31, z_2–17, z_3–43, z_4–17, s_4, s_6–107 each, Z_5–71, Z_4–85, r_3–76. Sternal shield 78 long, with 3 pairs of sternal setae. Genital shield truncated posteriorly with a pair of setae. Ventrianal shield 71 long, 47 wide, with 3 pairs of preanal setae; 3 pairs of setae present around ventrianal shield, JV_5–55 long. One pair of metapodal plates present. Macrosetae on leg IV : genu–19, tibia–53, basitarsus–26, distitarsus–30, all with bulging tip. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}1\\1\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}1\\0\end{smallmatrix}\ 1$ Spermatheca as illustrated.

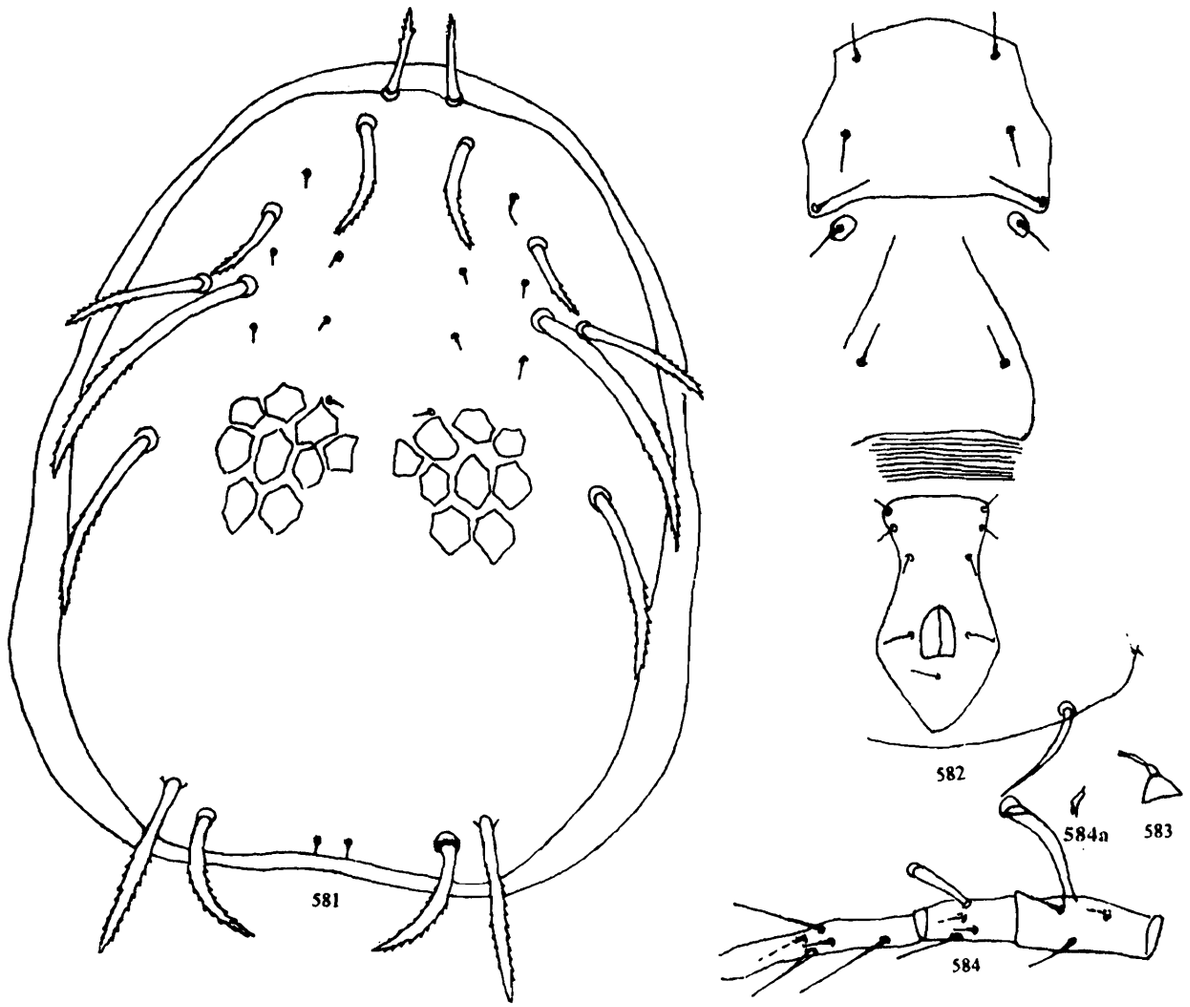
Male : Unknown.

Holotype : Female : India : Mizoram, Lunglei, Longtalai, on an undet. plant, 21.12.1994 (coll. S. K. Gupta).

Habitat : Undet. plant.

Distribution : India (Mizoram).

Remarks : This new species is easily distinguishable from related species like *P. (P.) meyerae* Gupta (1977) having j_3 much longer than z_2 and also differs from *P. (P.) punjabensis* Gupta (Gupta, 1977) in having j_3 almost equal to j_1.



Figs. 581-584a : *Phytoseius (Phytoseius) mizoramensis* Gupta & Chatterjee sp. nov. (F) : 581-Dorsal shield, 582-Ventral surface, 583-Spermatheca, 584-Genu, tibia, basitarsus of leg IV, 584a-Spermatophoral process (M).

133. *Phytoseius (Phytoseius) neocorniger* Gupta

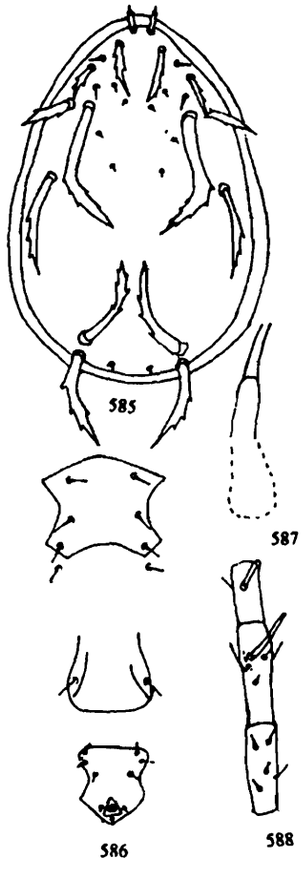
(Figs. 585–588)

1977. *Phytoseius (Dubininellus) neocorniger* Gupta, *Indian J. Acar.*, **1** : 13.

1986. *Phytoseius (Phytoseius) neocorniger*, Gupta, *Fauna of India : Phytoseiidae*, p. 248.

1987. *Phytoseius (Phytoseius) neocorniger*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 93.

Female : Dorsal shield 284 long, 155 wide. Measurements of setae : j_1–28, j_3–50, z_2–12, z_3–33, z_4–12, s_4–110–130, s_6–80, Z_5–65–82, Z_4–70–89, r_3–40. Sternal shield wider than long, with 3 pairs of setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield 60 long, 40 wide, with 3 pairs of preanal setae. Macrosetae on leg IV : genu–nil, tibia–40, basitarsus–26.



Figs. 585-588 : *Phytoseius (Phytoseius) neocorniger* Gupta (F) : 585-Dorsal shield, 586-Ventral surface, 587-Spermatheca, 588-Genu, tibia, basitarsus of leg IV.

Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Unknown.

Collection Records : The description of this species was made from Rajasthan collected on *Lantana* sp.

Habitat : *Lantana* sp.

Distribution : India (Rajasthan).

134. *Phytoseius (Phytoseius) neoferox* Ehara & Bhandhufalck

(Figs. 589–592)

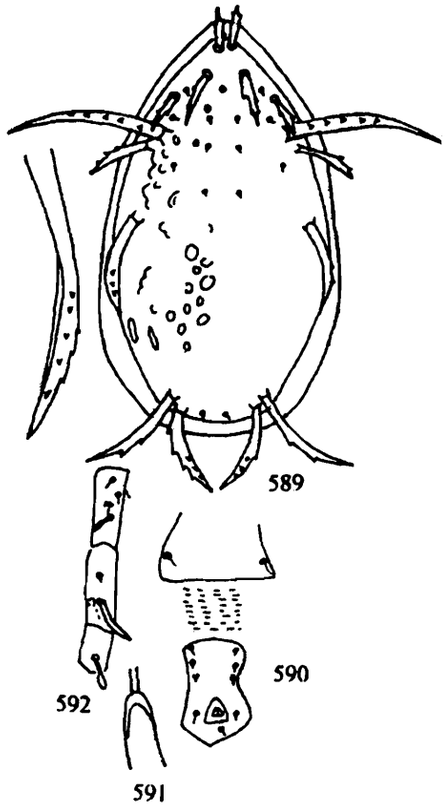
1977. *Phytoseius (Phytoseius) neoferox* Ehara & Bhandhufalck, *J. Fac. Ed. Tottori Univ.*, **27**(2) : 49-50.

1986. *Phytoseius (Phytoseius) neoferox*, Gupta, *Fauna of India : Phytoseiidae*, p. 250.

1987. *Phytoseius (Phytoseius) neoferox*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 93-94.

1997. *Phytoseius neoferox*, Wei-nan, *Economic Insect Fauna of China : Phytoseiidae*, p. 151.

Female : Dorsal shield 291 long, 156 wide. Measurements of setae : j_1–28–31, j_4–j_6, J_2, z_5–5–6 each j_3–38–47, z_2–12, z_3–26, z_4–9–11, s_4–93–112, s_6–82–89, Z_5–63–71, Z_4–74–96, r_3–38–45.



Figs. 589-592 : *Phytoseius (Phytoseius) neoferox* Ehara & Bhandhufalck (F) : 589-Dorsal shield, 590-Genital and ventrianal shields, 591-Spermatheca, 592-Genu, tibia, basitarsus of leg IV.

Sternal shield wider (94) than long (62), with 3 pairs of setae. Genital shield 71 wide. Ventrianal shield longer (78) than broad (50), with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–24, tibia–51, basitarsus–28, distitarsus–22. Leg chaetotactic formula : genu II $2\ \begin{matrix}2\\0\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia II $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$, genu III $1\ \begin{matrix}2\\0\end{matrix}\ \begin{matrix}2\\0\end{matrix}\ 1$, tibia III $1\ \begin{matrix}1\\1\end{matrix}\ \begin{matrix}2\\1\end{matrix}\ 1$.

Male : Unknown.

Collection Records : The type of this species was from Thailand collected on persimon and coffee. The Indian record is from Arunachal Pradesh on guava.

Habitat : India : Guava, elsewhere : Persimon, coffee.

Distribution : India (Arunachal Pradesh), Thailand, China.

135. ***Phytoseius (Phytoseius) nipponicus*** Ehara (Figs. 593–597)

1962. *Phytoseius (Dubininellus) nipponicus* Ehara, *Jap. J. appl. Ento. Zool.*, **6**(1) : 55-88.

1985. *Phytoseius (Phytoseius) nipponicus*, Rather, *Acarologia*, **26**(1) : 13-16.

1987. *Phytoseius (Phytoseius) nipponicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 98.

1997. *Phytoseius (Phytoseius) nipponicus*, Wei-nan, *Economic Insect Fauna of China*, p. 151.

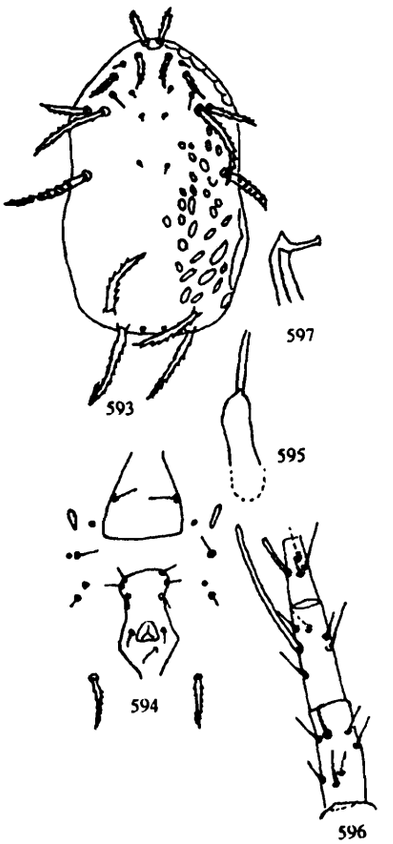
Female : Dorsal shield faintly reticulate. Measurements of setae : j_1–36, j_4, j_6–8 each, J_5–13, j_3–35, z_2–13, z_3–31, z_4–19, s_4–84, s_6–82, Z_5–79, Z_4–73, r_3–50. Sternal shield wider than long, with 3 pairs of sternal setae. Ventrianal shield longer than wide, with 3 pairs of preanal setae. Macrosetae on leg IV : tibia–61, basitarsus–18. Spermatheca with broadly elongated cervix and knobbed atrium.

Male : Ehara (1962) described it.

Collection Records : The description of this species was from Japan collected on *Chrysanthemum*. The Indian record is from Kashmir on *Clematis orientale*.

Habitat : India : *Clematis orientale*, elsewhere : chrysanthemum.

Distribution : India (Jammu & Kashmir), Japan.



Figs. 593-597 : *Phytoseius (Phytoseius) nipponicus* Ehara (F) : 593-Dorsal shield, 594-Post ventral surface, 595-Spermatheca, 596-Genu, tibia, basitarsus of leg IV, 597-Spermatophoral process (M). (after Denmark, 1966)

136. ***Phytoseius (Phytoseius) punjabensis*** Gupta (Figs. 598–601)

1977. *Phytoseius (Dubininellus) punjabensis* Gupta, *Indian J. Acar.*, **1** : 16.

1986. *Phytoseius (Phytoseius) punjabensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 252-253.

1987. *Phytoseius (Phytoseius) punjabensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 94.

1990. *Phytoseius punjabensis*, Mallikarjunappa *et al.*, *Curr. Res.*, **19**(3) : 43-47.

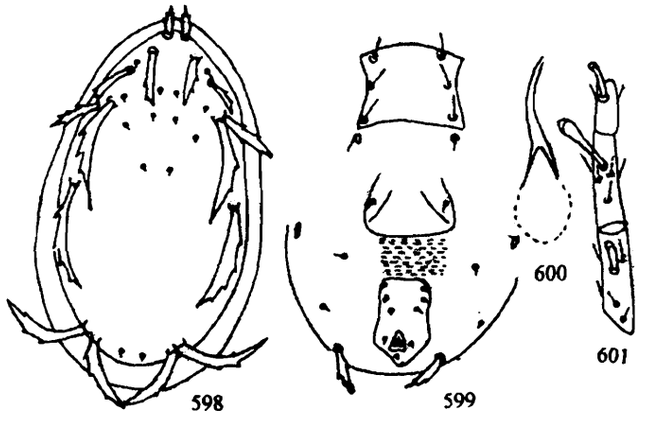
1990. *Phytoseius punjabensis*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1996. *Phytoseius (Phytoseius) punjabensis*, Chatterjee & Gupta, *Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

Female : Dorsal shield 275 long, 140 wide. Measurements of setae : j_1–24, j_4–j_6, J_5, z_5–6–8 long, j_3–48, z_3–32, z_4–10, s_4–97, s_6–97, Z_5–64, Z_4–72, r_3–44. Sternal shield as long as broad with 3 pairs

of sternal setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield 76 long, 48 wide, with 3 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 3 teeth, movable digit with 1 tooth. Macrosetae on leg IV : genu–16, tibia–36, basitarsus–24. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.



Figs. 598-601 : *Phytoseius (Phytoseius) punjabensis* Gupta (F) : 598-Dorsal shield, 599-Ventral surface, 600-Spermatheca, 601-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described from Punjab collected on fig.

Habitat : Fig.

Distribution : India (Punjab).

137. ***Phytoseius (Phytoseius) rachelae*** Swirski & Shechter

(Figs. 602-605)

1961. *Phytoseius (Dubininellus) rachelae* Swirski & Shechter, *Israel J. agric. Res.*, **11** : 108-109.

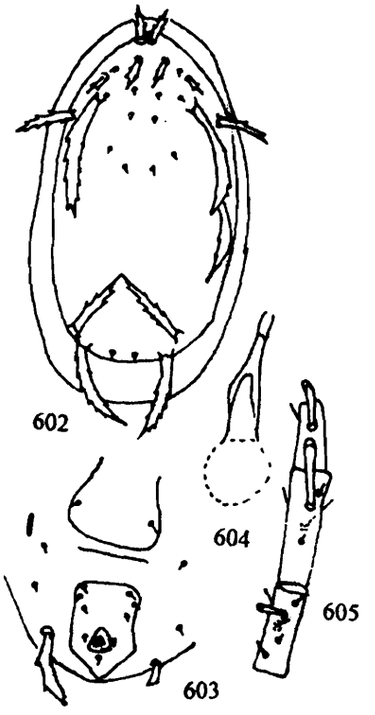
1986. *Phytoseius (Phytoseius) rachelae*, Gupta, *Fauna of India Phytoseiidae*, p. 253-255.

1987. *Phytoseius (Phytoseius) rachelae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 94.

1992. *Phytoseius (Phytoseius) rachelae*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 175.

Female : Dorsal shield 370–380 long, 130–140 wide. Measurements of setae : j_1–25–28, j_4–j_6, z_5,–J_5–5 each, j_3–25–28, z_2–8–9, z_3–15–20, z_4–8–10, s_4–90–100, s_6–60–70, Z_5–76, Z_4–70–76, r_3–36–40. Sternal shield with 3 pairs of sternal setae. Genital shield wider than greatest width of ventrianal shield. Ventrianal shield 64 long, 44 wide, with 3 pairs of preanal setae. Fixed digit of chelicera with 2 teeth, movable digit with 1 tooth. Spermatheca as figured. Macrosetae on leg VI : genu–20, tibia–60, basitarsus–25–35, all with spatulate tip.

Male : Unknown.



Figs. 602-605 : *Phytoseius (Phytoseius) rachelae* Swirski & Shechter (F) : 602-Dorsal shield, 603-Post ventral surface, 604-Spermatheca, 605-Genu, tibia, basitarsus of leg IV.

Collection Records : The holotype was from Hong Kong collected on *Rhus chinensis* as well as from *Glochidion eriocarpum*. The Indian record is from West Bengal on an undet. plant and on *Hibiscus* from Kerala.

Habitat : India : *Hibiscus*, undet. plant, elsewhere *Rhus chinensis, Glochidion eriocarpum*.

Distribution : India (West Bengal, Kerala), Hong Kong.

138. ***Phytoseius (Phytoseius) roseus*** Gupta

(Figs. 606-611)

1869. *Phytoseius (Dubininellus) roseus* Gupta, *Israel J. agric. Res.*, **19** : 119-120.

1986. *Phytoseius (Phytoseius) roseus*, Gupta, *Fauna of India : Phytoseiidae*, p. 255-257.

1987. *Phytoseius (Phytoseiis) roseus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 96.

1990. *Phytoseius (P.) roseus*, Sadana *et al.*, *Acar. Newsl.*, **17-18** : 16.

1990. *Phytoseius (P.) roseus*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Phytoseius (Phytoseius) roseus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 175.

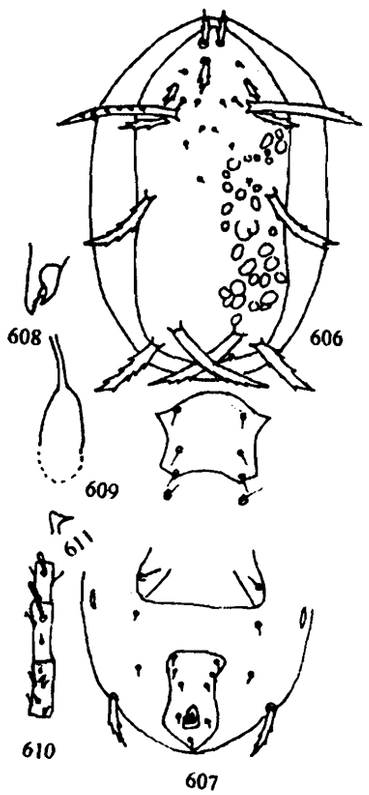
1995. *Phytoseius (P.) roseus*, Singh, *Adv. agric. Res. India*, **3** ; 189.

1995. *Phytoseius (P.) roseus*, Mathur *et al. Abst. V Nat. Symp Acar.*, p. 14.

1996. *Phytoseius (Phytoseius) roseus*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

2000. *Phytoseius (Phytoseius) roseus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura*, Part 2, p. 28.

Female : Dorsal shield 280–285 long, 130–145 wide. Measurements of setae : j_1–25–27, j_4–j_6, z_5, J_5–4–6 each, j_3–31–40, z_2–8–11, z_3–29–33, z_4–8–9, s_4–99–101, s_6–64–70, Z_5–65–75, Z_4–72–81, r_3–40–45. Sternal shield slightly wider than long, with 3 pairs of sternal setae. Genital shield much wider (74) than greatest width of ventrianal shield. Ventrianal shield 70–80 long, 40–50 wide, with 3 pairs of preanal setae. Chelicera with 3–4 teeth on fixed digit and *pilus dentilis*, movable digit with 1 tooth. Macrosetae on leg IV : genu–nil, tibia–35–40, basitarsus–20–22, all with broadened tip. Spermatheca as figured. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1.



Figs. 606-611 : *Phytoseius (Phytoseius) roseus* Gupta (F) : 606-Dorsal shield, 607-Ventral surface, 608-Chelicera, 609-Spermatheca, 610-Genu, tibia, basitarsus of leg IV.

Male : Spermatophoral process as figured. (Gupta, 1986)

Collection Records : This species was described from West Bengal collected on rose. The other collections are from *Pyrus malus* in Uttar Pradesh; *Ficus carica, Zizyphus* sp., *Dolichos* sp., an undet. plant in West Bengal; Guava in Tripura; palm, *Zizyphus jujuba, Calotropis* in Punjab.

Habitat : Rose, papaya, marigold, *Zizyphus* sp., fig. guava, beans, *Dolichos* sp., undet. plant, *Calotropis* sp.; elsewhere : *Canabis sativa.*

Distribution : India (West Bengal, Tripura, Punjab, Uttar Pradesh, Jammu & Kashmir, Gujarat, Tamil Nadu), Pakistan.

Remarks : Dhooria (1990) reported this species associated with *Eutetranychus orientalis* on *Zizyphus jujuba* and *Eotetranychus* sp. on *Calotropis.*

139. ***Phytoseius (Phytoseius) rugosus*** Denmark (Figs. 612-614)

1966. *Phytoseius (Dubininellus) rugosus* Denmark, *Fla. Dept. Agr. Bull.*, **6** : 100.

1986. *Phytoseius (Phytoseius) rugosus*, Gupta, *Fauna of India : Phytoseiidae*, p. 257-258.

1987. *Phytoseius (Phytoseius) rugosus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* **95** : 96.

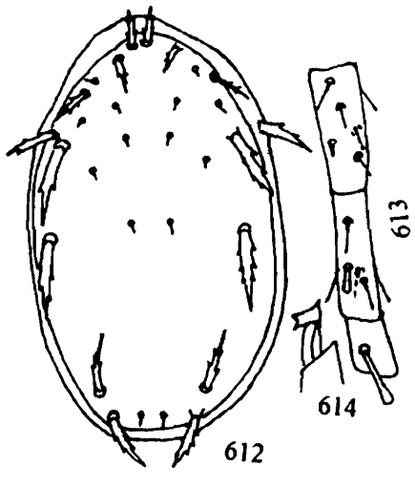
1992. *Phytoseius rugosus*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 183.

1995. *Phytoseius (P.) rugosus*, Jagadish *et al.*, *Abst. V Nat. Symp. Acarology, Bangalore*, p. 17.

Female : Unknown.

Male : Dorsal shield 200 long, 155 wide. Measurements of setae : j_1–19, j_4–j_6, z_5, J_5–5–6 each, j_3–20–25, z_2–9–11, z_3–24–27, z_4–11–12, s_4–50–60, s_6–50–60, Z_5–30–35, Z_4–35–41, r_3–26–32. Sternitigenital shield normal with 5 pairs of setae.

Ventrianal shield with 3 pairs of preanal setae. Spermatophoral process as figured. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$. Macrosetae on leg IV : genu–6, tibia–7, basitarsus–20.



Figs. 612-614 : *Phytoseius (Phytoseius) rugosus* Denmark (M) : 612-Dorsal shield, 613-Genu, tibia, basitarsus of leg IV, 614-Spermatophoral process.

Collection Records : Original description of this species was from Pakistan collected on an undet. plant. The Indian records are from *Terminalia arjuna* in Orissa and mango in Karnataka.

Habitat : India : *Terminalia arjuna,* mango. Elsewhere : undet. plant, *Zizyphus* sp.

Distribution : India (Orissa, Karnataka), Pakistan.

140. ***Phytoseius (Phytoseius) swirskii*** Gupta (Figs. 615-617)

1980. *Phytoseius (Dubininellus) swirskii* Gupta, *Ent. mon. Mag.,* **115** : 210-212.

1986. *Phytoseius (Phytoseius) swirskii,* Gupta, *Fauna of India : Phytoseiidae,* p. 259-260.

1987. *Phytoseius (Phytoseius) swirskii,* Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 97.

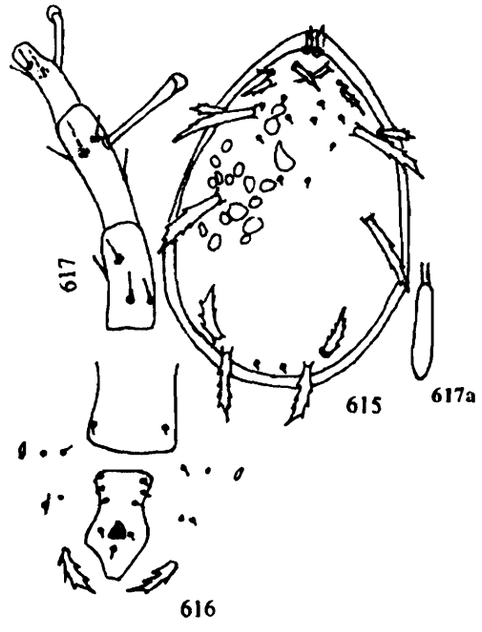
1990. *Physeseius swirskii,* Mallikarjunappa *et al., Curr. Res.,* **19**(3) : 45-47.

1992. *Phytoseius (Phytoseius) swirskii,* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 175.

1996. *Phytoseius (Phytoseius) swirskii,* Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc., (NS),* **15** : 26.

Female : Dorsal shield 280 long, 180 wide. Measurements of setae : j_1–20, j_4–j_6, J_5–7 each, j_3–26, z_2–12, z_3–26, z_4–12, s_4–70, s_6–70, Z_5–50, Z_4–60, r_3–32. Sternal shield with 3 pairs of setae. Genital shield wider than maximum width of ventrianal shield. Ventrianal shield longer (82) than broad (45) with 3 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–17, tibia–36, basitarsus–21, distitarsus–21, all being spatulate. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Unknown.



Figs. 615-617 : *Phytoseius (Phytoseius) swirskii* Gupta (F) : 615-Dorsal shield, 616-Post ventral surface, 617-Genu, tibia, basitarsus of leg IV, 617a-Spermatheca.

Collection Records : The original description of this species was from West Bengal, collected from fig. It was also recorded on guava in Karnataka.

Habitat : Fig. guava.

Distribution : India (West Bengal, Karnataka).

141. ***Phytoseius (Phytoseius) wainsteini*** Gupta (Figs. 618-622)

1981. *Phytoseius (Dubininellus) wainsteini* Gupta, *Indian J. Acar.,* **5**(1-2) : 43-44.

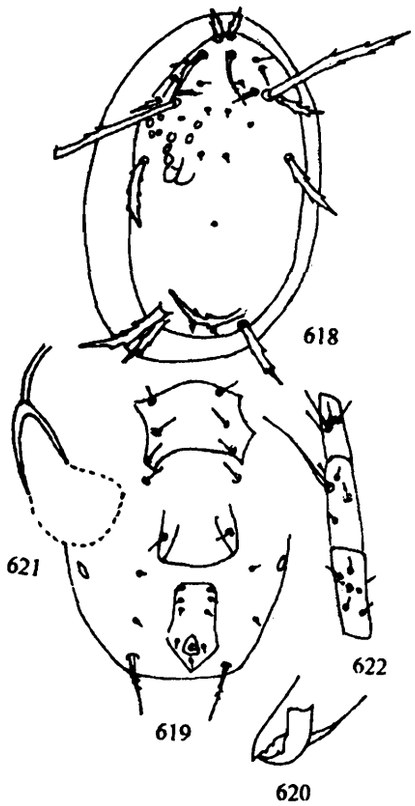
1986. *Phytoseius (Phytoseius) wainsteini,* Gupta, *Fauna of India : Phytoseiidae,* p. 260-261.

1987. *Phytoseius (Phytoseius) wainsteini*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 97.

1999. *Phytoseius (Phytoseius) wainsteini*, Gupta & Chatterjee, *Sci. & Cult.*, **65**(5-6) : 162.

Female : Dorsal shield 270 long, 150 wide. Measurements of setae : j_1–30, j_4–j_6, J_5, z_5–minute, j_3–56, z_2–16, z_3–32, z_4–28, s_4–124, s_6–65, Z_5–68, Z_4–80, r_3–36. Sternal shield with 3 pairs of setae. Genital shield wider (64) than greatest width of ventrianal shield. Ventrianal shield longer (80) than wide (40) with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit with 1 tooth. Spermatheca as figured. Macrosetae on leg IV : genu–nil, tibia–67, basitarsus–32, leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia III $1\,\frac{2}{1}\,\frac{1}{1}\,1$.

Male : Unknown.



Figs. 618-622 : *Phytoseius (Phytoseius) wainsteini* Gupta (F) : 618-Dorsal shield, 619-Ventral surface, 620-Chelicera, 621-Spermatheca, 622-Genu, tibia, basitarsus of leg IV.

Collection Records : It was described from Kashmir collected on an undet. plant and later was also recorded on guava in Lakshadwip Isls.

Habitat : Undet. plant, guava.

Distribution : India (Jammu & Kashmir, Lakshadwip Isls.).

Genus 17. *Typhlodromus* Scheuten

1967. *Typhlodromus* Scheuten, *Arch. Naturges.*, **23** : 111.

1982. *Typhlodromus*, Karg, *Zool. Jb. Syst. Bd.*, **109** : 206.

1986. *Typhlodromus*, Gupta, *Fauna of India : Phytoseiidae*, p. 262.

1987. *Typhlodromus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 100.

1988. *Typhlodromus*, Gupta, *Progress in Acarology*, **1** : 404.

1989. *Typhlodromus*, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 163-178.

1992. *Typhlodromus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 177.

1992. *Typhlodromus*, Denmark, *Fla. St. Coll. of Arthropods*, **7**(0) : 1-43.

1992. *Typhlodormus*, Ryu & Won Koo Lee, *Korean J. Entomol.*, **22** : 23-42.

1993. *Typhlodromus*, Schicha & O'Dowd, *J. Aust. Ent. Soc.*, **32** : 297-305.

1995. *Typhlodromus*, Yoshida-Shaul & Chant, *Acarologia*, **36** : 3-19.

1997. *Typhlodromus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 526.

Diagnosis : Dorsal shield entire, 16–20 pairs of setae, of those, 5–6 pairs on prolateral series, dorsocentral setae 5–6 pairs, lateral setae 8–12 pairs. Female with sternal and genital shields and either ventrianal or separate ventral and anal shields; metapodal plates 2 paired. Spermatheca well developed. Genu II, III and IV 7 setae each; tibia II and III 6–7 setae each.

Type ***Typhlodromus pyri*** Scheuten (1857)
(by subsequent designation, Oudemans, 1929)

Key to the subgenera of *Typhlodromus*

1. Dorsal shield with 11 pairs of setae .... *Typhloctonus*
– Dorsal shield with less than 11 pairs of setae 2
2. Dorsal shield with 10 pairs of setae 3
– Dorsal shield with less than 9 pairs of setae ..... *Brethria*

3. 3 pairs of median setae ..... *Paraseiulus*
– 2 pairs of median setae 4
4. Ventrianal shield with 3 pairs of preanal setae ..... *Anthoseius*
– Ventrianal shield with 4 pairs of preanal setae 5
5. Most of the lateral setae plumose ..... *Clavidromus*
– Most of the lateral setae not plumose, only a few may be serrate 6
6. Z_5 and Z_4 normally serrate, the former may be knobbed ..... *Amblydromella*
– Z_5 and Z_4 never serrate, Z_5 always smooth 7
7. Leg IV with macrosetae on genu, tibia and basitarsus of leg IV ..... *Orientiseius*
– Leg IV with macroseta on basitarsus IV only ..... *Typhlodromus* s. str.

Subgenus 1. ***Amblydromella*** Muma

1961. *Amblydromella* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 294.
1979. *Amblydromella*, Chaudhri *et al.*, *Univ. Agr. Faisalabad*, p. 25.
1986. *Amblydromella*, Gupta, *Fauna of India : Phytoseiidae*, p. 264.
1987. *Amblydromella*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 101.
1987. *Amblydromella*, Daneshvar, *Ent. Phyt. Applique*, **54** : 23.
1992. *Amblydromella*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 178.
1997. *Amblydromella*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 526.

Diagnosis : Dorsal shield well sclerotized, may be reticulate, with 18 pairs of setae, 10 pairs of laterals, 2 pairs of median and 6 pairs on dorsocentrals.; Z_5, Z_4 often thick and serrate; the former may be knobbed. Sternal setae 2 pairs, ventrianal shield with 4 paris of preanal setae. Macrosetae present on genu, tibia and basitarsus of leg IV, which may be simple or knobbed.

Type ***Typhlodromus fleschneri*** Chant, 1960 (by designation) Muma, 1961

Key to the species of Subgenus *Amblydromella* known to inhabit plants in India

1. Macrosetae on leg IV absent ..... *bakeri*
– Macrosetae present on leg IV : 2
2. Z_5 knobbed and serrate 3
– Z_5 not knobbed, may be serrate 11
3. Macroseta present only on basitarsus IV 4
– Macroseta present on other leg segments besides basitarsus IV 6
4. Z_4 almost touches base of Z_5 ..... *fleschneri*
– Z_4 much shorter than the distance between its base and that of Z_5 5
5. Ventrianal shield 1½ times as long as wide ..... *himalayensis*
– Ventrianal shield less than 1½ times as long as wide ..... *homalii*
6. Macrosetae present on genu, tibia and basitarsus of leg IV 7
– Macroseta present on genu and basitarsus of leg IV, absent on tibia IV ..... *mori*
7. Ventrianal shield almost as long as or only slightly longer than wide 10
– Ventrianal shield distinctly (over 1½ times) longer than wide 8
8. Posterior margin of sternal shield pushed inwards giving appearance of deep cleft ..... *persicus*
– Such cleft on sternal shield absent 9
9. z_2 reaches upto base of z_3 ..... *umbratus*
– z_2 shorter than distance btween its base and that of z_3 ..... *sonoprayagensis*
10. Spermatheca corniform .... *darjeelingensis*
– Spermatheca saculiform ..... *bambusicolus*
11. Setae comparatively longer, Z_4 almost touches base of Z_5 12
– Setae comparatively shorter, Z_4 never reaches upto base of Z_5 14

12. Macroseta present on genu, tibia and basitarsus of leg IV, all knobbed .... *nilgiriensis*
- Macroseta present only on basitarsus IV, simple 13

13. Cervix of spermatheca funnel shaped .... *gopali*
- Cervix of spermatheca saccular .... *divergentis*

14. Macroseta simple 15
- Macroseta knobbed 19

15. z_2 reaches upto base of z_3 16
- z_2 much shorther than the distance between its base and that of z_3 18

16. Sternal shield with 2 pairs of setae 17
- Sternal shield with 3 pairs of setae .... *rhododendroni*

17. Z_5 serrate ..... *denmarki*
- Z_5 simple ..... *dalii*

18. Setae j_3, z_2, s_4 small, length vary between 10–15 microns, macrosetae blunt .... *arunachalensis*
- Setate j_3, z_2–z_4, s_4 long, length vary between 15–25 microns, macrosetae pointed .... *rhenanus*

19. Spermatheca with elongate cervix, movable digit without teeth .... *chrysanthemi*
- Spermatheca with saccular cervix, movable digit with 2 teeth ..... *kodaikanalensis*

142. *Typhlodromus (Amblydromella) arunachalensis* Gupta

(Figs. 623-628)

1986. *Typhlodromus (Amblydromella) arunachalensis* Gupta, *Fauna of India : Phytoseiidae*, p. 265-267.

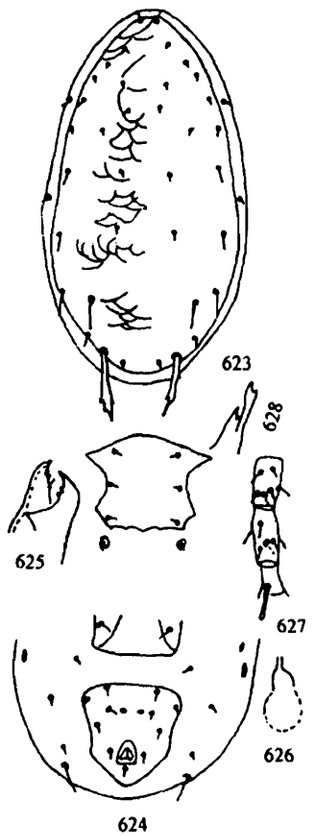
1987. *Typhlodromus (Amblydromella) arunachalensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 115.

1992. *Typhlodromus (Amblydromella) arunachalensis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1992. *Typhlodromus (Amblydromella) arunachalensis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 178.

1999. *Typhlodromus (Amblydromella) arunachalensis*, Gupta & Chatterjee, *Sci. & Cult.*, **65** : 162.

Female : Dorsal shield reticulate, 300 long, 145 wide. Measurements of setae : j_1–14, j_4–9, j_5–11, j_6–14, J_2–15, J_5–4, j_3–13, z_2–10, z_3–11, z_4–13, s_4–15, s_6–22, S_2–22, S_4–24, S_5–12, Z_5–47, (weakly serrate, blunt), z_5–12, Z_4–34, r_3, R_1–13 each. Sternal shield almost as long (74) as broad with 3 pairs of sternal setae. Genital shield 56 wide.



Figs. 623-628 : *Typhlodromus (Amblydromella) arunachalensis* Gupta (F) : 623-Dorsal shield, 624-Ventral surface, 625-Chelicera, 626-Spermatheca, 627-Genu, tibia, basitarsus of leg IV, 628-Spermatophoral process (M).

Ventrianal shield, 78 long, as much wide, with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to strong *pilus dentilis*, movable digit with 2 teeth. Spermatheca as figured. Macroseta present only on basitarsus IV : 35 (blunt). Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Ventrianal shield and spermatophoral process as figured (Gupta, 1986).

Collection Records : This species was described from Arunachal Pradesh collected on an undet. plant and later was reported from Lakshadwip Isl. on brinjal.

Habitat : Undet. plant, brinjal.

Distribution : India (Arunachal Pradesh, Lakshadwip Isls.).

143. *Typhlodromus (Amblydromella) bambusicolus* Gupta

(Figs. 629-632)

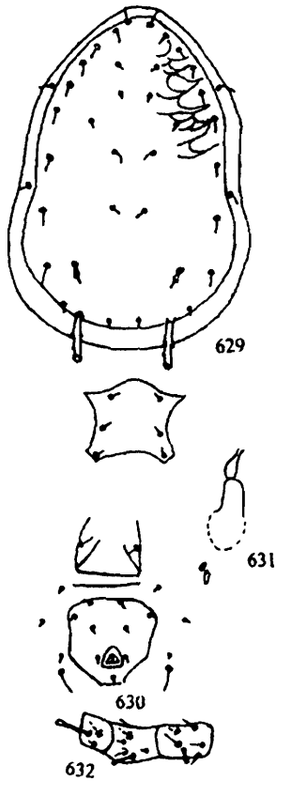
1977. *Typhlodromus bambusicolus* Gupta, *Indian J. Acar.*, **2** : 2-4.

1986. *Typhlodromus (Amblydromella) bambusicolus*, Gupta, *Fauna of India : Phytoseiidae*, p. 267-268.

1987. *Typhlodromus (Amblydromella) bambusicolus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 103.

2000. *Typhlodromus (Amblydromella) bambusicolus*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 28.

Female : Dorsal shield 290 long, 160 wide. Measurements of setae : j_1–12, j_4–10, j_5–11, j_6–16, J_2–20, J_5–8, j_3–15, z_2–12, z_3–12, z_4–16, s_4–16, s_6–20, S_2–20, S_4–22, S_5–12, Z_5–44, z_5–14, Z_4–24, r_3, R_1–16 each. Sternal shield 68 long, 56 wide with 3 pairs of sternal setae. Genital shield narrower (60) than greatest width of ventrianal shield. Ventrianal shield 76 long, 72 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, tooth on movable digit not discernible. Spermaheca as figured. Macrosetae on leg IV : genu–8, tibia–12, basitarsus–20, all with knobbed tip. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{2}{1}\ \frac{1}{1}\ 1$.



Figs. 629-632 : *Typhlodromus (Amblydromella) bambusicolus* Gupta (F) : 629-Dorsal shield, 630-Ventral surface, 631-Spermatheca, 632-Genu, tibia, basitarsus of leg IV.

Male : Unknown.

Collection Records : Its description was made on collection from Assam on *Bambusa* sp. and citrus. Later, it was also collected from Tripura on bamboo.

Habitat : Bamboo, citrus.

Distribution : India (Assam, Tripura).

144. *Typhlodromus (Amblydromella) bakeri* (Garman)

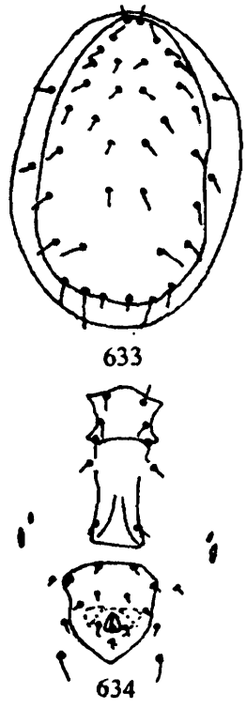
(Figs. 633-634)

1948. *Seiulus bakeri* Garman, *Bull. Connecticut Agr. Expt. Sta.*, **520** : 15.

1951. *Typhlodromus bakeri*, Nesbitt, *Zool. Verh.*, **12** : 36-37.

1979. *Typhlodromus bakeri*, Chant *et al.*, *Canadian J. Zool.*, **52** : 1257.

1999. *Typhlodromus bakeri*, Rather, *J. Acarol.*, **15** : 20.



Figs. 633-634 : *Typhlodromus (Amblydromella) bakeri* (Garman) (F) : 633-Dorsal shield, 634-Ventral surface. (after Womersley, 1954)

Female : Dorsal shield sclerotized, reticulate with 18 pairs of setae. Z_5, Z_4 serrate. Ventrianal shield triangular, with 4 pairs of preanal setae, shield has a number of concentric creases around anus, 2 pairs of metapodal plates. No macroseta present on leg IV.

Male : ?

Collection Records : The type collection was from Connecticut on apple. Thereafter, it has been recorded on several plants in different parts of the world. The Indian record of this species is from Kashmir from grape vines.

Habitat : India : Grape vines, elsewhere : bark, apple bark.

Distribution : India (Jammu & Kashmir), England, Canada, U.S.A., New Zealand, Australia.

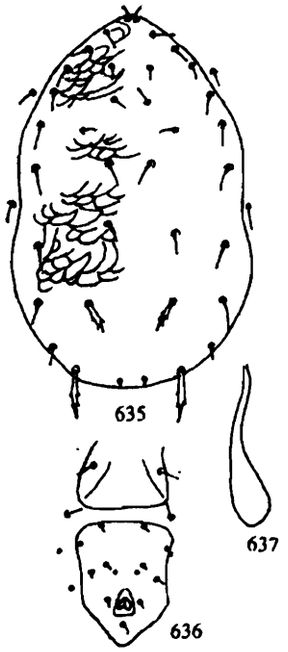
Remarks : Rather (1999) reported this mite feeding upon grape vine mites.

145. *Typhlodromus (Amblydromella) chrysanthemi* Gupta
(Figs. 635–637)

1977. *Typhlodromus chrysanthemi* Gupta, *Indian J. Acar.*, **1** : 11-12.

1986. *Typhlodromus (Amblydromella) chrysanthemi*, Gupta, *Fauna of India : Phytoseiidae*, p. 269-270.

1987. *Typhlodromus (Amblydromella) chrysanthemi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 104.



Figs. 635-637 : *Typhlodromus (Amblydromella) chrysanthemi* Gupta (F) : 635-Dorsal shield, 636-Post ventral surface, 637-Spermatheca.

Female : Dorsal shield 312 long, 200 wide, with 18 pairs of setae. Measurements of setae : j_1–21, j_4–20, j_5–20, j_6–20, J_2–25, J_5–8, j_3–18, z_2–z_4–20–22, s_4–26, s_6–28, S_2–29, S_4–32, S_5–18, Z_5–48, z_5–20, Z_4–33, R_1–32. Sternal shield with 4 pairs of setae. Genital shield 76 wide. Ventrianal shield 108 long, 80 wide, with 3 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit without tooth. Spermatheca as in figure. Leg IV macroseta only on basitarsus IV–28.

Male : Unknown.

Collection Records : Type collection was made from Gujarat collected on chrysanthemum plant.

Habitat : Chrysanthemum.

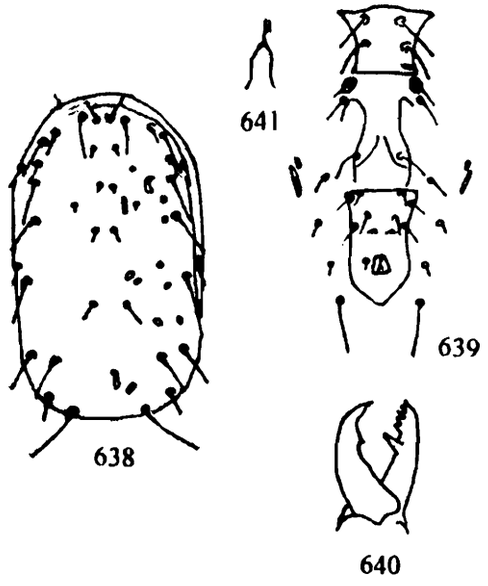
Distribution : India (Gujarat).

146. *Typhlodromus (Amblydromella) dalii* (Rather)
(Figs. 638–641)

1984. *Amblydromella dalii* Rather, *Ent. mon. Mag.*, **120** : 105-106.

1999. *Amblydromella dalii*, Rather, *J. Acarol.*, **15** : 20.

Female : Dorsal shield 397 long, 160 wide, with 18 pairs of setae. Measurements of setae : j_1–28, j_4, j_5–11 each, j_6–22, J_2–25, J_5–5, j_3–55, z_2–18, z_3–69, z_4–36, s_4, s_6–66 each, S_2–60, S_4–55, S_5–40, Z_5–88, z_5–8, Z_4–59, r_3–25, R_1–35. Sternal shield with 2 pairs of setae. Ventrianal shield longer than wide with 4 pairs of preanal setae.



Figs. 638-641 : *Typhlodromus (Amblydromella) dalii* (Rather) (F) : 638-Dorsal shield, 639-Ventral surface, 640-Chelicera, 641-Spermatheca. (after Rather, 1984)

Spermathecal cervix fundibuliform, diameter–19, atrium nodular. Macrosetae on leg IV : genu–40, tibia–39, basitarsus–70. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, genu III $1\,\frac{2}{1}\,\frac{2}{1}\,1$. Fixed digit of chelicera tridentate, movable digit unidentate.

Male : Unknown.

Collection Records : The description was made from Kashmir collected on grape vines.

Habitat : Grape vines.

Distribution : India (Jammu & Kashmir).

147. ***Typhlodromus (Amblydromella) darjeelingensis*** Gupta

(Figs. 642–646)

1980. *Typhlodromus eharai* Gupta, *Ent. mon. Mag.*, **115** : 209-210.

1986. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 272.

1987. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 106.

1990. *Typhlodromus caudiglans*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Typhlodromus darjeelingensis*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1992. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 179.

1995. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 4*, p. 39.

1996. *Typhlodromus (Amblydromella) darjeelingensis*, Chatterjee & Gupta, *J. Beng. Nat. Hist. Soc. (NS)*, **15** : 26.

1997. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 526.

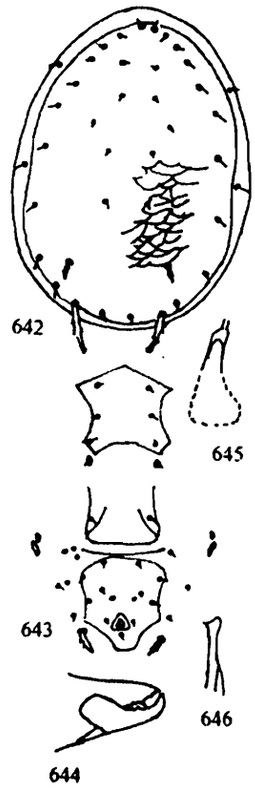
2000. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 28.

In press. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 285–295 long, 170–180 wide, with 18 pairs of setae. Measurements of setae : j_1–10, j_4–j_5–10–11 each, j_6–15–16, J_2–16–18, J_5–10–15, j_3–14–16, z_2, z_3–10–13 each, z4–15–16, s_4–17–18, s_6–20, S_2–22–24, S_4–22–24, S_5–12–15, Z_5–40, z_5–12–15, Z_4–21–24, r_3–14–16, R_1–14–15. Sternal shield longer than wide with 3 pairs of setae. Genital shield 55–67 wide. Ventrianal shield longer (84–88) than wide (73–75), with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis*, movable digit with 3 teeth. Spermatheca as illustrated. Macrosetae on leg IV: genu–8–9, tibia–15–16, basitarsus–24–29. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{1}\,1$, tibia III $1\,\frac{2}{1}\,\frac{1}{1}\,1$.

Male : Chaetotaxy of dorsal shield as in female. Spermatophoral process as illustrated.



Figs. 642-646 : *Typhlodromus (Amblydromella) darjeelingensis* Gupta (F) : 642-Dorsal shield, 643-Ventral surface, 644-Chelicera, 645-Spermatheca, 646-Spermatophoral process (M).

Collection Records : The description of this species was based upon collection from West Bengal on an undet. plant. Afterwards it was

recorded on mango and *Cassia* in Karnataka; cane in Arunachal Pradesh, guava, blackberry, castor, mango in West Bengal, champa in Meghalaya, grape vines in Delhi, undet. plant in Tripura, cucurbits in Sikkim, rose and tea in Mizoram, mango in Punjab, coffee in Tamil Nadu.

Habitat : *Cassia* sp. coffee, plum, mango, *Syzygium cumini*, undet. plant, castor, champa, cucurbits, rose, tea, cane.

Distribution : India (West Bengal, Tripura, Sikkim, Mizoram, Arunachal Pradesh, Karnataka, Tamil Nadu, Punjab, Uttar Pradesh, Delhi).

Remarks : Dhooria (1990) and Jagadish *et al.*, (1995) reported its association with *Aceria mangiferae* in malformed mango in Punjab and Karnataka. Gupta (1989) also reported its association with *Oligonychus coffeae*.

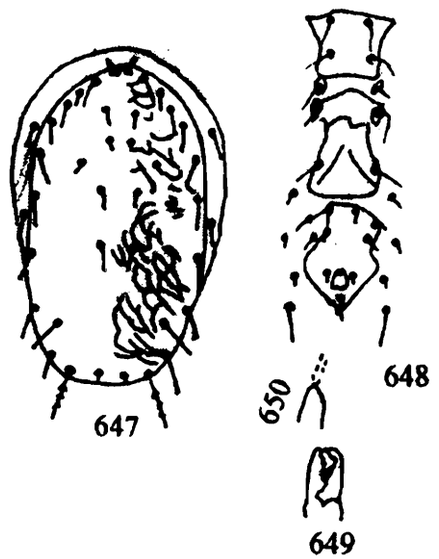
148. *Typhlodromus (Amblydromella) denmarki* (Rather)

(Figs. 647–650)

1984. *Amblydromella denmarki* Rather, *Ent. mon. Mag.*, **120** : 103.

1989. *Amblydromella denmarki*, Rather, In : *Progress in Acarology*, **2** : 188.

Female : Dorsal shield 369 long, 180 wide. Measurements of setae : j_1–22, j_4–j_5–20–21, j_6–25, J_2–31, J_5–8, j_3–35, z_2–22, z_3–29, z_4, s_4–32 each, s_6, S_2, S_4–42 each, S_5–30, Z_5–60, z_5–22, Z_4–50, r_3–32, R_1–30. Sternal shield with 2 pairs of setae. Ventrianal shield longer than wide with 4 pairs of preanal setae. Spermathecal cervix poculiform. Leg IV macrosetae on basitarsus–57. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&1\end{smallmatrix}\ 1$.



Figs. 647-650 : *Typhlodromus (Amblydromella) denmarki* (Rather) (F) : 647-Dorsal shield, 648-Ventral surface, 649-Chelicera, 650-Spermatheca. (after Rather, 1984)

Male : Unknown.

Collection Records : Rather (1989) recorded it on *Juglans regia* in Kashmir associated with *Tetranychus urticae* and *Eriophyes erinus*.

Habitat : *Juglans regia*.

Distribution : India (Jammu & Kashmir).

149. *Typhlodromus (Amblydromella) divergentis* (Chaudhri, Akbar & Rasool)

(Figs. 651–655)

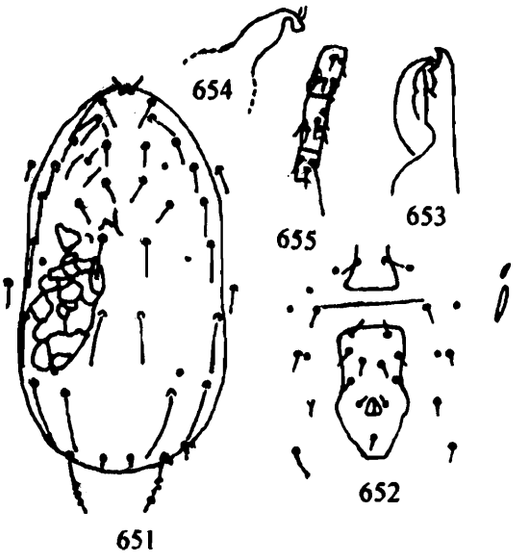
1974. *Amblydromella divergentis* Chaudhri *et al.*, *Rept. PL 480 Project, Univ. Agri. Lyallpur*, p. 217-221.

1982. *Typhlodromus divergentis*, Dhooria, *Acar. Newsl.*, **10** : 4–6.

1987. *Typhlodromus (Amblydromella) divergentis*, Gupta, *Red. zool. Surv. India, Occ. Pap.*, **95** : 105.

1994. *Typhlodromus (Amblydromella) divergentis*, Singh, *Shashpa*, **1**(2) : 71.

Female : Dorsal shield 316 long, 163 wide. Measurements of setae : j_1–18, j_4, j_5–21–23 each, j_6–39, J_2–47, J_5–10, j_3, z_3–29 each, z_2–23, z_4–31, s_4–39 s_6–52, S_2–56, S_4–55, S_5–10, Z_5–26, Z_4–60, r_3–26, R_1–31. Ventrianal shield 107 long, 65 wide, pentagonal, with 4 pairs of preanal setae.



Figs. 651-655 : *Typhlodromus (Amblydromella) divergentis* (Chaudhri *et al.*) (F) : 651-Dorsal shield, 652-Post ventral surface, 653-Chelicera, 654-Spermatheca, 655-Genu, tibia, basitarsus of leg IV. (after Chaudhri *et al.*, 1974)

Fixed digit of chelicera with 4 teeth, subapical; movable digit with 1 tooth. Macroseta on basitarsus IV : 30.

Male : Unknown.

Collection Records : The holotype was from Pakistan collected on *Grewia*. The Indian record is from U.P. on *Luffa acutangula* and from Punjab on citrus.

Habitat : India : *Luffa acutangula*, citrus, elsewhere : *Grewia* sp., *Vernonea* sp., *Acacia arabica, Eriobotrya japonica, Helianthus annuus, Malvastrum* sp., *Cupressus semperverens, Nerium indicum, Salvadora oleoides, Jacaranda* sp., *Mangifera indica, Acacia modesta, Withania somnifera, Olea europea, Punica granatum, Grewia asiatica, Cestrum noctrum, Thuja orientalis, Sesbania sesban, Chrysanthemum* sp., *Cordia obliqua.*

Distribution : India (Uttar Pradesh, Punjab), Pakistan.

Remarks : It was found associated with *Eutetranychus orientalis* on citrus in Punjab (Dhooria, 1982).

150. ***Typhlodromus (Amblydromella) fleschneri*** Chant

(Figs. 656–658)

1960. *Typhlodromus (Typhlodromus) fleschneri* Chant, *Can. Ent.*, **92** : 60-62.

1986. *Typhlodromus (Amblydromella) fleschneri*, Gupta, *Fauna of India : Phytoseiidae*, p. 272-274.

1987. *Typhlodromus (Amblydromella) fleschneri*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 107.

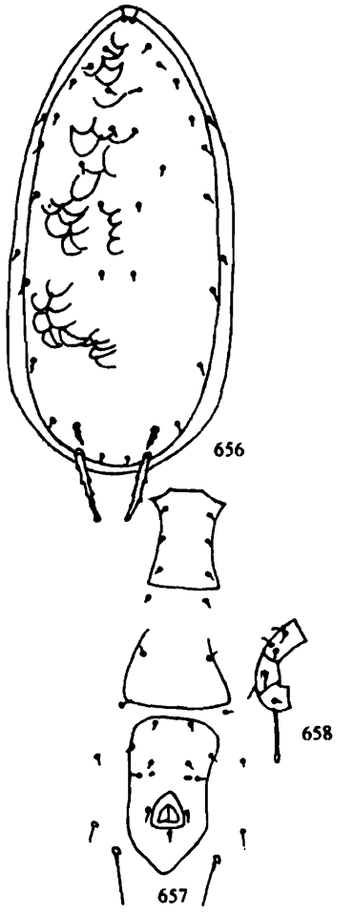
1992. *Typhlodromus (Amblydromella) fleschneri*, Sharma & Thakur, *Indian J. agric. Sci.*, **62**(3) : 231-232.

1992. *Typhlodromus (Amblydromella) fleschneri*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 179.

1995. *Typhlodromus (Amblydromella) fleschneri*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 39.

Female : Dorsal shield 360 long, 180 wide. Measurements of setae : j_1–14, j_5–15–16 each, j_6–19, J_2–20, J_5–8, j_3–22, z_2–20, z_3–20, z_4–22, s_4–23, s_6–24, S_2–24, S_4–24, S_5–16, Z_5–45, z_5–18, Z_4–31, r_3–13, R_1–22. Sternal shield longer than wide with 3 pairs of sternal setae. Genital shield 89 wide with a pair of setae. Ventrianal shield 112 long, 80 wide with 4 pairs of preanal setae. Spermatheca not discernible. Macroseta present only on basitarsus IV–45 long (knobbed).

Male : Dorsal chaetotaxy as in female.



Figs. 656-658 : *Typhlodromus (Amblydromella) fleschneri* Chant (F) : 656-Dorsal shield, 657-Ventral surface, 658-Genu, tibia, basitarsus of leg IV.

Collection Records : This species was described on the basis of material collected from Karnataka, Assam and Meghalaya on citrus. Subsequently, it was also collected from Bihar on litchi and from West Bengal on cotton.

Habitat : Citrus, litchi, cotton.

Distribution : India (Assam, Meghalaya, West Bengal, Karnataka, Bihar).

Remarks : Sharma & Thakur (1992) reported this mite feeding upon litchi erineum mite, *Aceria litchii* in Bihar.

151. *Typhlodromus (Amblydromella) gopali* Gupta

(Figs. 659–662)

1969. *Typhlodromus gopali* Gupta, *Sci. & Cult.*, **35** : 277.

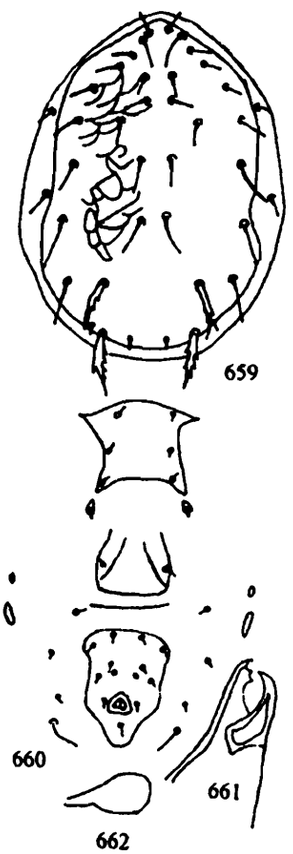
1986. *Typhlodromus (Amblydromella) gopali*, Gupta, *Fauna of India : Phytoseiidae*, p. 274-278.

1987. *Typhlodromus (Amblydromella) gopali*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 108.

1995. *Typhlodromus gopali*, Jagadish *et al.*, *Abst. V Nat. Symp. Acarology*, p. 17.

2000. *Typhlodromus (Amblydromella) gopali*, Gupta, In : *State Fauna Ser. 7, Fauna of Tripura, Part 2*, p. 28.

Female : Dorsal shield 300 long, 190 wide. Measurements of setae : j_1–19, j_4–22, j_5–22, j_6–31–34, J_2–40, J_5–9, j_3–27, z_2–18, z_3–24, z_4–27, s_4–36, s_6–45, S_2–52, S_4–52, S_5–6, Z_5–56, z_5–22, Z_4–55, r_3–20, R_1–27. Sternal shield with 3 pairs of setae. Genital shield as wide as sternal shield (67) with a pair of setae. Ventrianal shield longer (63) than wide, with 4 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 2 teeth, no tooth on movable digit. Macrosetae only on basitarsus IV–27. Leg chaetotactic formula : genu II $2\,\begin{smallmatrix}2&2\\0&0\end{smallmatrix}\,1$, tibia II $1\,\begin{smallmatrix}1&2\\1&1\end{smallmatrix}\,1$, genu III $1\,\begin{smallmatrix}2&2\\1&0\end{smallmatrix}\,1$, tibia III $1\,\begin{smallmatrix}1&2\\1&1\end{smallmatrix}\,1$.



Figs. 659-662 : *Typhlodromus (Amblydromella) gopali* Gupta (F) : 659-Dorsal shield, 660-Ventral surface, 661-Chelicera, 662-Spermatheca.

Male : Unknown.

Collection Records : The original description was made from West Bengal, collected on palm tree. It has been collected on mango in Karnataka, banana in Tripura and palm in Rajasthan.

Habitat : India : Palm, banana, mango.

Distribution : India (Tripura, West Bengal, Himachal Pradesh, Punjab, Rajasthan, Karnataka).

152. *Typhlodromus (Amblydromella) himalayensis* Gupta

(Figs. 663–667)

1981. *Typhlodromus himalayensis* Gupta, *Indian J. Acar.*, **5**(1-2) : 32-33.

1986. *Typhlodromus (Amblydromella) himalayensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 276-277.

1987. *Typhlodromus (Amblydromella) himalayensis*, Gupta, *Rec. zool Surv. India, Occ. Pap.*, **95** : 108-109.

1990. *Typhlodromus himalayensis*, Rishi, *Abst. V Nat. Symp. Acarology*, p. 32-33.

1993. *Typhlodromus (Amblydromella) himalayensis*, Mukherjee & Singh, *J. Insect. Sci.*, **6**(1) : 136.

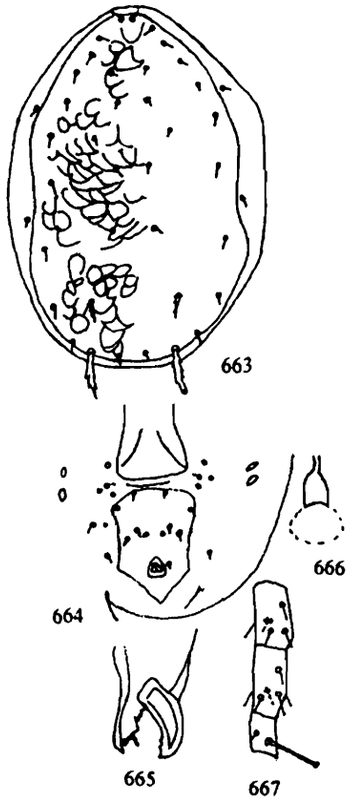
1995. *Typhlodromus (Amblydromella) himalayensis*, Singh, *Adv. Agr. Res. India*, **3** : 190.

1999. *Typhlodromus (Amblydromella) himalayensis*, Gupta & Chatterjee, *Sci. & Cult.*, **65** : 162.

Female : Dorsal shield 310 long, 200 wide. Measurements of setae : j_1–12, j_4–10, j_5–12, j_6–16, J_2–16, J_5–8, j_3–14, z_2–18, z_3–15, z_4–16, s_4–20, s_6–24, S_2–24, S_4–25, S_5–17, Z_5–40 (serrate, knobbed), z_5–16, Z_4–24, r_3–14, R_1–16. Sternal shield with 3 pairs of setae. Genital shield 69 wide with a pair of setae. Ventrianal shield 108 long, 68 wide, with 4 pairs of setae. Fixed digit of chelicera 3–4 teeth and strong *pilus dentilis*, 2 small teeth on movable digit. Spermatheca as figured. Leg chaetotactic formula : genu II $2\,\begin{smallmatrix}2&2\\0&0\end{smallmatrix}\,1$, tibia II $1\,\begin{smallmatrix}1&2\\1&1\end{smallmatrix}\,1$, genu III $1\,\begin{smallmatrix}2&2\\0&1\end{smallmatrix}\,1$, tibia III $1\,\begin{smallmatrix}2&1\\1&1\end{smallmatrix}\,1$. Macroseta only on basitarsus IV : 36 (knobbed).

Male : Unknown.

Collection Records : It was described from Himachal Pradesh collected on pear. The other



Figs. 663-667 : *Typhlodromus (Amblydromella) himalayensis* Gupta (F) : 663-Dorsal shield, 664-Post ventral surface, 665-Chelicera, 666-Spermatheca, 667-Genu, tibia, basitarsus of leg IV.

collections are from Uttar Pradesh on *Punica granatum*, from Lakshadwip on *Nerium* and from Jammu & Kashmir on abandoned orchard.

Habitat : Pear, pine cone, pomegranate, abandoned orchard, *Nerium*.

Distribution : India (Himachal Pradesh, Uttar Pradesh, Jammu & Kashmir, Lakshadwip Isl.).

153. *Typhlodromus (Amblydromella) homalii* Gupta

(Figs. 668–671)

1970. *Typhlodromus homalii* Gupta, *Oriental Ins.*, **4**(2) : 188-189.

1986. *Typhlodromus (Amblydromella) homalii*, Gupta, *Fauna of India : Phytoseiidae*, p. 278-280.

1987. *Typhlodromus (Amblydromella) homalii*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 109.

1989. *Typhlodromus (A.) homalii*, Singh, Somchoudhury & Mukherjee, In : *Progress in Acarology*, **2** : 361-368.

1990. *Typhlodromus homalii*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Typhlodromus (Amblydromella) homalii*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 179.

1992. *Typhlodromus (Amblydromella) homalii*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1992. *Typhlodromus homalii*, Sharma & Thakur, *Indian J. agric. Res.*, **62**(3) : 240-243.

1993. *Typhlodromus (Amblydromella) homalii*, Mukherjee & Singh, *J. Insect. Sci.*, **6**(1) : 136.

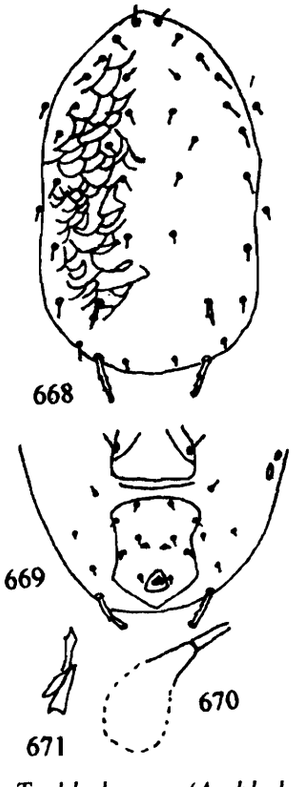
1994. *Typhlodromus (Amblydromella) homalii*, Singh, *Shashpa*, **1**(2) : 71.

1995. *Typhlodromus homalii*, Mathur *et al.*, *Abst. V. Nat. Symp. Acarology*, p. 14.

1995. *Typhlodromus (Amblydromella) homalii*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 39-40.

In press. *Typhlodromus (Amblydromella) homalii*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

Female : Dorsal shield 310–320 long, 175–190 wide. Measurements of setae : j_1–16–18, j_4–14–18, j_5–13–20, j_6–16–20, J_2–17–22, J_5–7–9, j_3–16–20, z_2–14–17, z_3–18–20, z_4–15–18, s_4–18–19, s_6–20–25, S_2–21–27, S_4–24–28, S_5–16–18, Z_5–37–45, z_5–16–18, Z_4–24–28, r_3, R_1–16–18 each. Sternal shield with 3 pairs of sternal setae.



Figs. 668-671 : *Typhlodromus (Amblydromella) homalii* Gupta (F) : 668-Dorsal shield, 669-Post ventral surface, 670-Spermatheca, 671-Spermatophoral process (M).

Genital shield 72 wide with a pair of setae. Ventrianal shield 96–103 long, 75 wide, with 4 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit toothless. Spermatheca as figured. Macroseta present only on basitarsus IV–15–16. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$. Macroseta on basitarsus IV–15 knobbed.

Male : Dorsal chaeetotaxy as in female. Spermatophoral process as figured.

Collection Records : The original description of this species was from West Bengal collected on *Homalium tomentosum*. Subsequently, it has been recorded by various authors on different plants as : litchi and citrus in Bihar, and West Bengal; *Citrus, Syzygium cumini, Colocasia antiquorum* in Uttar Pradesh; guava in Arunachal Pradesh; on undet. plant, citrus, *Ficus* in Meghalaya; on a shrub in Sikkim, on *Zizyphus jujuba* in Punjab; on *Ficus bengalensis* in Orissa; on some undet. plants in Kerala and Tamil Nadu.

Habitat : *Homalium tomentosum*, galls of *Zizyphus* sp., *Ficus bengalensis*, arum, citrus, litchi, *Syzygium cumini, Colocasia antiquorum*, guava, shrub, undet. plants.

Distribution : India (West Bengal, Bihar, Orissa, Meghalaya, Punjab, Himachal Pradesh, Uttar Pradesh, Arunachal Pradesh, Sikkim, Haryana, Kerala, Tamil Nadu), Pakistan.

Remarks : Sharma & Thakur (1992) reported this mite to feed on *Aceria litchii* infesting litchi in Bihar while Dhooria (1990) reported its association with *Eutetranychus orientalis* on jujube. Mathur *et al.*, (1995) also reported this species as an useful predator in Haryana.

154. *Typhlodromus (Amblydromella) kodaikanalensis* Gupta

(Figs. 672–674)

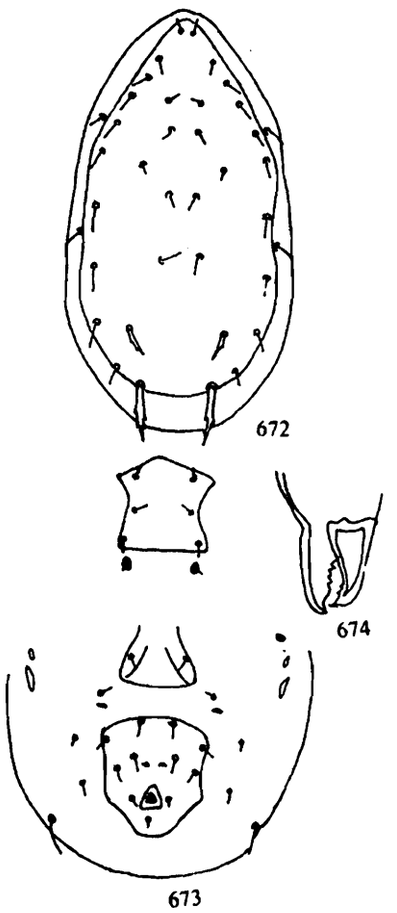
1978. *Typhlodromus kodaikanalensis* Gupta, *Bull. zool. Sruv. India*, **1**(1) : 47-49.

1986. *Typhlodromus (Amblydromella) kodaikanalensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 280-281.

1987. *Typhlodromus (Amblydromella) kodaikanalensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 110.

Female : Dorsal shield 300 long, 165 wide. Measurements of setae : j_1–21, j_4–j_6–16 each, J_2–20, J_5–6, j_3, z_2–z_4–20 each, s_4–24, s_6–28, S_2, S_4–28 each, S_5–16, Z_5–48, z_5–16, Z_4–28, r_3, R_1–25 each. Sternal shield weakly sclerotized with 3 pairs of sternal setae. Genital shield 80 wide. Ventrianal shield 92 long, 74 wide with 4 pairs of preanal setae. Fixed digit of chelicera multidentate with *pilus dentilis*, 3 teeth on movable digit. Spermatheca as figured. Macroseta on basitarsus IV–40.

Male : Unknown.



Figs. 672-674 : *Typhlodromus (Amblydromella) kodaikanalensis* Gupta (F) : 672-Dorsal shield, 673-Ventral surface, 674-Chelicera.

Collection Records : This species was described from Tamil Nadu collected on pear.

Habitat : Pear.

Distribution : India (Tamil Nadu).

155. *Typhlodromus (Amblydromella) mori* Gupta

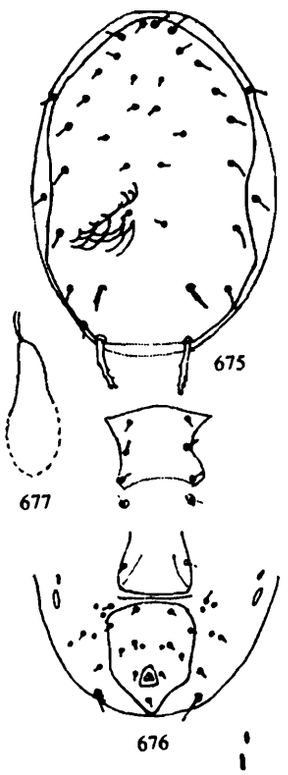
(Figs. 675–677)

1981. *Typhlodromus mori* Gupta, *Indian J. Acar.*, **5** : 39-40.

1986. *Typhlodromus (Amblydromella) mori*, Gupta, *Fauna of India : Phytoseiidae*, p. 282-283.

1987. *Typhlodromus mori*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 111.

Female : Dorsal shield 312 long, 172 wide. Measurements of setae : j_1–12–15, j_4–j_6–13–16, J_2–20, J_5–8, j_3–22–24, z_2–16, z_3–20, z_4–20, s_4–20–24, s_6–24–26, S_2–27, S_4–27–29, S_5–20–25, Z_5–45–53, z_5–12–16, Z_4–28–31, r_3, R_1–16 each. Sternal shield as long (75) as broad (77) with 3 pairs of sternal setae. Genital shield 64–66 wide.



Figs. 675-677 : *Typhlodromus (Amblydromella) mori* Gupta (F) : 675-Dorsal shield, 676-Ventral surface, 677-Spermatheca.

Ventrianal shield longer (100–110) than wide (80–90) with 4 pairs preanal setae. Fixed digit of chelicera multidentate with strong *pilus dentilis*, 2 sharp teeth on movable digit. Spermatheca as illustrated. Macrosetae on leg IV : genu–10 (knobbed), tibia–not discernible, basitarsus–36 (knobbed). Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2\\0\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2\\1\end{smallmatrix}\ \begin{smallmatrix}2\\0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1\\1\end{smallmatrix}\ \begin{smallmatrix}2\\1\end{smallmatrix}\ 1$.

Male : Unknown.

Collection Records : It was described from Jammu & Kashmir collected on mulberry as well as on apple.

Habitat : Mulberry, apple.

Distribution : India (Jammu & Kashmir).

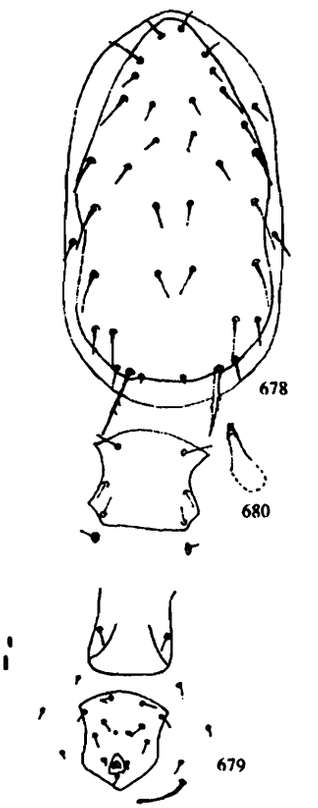
156. *Typhlodromus (Amblydromella) nilgiriensis* Gupta

(Figs. 678–680)

1986. *Typhlodromus (Amblydromella) nilgiriensis* Gupta, *Fauna of India : Phytoseiidae*, p. 282-285.

1987. *Typhlodromus (Amblydromella) nilgiriensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 117-118.

Female : Dorsal shield 355 long, 210 wide. Measurements of setae : j_1–22, j_4–22, j_5–22, j_6–29, J_2–40, J_5–6, j_3–35, z_2–11, z_3–44, z_4–29, s_4–49, s_6–56, S_2–50, S_4–33, S_5–29, Z_5–78, z_5–26, Z_4–49, r_3, R_1–25 each. Sternal shield with 3 pairs of setae. Genital shield 100 wide with a pair of setae. Ventrianal shield 112 long, 100 wide, with 4 pairs of preanal setae. Dentition on chelicera not discernible. Spermatheca as figured.



Figs. 678-680 : *Typhlodromus (Amblydromella) nilgiriensis* Gupta (F) : 678-Dorsal shield, 679-Ventral surface, 680-Spermatheca.

Macrosetae on leg IV : genu–39, tibia–33, basitarsus–62 all knobbed. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2&2\\1&0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1.

Male : Unknown.

Collection Records : This speceies was described from Tamil Nadu on an undet. plant.

Habitat : Undet. plant.

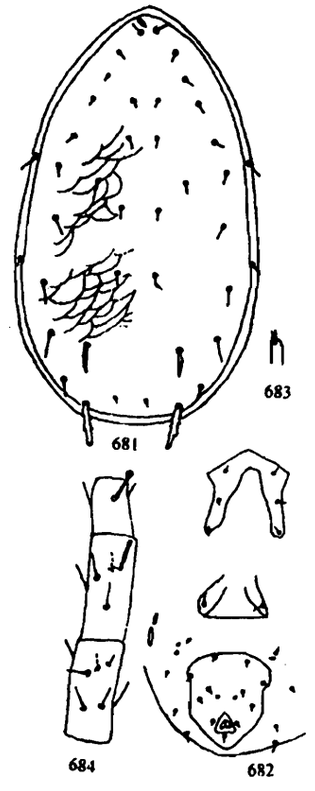
Distribution : India (Tamil Nadu).

157. *Typhlodromus (Amblydromella) persicus* Gupta

(Figs. 681–684)

1992. *Typhlodromus (Amblydromella) persicus* Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 181.

Female : Dorsal shield 214 long, 161 wide. Measurements of setae : j_1–18, j_4–9, j_5–11, j_6–13, J_2–22, J_5–8, j_3–13, z_2–13, z_4–18, s_4–20, s_6–23, S_2–26, S_4–26, S_5–22, Z_5–48 (serrate) and knobbed, shorter than distance between their bases, z_5–13, Z_4–29 (shorter than distance between its base and that of Z_5), r_3–26, R_1–22. Sternal shield with 3 pairs of sternal setae. Ventrianal shield 100 long, 51 wide, with 4 pairs of preanal setae. Metapodal plates 2 paired. Macrosetae on leg IV : genu–12, tibia–17, basitarsus–20. Leg chaetotactic formula : genu II 2 $\begin{smallmatrix}2&2\\0&0\end{smallmatrix}$ 1, tibia II 1 $\begin{smallmatrix}1&2\\2&1\end{smallmatrix}$ 1, genu III 1 $\begin{smallmatrix}2&2\\1&0\end{smallmatrix}$ 1, tibia III 1 $\begin{smallmatrix}1&2\\1&1\end{smallmatrix}$ 1.



Figs. 681-684 : *Typhlodromus (Amblydromella) persicus* Gupta (F) : 681-Dorsal shield, 682-Ventral surface, 683-Spermatheca, 684-Genu, tibia, basitarsus of leg IV.

Male : Unknown.

Collection Records : This material was collected from West Bengal on peach.

Habitat : Peach.

Distribution : India (West Bengal).

158. *Typhlodromus (Amblydromella) rhenanus* (Oudemans)

(Figs. 685–689)

1905. *Seiulus rhenanus* Oudemans, *Tij. Ent.*, **48** : 78.

1986. *Typhlodromus (Amblydromella) rhenanus*, Gupta, *Fauna of India : Phytoseiidae*, p. 285-287.

1987. *Typhlodromus (Amblydromella) rhenanus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 112.

1990. *Typhlodromus rhenanus*, Dhooria, *Acar. Newsl.*, **17-18** : 18.

1992. *Amblyseius rhenanus*, Kolodochka, *Vestn. Zool.*, **6** : 19-21.

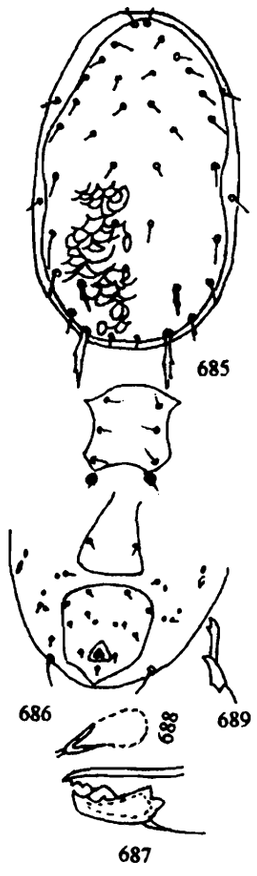
1992. *Typhlodromus rhenanus*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 182.

1997. *Typhlodromus (Amblydromella) rhenanus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 527.

Female : Dorsal shield 325 long, 195 wide, reticulate. Measurements of setae : j_1–16, j_4–16, j_5–16, j_6–16, J_2–20, J_5–5, j_3–17, z_2–14, z_3–20, z_4–20, s_4–25, s_6–25, S_2–32, S_4–32, S_5–28, Z_5–56, z_5–16, Z_4–36. Sternal shield as long as wide, with 3 pairs of sternal setae. Genital shield 68 wide. Ventrianal shield 96 long, 80 wide, with 4 pairs of preanal setae. Fixed digit of chelicera with 2–3 sharp teeth anterior to *pilus dentilis*, movable digit with 2 teeth. Spermatheca as figured.

Macroseta on basitarsus IV–36. Leg chaetotactic formula : genu II 2 $\begin{matrix}2&2\\0&0\end{matrix}$ 1, tibia II 1 $\begin{matrix}1&2\\1&1\end{matrix}$ 1, genu III 1 $\begin{matrix}2&2\\0&1\end{matrix}$ 1, tibia III 1 $\begin{matrix}2&1\\1&1\end{matrix}$ 1.

Male : Spermatophoral process as figured.



Figs. 685-689 : *Typhlodromus (Amblydromella) rhenanus* (Oudemans) (F) : 685-Dorsal shield, 686-Ventral surface, 687-Chelicera, 688-Spermatheca, 689-Spermatophoral process (M).

Collection Records : The original description of this species was from Germany on rotting leaves. The Indian records are from citrus and mango in Punjab and on malformed mango in Delhi.

Habitat : India : mango, cirrus, malformed mango, elsewhere : rotten leaves, pine cone.

Distribution : India (Punjab, Delhi, Himachal Pradesh, Jammu & Kashmir), U.S.A., Russia, U.K., Canada, Israel, Netherland, France, Belgium.

Remarks : Dhooria (1990) reported its association with *Eutetranyhus orientalis* on citrus in Punjab.

159. *Typhlodromus (Amblydromella) rhododendroni* Gupta

(Figs. 690–692)

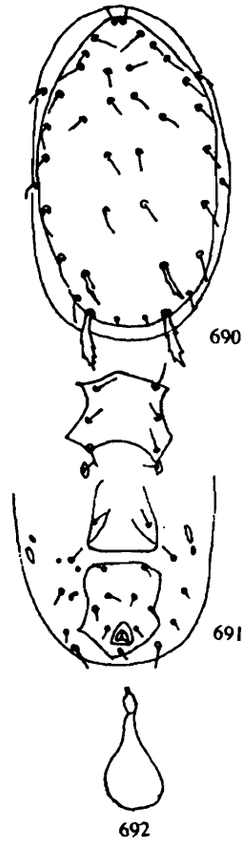
1978. *Typhlodromus rhododendroni* Gupta, *Bull. zool. Surv. India*, **1**(1) : 50.

1986. *Typhlodromus (Amblydromella) rhododendroni*, Gupta, *Fauna of India : Phytoseiidae*, p. 287-288.

1987. *Typhlodromus (Amblydromella) rhododendroni*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 112.

Female : Dorsal shield 272 long, 160 wide. Measurements of setae : j_1, j_4–16 each, j_5–18, j_6–20, J_2–25, J_5–8, j_3–25, z_2–16, z_3–20, z_4–20, s_4–24, s_6–25, S_2–26, S_4–32, S_5–20, Z_5–44, z_5–20, Z_4–36, r_3–20, R_1–18. Sternal shield with 3 pairs of setae. Genital shield narrower (56) than greatest width of ventrianal shield. Ventrianal shield 84 long, 60 wide with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth placed anteriorly, movable digit with 1 tooth. Spermatheca as figured. Macroseta on basitarsus IV–25 long.

Male : Unknown.



Figs. 690-692 : *Typhlodromus (Amblydromella) rhododendroni* Gupta (F) : 690-Dorsal shield, 691-Ventral surface, 692-Spermatheca.

Collection Records : Type material was collected from Karnataka on *Rhododendron.*

Habitat : *Rhododendron.*

Distribution : India (Karnataka).

160. *Typhlodromus (Amblydromella) sonprayagensis* Gupta
(Figs. 693–696)

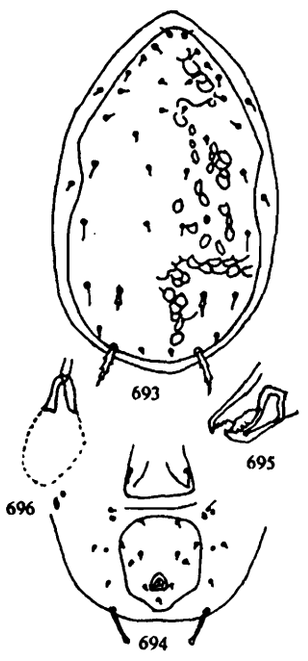
1985. *Typhlodromus sonprayagensis* Gupta, *Entomon*, **10**(3) : 211-213.

1986. *Typhlodromus (Amblydromella) sonprayagensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 289.

1987. *Typhlodromus (Amblydromella) sonprayagensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 119.

1989. *Typhlodromus (Amblydromella) sonprayagensis*, Singh, Somchoudhury & Mukherjee, In : *Progress in Acarology*, **2** : 361-368.

Female : Dorsal shield 360 long, 215 wide. Measurements of setae : j_1–j_5–14–15 each, J_2–20, J_5–6, j_3–22, z_2–16, z_3–20, z_4–18, s_4–22, s_6–22, S_2–27, S_4–27, S_5–20, Z_5–45, z_5–16, Z_4–25, r_3–23, R_1–18. Sternal shield with 3 pairs of setae. Genital shield 70 wide. Ventrianal shield 112 long, 85 wide with 4 pairs of preanal setae. Chelicera with 4–5 teeth anterior to *pilus dentilis*, movable digit with 3 teeth. Spermatheca as figured.



Figs. 693-696 : *Typhlodromus (Amblydromella) sonpraygensis* Gupta (F) : 693-Dorsal shield, 694-Post ventral surface, 695-Chelicera, 696-Spermatheca.

Macrosetae on leg IV : genu–14, tibia–16, basitarsus–35. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$. All macrosetae on leg IV with knobbed tip.

Male : Unknown.

Collection Records : This species was described from Uttar Pradesh collected on pear.

Habitat : Pear.

Distribution : India (Uttar Pradesh).

161. *Typhlodromus (Amblydromella) tarbateijamae* (Denmark & Daneshvar)

1989. *Amblydromella tarbateijamae* Denmark & Daneshvar, Rather, In : *Progress in Acarology*, **2** : 188.

Collection Records : Rather (1989) reported the occurrence of this species in Kashmir on *Juglans regia.*

Habitat : *Juglans regia.*

Distribution : India (Jammu & Kashmir).

Remarks : Due to nonavailability of the full description of this species, the same could not be included here.

162. *Typhlodromus (Amblydromella) umbratus* (Chaudhri, Akbar & Rasool)
(Figs. 697–701)

1974. *Amblydromella umbratus* Chaudhri *et al.*, *Rept. PL 480 Projec University of Agril, Lyallpur*, p. 215-217.

1984. *Amblydromella umbratus*, Rather, *Ent. mon. Mag.*, **120** : 103-107.

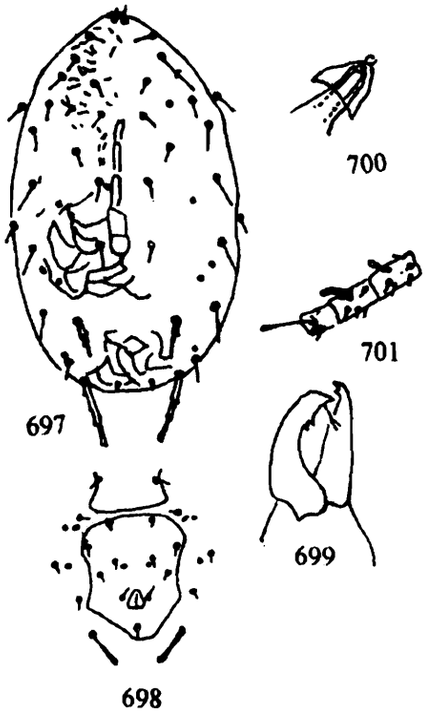
1987. *Typhlodromus (Amblydromella) umbratus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 114.

1989. *Amblydromella umbratus*, Rather, *Progress in Acarology*, **2** : 188.

Female : Dorsal shield reticulate, 316 long, 184 wide. Measurements of setae : j_1–11, j_4, j_5–16 each, j_6–21, J_2–23, J_5–10, j_3–18, z_2–16, z_3, z_4–21 each s_4–23, s_6–26, S_2, S_4–29 each, S_5–18, Z_5–49 (serrate with bulbous tip), z_5–18, Z_4–34 (serrate, pointed).

Ventrianal shield 107 long, 78 wide with 4 pairs of preanal setae and a pair of pores. Spermatheca saccular with umbrella-like process. Macrosetae on leg VI : genu–16, tibia–16, basitarsus–36, all with bulbous tip.

Male : Unknown.



Figs. 697-701 : *Typhlodromus (Amblydromella) umbratus* (Chaudhri *et al.*) (F) : 697-Dorsal shield, 698-Post ventral surface, 699-Chelicera, 700-Spermatheca, 701-Genu, tibia, basitarsus of leg IV. (after Chaudhri *et al.*, 1974)

Collection Records : This species was described from Pakistan collected on *Punica granatum* as well as on *Conyza stricta. Cupressus sempervirens, Prunus communis.* In India, it has been recorded on *Prunus armeniaca* in Kashmir.

Habitat : India : *Prunus armeniaca,* elsewhere : *Punica granatum, Conyza stricta, Cupressus sempervirens, Prunus communis.*

Distribution : India (Jammu & Kashmir), Pakistan.

163. *Typhlodromus (Amblydromella) vinifera* (Rather)

1999. *Amblydromella vinifera* Rather, *J. Acarol.*, **15** : 20.

Collection Records : Rather (1999) recorded it on grape vines in Kashmir.

Habitat : Grape vines.

Distribution : India (Jammu & Kashmir).

Remarks : Due to nonavailability of full description, the same could not be included here. Rather (1999) reported that this mite fed upon grape vine mite, *Colomerus vitis* in Kashmir.

164. *Typhlodromus (Amblydromella) zafari* Chaudhri

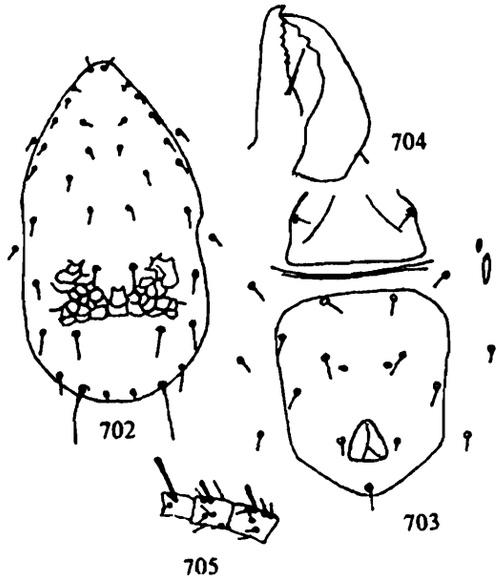
(Figs. 702-705)

1965. *Typhlodromus zafari* Chaudhri, *Acarologia,* **7** : 632-635.

1984. *Typhlodromus zafari*, Rather, *Ent. mon. Mag.*, **120** : 106.

Female : Dorsal shield 352 long, 205 wide. Fixed digit of chelicera with 8 teeth, movable digit with 3 teeth. Ventrianal shield with 4 pairs of preanal setae. Leg IV with macroseta on genu, tibia and basitarsus.

Male : Unknown.



Figs. 702-705 : *Typhlodromus (Amblydromella) zafari* Chaudhri (F) : 702-Dorsal shield, 703-Post ventral surface, 704-Chelicera, 705-Genu, tibia, basitarsus of leg IV. (after Chaudhri *et al.*, 1979)

Collection Records : Rather (1984) recorded it in Jammu & Kashmir on *Geranium wallichiana, Nepeta raphanorphiza* in association with tydeid mites.

Habitat : India : *Geranium wallichiana, Nepeta raphanorphiza.*

Distribution : India (Jammu & Kashmir), Pakistan.

Subgenus 2. *Anthoseius* De Leon

1959. *Anthoseius* De Leon, *Ent. Newsl.*, **70** : 257.

1986. *Anthoseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 289-290.

1987. *Anthoseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 119.

1984. *Typhlodromus (Anthoseius)*, Wei-nan & Zhao-quan, *Acta Entomologica Sinica*, **27**(1) : 98.

1989. *Anthoseius*, Cobanoglu, *Turk, Entomol, derg.*, **13**(3) : 175.

Diagnosis : Dorsal shield reticulate with 18 pairs of setae; 6 pairs on dorsocentral, 2 pairs on median, 10 pairs on lateral series. Dorsal shield with incision at the level on R_1. Two pairs of sublateral setae on lateral integument. Sternal shield with 3 pairs of sternal setae. Ventrianal shield with 3 pairs of preanal setae. Macroseta absent on leg IV.

Type ***Anthoseius hebetes*** De Leon, 1959 (by designation)

165. *Typhlodromus (Anthoseius) majumderi* Gupta

(Figs. 706–707)

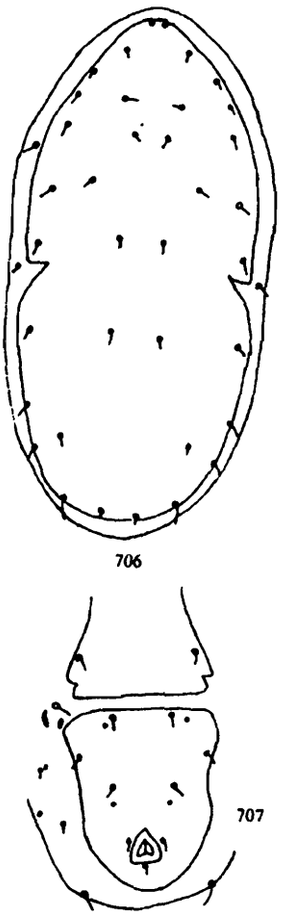
1986. *Typhlodromus (Anthoseius) majumderi* Gupta, *Fauna of India : Phytoseiidae*, p. 291.

1987. *Typhlodromus (Anthoseius) majumderi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 119-120.

1992. *Typhlodromus (Anthoseius) majumderi*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 181.

Female : Dorsal shield gently reticulate, deeply incised at the level of R_1, Measurements of setae : j_1–10, j_4–11, j_5–12, s_4–12, s_6–14, S_2–15, S_4–12, S_5–14, Z_5–16 (slightly thicker, smooth), z_5–14, Z_4–14, r_3, R_1–14 each. Sternal shield 78 long, 70 wide with 3 pairs of long sternal setae. Genital shield 78 wide. Ventrianal shield much longer (123) than wide with 3 pairs of preanal setae; 2 pairs of metapodal plates present. Fixed digit of chelicera with 4 teeth, *pilus dentilis* apparently discernible. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{1}\,1$, tibia III $1\,\frac{1}{0}\,\frac{2}{1}\,1$ Macrosetae absent on leg IV. Spermatheca as figured.

Male : Unknown.



Figs. 706-707 : *Typhlodromus (Anthoseius) majumderi* Gupta (F) : 706-Dorsal shield, 707-Post ventral surface.

Collection Records : The description of this species was from West Bengal collected on a weed locally called "Hatisur"

Habitat : Hatisur.

Distribution : India (West Bengal).

Subenus 3. ***Brethria*** Tuttle & Muma

1973. *Brethria* Tuttle & Muma, *Tech. Bull. Agr. Exp. Sta., Univ. Arizona*, **208** : 35.

1986. *Brethria*, Gupta, *Fauna of India : Phytoseiidae*, p. 291-292.

1987. *Brethria*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 120.

Diagnosis : Dorsal shield reticulate with 6 pairs of dorso central, 2 pairs of median and 9 pairs of laterals; 2 pairs of sublaterals on lateral integument. Sternal shield with 3 pairs of setae. Ventrianal shield pentagonal with 4 pairs of preanal setae. Chelicera normal.

Type ***Brethria arizonica*** Tuttle & Muma, 1973 (by designation)

Key to the species of *Brethria* known to occur on plants in India

1. Ventrianal shield very long, almost 2 times as long as wide, lateral margins straight.. ..... *roshanlali*
- Ventrianal shield only slightly longer than wide, lateral margins lightly concave..... ..... *confusus*

166. *Typhlodromus (Brethria) confusus* Narayanan, Kaur & Ghai (Figs. 708–711)

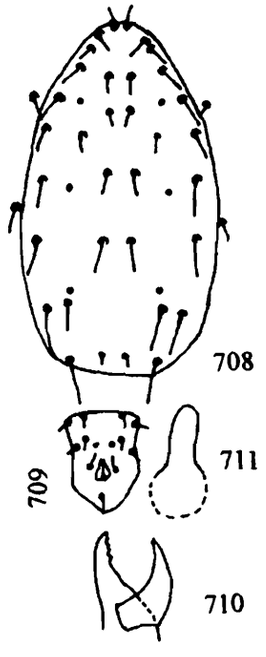
1960. *Typhlodromus (Typhlodromus) confusus* Narayanan *et al., Proc. Nat. Inst. Sci.*, **26B**(6) : 392-393.

1986. *Typhlodromus (Brethria) confusus*, Gupta, *Fauna of India : Phytoseiidae*, p. 293-294.

1987. *Typhlodromus (Brethria) confusus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 120.

1997. *Typhlodromus (Brethria) confusus*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 527.

Female : Dorsal shield faintly reticulate, 273 long, 150 wide. Measurements of setae : the detailed setal length could not be given because of position of specimen. However, the length of lateral setae as mentioned in original description are : 5 : 7 : 8 : 9 : 12 : 13 : 13 : 13, j_1–j_5 same length, J_2 being longest in that series. Z_4 shorter than Z_5 and never touches base of the latter. Sternal shield normal. Ventrianal shield longer (85) than broad (52) with 4 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 3 teeth, movable digit toothless. Leg IV with macroseta on basitarsus IV : 27 long. Genu III and IV with 7 setae.



Figs. 708-711 : *Typhlodromus (Brethria) confusus* Narayanan *et al.* (F) : 708-Dorsal shield, 709-Ventrianal shield, 710-Chelicera, 711-Spermatheca (after Narayanan *et al.*, 1960).

Male : Unknown.

Collection Records : This species was described from Delhi collected on sunflower.

Habitat : Sunflower.

Distribution : India (Delhi).

167. *Typhlodromus (Brethria) roshanlali* Narayanan & Ghai (Figs. 712)

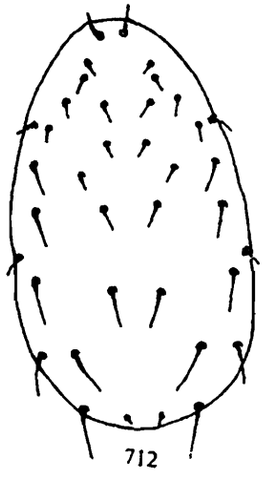
1964. *Typhlodromus (Typhlodromus) roshanlali* Narayanan & Ghai, *Proc. Nat. Inst. Sci.*, **29B**(5) : 539.

1986. *Typhlodromus (Brethria) roshanlali*, Gupta, *Fauna of India : Phytoseiidae*, p. 294-296.

1987. *Typhlodromus (Brethria) roshanlali*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 120.

1997. *Typhlodromus (Brethria) roshanlali*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 527.

Female : Dorsal shield 364 long, 208 wide. Measurements of setae : j_1–24, j_4, j_5–20 each,



Figs. 712 : *Typhlodromus (Brethria) roshanlali* Narayanan & Ghai (F) : Dorsal shield (after Narayan & Ghai, 1964).

j_6–32, J_2–44, J_5–8, j_3–15, z_2–23, z_3–31, z_4–31, s_4–35, s_6–45, S_2–50, S_4–42, Z_5–50, z_5–20, Z_4–56, r_3, R_1 on lateral integument. Sternal shield with 3 pairs of sternal setae. Ventrianal shield longer (124) than wide with 4 pairs of preanal setae. Fixed digit of chelicera with 5 small tooth, movable digit without tooth. Macroseta on leg IV absent.

Male : Dorsal shield 256 long, 140 wide. Ventrianal shield 120 long, 140 wide.

Collection Records : The type material was from Delhi, collected on malformed mango twig.

Habitat : Malformed mango twig.

Distribution : India (Delhi).

Subgenus 3. ***Clavidromus*** Muma

1961. *Clavidromus* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 296.

1986. *Clavidromus*, Gupta, *Fauna of India : Phytoseiidae*, p. 296.

1987. *Clavidromus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 121.

Diagnosis : Dorsal shield highly sclerotized with 18 pairs of setae, of those, 6 pairs on dorsocentral series, 2 pairs on median and 10 pairs on lateral series, all but j_1 and j_5 being plumose; 2 pairs of sublateral setae on lateral integument. Sternal setae 2–3 pairs. Ventrianal shield with 3–4 pairs of preanal setae. Leg IV with macroseta on genu, tibia and basitarsus of leg IV–all knobbed. Macrosetae absent on leg I–III.

Type ***Kampimodromus transvaalensis*** Nesbitt, 1951

(by designation Muma, 1961)

168. ***Typhlodromus (Clavidromus) neotransvaalensis*** Gupta

(Figs. 713–715)

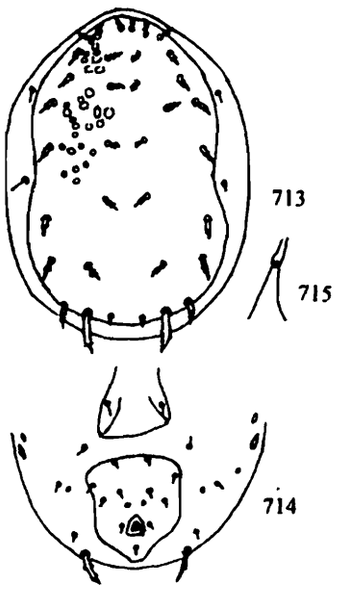
1978. *Typhlodromus neotransvaalensis* Gupta, *Bull. zool. Surv. India*, **1**(1) : 49-50.

1986. *Typhlodromus (Clavidromus) neotransvaalensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 296-298.

1987. *Typhlodromus (Clavidromus) neotransvaalensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 121.

Female : Dorsal shield heavily sculptured as in *Phytoseius*, 320 long, 190 wide. Measurements of setae : j_1–j_4, and J2–16–20 each, J_5–12, j_3, z_3, z_4–18 each, s_4–20, s_6–24, S_2–24, S_4–24, S_5–24, Z_5–36, z_5–18, Z_4–28, r_3, R_1–20 each. Sternal shield weakly sclerotized with 3 pairs of setae. Genital shield 58 wide. Ventrianal shield 112 long, 92 wide, with 4 pairs of preanal setae. Spermatheca as figured. Fixed digit of chelicera with 2–3 teeth and strong *pilus dentilis*, movable digit toothless. Macrosetae on leg IV : genu–16, tibia–20, basitarsus–25 all with flattened tip. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{2}{0}\,\frac{2}{1}\,1$, genu III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Unknown.



Figs. 713-715 : *Typhlodromus (Clavidromus) neotransvaalensis* Gupta (F) : 713-Dorsal shield, 714-Post ventral surface, 715-Spermatheca.

Collection Records : The description of this species was from Tamil Nadu collected on *Casuarina* sp. as well as on tea.

Habitat : *Casuarina* sp., tea.

Distribution : India (Tamil Nadu).

Subgenus 4. ***Orientiseius*** Muma & Denmark

1961. *Amblydromella* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 294.

1968. *Orientiseius*, Muma & Denmark, *Fla. Ent.*, **51** : 238.

1979. *Orientiseius*, Chaudhri *et al.*, *Univ. Agri. Faisalabad*, p. 41.

1986. *Orientiseius*, Gupta, *Fauna of India : Phytoseiidae*, p. 298.

1987. *Orientiseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 122.

Diagnosis : Dorsal shield smooth/reticulate with 18 pairs of setae, of those 10 pairs of laterals, 2 pairs of median and 6 pairs of dorsocentrals, some of the dorsal setae long or very long, whip like. Sternal and ventrianal shields with 3 and 4 pairs of setae, respectively. Ventrianal shield elongated/ pentagonal, broad anteriorly. Macrosetae on leg IV present on genu, tibia and basitarsus, no macroseta on legs I–III.

Type ***Typhlodromus (Typhlodromus) rickeri*** Chant, 1970
(by designation Muma & Denmark, 1968)

Key to the species of subgenus *Orientiseius*

1. z_3 only 2 times as long as z_2 ..... *manipurensis*
– z_3 over 3–4 times as long as z_2 2
2. Length of j_4–j_6 vary between 8–20 microns. 3
– Length of j_4–j_6 vary between 26–60 microns. 5
3. z_2 and z_4 equal. ..... *pruni*
– z_2 and z_4 unequal. 4
4. S_5 less than 1/2 of S_2, spermatheca as in fig. 716a. ..... *channabasavannai*
– S_5 more than 1/2 of S_2, spermatheca as in fig. 720. ..... *hadii*
5. Ventrianal shield only slightly longer than wide. ..... *orissaensis*
– Ventrianal shield about 1½ times as long as wide. ..... *rickeri*

169. *Typhlodromus (Orientiseius) channabasavannai* Gupta
(Figs. 716–716a)

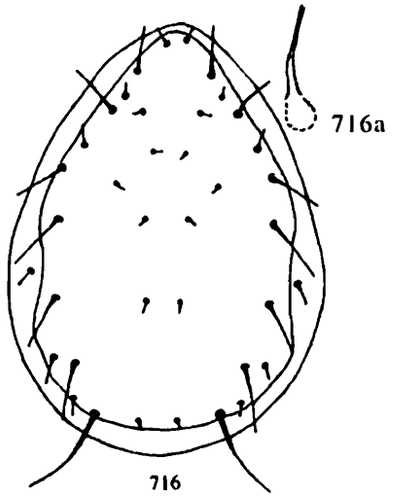
1978. *Typhlodromus channabasavannai* Gupta, *Bull. zool. Surv. India*, **1**(1) : 50-52.

1986. *Typhlodromus (Orientiseius) channabasavannai*, Gupta, *Fauna of India : Phytoseiidae*, p. 298-300.

1987. *Typhlodromus (Orientiseius) channabasavannai*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 123.

In press. *Typhlodromus (Orientiseius) channabasavannai*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 302 long, 160 wide, with 18 pairs of setae. Measurements of setae : j_1–16–20, j_4–10–16, j_5–10–16, j_6–16–20, J_2–18–24, J_5–5–6, j_3–36–41, z_2–9–11, z_3–36–40, z_4–22, s_4–40–50, s_6–48–68, S_2–48–68, S_4–30–34, S_5–12–15, Z_5–70–90, z_5–17–22, Z_4–50–72, r_3–22–29, R_1–16–22. Sternal shield margins indistinct, with 3 pairs of setae. Genital shield 64–75 wide.



Figs. 716-716a : *Typhlodromus (Orientiseius) channabasavannai* Gupta (F) : Dorsal shield, 716a-Spermatheca.

Ventrianal shield 100–123 long, 75–100 wide, with 4 pairs of preanal setae. Fixed digit of chelicera multidentate and a strong *pilus dentilis*, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–40–50, tibia–38–48, basitarsus–60–70. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{0}\,\frac{2}{1}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Unknown.

Collection Records : The type material was collected from Tamil Nadu on tea. Later, it was collected on *Aporusa dioca*, chrysanthemum and citrus in Mizoram.

Habitat : Tea, *Aporusa dioca*, citrus, chrysanthemum.

Distribution : India (Tamil Nadu).

170. *Typhlodromus (Orientiseius) hadii* Chaudhri

(Figs. 717–720)

1965. *Typhlodromus hadii* Chaudhri, *Acarologia*, **7** : 632-633.

1986. *Typhlodromus (Orientiseius) hadii*, Gupta, *Fauna of India : Phytoseiidae*, p. 302.

1987. *Typhlodromus (Orientiseius) hadii*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 124.

1987. *Orientiseius hadii*, Rather, *Z. angew. Zool.*, **74**(3) : 357.

1989. *Orientiseius hadii*, Rather, In : *Progress in Acarology*, **2** : 188.

1992. *Typhlodromus (Orientiseius) hadii*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 182.

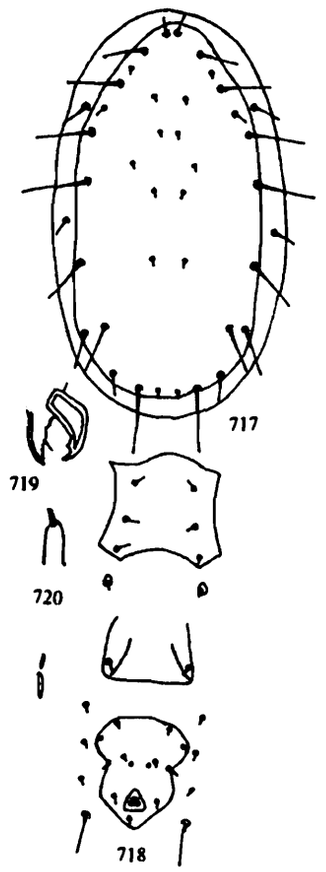
Female : Dorsal shield 345 long, 180 wide. Measurements of setae : j_1–23, j_4–5–7, j_5–5–8, j_6–10–16, J_2–14–16, J_5–4–5, j_3–38–43, z_2–7, z_3–49–53, z_4–18–25, s_4–45–56, s_6–56–61, S_2–43–53, S_4–32–40, S_5–29–35, Z_5–68–74, z_5–5–7, Z_4–40–55, r_3–27–29, R_1–25. Sternal shield as long (60) as wide, with 3 pairs of setae. Ventrianal shield 100 long, 76 wide, with 4 pairs of preanal setae. Fixed digit of chelicera with 4–5 teeth anterior to strong *pilus dentilis*, movable digit with one tooth. Spermatheca as figured. Macrosetae on leg IV : genu–24–30, tibia–32–35, basitarsus–40–50. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, genu III $1\,\frac{2}{1}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$.

Male : Unknown.

Collection Records : The type material was collected from Pakistan on fig. The Indian records are on *Prunus armeniaca* in Kashmir.

Habitat : India : *Prunus armeniaca*, elsewhere : fig.

Distribution : India (Jammu & Kashmir, Uttar Pradesh), Pakistan.



Figs. 717-720 : *Typhlodromus (Orientiseius) hadii* Chaudhri (F) : 717-Dorsal shield, 718-Ventral surface, 719-Chelicera, 720-Spermatheca.

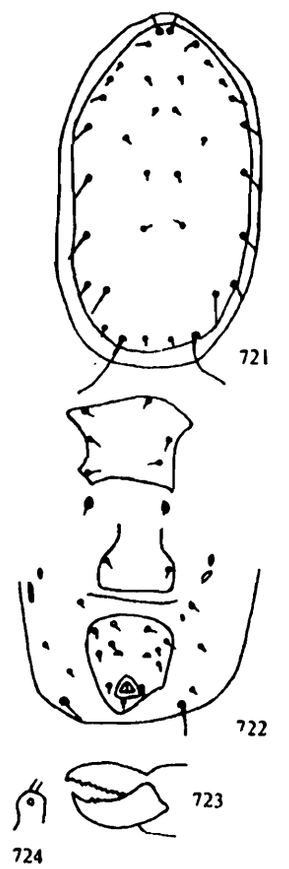
171. *Typhlodromus (Orientiseius) manipurensis* Gupta

(Figs. 721–724)

1977. *Typhlodromus manipurensis* Gupta, *Indian J. Acar.*, **2** : 1-2.

1986. *Typhlodromus (Orientiseius) manipurensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 302-304.

1987. *Typhlodromus (Orientiseius) manipurensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 125.



Figs. 721-724 : *Typhlodromus (Orientiseius) manipurensis* Gupta (F) : 721-Dorsal shield, 722-Ventral surface, 723-Chelicera, 724-Spermatheca.

Female : Dorsal shield 288 long, 160 wide. Measurements of setae : j_1–20, j_4–8, j_5–12, j_6–16, J_2–16, J_5–16, j_3–12, z_2–8, z_3–18, z_4–18, s_4–24, s_6–32, S_2–32, S_4–24, S_5–20, Z_4–32, z_5–12, r_3, R_1 on lateral integument. Sternal shield as long as wide, with 3 pairs of sternal setae. Genital shield 60 wide, narrower than greatest width of ventrianal shield. Ventrianal shield longer (88) than wide (68) with 4 pairs of preanal setae. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–25, tibia–28, basitarsus–56.

Male : Unknown.

Collection Records : This species was described on material collected on an undet. plant in Manipur.

Habitat : Undet. plant.

Distribution : India (Manipur).

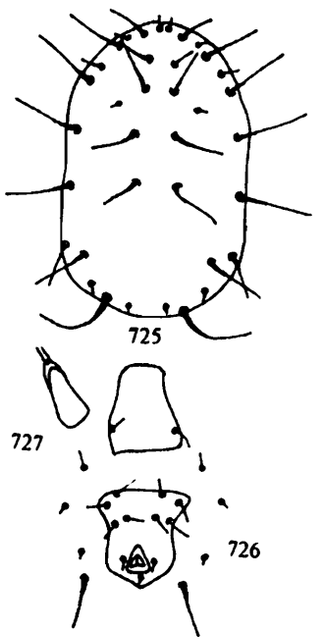
172. ***Typhlodromus (Orientiseius) orissaensis*** Gupta

(Figs. 725–727)

1977. *Typhlodromus orissaensis* Gupta, *Indian J. Acar.*, **2** : 4-6.

1986. *Typhlodromus (Orientiseius) orissaensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 304-305.

1987. *Typhlodromus (Orientiseius) orissaensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 125.



Figs. 725-727 : *Typhlodromus (Orientiseius) orissaensis* Gupta (F) : 725-Dorsal shield, 726-Post ventral surface, 727-Spermatheca.

Female : Dorsal shield slightly sclerotized, 200 long, 150 wide. Measurements of setae : j_1–24, j_4–26, j_5–33, j_6–48, J_2–54, J_5–5, j_3–44, z_2–6, z_3–53, z_4–24, s_4–53, s_6–64, S_2–62, S_4–40, S_5–16, z_5–12, Z_4–56, r_3, R_1 on lateral integument. Z_5–64. Sternal shield with 3 pairs of setae. Genital shield 64 wide. Ventrianal shield 88 long, 76 wide, with 4 pairs of preanal setae. Spermatheca as figured. Macrosetae on leg IV : genu–10, tibia–14, basitarsus–36. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}1\\1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The type material was collected on an undet. plant in Orissa.

Habitat : Undet. plant.

Distribution : India (Orissa).

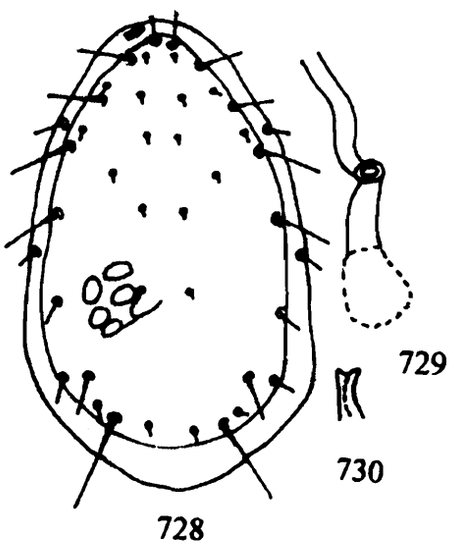
173. ***Typhlodromus (Orientiseius) pruni*** Gupta

(Figs. 728–730)

1970. *Typhlodromus pruni* Gupta, *Oriental Ins.*, **4** : 189-190.

1986. *Typhlodromus (Orientiseius) pruni*, Gupta, *Fauna of India : Phytoseiidae*, p. 305-307.

1987. *Typhlodromus (Orientiseius) pruni*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 125-126.



Figs. 728-730 : *Typhlodromus (Orientiseius) pruni* Gupta (F) : 728-Dorsal shield, 729-Spermatheca, 730-Spermatophoral process (M).

Female : Dorsal shield 330–335 long, 170–180 wide. Measurements of setae : j_1–25–27, j_4–4–9, j_5–5–8, j_6–7–10, J_2–9–12, J_5–4–7, j_3–36, z_2–5–7, z_3–36–45, z_4–6–9, s_4–42, s_6–48, S_2–27, S_4–14, S_5–9, Z_5–76, z_5–5, Z_4–36, r_3–27, R_1–13. Sternal shield 76 long, 76 wide with 3 pairs of setae. Ventrianal shield 100–110 long, 72–80 wide, with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to strong *pilus dentilis*, 5 teeth posterior to it, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–35–40, tibia–27, basitarsus–45. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Dorsal chaetotaxy as in female. Spermatophoral process as figured.

Collection Records : This species was described from West Bengal collected on *Prunus persica*. It has also been collected on an undet. plant in Sikkim and Arunachal Pradesh.

Habitat : Undet. plants, *Prunus persica*.

Distribution : India (West Bengal, Sikkim, Arunachal Pradesh).

174. ***Typhlodromus (Orientiseius) rickeri*** Chant (Figs. 731–733)

1960. *Typhlodromus (Typhlodromus) rickeri* Chant, *Can. Ent.*, **92** : 62-64.

1986. *Typhlodromus (Typhlodromus) rickeri*, Gupta, *Fauna of India : Phytoseiidae*, p. 307-310.

1987. *Typhlodromus (Typhlodromus) rickeri*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 126.

1995. *Typhlodromus (Typhlodromus) rickeri*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 40.

1995. *Typhlodromus (Typhlodromus) rickeri*, Jagadish *et al.*, *Abst. V Nat. Symp. Acarology*, p. 17.

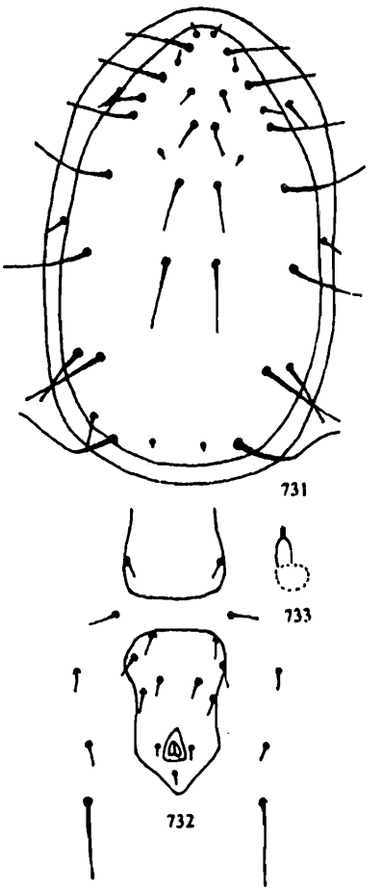
1997. *Typhlodromus (Typhlodromus) rickeri*, Wei-nan, *Economic Insect Fauna of China, Phytoseiidae*, p. 178.

In press. *Typhlodromus (Typhlodromus) rickeri*, Gupta, In : *State Fauna Ser. 9, Fauna of Sikkim.*

In press. *Typhlodromus (Typhlodromus) rickeri*, Gupta & Chatterjee, In : *State Fauna Ser. 11, Fauna of Mizoram.*

Female : Dorsal shield 380 long, 215 wide. Measurements of setae : j_1–27, j_4–22, j_5–36, j_6–47, J_2–63, J_5–7, j_3–67, z_2–18, z_3–74, z_4–25, s_4–78, s_6–85, S_2–85, S_4–49, S_5–27, Z_4–78, Z_5–104, z_5–16, r_3–31, R_1–27. Sternal shield 116 long, 98 wide with 3 pairs of setae. Genital shield 78 wide. Ventrianal shield 134 long, 88 wide, with 4 pairs of preanal setae. Dentition on chelicera not discernible. Spermatheca as figured. Macrosetae on leg IV : genu–45, tibia–51, basitarsus–63. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2&2\\0&0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2&2\\1&0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1&2\\1&1\end{smallmatrix}1$.

Male : Ventrianal shield as figured.



Figs. 731-733 : *Typhlodromus (Orientiseius) rickeri* Chant (F) : 731-Dorsal shield, 732-Post ventral surface, 733-Spermatheca.

Collection Records : Originally, this species was described from Meghalaya collected on citrus as well as from Karnataka on the same host. The other records from India are on mango and sapota in Karnataka; on banana, citrus, cardamom, orchid from Sikkim and citrus in Mizoram.

Habitat : Citrus, peach, banana, sapota, mango, cardamom, orchid.

Distribution : India (Meghalaya, Nagaland, Mizoram, Sikkim, Madhya Pradesh, Uttar Pradesh, Karnataka), Florida (introduced), China.

Remarks : Gupta (in press) found this species actively feeding upon *Brevipalpus phoenicis* infesting cardamom in Sikkim. The fully fed females were found reddish in field. Gupta & Gupta (1992) reported this species feeding upon all stages of a *Tetranychus* sp. infesting ornamental plant in West Bengal.

Subgenus 5. ***Paraseiulus*** Muma

1961. *Paraseiulus* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 299.

1982. *Paraseiulus*, Daneshvar, *Ent. Phyt. Appliq.*, **54** : 27.

1986. *Paraseiulus*, Gupta, *Fauna of India : Phytoseiidae*, p. 310.

1987. *Paraseiulus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 127.

1989. *Paraseiulus*, Cobanoglu, *Turk. Entomol. derg.*, **13**(3) : 175.

Diagnosis : Dorsal shield reticulate, with 19 pairs of setae; 6 pairs on dorsocentrals, 3 pairs on median and 10 pairs of laterals, z_5, Z_4 serrate. Sternal shield with 2 pairs of setae; 3rd pair on small platelets, 4th pair on metastarnal plates. Ventrianal shield with 2–4 pairs of preanal setae. Leg IV macroseta only on basitarsus.

Type ***Seiulus soleiger*** Ribaga, 1902
(by designation, Muma, 1961)

Key to the species of Subgenus *Paraseiulus* known to occur on plants in India

1. Dorsal setae markedly thicker, movable digit of chelicera with 2 denticles. ..... *kuzini*

– Dorsal setae not markedly thicker, movable digit of chelicera with 1 tooth. .. *neosoleiger*

175. ***Typhlodromus (Paraseiulus) kuzini*** (Wainstein)

(Figs. 734–737)

1962. *Paraseiulus kuzini* Wainstein, *Rev. Entomol. U.S.S.R.*, **41**(1) : 231, 233.

1976. *Kuzinellus (Kuzinellus) kuzini* Wainstein, *Zool. Zh.*, **55**(5) : 700.

1987. *Paraseiulus kuzini*, Rather, *Z. angew. Zool.*, **74**(3) : 356.

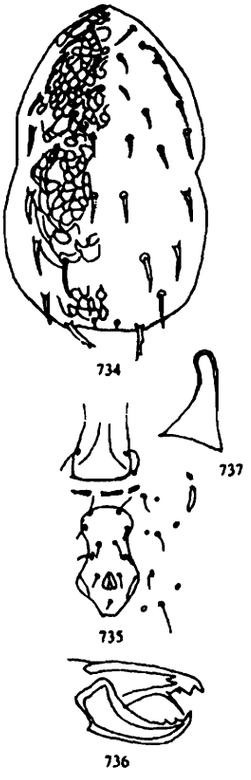
1987. *Paraseiulus kuzini*, Daneshvar, *Ent. Phyt. Applq.*, **54**(1-2) : 28.

1989. *Paraseiulus kuzini*, Rather, In : *Progress in Acarology*, **2** : 188.

1986. *Paraseiulus kuzini*, Chant & Yoshida-Shaul, *Can. J. Zool.*, **64** : 453.

Female : Dorsal shield 350 long, 190 wide. Measurements of setae : j_1–16, j_4–17, j_6–20, J_2–27, J_5–7, j_3–25, z_2–24, z_3–24, z_4–26, z_6–23, s_4–26, s_6–31, S_2–34, S_4–35, Z_5–35, z_5–19, z_6–23, Z_4–39, r_3–22, R_1–21. Ventrianal shield 112 long, 61 wide with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth and *pilus dentilis*, movable digit bidentate. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, genu III $1\,\frac{2}{1}\,\frac{2}{0}\,1$. Macroseta absent on leg IV.

Male : Dorsal chaetotaxy as in female.



Figs. 734-737 : *Typhlodromus (Paraseiulus) kuzini* (Wainstein) (F) : 734-Dorsal shield, 735-Post ventral surface, 736-Chelicera, 737-Spermatheca. (after Chant & Shaul, 1986)

Collection Records : The type collection was made from erstwhile U.S.S.R. on Grecian walnut. The Indian record is from Kashmir on *Juglans regia*.

Habitat : India : *Juglans regia*, elsewhere Grecian walnut.

Distribution : India (Jammu & Kashmir), U.S.S.R., Iran.

176. *Typhlodromus (Paraseiulus) neosoleiger* Gupta

(Figs. 738–739)

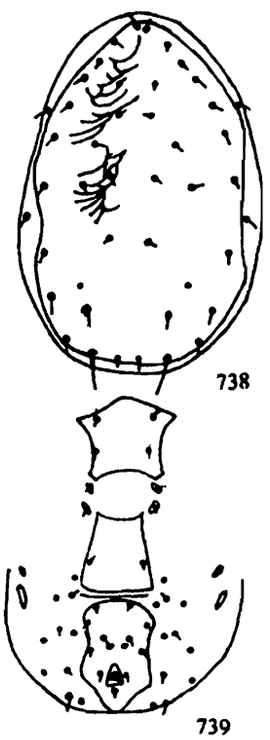
1981. *Typhlodromus neosoleiger* Gupta, *Indian J. Acar.*, **5** : 41-43.

1986. *Typhlodromus (Paraseiulus) neosoleiger*, Chant & Yoshida-Shaul, *Can. J. Zool.*, **64**(2) : 461-462.

1986. *Typhlodromus (Paraseiulus) neosoleiger*, Gupta, *Fauna of India : Phytoseiidae*, p. 310-312.

1987. *Typhlodromus (Paraseiulus) neosoleiger*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 128.

Female : Dorsal shield sclerotized, reticulate, 340 long, 210 wide. Measurements of setae : j_1–23, j_4–16, j_5–16, j_6–16, J_2–16, j_3–20, z_2–16, z_3–16, z_4–20, s_4–20, s_6–20, S_2–20, S_4–22, S_5–20, Z_5–36, Z_4–24, z_5, z_6–16 each. Sternal shield 80 long, 68 wide, with 2 pairs of setae, 3rd pair on small platelets, 4th pair on metasternal plates.



Figs. 738-739 : *Typhlodromus (Paraseiulus) neosoleiger* Gupta (F) : 738-Dorsal shield, 739-Ventral surface.

Genital shield 68 wide. Ventrianal shield much longer than broad, with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit with 1 tooth. Spermatheca not discernible. Leg chaetotactic formula : genu II $2\,\frac{2}{0}\,\frac{2}{0}\,1$, tibia II $1\,\frac{1}{1}\,\frac{2}{1}\,1$, genu III $1\,\frac{2}{1}\,\frac{2}{0}\,1$, tibia III $1\,\frac{1}{1}\,\frac{2}{1}\,1$ Macroseta on basitarsus IV–24 long.

Male : Unknown.

Collection Records : This species was described from Jammu & Kashmir collected on chrysanthemum.

Habitat : *Chrysanthemum*

Distribution : India (Jammu & Kashmir).

Subgenus 6. *Typhloctonus* Muma

1961. *Typhloctonus* Muma, *Bull. Fla. St. Mus.*, **5**(7) : 299.

1986. *Typhloctonus*, Gupta, *Fauna of India : Phytoseiidae*, p. 312.

1987. *Typhloctonus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 130.

1987. *Typhloctonus*, Daneshvar, *Ent. Phyt. Applq.*, **54**(2) : 26.

Diagnosis : Dorsal shield sclerotized, reticulate, with 17 pairs of setae, 11 pairs of laterals, 2 pairs of median and 6 pairs of dorsocentrals; 2 pairs of sublateral setae on lateral integument. Sternal shield with 2–4 pairs of setae. Ventrianal shield with 3–4 pairs of preanal setae. Leg IV with 0–3 macrosetae.

Type ***Typhlodromus tilliarum*** Oudemans, 1930 (by designation Muma, 1961)

Key to the species of Subgenus *Typhloctonus* known to occur on plants in India

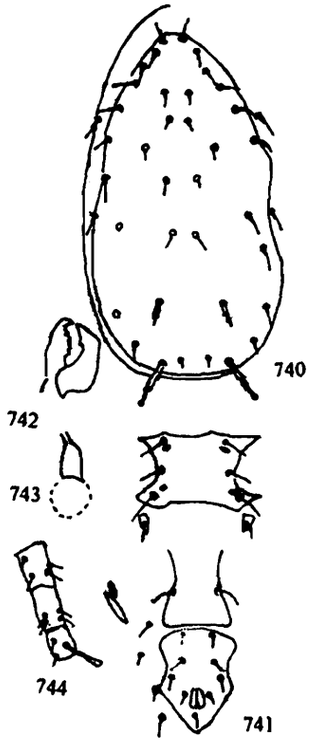
1. j_1 and z_2 of same length 2
– j_1, z_2 unequal 3
2. Macroseta present only on basitarsus IV. ..... *celtis*
– Macroseta present on genu, tibia and basitarsus of leg IV. ..... *transitans*

3. Ventrianal shield over 2 times as long as wide. ..... *malviyai*
- Ventrianal shield much less than 1½ as long as wide. ..... *nesbitti*

177. ***Typhlodromus (Typhloctonus) celtis*** (Denmark & Rather) (Figs. 740–744)

1996. *Neoseiulella (Typhloctona) celtis* Denmark & Rather, *Internat. J. Acarol.*, **27**(1) : 69.

Female : Dorsal shield reticulate with 19 pairs of setae. Measurements of setae : j_1–20, j_4–16, j_5–17, j_6–20, J_2–25, J_5–11, j_3–28, z_2–19, z_3–24, z_4–22, s_4–24, s_6–28, Z_1–20, S_2–32, S_4–32, S_5–26, Z_5–47, z_5–17, Z_4–20, r_3–28, R_1–25. Sternal shield with 3 pairs of setae. Ventrianal shield with 4 pairs of preanal setae, Fixed digit of chelicera with 6 teeth, movable digit with 2 teeth.



Figs. 740-744 : *Typhlodromus (Typhloctonus) celtis* (Denmark & Rather) (F) : 740-Dorsal shield, 741-Ventral surface, 742-Chelicera, 743-Spermatheca, 744-Genu, tibia, basitarsus of leg IV. (after Denmark & Rather, 1996)

Macrosetae on basitarsus IV–38. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$ Spermatheca with short saccular cervix, c-shaped atrium.

Male : Unknown.

Collection Records : This species was described from Kashmir collected on *Celtis australica*.

Habitat : *Celtis australica*.

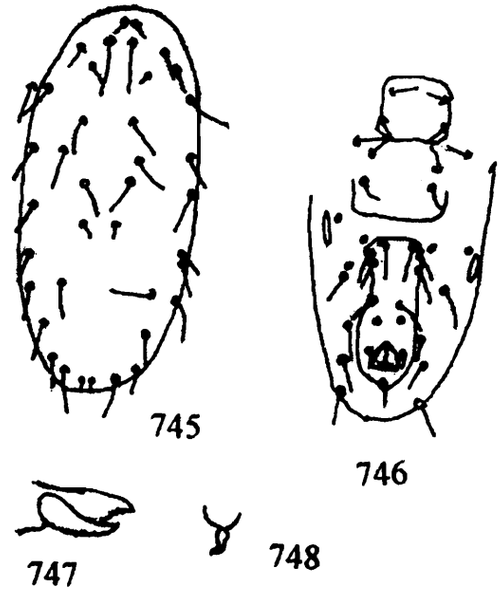
Distribution : India (Jammu & Kashmir).

178. ***Typhlodromus (Typhloctonus) malviyai*** (Singh & Singh) (Figs. 745–748)

1996. *Typhloctonus (Typhloctonus) malviyai* Singh & Singh, *Entomon*, **21**(2) : 195-197.

Female : Dorsal shield 434 long, 223 wide with 19 pairs of setae. Measurements of setae : j_1–10, j_4–12, j_5–34, j_6–14, J_2–7, J_5–9, j_3–39, z_2–20, z_3–20, z_4–27, s_4–33, s_6–35, Z_1–26, S_2–27, S_4–35, S_5–13, Z_5–36, Z_4–19, z_5–20. Sternal shield with 2 pairs of setae. Ventrianal shield 151 long, 68 wide, with 4 pairs of preanal setae. Spermatheca with cup shaped cervix. Fixed digit of chelicera bidentate, movable digit edentate. Macroseta absent on leg IV.

Male : Unknown.



Figs. 745-748 : *Typhlodromus (Typhloctonus) malviyai* Singh & Singh (F) : 745-Dorsal shield, 746-Ventral surface, 747-Chelicera, 748-Spermatheca (after Singh & Singh, 1996).

Collection Records : The description of this species was based upon material collected on brinjal in Uttar Pradesh.

Habitat : Brinjal.

Distribution : India (Uttar Pradesh).

179. *Typhlodromus (Typhloctonus) nesbitti* Womersley

(Figs. 749–755)

1954. *Typhlodromus nesbitti* Womersley, *Aust. J. Zool.*, **2** : 179–180.

1975. *Typhlodromus nesbitti*, Schicha, *J. Aust. Ent. Soc.*, **14** : 217.

1986. *Typhlodromus (Typhloctonus) nesbitti*, Gupta, *Fauna of India : Phytoseiidae*, p. 312-314.

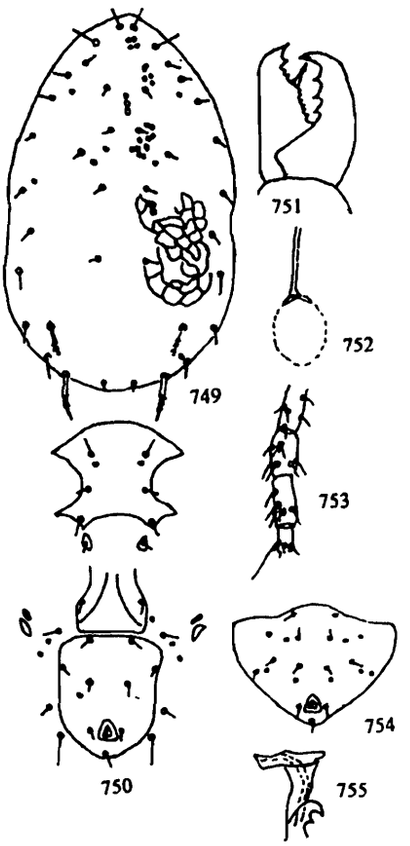
1987. *Typhlodromus (Typhloctonus) nesbitti*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 130-131.

1992. *Typhlodromus nesbitti*, Chant & Yoshida-Shaul, *Internat. J. Acarol.*, **18**(3) : 182.

1996. *Typhloctonus nesbitti*, Denmark & Rather, *Internat. J. Acarol.*, **22**(1) : 47.

1997. *Typhlodromus (Typhloctonus) nesbitti*, Gupta & Chatterjee, In : *State Fauna Ser. 6, Fauna of Delhi*, p. 527.

Female : Dorsal shield with 19 pairs of setae. Measurements of setae : j_1–28, j_4–j_6–17, J_2–20, J_5–11, j_3–20, z_2–20, z_3–22, z_4–22, s_4–25, s_6–25, Z_1–20, S_2–28, S_4–22, S_5–22, Z_5–56, z_5–17, Z_4–36, r_3, R_1–20 each. Sternal shield with 3 pairs of setae.



Figs. 749-755 : *Typhlodromus (Typhloctonus) nesbitti* Womersley (F) : 749-Dorsal shield, 750-Ventral surface, 751-Chelicera, 752-Spermatheca, 753-Genu, tibia, basitarsus of leg IV, 754-Ventrianal shield (M), 755-Spermatophoral process (M). (after Schicha, 1978)

Ventrianal shield 143 long, 110 wide, imbricate with 3 pairs of preanal setae. Fixed digit of chelicera multidentate with strong *pilus dentilis*, movable digit with 3 teeth. Macroseta present only on basitarsus IV.

Male : Unknown.

Collection Records : The type material was from New South Wales on lucern tree. The Indian records are from malformed mango tree in Delhi.

Habitat : India : Malformed mango tree, elsewhere lucern tree.

Distribution : India (Delhi, Jammu & Kashmir), Australia.

180. *Typhlodromus (Typhloctonus) transitans* Gupta

(Figs. 756-759)

1981. *Typhlodromus transitans* Gupta, *Indian J. Acar.*, **5** : 40-41.

1984. *Typhloctonus prunus* Denmark & Rather, *Internat. J. Acarol.*, **10**(3) : 173.

1986. *Typhlodromus (Typhloctonus) transitans*, Gupta, *Fauna of India : Phytoseiidae*, p. 314.

1986. *Typhloctonus transitans*, Moraes *et al.*, *EMBRAPA*, **353**, p. 315.

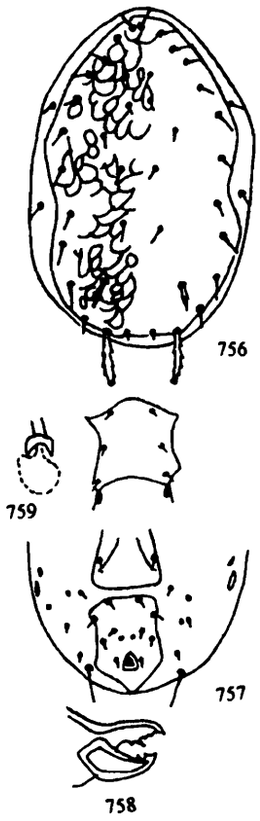
1987. *Typhlodromus (Typhloctonus) transitans*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 131.

1989. *Typhloctonus prunus*, Rather, In : *Progress in Acarology*, **2** : 188.

Female : Dorsal shield 320 long, 175 wide. Measurements of setae : j_1–j_6–16–18 each, J_2–20, J_5–8, j_3–21, z_2–16, z_3–21, z_4–24, s_4–24, s_6–25, Z_1–20, S_2–28, S_4–28, S_5–20, Z_5–48, z_5–16, Z_4–28, r_3–23, R_1–20. Sternal shield as long as wide with 3 pairs of sternal setae. Genital shield 68 wide. Ventrianal shield 92 long, 64 wide, with 4 pairs of preanal seate. Fixed digit of chelicera multidentate, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu–20, tibia–18, basitarsus–36. Leg chaetotactic formula : genu II $2\begin{smallmatrix}2\\0\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia II $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$, genu III $1\begin{smallmatrix}2\\1\end{smallmatrix}\begin{smallmatrix}2\\0\end{smallmatrix}1$, tibia III $1\begin{smallmatrix}1\\1\end{smallmatrix}\begin{smallmatrix}2\\1\end{smallmatrix}1$.

Male : Unknown.

Collection Records : The description of this species was from Kashmir collected on pear.



Figs. 756-759 : *Typhlodromus (Typhloctonus) transitans* Gupta (F) : 756-Dorsal shield, 757-Ventral surface, 758-Chelicera, 759-Spermatheca.

The other collections are from Kashmir on *Prunus armeniaca.*

Habitat : Pear, *Prunus armeniaca,* mulberry.

Distribution : India (Jammu & Kashmir).

Subgenus 7. ***Typhlodromus*** Scheuten s. str.

1957. *Typhlodromus* Scheuten, *Arch. Fur. Naturges,* **23** : 104-112.

1986. *Typhlodromus*, Gupta, *Fauna of India : Phytoseiidae,* p. 315.

1987. *Typhlodromus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 132.

Diagnosis : Dorsal shield well sclerotized with 18 pairs of setae, 10 pairs of laterals, 2 pairs of median and 6 pairs of dorsocentrals. All setae smooth and pointed : 2 pairs of sublateral setae on lateral integument. Sternal shield with 3 pairs of sternal setae. Ventrianal shield with 4 pairs of preanal setae. Macroseta present only on basitarsus IV.

Type ***Typhlodromus pyri*** Scheuten, 1857 (by subsequent designation : Oudemans, 1929)

Key to the species of Subgenus *Typhlodromus* known to inhabit plants in India

1. Besides Z_5 which is quite long, the other lateral setae mostly long, all over 35 microns (except S_5), anterior ones nearly reach bases of the following setae on line ..... *sijiensis*
– Besides Z_5 which is normally long, the other lateral setae mostly short and never more than 20–30 microns, z_3–s_4 shorter never reach upto the bases of setae next in line 2
2. Ventrianal shield much longer than broad ..... *garhwalicus*
– Ventrianal shield almost as long as broad....3
3. S_5 very small, nearly 1/2 as long as S_4, Z_4 much shorter than the distance between its base and that of Z_5 ..... *communis*
– S_5 subequal to S_4, Z_4 almost touches the base of Z_5 ..... *neorhenanus*

181. ***Typhlodromus (Typhlodromus) communis*** Gupta

(Figs. 760-763)

1978. *Typhlodromus communis* Gupta, *Bull. Zool. Surv. India,* **1** : 53.

1986. *Typhlodromus (Typhlodromus) communis*, Gupta, *Fauna of India : Phytoseiidae,* p. 316-318.

1987. *Typhlodromus (Typhlodromus) communis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.,* **95** : 132.

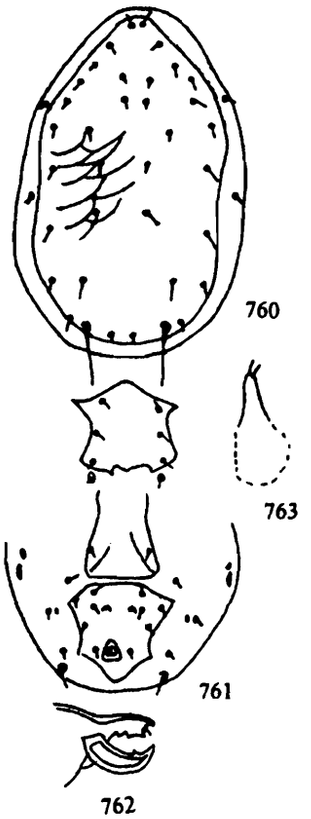
1992. *Typhlodromus (Typhlodromus) communis*, Gupta, In : *Contributions to Acarological Researches in India,* p. 444.

1992. *Typhlodromus (Typhlodromus) communis*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3,* p. 183.

Female : Dorsal shield 280–300 long, 160–180 wide, with 18 pairs of setae. Measurements of setae : j_1–13–15, j_4–10–13, j_5–10–15, j_6–12–16, J_2–16–20, J_5–5–8, j_3–12–16, z_2–6–7, z_3–12–16, z_4–12–17, s_4–13–18, s_6–16–20, S_2–18–24, S_4–21–24, S_5–11–15, Z_5–56–65, z_5–12–16, Z_4–30–40,

r_3–10–15, R_1–10–15. Sternal shield as long (83) as broad with 3 pairs of sternal setae. Genital shield 63–65 wide. Ventrianal shield almost as long as wide, or only slightly longer with 3 pairs of preanal setae. Fixed digit of chelicera with 3 teeth anterior to *pilus dentilis* and 2 teeth beyond it. Movable digit with 2 teeth. Spermatheca as figured. Macroseta only on basitarsus IV–35 long. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{1}\ \frac{2}{0}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Ventrianal shield and spermatophoral process as figured (Gupta, 1986).



Figs. 760-763 : *Typhlodromus (Typhlodromus) communis* Gupta (F) : 760-Dorsal shield, 761-Ventral surface, 762-Chelicera, 763-Spermatheca.

Collection Records : The description of this species was made from West Bengal collected on *Pyrus communis*. The other collections were from *Ipomoea staphylina* in Arunachal Pradesh, on an undet. plant and mango in West Bengal.

Habitat : *Pyrus communis*, mango, *Eucalyptus* sp., *Dalbergia* sp., *Ipomoea staphylina*, undet. plant.

Distribution : India (Arunachal Pradesh, West Bengal, Karnataka, Tamil Nadu).

182. *Typhlodromus (Typhlodromus) garhwalicus* Gupta

(Figs. 764-766)

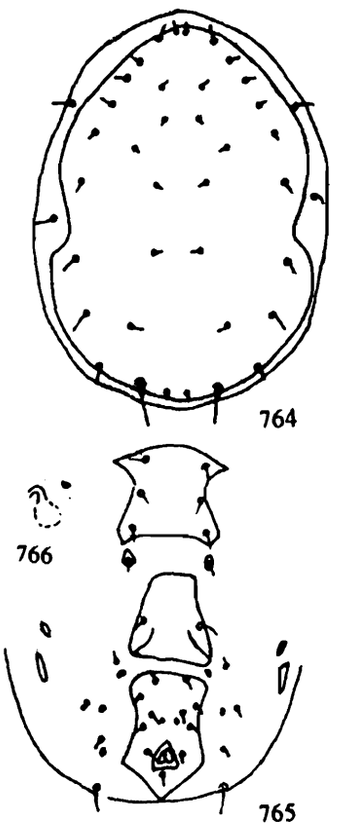
1982. *Typhlodromus garhwalicus* Gupta, *Indian J. Acar.*, **6** : 29-30.

1986. *Typhlodromus (Typhlodromus) garhwalicus*, Gupta, *Fauna of India : Phytoseiidae*, p. 318-319.

1987. *Typhlodromus (Typhlodromus) garhwalicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 133.

Female : Dorsal shield 387 long, 228 wide. Measurements of setae : j_1–13, j_4–j_6, J_2–14–18 each, J_5–8, j_3–22, z_2–z_4–17 each, s_4–13, s_6–22, S_2–26, S_4–30, S_5–21, Z_5–39, z_5–14, Z_4–26, r_3–26, R_1–17. Sternal shield as long as broad with 3 pairs of setae. Genital shield 65 wide with a pair of setae. Ventrianal shield 120 long, 70 wide with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth, movable digit toothless. Macroseta only on basitarsus IV–52 long. Leg chaetotactic formula : genu II $2\ \frac{2}{0}\ \frac{2}{0}\ 1$, tibia II $1\ \frac{1}{1}\ \frac{2}{1}\ 1$, genu III $1\ \frac{2}{0}\ \frac{2}{1}\ 1$, tibia III $1\ \frac{1}{1}\ \frac{2}{1}\ 1$.

Male : Unknown.



Figs. 764-766 : *Typhlodromus (Typhlodromus) garhwalicus* Gupta (F) : 764-Dorsal shield, 765-Ventral surface, 766-Spermatheca.

Collection Records : The description of this species was form Uttar Pradesh collected on *Casuarina* sp.

Habitat : *Casuarina* sp.

Distribution : India (Uttar Pradesh).

183. *Typhlodromus (Typhlodromus) neorhenanus* Gupta

(Figs. 767-770)

1977. *Typhlodromus neorhenanus* Gupta, *Indian J. Acar.*, **2**: 4.

1986. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, *Fauna of India : Phytoseiidae*, p. 320-321.

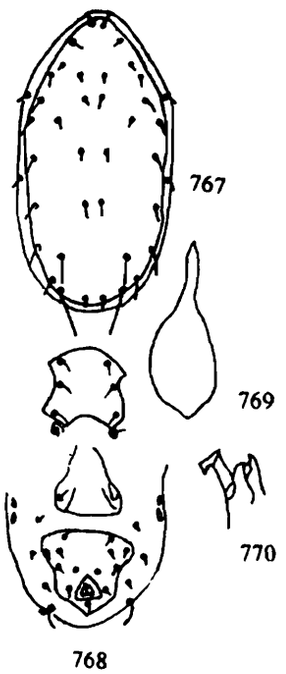
1987. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 133.

1992. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, In : *Contributions to Acarological Researches in India*, p. 444.

1992. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, In : *State Fauna Ser. 3, Fauna of West Bengal, Part 3*, p. 183.

1995. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, In : *State Fauna Ser. 4, Fauna of Meghalaya, Part 2*, p. 40.

Female : Dorsal shield 300 long, 160 wide. Measurments of setae j_1–16, j_4–10, j_5–16, j_6–20, J_2–24, J_5–8, j_3–13, z_2–8, z_3–16. z_4–22, s_4–25, s_6–20, S_2–33, S_4–36, S_5–32, Z_5–56, z_5–16, Z_4–44, r_3, R_1 on lateral integument. 20 and 24, respectively. Sternal shield with 3 pairs of setae. Genital shield narrower than greatest width of ventrianal shield. Ventrianal shield broader at anterior region, concave at preanal region, with 4 pairs of preanal setae. Fixed digit of chelicera with 3 teeth and strong *pilus dentilis*; movable digit with 2 teeth. spermatheca as figured. Macroseta present only on basitarsus IV–40 long.



Figs. 767-770 : *Typhlodromus (Typhlodromus) neorhenanus* Gupta (F) : 767-Dorsal shield, 768-Ventral surface, 769-Spermatheca, 770-Spermatophoral process (M).

Male : Dorsal shield chaetotaxy as in female. Spermatophoral process as figured.

Collection Records : The type material was from Meghalaya collected on fern. It was also collected on mango in Arunachal Pradesh as well as on an undet. plant in West Bengal.

Habitat : Fern, mango, undet. plant.

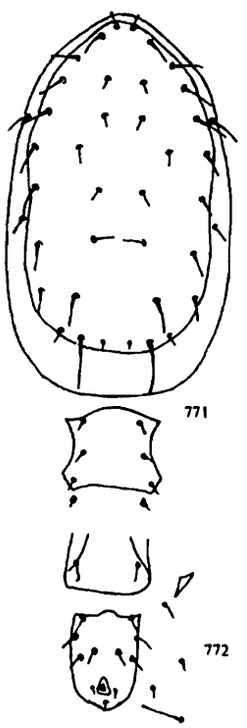
Distribution : India (Meghalaya, Arunachal Pradesh, West Bengal).

184. *Typhlodromus (Typhlodromus) sijiensis* Gupta

(Figs. 771-772)

1986. *Typhlodromus (Typhlodromus) sijiensis* Gupta, *Fauna of India : Phytoseiidae*, p. 321-322.

1987. *Typhlodromus (Typhlodromus) sijiensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 134.



Figs. 771-772 : *Typhlodromus (Typhlodromus) sijiensis* Gupta (F) : 771-Dorsal shield, 772-Ventral surface.

Female : Dorsal shield 370 long, 202 wide with 18 pairs of setae. Measurments of setae : j_1–26, j_4–j_6–20–22 each, J_2–24, J_5–7, j_3–44, z_2–41, z_3–35, z_4–44, s_4–44, s_6–42, S_2–37, S_4–34, S_5–26, Z_5–56, z_5–20, Z_4–38, r_3–40, R_1–26. Sternal shield with 3 pairs of setae. Genital shield 67 wide with a pair of setae. Ventrianal shield 125 long, 109 wide, with 4 pairs of preanal setae. Fixed digit of chelicera with 2 apical teeth, movable digit with at least 1 tooth. Spermatheca not discernible. Macroseta present only on basitarsus IV–56 long. Leg chaetotactic formula : genu II $2\ \begin{smallmatrix}2&2\\0&0\end{smallmatrix}\ 1$, tibia II $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$, genu III $1\ \begin{smallmatrix}2&2\\1&0\end{smallmatrix}\ 1$, tibia III $1\ \begin{smallmatrix}1&2\\1&1\end{smallmatrix}\ 1$.

Male : Unknown.

Collection Records : The original description of this species was from Arunachal Pradesh on soil habitat.

Habitat : Soil habitat.

Distribution : India (Arunachal Pradesh).

Subfamily 3. GNORIMINAE Chaudhri

1975. Gnoriminae Chaudhri, *Pak. J. Agr. Sci.*, **12** : 100.

1982. Gnoriminae, Wei-nan & Cheng-ling, W. uyi *Sci. Jour.*, **2** : 132.

1986. Gnoriminae, Gupta, *Fauna of India : Phytoseiidae*, p. 323.

1987. Gnoriminae, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 135.

Diagnosis : Dorsal shield light to heavily sclerotized with 12 pairs of lateral setae of diverse shape and nature, 3 pairs of sublateral setae, 2 pairs of setae present around ventrianal shield; ventrianal shield large to robust, reticulate with 6–7 pairs of setae; a fold like structure present on ventrianal shield little anterior to anal region.

Type ***Gnorimus*** Chaudhri (1975)
(by designation)

Genus 18. ***Garhwalicus*** Gupta & Ray

1981. *Garhwalicus* Gupta & Ray, *Bull. Zool. Surv. India*, 4(3) : 268.

1986. *Garhwalicus*, Gupta, *Fauna of India : Phytoseiidae*, p. 323.

1987. *Garhwalicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 135.

Diagnosis : Dorsal shield heavily sclerotized with 12 pairs of lateral setae of diverse length, 2 pairs of median setae and 6 pairs of dorsocentral setae; sublateral setae 3 pairs on lateral integument. Most of the setae on dorsal shield rod-like, a few with widened base. Sternal shield reticulate with 3 pairs of sternal setae. Ventrianal shield reticulate, robust, with 7 pairs of preanal setae. Leg IV with 2 macrosetae each on genu and tibia and 1 on basitarsus-all being spatulate. Spermatheca scarcely visible.

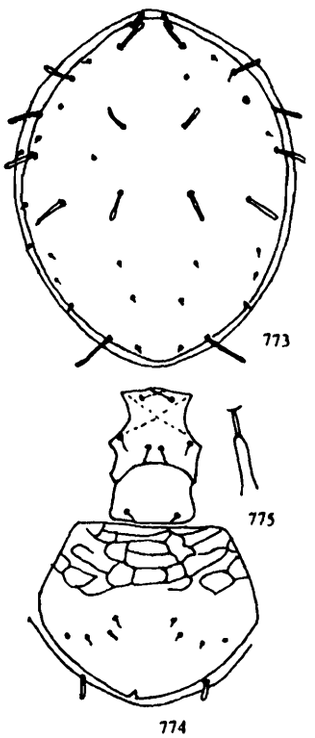
Type ***Garhwalicus himalayensis*** Gupta & Ray, 1981
(by original designation)

185. ***Garhwalicus himalayensis*** Gupta & Ray (Figs. 773-775)

1981. *Garhwalicus himalayensis* Gupta & Ray, *Bull. Zool. Surv. India*, 4(3) : 268-269.

1986. *Garhwalicus himalayensis*, Gupta, *Fauna of India : Phytoseiidae*, p. 322-325.

1987. *Garhwalicus himalayensis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, **95** : 135.



Figs. 773-775 : *Garhwalicus himalayensis* Gupta & Ray (F) : 773-Dorsal shield, 774-Ventral surface, 775-Spermatheca.

Female : Dorsal shield 370 long, 278 wide, heavily sclerotized with 12 pairs on lateral series, 2 pairs on median series, 6 pairs on dorsocentral series, 3 pairs of sublateral setae on lateral integument. Most of the dorsal setae rod-like, a few with widened bases, some setae short. Measurements of setae : j_1–18, j_4–31, j_5–29, j_6–34, J_2–7, J_5–4, j_3–38, z_2–5, z_3–44, z_4–36, s_4–5, s_6–44, Z_1–6, S_2–44, S_3–5, S_4–5, S_5–5, Z_5–60, z_5–broken, Z_4–6. Lateral integument heavily sclerotized with 3 pairs of sublateral setae, r_3–38, R_1, R_4 broken. Sternal shield 67 long, 100 wide, with 3 pairs of setae. Genital shield 67 wide, granulate with a pair of setae. Ventrianal shield 190 long, 210 wide with 7 pairs of preanal setae. Leg IV with 2 macrosetae on genu (27, 18 long), tibia also with 2 macrosetae (18 and 20 long), basitarsus–22 long – all being spatulate. Spermatheca scarcely visible. Chelicera not discernible.

Male : Unknown.

Collection Records : The type material was from Uttar Pradesh collected on an undet. plant.

Habitat : Undet. plant.

Distribution : India (Uttar Pradesh).

BIO-ECOLOGY

The predatory mites having potentiality to suppress pest mite population had drawn attention of acarologists and entomologists and studies both in laboratories and in fields were undertaken to workout the life cycles, food preference, feeding potentiality, effect of alternate food on development, effect of different pesticides on their population, seasonal occurrence, mass multiplication, etc. and results so far available are summarised in this chapter so as to give an idea to the future workers as to how much is already known and what is yet to be done.

Family 1. PHYTOSEIIDAE

1. *Amblyseius (Amblyseius) channabasavannai* Gupta & Daniel

Daniel (1981) reported this predator feeding effectively upon *Raoiella indica* infesting areca palm in Kerala. She studied biology and population fluctuation. According to her, the duration of different developmental stages was : larva–17.2 hrs., protonymph–22.2 hrs., deutonymph–23.8 hrs. in case of males and for females, the corresponding figures were : 20.4 hrs., 21.9 hrs. 23.4 hrs., respectively. The total developmental period when feeding upon eggs of *R. indica* Hirst was 85–107 hrs. in case of males and 84–113 hrs. in case of females. During this period, a female consumed 15–38 eggs, and male consumed 14–19 eggs. An average fecundity of a female was 27.3 in life time during average oviposition period of 15.7 days. The number of eggs laid per female per day was 2.7 ± 0.60. The preoviposition period was 4.5 ± 1.93 hrs. and the total oviposition period was 15.7 ± 1.51 days. All the stages of prey mite were attacked by all the stages of the predator. A female fed on 11–42 eggs/day or 6–13 adults/day. The time required to consume a protonymph, larva, adult male or female of prey mite was 1/2 minute, 1–1 $^1/_2$ minutes and 5 minutes, respectively. The alternate food of the predator included *Tetranychus fijiensis* Hirst and eggs and crawlers of sclae insect. This predatory mite appeared to be a specific predator of *Raoiella indica* and had good searching capacity.

2. *Amblyseius (Amblyseius) paraaerialis* Muma

Sathiama (1995) discussed the possibility of utilising this predatory mite for biological suppression of *Oligonychus iseilemae* (Hirst) infesting coconut in Kerala.

3. ***Amblyseius (Euseius) alstoniae*** Gupta

Dhooria (1981) studied predatory behaviour of this mite and reported that both nymphs and adults of this predatory mite fed on prey mite *Eutetranychus orientalis* (Klein) consuming larvae and protonymphs more readily than other stages. It could also feed and breed on mymphs of white fly on castor leaves. Those predatory mites which fed on white fly developed yellowish white discolouration and those fed on *E. orientalis* developed orange red or blackish areas in gut region. Adult females of predatory mite took average of 110, 124.37, 205, 331.80, 460.2 seconds to consume an egg, a larva, a protonymph, a deutonymph and one adult female mite, respectively. On an average 3.67, 5.20, 4.62 and 10.16 protonymphs of prey mite were consumed in 24 hrs., respectively by one larva, one proto, one deuto and one adult female predator. An adult female consumed an average of 6.6 eggs per day. According to Jose *et al.* (1989), this predatory mite along with *Scolothrips indicus* fed on all stages of *Tetranychus macfarlanei.* On an average, one predatory mite consumed a total of 191.36 eggs, 76 larvae, 82.60 nymphs and 46.26 adults of *T. macfarlanei* Baker & Pritchard in life time. Kumari & Sadana (1990) studied the effects of temperature and R.H. on its development while Kumari & Sadana (1990a) made observations on mating behaviour of this predatory mite and reported that females mated with one male. Often males awaited the emergence of adult female from deutonymph. Pheromones might have played important role in this matter. Males mated with several virgin females. This predatory mite built up the population when temperature, R.H., wind velocity, sun shine hours and rainfall ranged from 26.23–29.55°C, 56.33–79.83%, 30–40 kms. per hour, 7.03–10.07 hrs. and 0–42.70 mm, respectively. Rainfall had very little effect on population of this predatory mite and no correlation was there with population of phytophagous and predatory mites indicating that this predator could subsist on other food. Population of predatory mite was more in summer when prey population was very low (Kumari & Sadana, 1995). The time taken to completely eliminate the population of *Brevipalpus phoenicis* (Geij.) on potted guava plants increased with prey density. *Amblyseius alstoniae* could control the population of *B. phoenicis* in all predator-prey ratio excepting 1 : 10 and 1 : 20. Prey population in control plants increased on the contrary producing characteristic damage symptoms and defoliation while plants receiving predatory mites had no defoliation (Kumari & Sadana, 1995a). The population of *A. alstoniae* was significantly positively corelated with population of *T. ludeni* Zacher Neemark (0.5%) was safe to this predatory mite (Rai *et al.,* 1999). The evaluation of different chemicals against *A. alstoniae* revealed that based on cumulative percentage mortality, the toxicity of compounds in descending order was fluvalinate > monocrotophos > dicofol > methyl-o-demeton > tetradifon > quinalphos > triazophos > ethion > wettable sulphur > neemark > NSKE (Rai *et al.,* 1995).

4. ***Amblyseius (Euseius) concordis*** (Chant)

Jagadish *et al.* (1990) studied life cycle of this predator under laboratory condition at temperature ranging from 24.1–29.6°C and 60–80% R.H. The duration of different developmental stages was 50.04 ± 0.91 hrs. for eggs. 17.68 ± 1.90 hrs. for larva, 24.49 ± 2.51 hrs. for protonymph and 29.80 ± 2.01 hrs. for deutonymph. Males developed faster than females. Further, Jagdish *et al.* (1990a) studied the seasonal history of this predator on castor pollen at Bangalore during 1984–1986 and that revealed that R.H. and rainfall had no effect on population built up eventhough rainfall had a tendency to reduce the population. Temperature, sun shine hours and wind speed had significant correlation in causing increase/decrease of this predatory mite population.

Jagadish *et al.* (1995, 1999) studied the effect of temperature and R.H. on development of this mite and the results are as below :

Incubation period : It was maximum (65 ± 2.33 hrs.) at 20 ± 1°C with 60 ± 3% R.H. and minimum (35 ± 0.98 hrs.) at 35 ± 1°C with 55 ± 3% R.H.. This period was shorter at higher temperature and was prolonged at lower temperature.

Hatchability : It was least (38.8%) at 20 ± 1°C with 60 ± 3% R.H. and highest (100%) at 27 and 35°C with R.H. of 65 ± 3% and 55 ± 3%, respectively.

Larval period : It was minimum (19.80 ± 1.14 hrs.) at 35 ± 1°C with R.H. of 55 ± 3% and maximum (41 ± 1.12 hrs.) at 20 ± 1°C with 60 ± 3% R.H.

Protonumph : Minimum duration was 24 ± 0.91 hrs. at 35 ± 1°C and 55 ± 3% R.H. and maximum was 40 ± 0.94 hrs. at 20 ± 1°C with 55 ± 3% R.H.

Deutonymph : Shortest duration (23 ± 0.94 hrs.) was seen at 35 ± 1°C and 55 ± 3% R.H. and longest was 39.48 ± 0.90 hrs. at 20 ± 1°C with 60 ± 3% R.H.

Total developmental period (egg-adult) : It was shortest (66.80 ± 1.14 hrs.) at 35 ± 1°C with 55 ± 3% R.H. and longest (120. 48 hrs) at 20 ± 1°C with 60 ± 3% R.H.. This period increased with increase of temperature. The optimum temperature required for development of this species ranged between 27–35°C.

According to Nageshchandra *et al.* (1999) castor pollen expedited development of larval, protonymphal and deutonymphal periods while incubation period remained unaffected. In addition, castor pollen also shortened the preoviposition period, gave higher fecundity and total developmental period was also short (122.01 ± 4.21 hrs. and 118.8 ± 3.40 hrs.) for females and males, respectively. This indicated that castor pollen was most preferred food as compared to other food like tetranychids, tenuipalpids and eriophyids. Jagadish *et al.* (1995) studied the effect of temperature on development of this species feeding upon *Tetranychus neocaledonicus* Andre. It was found that developmental period of this predatory mite was affected by rise in temperature beyond 35°C. It took 66 ± 41.4 hrs. for development at 35°C. However, at lower temperature (20°C), it took 120.40 ± 1.10 hrs.). Therefore, optimum temperature for development was 25–27°C.

This predatory mite readily consumed Tetranychidae. Tenuipalpidae and Eriophyidae but failed to develop on artificial food (Bengal gram powder + honey and pigeonpea powder + honey). However, it survived upto larval stage in pigeonpea powder + honey registering 2% survival. In case of soybean flour + honey, the survival percentage was 0.5%. Castor pollen was found to be suitable showing 100% survival. *Raoiella indica* and *Brevipalpus phoenicis* gave 90% survival. With *Eutetranychus orientalis* and *Tetranychus ludeni,* the survival was 100%. (Jagadish & Channa-Basavanna, 1995; Nageshachandra *et al.*, 1998).

Nageshchandra *et al.* (1995a, 1999) studied food preference of this mite. The incubation period was not affected with different types of food but larval, protonymphal stages were faster on castor pollen. Preoviposition period was longest on *T. neocaledonicus* + castor pollen (26.94 ± 2.85 days). Total developmental period was 122.01 ± 4.21 hrs. and 118 ± 3.40 hrs. for female and male, respectively, on castor pollen proved that this food was most preferred, hence may be used for mass multiplication. Besides castor pollen, the other preferred foods were : *T. neocaledonicus.* Bengal gram powder + honey, pigeonpea powder + honey, soybean powder + honey, honey alone.

Jagadish & ChannaBasavanna (1987) reported castor pollen as most suitable food for this species giving 100% survival. The other alternate foods as Bengal gram powder + honey, pigeonpea powder + honey were not suitable. Among prey mites, *Raoiella indica* and *Brevipalpus phoenicis* recorded 90% survival whereas *Eutetranychus orientalis* and *Tetranychus neocaledonicus* gave 100% survival.

5. *Amblyseius (Euseius) delhiensis* (Narayanan & Kaur)

Somchoudhury (1981) studied population fluctuation of this mite in Delhi on cotton infested with jassids during 1973–1975 and reported that the population was more correlated with environmental condition than with prey density. High temperature and high rainfall were unfavourable for rapid multiplication of this predatory mite. Maximum population was recorded when jassid population was on the decline indicating that the predator could not exert check on population build up of jassids. However, it was evident that this predatory mite could be an effective factor in determining the maximum size of the jassid population.

Nageshchandra *et al.* (1998) studied its biology on guava mite, *Eotetranychus hicoriae* (eggs and immature stages) besides castor pollen. The duration of different developmental stages were :

Immatures of *A. delhiensis* fed 1.20, 7.93, 19.96 eggs and 0.26, 3.53 and 8.20 nymphs of *E. hicoriae* respectively during their larval, protonymphal and deutonymphal periods. Adult female/male on an average fed on 9.70/1.54 eggs and 5.36/0.76 mymphs of *E. hicoriae* per day.

6. *Amblyseius (Euseius) coccosocius* Ghai & Menon

Saha *et al.* (1998) studied the effect of temperature on development of this species. Total development period was shortest (4.83 ± 0.22 days) at 35°C and was longest (8.53 ± 0.17 days) at 30°C while fecundity was maximum (46.28 ± 1.27 eggs at 25°C and minimum at 35°C (8.28 ± 0.29 eggs). Longevity of female and male ranged respectively between 2.08 ± 0.82 days at 35°C to 23.52 ± 0.84 days at 25°C. Oviposition and preoviposition periods rnaged respectively from 9.92 ± 0.15 days at 35°C to 21.28 ± 0.15 days at 25°C and 0.3 ± 0.08 days at 30°C to 1.26 ± 0.12 days at 35°C. Mortality at 25°C was nil and it was maximum (70%) at 35°C. This indicated that development period increased with decrease of temperature while daily egg laying rate, fecundity, longevity (female and male) were highest at 25°C and lowest at 35°C. Therefore, 25°C was most suitable and 35°C was most unsuitable temperatures for development of this mite.

Table–1 : Duration of different developmental stages of *A. (E.) delhiensis* on different types of food.

	Stage	Castor pollen	Eggs *E. hicoriae*	Immature stages of *E. hicoriae*
Incubation		32–52 Hrs.	36–52 Hrs.	34–46 Hrs.
Larva	(Female)	27.2 Hrs.	36.0 Hrs.	32.0 Hrs.
	(Male)	26.4 Hrs.	30.4 Hrs.	35.2 Hrs.
Protonymph	(F.)	46.93 Hrs.	60.26 Hrs.	68.53 Hrs.
	(Male)	47.2 Hrs.	60.0 Hrs.	69.28 Hrs.
Deutonymph	(F.)	53.87 Hrs.	74.67 Hrs.	79.73 Hrs.
	(Male)	53.60 Hrs.	66.80 Hrs.	69.70 Hrs.
Preoviposition		2.43 Hrs.	15.36 Hrs.	1.23 Hrs.
Oviposition		2.46 days	15.13 days	1.40 days
Postoviposition		1.63 days	17.96 days	1.46 days

7. *Amblyseius (Euseius) finlandicus* (Oudemans)

Sadana *et al.* (1990) reported this species as voraceous feeder of *Eutetranychus orientalis.* Sharma & Sadana (1985) studied the rate of development of this species at 20, 25, 30, 35°C on citrus. The most suitable temperature was found to be 25°C as at that temperature the total development period was quite short with no mortality, longer oviposition period and higher fecundity. At 35°C, the mortality was highest. The duration of different developmental stages was as below :—

Sharma & Sadana (1983, 1989) studied development of this species feeding upon *Eutetranychus orientalis* as its prey food: Adult females formed its best food for rapid development and reproduction as developmental duration was very short, adult longevity and fecudity were very high and sex ratio was fairly high and balanced. The next preferred food was the combination of all the stages of *E. orientalis* but when eggs were given as food, the progeny was only femal es which could not reproduce further for want of males, as this predatory mite did not reproduce parthenogenetically. Duration of different developmental stages varied with types of food provided. The minimum was on adult food followed by all developmental stages taken together and maximum was on prey protonymphs.

Sadana & Sharma (1989) described the different developmental stages of this mite. The eggs were translucent at hatching but the colour changed with food taken. Protonymph which was 8-legged has 4 pairs of postlateral setae, 2 pairs of mediolateral setae, 1 pair of clunal setae, 2 pairs of sublateral setae and 2 pairs of pores on the dorsum with a small peritreme near base of coxae III. Deutonymphs differed from protonymphs in having a small sternal shield, 1 pair each of metasternal and genital setae and more defined peritreme.

Sharma & Sadana (1990) studied influence of temperature on development of this mite and its interaction with its prey mite *E. orientalis* at constant temperatures, 20 ± 1°C, 25 ± 1°C, 30 ± 1°C and 35 ± 1°C at 70 ± 3% R.H., at 1 : 5, 1 : 10, 1 : 15, 1 : 20, 1 : 25, 1 : 30, 1 : 40 and

Table–2 : Duration of different developmental stages of *A. (E.) finlandicus* at different temperatures.

Stage	**Temperatures**			
	20°C	**25°C**	**30°C**	**35°C**
Larva	1.8 ± 0.40	1.2 ± 0.40	1.0 ± 0.00	1.0 ± 0.10
Proto	1.2 ± 0.40	1.0 ± 0.00	1.2 ± 0.40	1.0 ± 0.00
Deuto	3.4 ± 0.48	2.8 ± 0.40	2.4 ± 0.48	2.4 ± 0.48
Total Dev. period	7.8 ± 1.16	5.9 ± 6.66	5.8 ± 0.40	5.2 ± 0.50
Longevity (F)	17.6 ± 1.85	27.8 ± 1.93	18.6 ± 1.49	11.6 ± 1.62
(M)	10.5 ± 0.50	16.5 ± 0.81	8.5 ± 0.50	5.5 ± 0.50
% Mortality (Larva-Adult)	0.00	0.00	36.3	52.1
Preoviposition Period	1.4 ± 0.48	1.2 ± 0.40	1.8 ± 0.40	1.0 ± 0.00
Oviposition Period	15.0 ± 0.49	25.6 ± 1.85	15.8 ± 1.32	7.2 ± 1.32
Postoviposition Period	1.2 ± 0.40	1.0 ± 0.00	1.6 ± 0.00	1.4 ± 6.45
Fecundity	24.2 ± 2.99	51.8 ± 0.80	15.6 ± 1.20	9.2 ± 1.16
Daily rate of egg laying	1.61	2.02	0.98	1.27
Sex ration (F : M)	4.60 : 1	3.84 : 1	3.30 : 1	2.20 : 1

1 : 50 predator : prey ratios. It was observed that at 1 : 5 and 1 : 10, all the preys were consumed at all temperatures regimes. Predation rate increased with increase in temperature becoming maximum at 35°C. The rate also increased with increase of prey density upto 1 : 25 and 1 : 30 but declined thereafter irrespective of temperature. Mean number of eggs laid by the predator per day increrased with increase in prey density of 5–25 but decreased with further increase of prey density. It also increased with increase of temperatures with 25–35°C irrespective of food ratios and decreased with further increase of temperature. Thus, keeping in view the fecundity and marginal difference in predation rate, 25°C was considered most favoured for predator-prey interaction with *A. (E.) finlandicus* and *E. orientalis* at any ratio of predator-prey from 1 : 15 to 1 : 30.

8. *Amblyseius (Euseius) rhododendronis* Gupta

According to Krishnamoorthy (1983), this sepcies was recorded in field along with *Tetranychus ludeni* during June. The predator population was found to be 16.9–151.9 per plant and that of *T. ludeni* was 71.9–446.9 per plant. It was found to be very efficient in controlling the spider mite in about 4 weeks time under field condition and could be multiplied only on spider mite and not on any other food like castor pollen. This was in contrary to *Amblyseius (Typhlodromips) tetranychivorus* (Gupta) which could be multiplied on pollen also.

9. *Amblyseius (Euseius) ovalis* (Evans)

This is an important predator and has been found to be effective as biocontrol agent in many parts of the world. In India, it has been seen feeding voraceously on tetranychid mites assuming almost reddish colour. In view of this, Borah & Rai (1989) found this species as predator of *Bemesia tabaci* (Gennadius) on chilli plant. and studied its biology on the same prey. The duration of different developmental stages was as below :—

Average consumption was found to be 10.14 ± 1.31 eggs or 3.86 ± 1.01 first instar larva/adult

Table–3 : Duration of different developmental stages of *A. (E.) ovalis* on different foods.

Stage	Duration of different developmental stages of *A. ovalis* on different food (in hours)		
	Castor pollen	Eggs of *B. tabaci*	First instar of *B. tabaci*
Egg	50.38 ± 5.01	51.15 ± 2.31	55.23 ± 3.53
Larva	21.02 ± 3.08	21.37 ± 1.10	33.14 ± 2.18
Proto	27.15 ± 2.96	31.59 ± 2.56	32.13 ± 2.01
Deuto	28.19 ± 4.63	33.80 ± 2.41	34.71 ± 1.95
Egg-adult	127.10	137.91	155.21
Oviposition	14.01 ± 2.05 (days)	10.13 ± 2.01 (days)	6.31 ± 1.25 (days)
Fecundity	39.2 ± 4.01 eggs	20.60 ± 3.83 eggs	18.35 ± 2.27 eggs
Daily egg production	2.13 ± 0.50	0.97 ± 0.35	0.82 ± 0.18
Adult longevity (F)	16.21 ± 2.03	12.52 ± 2.09	10.67 ± 3.43
(M)	11.81 ± 2.01	9.38 ± 2.53	8.24 ± 2.12
Hatchability	94.62	81.05	66.21

female/day while it was 9.01 ± 2.35 eggs or 2.95 ± 0.03. First instar larva/adult male/day. According to the authors, the predatory mite preferred 1–3 days old eggs and first instar larvae and rejected other stages. The predatory mite had shorter developmental period, longer oviposition period, higher fecundity and egg production per day as well as higher survival percentage when fed on castor pollen than on eggs and first instar larvae of *B. tabaci.* Hence, the predatory mite could be effective only when the pollen availability in the field is scarce.

Nangia, ChannaBasavanna & Jagadish (1990) reported that the life cycle took 12.3 ± 2.7 days in Karnataka and fecundity was 30.6 ± 3.2 eggs/ female.

Hariyappa & Kulkarni (1989) studied interaction between *A. ovalis* and chilli mite, *Polyphagotarsonemus latus.* Manjunatha *et al.* (1999) devised a technique for mass multiplication of *A. ovalis* and its field release against *P. latus* on chilli. The mass multiplication of *A. ovalis* in laboratory was done with castor pollen mixed with honey and yeast on undersurface of cotton leaves kept in wet cotton in plastic tray. Field release was done using 5, 10, 15, 20 mites per plant and was compared with recommended chemicals, water sprays and untreated checks. The result indicated that 20 mites per plant proved superior with lowest count of thrips (0.81/3 leaves) and mites (0.61/3 leaves). Even castor pollen alone was found quite useful as food giving eggs and mite density of 62.4 ± 7.39 and 49 ± 5.47, respectively after 15 days of release. Honey + Yeast and honey alone were ineffective. Recommended dose of dicofol (2 ml/L) + dimethoate (2 ml/L) was at per with release of 20 mites per plant.

10. *Amblyseius (Neoseiulus) cucumeris* (Oudemans)

Manjunatha *et al.* (1995) studied olfactory behaviour of this mite to Western flower thrips infested chrysanthemum volatiles. It was found that *A. cucumeris* was attracted significantly to volatiles of chrysanthemum whole plant with thrips and whole plant alone. The whole plant + thrips air entrained volatiles confirmed the presence of Germacrene-D, followed by caryophyllene and β farnesene. The Germacrene-D elicited maximum olfactory response. Manjunatha *et al.* (1995a) studied olfactory behaviour of Western flower thrips on eggs of *A. (N.) cucumeris.*

11. *Amblyseius (Neoseiulus) longispinosus* (Evans)

Since this is the most important phytoseiid predator in India, a good amount of work on different aspects has been done in India. Some of the results are summarised below :

Life cycle : Mallik & ChannaBasavanna (1983) studied life history of this mite at 27 ± 0.5°C and duration of different stages were : incubation–44 hrs. 42 minutes, larva–12 hrs. 25 minutes, proto–20 hrs. 53 minutes, deuto–21 hrs. 51 minutes, total development (female)–99 hrs. 11 minutes and that of male 95 hrs. 30 minutes. They also studied the life table and the different parameters were r_m–0.41, R_O–53.27, T–9.63, λ–1.51. The freshly laid larva was glistening white immediately after emergence and measured 264 microns long. It did not feed. Protonymph was initially white and later the colour changed according to food taken. Deutonymph was slightly longer as compared to protonymph. Before moulting to the next stage. Each stage passed through a resting stage called quiescent stage, during which it did not feed. Its life history was studied by Manjunatha & Puttaswamy (1993) using *Oligonychus indicus* (Hirst) and castor pollen as food and also by Nangia *et al.* (1990) infesting papaya. According to the latter report, the total life cycle took 15.8 ± 2.0 days and fecundity was 33.4 ± 3.5 eggs. Nangia *et al.* (1990) reported that *A. (N.) longispinosus* fed on *T. cinnabarinus* on mulberry and its total life cycle took 9.5 ± 2.4 days and fecundity was 49.3 eggs.

Pande & Majumdar (1990) studied the effect of different food, viz. *Tetranychus cinnabarinus,* okra pollen and honey dew on life cycle of this predatory mite and it was reported that oviposition rate, fecundity, life span of adult were higher and total development was shorter on combination of *T. cinnabarinus* + honey dew. The order of preference was : T. cinnabarinus + honey dew > okra pollen + honey dew > *T. cinnabarinus* > *T. cinnabarinus* + okra pollen and okra pollen + honey dew.

Chandrasekharappa *et al.* (1995) studied the effect of temperature and humidity on life cycle at 20, 25, 30, 35°C at 32.5–33, 50–55, 71–75, 94.5–96.5% R.H. Development was found to be rapid at higher temperature and high hunidities. At 20 and 30°C, average period for development from egg-adult was 99.6 ± 11.46 hrs. and 95.32 ± 8.33 hrs., respectively when humidities were higher i.e. 94.5–96.5%. Mites were susceptible to desiccation and none developed to maturity at above 30°C. Lower temperature of 20°C also caused high mortality during development.

Food preference : Mallik & ChannaBasavanna (1983) reported that this species preferred eggs of *T. ludeni* as compared to other predators like *A. (T.) tetranychivorus* which preferred its adults. Hence the degree of overlap of eggs of *T. ludeni* and adults of *A. (N.) longispinosus* was very low. Comparable to this trend was the degree of overlap between adults of *T. ludeni* and adults of *A. (N.) tetranychivorus.* Nangia *et al.* (1990) reported that this mite fed upon *T. cinnabarinus* on mulberry.

Feeding potentiality : Chandrasekharappa *et al.* (1995a) studied effect of temperature and humidity on feeding potentiality of this mite at 25 and 30°C and 32.5–33%, 50.5–55%, 71–75%, 94.5–96.5% R.H. Food used was eggs and adults of *T. urticae.* Higher temperature and higher humidity increased feeding. Maximum number of eggs consumed by an adult of *A. (N.) longispinosus* was 21.77 eggs at 30°C and 94.5–96.5% R.H. Maximum number of prey consumed by this predatory mite was 14.0 ± 1.58 eggs at 25°C and 32.5–33% R.H.

Manjunatha *et al.* (1995) reported predatory potential and mass rearing of this mite on cotton spider mite, *T. macfarlanei* under laboratory condition. Adults fed 14.22 ± 0.66 eggs, 2.41 ± 0.87 larvae, 1.72 ± 0.57 nymphs and 1.05 ± 0.97 adults. All motile stages of the predatory mite fed on prey eggs. At prey egg density of 10–50, the predator multiplied upto a density of 9.80–19.70 and laid 1.20 and 3.20 eggs at 10 and 40 eggs, respectively.

Predator-prey interaction : Mallik (1974) in his M. Sc. thesis studied biology of this mite along with *T. ludeni* as well as their interactions. It was found that at 1 : 4 ratio (predator : prey) the peak of the predator population was attained on 6th day and none of the predators was found on 11th day, showing rise in predator population coinsiding with rise in prey population. In those cases, where the predator was not released, the prey population was very high even during 6th week. In another study conducted by Mallik *et al.* (1989), it was found that the interaction between *T. ludeni* and its two predators, viz. *A. (N.) longispinosus* and *A. (T.) tetranychivorus* in laboratory at 1 : 10 ratio revealed that the former predator preferred eggs followed by immature forms. As a result of this preference, the respective stages of the prey were depleted first from the leaves by the respective predators in experiments with only one species.

Mass multiplication : Manjunatha *et al.* (1999) studied predatory potential and mass rearing of this mite. Mallik *et al.* (1999) developed a schedule for mass multiplication of this predator. According to them, french bean was raised in 22 cm dia. earthen pots. Later, those were infested with *T. urticae* when they were in 9 leaf stage. Then the predatory mites were released after 9 days and

the predators were harvested after 12 days of release. If 250 predators were released on a batch of 15 plants, 4700 predators could be harvested per batch per month. Manjunatha *et al.* (1995) also developed a technique for mass multiplication of this predatory mite. Bean leaves infested with *T. macfarlanei* proved superior and 326 and 292 predatory mites could be got in 10 days from initial of 20 pairs of adults. Potted cotton plants proved mass rearing arena. Anil *et al.* (1995) compared different mass rearing techniques for this predatory mite. They reported that petiole of trifoliate bean leaves infested with *T. macfarlanei* were inserted into stoppered vial filled with water and the same was placed over a blackened glass plate which formed a suitable arena. According to them, this technique was found to be best.

Effect of pesticides : Singh & Mukherjee (1995) reported that wettable sulphur (0.25%), NSKE (0.23%) and fenvalerate (0.005%) were safe to this predator though dicofol (0.04%), ethion (0.05%) and monocrotophos (0.05%) have maximum mortality of prey mite, *T. cinnabarinus.*

12. ***Amblyseius (Typhlodromalus) eucalypticus*** Ghai & Menon

Sathiamma (1995) reported biological suppression of *Oligonychus iseilemae* infesting cocomut in Kerala with this predatory mite.

13. ***Amblyseius (Typhlodromips) tetranychivorus*** (Gupta)

This is probably one of the best known predatory mites indigenously available in India. As a result, a number of workers reported that this mite can efficiently control pest mite population on vegetables and fruit trees. In view of this, this mite has drawn the attention of the entomologists and acarologists and therefore, works on diverse aspects have been undertaken, the results of which are summarised below.

Life cycle : Puttaswamy (1978) in his Ph.D. thesis first focussed its importance as biocontrolling agent against *T. ludeni* and worked out its biology, predator-prey interaction etc. Puttaswamy & ChannaBasavanna (1979, 1979a) reported that for females and males, the total developmental period was 140 ± 7.51 and 136.21 ± 6.00 hrs, respectively at 24–27°C and 62.8% R.H. Adult females of *T. ludeni* were preferred as food to other stages and ovipositing female fed on 3.5 adult females, 1.45 nymphs, 0.60 larvae and 3.98 eggs of *T. ludeni.* A female predator consumed 26.74 preys (all stages taken together) during its total developmental period. Preoviposition period was 3.11 ± 0.87 days and a female laid in average 45.30 ± 7.16 eggs during its oviposition period of 28.97 ± 4.01 days. Average longevity of female was found to be 39.22 ± 3.36 days and the same for male was 35.38 ± 5.57 days. According to Jagadish & Nageshchandra (1979), the average incubation period, larval, protonymphal and deutonymphal periods when studied using *R. indica* as prey were respectively 1.92, 1.06, 0.92 for female and 1.92, 1.14 and 1.42 days for males. ChannaBasavanna (1981) reported that the total developmental period at 27 ± 1°C and 95.3% R.H. was 47.95 ± 3.60 hrs. while the same at 24 ± 1°C and 65 ± 3% R.H. was 142.28 hrs. At 27 ± 1°C and 30 ± 1°C with humidity range of 85 ± 3 to 95 ± 3% R.H., the total developmental period decreased whereas at 24 ± 1°C and 32 ± 1°C, this period decreased and increased alternately. Jagadish & Nageshchandra (1982) also studied the life cycle of this species and according to them the duration (in days) of different stages was egg.1.71 (M), 1.92 (F), larva–1.14 (M), 1.06 (F), protonymph–1.14 (M), 1.06 (F), deutonymph–1.42 (M), 0.92 (F), total developmental period–3.71 (M), 3.16 (F). Preoviposition, oviposition and postoviposition periods were 3.63, 17.10 and 5.12 days, respectively. Fecundity was 17–40 eggs. (Average–26.8 eggs/female). Longevity 18–35 days (average 20.63 days). Preoviposition period (3.63 days) was shorter than that of its prey (5.83 days). The development was faster on red palm mite than on *T. ludeni* but fecundity was more on

T. ludeni (44.33 eggs) than on *R. indica* (26.8 eggs). According to Nangia *et al.* (1990), the life cycle took 9.8 ± 3.6 days and fecundity was 39.4 ± 3.74 eggs/female. Nangia & ChannaBasavanna (1990) reported that this mite fed on *T. cinnabarinus* and total life cycle took 9.1 ± 2.6 days and total fecundity was 50.4 eggs. Nangia & ChannaBasavanna (1984) studied biology of this predatory mite on selected plant feeding mites of economic importance in laboratory. The preys which were used were *E. orientalis* on *Cassia* sp. *O. biharensis* on rose, *O. indicus* on sorghum, *Schizotetranychus* sp. on neem, *R. indica* on coconut, *R. shimpara* on rose apple, *B. phoenicis* on guava, *Eriophyes cymbopogonis* on lemon grass, *Phyllocoptruta oleivora* on citrus and *Aculus* sp. on jackfruit. The results indicated that life cycle was completed at shorter time on tetranychild mites whereas on tenuipalpid mites it lasted for an intermediate time (20.94 hrs.) while it was longest (21.74 hrs.) on eriophyid mites. Protonymphal and deutonymphal periods were shortest on tetranychids (3.91–5.43 days) and longest on eriophyid mites (5.21–6.81 days). Similar trend was seen on oviposition period as the average total fecundity was 42.27 when fed on tetranychid, *O. indicus*; on tenuipalpid, the maximum eggs was on *B. phoenicis* while the least (10.48) was on eriophyids. Hence, *A. (T.) tetranychivorus* was reported to be a good predator of tetranychid mites.

Food preference and Feeding potentiality : Nangia & ChannaBasavanna (1982) reported that short term feeding of castor pollen resulted in higher desnity of predator as against *T. ludeni* alone. Nangia & ChannaBasavanna (1983a, 1989) studied feeding potentiality of this predator on tetranychid and tenuipalpid food. Mean consumption rate of female protonymph and deutonymphs was higher than the respective stages of males irrespective of prey species provided. Adult predator mainly consumed adult tetranychids like *E. orientalis, O. indicus, O. biharensis, Schizotetranychus* sp. during oviposition period. On the contrary, eggs of *R. indica, R.* sp. and adults of *B. phoenicis* were not preferred. Adult preys were caught with first pair of legs and then were paralysed. After consumption of prey, the gut contents of the predator assumed the colour of the prey. Female predator devoured nymphs and adults of all tetranychids. All stages of *O. indicus* were consumed during preoviposition period whereas general preference of feeding on adults of all tetranychids was observed during oviposition period.

Food preference : The rate of prey consumption decreased with increase in amount of pollen (Puttaswamy & ChannaBasavanna, 1981). Effect of pollen feeding on predatory efficiency at 21–27°C and 68–69% R.H. indicated that presence of higher quantity of pollen reduced predatory efficiency. Magnitude in reduction in prey consumption between the treatments receiving no pollen was 2.89 prey/predator/day while with higher pollen it was 1.29 prey/predator/day and with heavy pollen it was 1.04 prey/predator/day. Oviposition, rate was higher with heavy pollen followed by light pollen and no pollen. The overall average of 55.04% reduction in number of prey consumed in the presence of lower concentration of pollen would appear to be more than compensated by 30.37% in rate of oviposition. Even the overall average of 63.91% reduction in prey consumption in the presence of heavy concentration of pollen was accompanied by 36.91% increase in oviposition (Puttaswamy & ChannaBasavanna, 1981). The larvae of predator completely starved and yet completed life cycle successfully. Mean consumption rate of female protonymph and deutonymph was relatively higher than that of the respective stages of male, irrespective of prey provided. Adult predator mainly consumped adult tetranychids during oviposition period. Prey consumption capacity was fewer than 5 adult spider mites or less than 20 immatures of tetranychid/tenuipalpid preys (Nangia & ChannaBasavanna, 1983, 1989).

Chandrasekharappa *et al.* (1995a) stuided the effect of temperature and humidity on feeding potentiality of this mite.

Period of release and Population fluctuation : Nangia & ChannaBasavanna (1995) studied the trend of release of this predator and its prey *T. ludeni* on various crops. Where predators were released after 5 and 10 days after release of prey, peak prey population occurred in 2nd week showing a steep increase of population thereafter. In predator free control set, on the other hand, the peak in prey population occurred at the end of 4th week, by that time the prey density in other two sets was very low. Plants receiving predators 5 days after release of prey were free of both mite species by the end of 5th week, whereas in case of plants receiving predators with a time lag of 10 days, became free of both species at the end of 7th week. In either case, the predator could suppress the prey population effectively.

Predator-prey interaction : Mallik *et al.* (1989) made mathematical models for studying interaction between *T. ludeni* and this predator at 10 : 1 ratio. This predator preferred adults and older nymphal stages as compared to *A. (N.) longispinosus* which preferred eggs followed by younger stages. As a result of this feeding habits, the respective stages of the prey mite were depleted from leaves. In presence of both the predators, the total time taken for elimination of the prey was same as with either one of the predator. Mathematical model for the number of different stages of the prey and predators was developed based on difference equation. Nangia & ChannaBasavanna (1983, 1995) studied interaction of this predatory mite and *T. ludeni* at 1 : 30, 1 : 12, 1 : 24, 1 : 18 and 1 : 6 on okra. At 1 : 30 ratio, total elimination of prey was seen in the first half of the 6th week. At 1 : 24 and 1 : 18, total elimination of prey was by the end of 4th week. At 1 : 12 and 1 : 6, elimination was on mid third week and within 10 days, respectively. At 1 : 6, the symptoms of damage was minimum.

Effect of pesticides : Krishnamoorthy (1983) studied the effect of pesticides on this predatory species. Adults were less affected with wettable sulphur and dimethoate @ 2 gm/L on the day of spraying. Residues were also innocuous. Endosulfan (0.07%) was highly toxic on the day of spraying but no mortality of predatory mite was seen subsequently. Dicofol, monocrotophos, fenitrothion, cypermethrin, quinalphos, dimethoate, methyl-o-demeton, phosalone, methomyl (@ 0.05%), malathion and carbaryl (0.1%) were highly toxic causing 100% mortality within 24 hours of spraying. Residues of all those were toxic even 9 days after treatment. Jagadish & ChannaBasavanna (1989) studied toxicity of pesticides on this predatory mite species. It was highly susceptible to phosphamidon, dicofol, formothion, quinalphos, carbaryl, sulphur, malathion, endosulfan, oxydemeton methyl and dimethoate causing 100% mortality 48 and 72 hours after treatment at their recommended doses. However, sulphur and dicofol recorded better survival compared to other pesticides 12 hours after treatment with half the recommended doses (0.13%, 0.23%, respectively). Even 24 hours after treatment sulphur (0.13%) showed relatively less mortality as compared to other pesticides. Among 7 ecofriendly pesticides attempted against 2-spotted spider mites, wettable sulphur (0.25%) was found to be safest to this species followed by NSKE (5%), fenvalerate (0.05%). Extracts of *Clerodendron inerme* caused only 3.75% mortality at 5% and 1.25% and hence it was safe to this predatory mite (Singh *et al.*, 1999). Jagadish & ChannaBasavanna (1983a) reported that this predator was sensitive to dicofol and sulphur at 0.05 and 0.36% concentrations, respectively, registering 100% mortality after 24 hours of treatment. With laps of time and decrease of concentrations, predator had shown tolerance to both sulphur and dicofol. Dicofol (0.2%) and sulphur (0.9%) were relatively much less toxic and the predator could thrive in the field indicating that these two chemicals at these concentrations

could be used for management of mite pests. On the contrary, phosphamidon, formothion, quinalphos, carbaryl, malathion, endosulfan, oxydemeton methyl and dimethoate at their recommended and half the recommended doses were most toxic to predator.

Synthetic pyrethroids like fenvalerate (0.01%), decamethrin (0.01%) and cypermethrin (0.05%) were highly toxic to this predator causing 100% mortality to the adults within one hour. Even residues 11 days after treatment were harmful (Krishnamoorthy, 1983a). The extracts of *Azadirachta indica, Clerodendron inerme, Datura repens, Eucalyptus globulus, Leucas aspera* and *Vitex negundo* for integrated control of *T. urticae* showed that extracts of *C. inerme, E. globulus* and *A. indica* were safe to *A. (T.) tetranychivorus.* Extracts of *C. inerme* recorded 3.75% mortality while extracts of *E. globulus* recorded 13.75 and 6.25% mortality. Hence, these were moderately safe to this predator (Yathiraj & Jagadish, 1999).

14. ***Phytoseiulus persimilis*** Athias-Henriot

Among the most important phytoseiid predatory mites found successful specially in temperate climate on fruit trees and vegetables, *Phytoseiulus persimilis* is definitely one of those and hence studies on diverse aspects of this species have been undertaken. Due to its tremendous success in biological control throughout the world, attempt was made to introduce this predatory mite in India from Switzerland through Commonwealth Institute of Biological Control, Bangalore in 1969 for trial against areca mite and tea mite. It was found to reproduce feeding upon *Tetranychus* sp., *Oligonychus* sp., *Raoiella indica,* but its reproductive potentiality reduced when *R. indica* was used and also was found that it could not survive in field during monsoon months when *R. indica* population was very low. This mite was again introduced in 1973 from England through C.I.B.C. and multiplied in laboratory at 27–29°C on *Oligonychus indicus* and *R. indica.* It was found that it preferred only eggs of *O. indicus.* However, in the absence of *O. indicus,* the predator fed upon freshly laid eggs of *R. indica.* It was also noted that when temperature was raised from 27–29°C to 30–32°C, the culture of the predator declined. It did not appear to be effective against areca palm mite because of prevailing high temperature (upto 40°C) and high humidity. All these caused high predator mortality (Daniel & Seshadri, 1975).

Krishnamoorthy (1989) reported that this predator preyed upon *Tetranychus cinnabarinus, T. ludeni, T. fijiensis* and *T. neocaledonicus* under laboratory condition but it preferred *T. fijiensis* and *T. ludeni* over others. The same author also studied the biology of this predator on *T. fijiensis* and *T. ludeni* at 25 ± 1°C and 29 ± 2°C. Duration of different developmental stages in days at two temperatures were : egg–2.20 ± 0.02, 1.80 ± 0.04; larva–0.65 ± 0.02 and 0.47 ± 0.02; protonymph–1.05 ± 0.03, 0.73 ± 0.03; deutonymph–1 13 ± 0.03, 0.84 ± 0.03, total developmental period–5.03 ± 0.03, 3.84 ± 0.07; preoviposition period–1.48 ± 0.02, 1.32 ± 0.04; oviposition–20.54 ± 2.64, 17.00 ± 1.25; postoviposition period–10.00 ± 1.76, 8.70 ± 1.57; total adult longevity–31.88 ± 3.63, 27.01 ± 3.89; mean number of eggs per day per female : on *T. cinnabarinus*–5.80, *T fijiensis*–5.67, *T. ludeni*–4.27, *T. neocaledonicus*–2.60; total eggs per female on *T. cinnabarinus*–17.40, *T. fijiensis*–17.00. *T. ludeni*–12.80, *T. neocaledonicus*–7.80; mean number of eggs/ day–3.99, 4.77; total number of eggs laid–82.40, 80.80; sex ratio–1 : 4.87, 1 : 4.81. Mating was essential for oviposition. Krishnamoorthy & Mani (1989) studied effect of release of *P. persimilis* for control of *T. ludeni* on French beans. A simple method was devised for mass culture of this predator (Krishnamoorthy, 1988).

SUMMARY

The present Monograph on plant inhabiting predatory mites of India deals with 185 species under Order Mesostigmata belonging to 4 families and 18 genera. Besides describing three new species, it gives selected synonymies, brief descriptions, illustrations, collection records, habitats, distribution of the remaining 182 species and provides keys to genera and species. In addition, bioecological informations like life cycle, seasonal occurrence, food preference, feeding potentiality, predator-prey interaction, mass culture, etc., wherever known for the promising predatory species, are also provided. A State-wise distribution list of all the 185 species treated here under Order Mesostigmata as well as of 134 species belonging to Orders Prostigmata, Astigmata and Cryptostigmata, dealt with in Part–I of the Monograph is also appended.

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Appendix : State-wise distribution of plant inhabiting predatory mites of Orders : Prostigmata, Astigmata, Cryptostigmata and Mesostigmata in India.

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1. *Anystis baccarum*																+	+													
2. *A. indica*									+																					
3. *A. nagalandensis*						+																								
4. *Anystis* sp.										+				+																
5. *Tencateia kanthiensis*									+																					
6. *Tencateia* sp.									+																					
7. *Walzia darjeelingensis*							+		+																					
8. *Walzia indiana*				+					+																					
9. *Walzia* sp.				+					+																					
10. *Bdella khasyana*	+																													
11. *Bdella maldahensis*									+																					
12. *Bdella* sp.									+					+																
13. *Cyta* sp.	+																													
14. *Biscirus* sp.	+																													
15. *Spinibdella* sp.									+																					
16. *Bdellodes affinis*								+																			+			
17. *Bdellodes angustifolius*			+																											
18. *Bdellodes atro*	+																													
19. *Bdellodes grandiflora*	+																													
20. *Bdellodes manipurensis*			+																											
21. *Bdellodes* sp. nr. *procincta*																											+			
22. *Bdellodes* spp.	+						+						+												+					
23. *Octobdellodes guajavae*									+																					
24. *Molothrognathus leptostylus*								+																						
25. *Neophyllobius guajavae*									+																					

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
26. *Chelacaropsis moorei*									+																		+			
27. *Cheletacarus gryphus*														+																
28. *Cheletogenes ornatus*									+			+	+									+								
29. *Cheletomimus* sp.								+																						
30. *Cheletonella summersi*									+																					
31. *Cheyletus eruditus*																+														
32. *C. fortis*									+					+		+								+						
33. *Cheyletus malaccensis*				+									+																	
34. *Cheyletus* sp.													+												+					
35. *Eucheyletia reticulata*																												+		
36. *Grallacheles tulipi*									+																					
37. *Hemicheyletia bakeri*																+														
38. *H. indica*	+																													
39. *Hemicheyletia* sp.																												+		
40. *Paracheyletia pyriformes*																	+													
41. *Armascirus taurus*																											+			
42. *Cunaxa anacardae*								+	+																					
43. *Cunaxa bambusae*																											+			
44. *C. capreolus*	+			+																										
45. *C. crista*	+																													
46. *C. curassavica*	+																													
47. *C. cynodonae*																											+			
48. *C. mangiferae*								+	+																					
49. *C. myabunderensis*																											+			
50. *C. setirostris*	+			+			+	+	+			+			+	+											+	+		

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
51. *C. womersleyi*									+																					
52. *Cunaxa* spp.							+		+	+			+												+					
53. *Dactyloscirus bengalensis*									+																					
54. *D. machairodus*				+																										
55. *Dactyloscirus* sp.																												+		
56. *Cunaxoides croceus*							+																							
57. *C. nicobarensis*																											+			
58. *Neocunaxoides andrei*								+																						
59. *N. cerasoides*		+																												
60. *N. pradhani*																											+			
61. *Neocunaxoides* sp.									+																					
62. *Balaustium* sp.							+		+															+						
63. *Abrolophus delhiensis*													+																	
64. *A. ripicola*													+																	
65. *Abrolophus* sp.																							+							
66. *Sphaerolophus delhiencis*													+																	
67. *S. gigas*													+																	
68. *S. minutus*													+																	
69. *Bochartia* sp.													+					+						+						
70. *Erythraeus plumosus*													+																	
71. *Paraerythraeus delhiensis*													+																	
72. *P. serratociliatus*													+																	
73. *Leptus giganticus*												+																		
74. *L. indicus*													+																	
75. *L. poonaensis*																			+											

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
76. *L. samsungensis*									+																					
77. *Leptus* sp.									+			+																		
78. *Eupodes sigmoidensis*					+		+		+																			+		
79. *Eupodes* sp.	+			+																										
80. *Exthorhis nadiaensis*									+																					
81. *Raphignathus darjeelingensis*									+																					
82. *R. guajavae*									+																					
83. *Agistemus aramatei*	+																													
84. *A. edulis*	+																													
85. *A. exsertus*	+	+			+																							+		
86. *A. fleschneri*	+	+	+	+			+	+	+				+	+		+											+			
87. *A. gamblei*	+																													
88. *A. garrulus*				+																										
89. *A herbarius*																	+													
90. *A. heterophylla*	+								+																					
91. *A. hystrix*			+																											
92. *A. industani*	+				+	+						+				+								+	+					
93. *A. inflatus*																+														
94. *A. javanicum*			+																											
95. *A. lakoocha*	+																													
96. *A. macrommatus*	+								+			+												+				+		
97. *A. obscura*			+																											
98. *A. terminalis*					+		+	+	+																					
99. *A. unguiparvus*								+				+																		

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
100. *Agistemus* sp.		+		+	+		+	+	+																					
101. *Cheylostigmaeus* sp.																											+			
102. *Eryngiopus coimbatorensis*																								+						
103. *Indostigmaeus rangatensis*																											+			
104. *Ledermuelleria parryorum*	+																													
105. *Ledermuelleria* sp.				+																										
106. *Zetzellia languida*									+																					
107. *Zetzellia* sp.															+															
108. *Lorryia africana*																											+			
109. *Lorryia stricta*						+																								
110. *Paralorryia fodderi*									+																					
111. *Parapronematus acaciae*																											+			
112. *P. cameliae*									+																					
113. *P. ferox*	+																													
114. *P. murshidabadensis*									+																					
115. *Parapronematus* sp.																											+			
116. *Parapronematus* sp. nr. *anconai*																						+								
117. *Pronematus elongatus*																	+													
118. *P. fleschneri*							+	+	+	+		+	+			+											+			
119. *P. mcgregori*																						+								
120. *P. sextoni*									+			+	+												+					
121. *P. ubiquitus*									+			+																		
122. *Pronematus* spp.																+														
123. *Tydeus cumini*									+																					
124. *Tydeus gossabaensis*									+																					

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
125. *T. ornamentalicus*									+																					
126. *T. schusteri*												+																		
127. *T. wallachi*					+																									
128. *Tydeus* sp.				+			+	+	+																					
129. *Caloglyphus* sp.												+																		
130. *Sancassania* sp.																								+						
131. *Tyrophagus putrescentiae*				+					+			+	+	+																
132. *Galumna flabellifera*																						+				+				
133. *Unguizetes clavatus*									+																					
134. *Xylobates seminudus*									+																	+				
135. *Blattisocius tarsalis*													+																	
136. *Gamasellodes bicolor*									+																					
137. *Lasioseius bengalensis*									+																					
138. *L. mcgregori*																+														
139. *L. quadrisetosus*		+																												
140. *L. terrestris*													+																	
141. *Lasioseius* sp.	+			+	+			+	+								+													
142. *Melichares (M.) fici*													+																	
143. *Proctolaelaps pygmaeus*									+																					
144. *Hypoaspis calcuttaensis*									+					+																
145. *H. dubium*																					+									
146. *Hemipteroseius indicus*									+				+																	
147. *A. (A.) adhatodae*																			+											
148. *A. (A.) aerialis*	+									+															+					
149. *A. (A.) channabasavannai*	+			+			+		+															+		+				

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
150. *A. (A.) cucurbitae*																	+													
151. *A. (A.) excelsus*																	+													
152. *A. (A.) hapoliensis*	+																													
153. *A. (A.) herbicolus*					+		+	+	+															+						
154. *A. (A.) indirae*																									+					
155. *A. (A.) kulini*		+		+																										
156. *A. (A.) largoensis*	+	+	+	+	+	+	+	+	+	+	+	+			+	+	+				+		+	+	+	+	+	+		+
157. *A. (A.) mcmurtryi*		+		+																								+		
158. *A. (A.) muraleedharani*																								+						
159. *A. (A.) neorykei*	+						+		+																					
160. *A. (A.) orientalis*		+																												
161. *A. (A.) paraaerialis*	+	+		+			+																			+				
162. *A. (A.) raoiellus*																									+					
163. *A. (A.) shoreae*									+																					
164. *A. (Asperoseius) heveae*	+																													
165. *A. (Asp.) hyauliangensis*	+																													
166. *A. (Asp.) nucifera*									+																	+				
167. *A. (E.) ahaioensis*									+																					
168. *A. (E.) alstoniae*	+			+				+	+	+	+	+		+		+	+	+			+	+		+	+					
169. *A. (E.) bambusae*								+	+														+	+	+	+				
170. *A. (E.) coccineae*	+	+		+			+	+	+	+	+	+					+	+			+		+	+						+
171. *A. (E.) coccosocius*								+	+							+							+	+	+	+		+		+
172. *A. (E.) concordis*																									+					
173. *A. (E.) delhiensis*							+		+		+	+	+	+		+									+					
174. *A. (E.) eucalypti*																									+					

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
175. *A. (E.) finlandicus*				+	+		+	+	+	+		+			+	+	+								+			+		
176. *A. (E.) insanus*																	+													
177. *A. (E.) macrospatulatus*	+																													
178. *A. (E.) neococcineae*				+																										
179. *A. (E.) ovalis*	+	+	+	+	+		+	+	+	+						+			+		+		+	+	+	+	+	+		+
180. *A. (E.) pruni*	+	+		+	+		+	+	+						+	+	+											+		
181. *A. (E.) rhododendronis*					+		+	+	+															+	+					
182. *A. (E.) sacchari*	+								+	+					+	+					+			+	+					
183. *A. (E.) scutalis*																	+													
184. *A. (E.) vignus*																	+													
185. *A. (N.) aceriae*									+												+									
186. *A. (N.) assamensis*		+																												
187. *A. (N.) baraki*																+									+					
188. *A. (N.) cucumeris*																+														
189. *A. (N.) cynodonae*																											+			
190. *A. (N.) fallacis*		+		+				+	+	+					+		+							+			+	+		
191. *A. (N.) fraterculus*																								+						
192. *A. (N.) imbricatus*									+																+					
193. *A. (N.) indicus*									+			+	+			+														
194. *A. (N.) longispinosus*	+						+		+	+	+	+												+	+		+	+		+
195. *A. (N.) oahuensis*																	+													
196. *A. (N.) paspalivorus*									+				+																	
197. *A. (N.) rangatensis*																											+			
198. *A. (N.) reticulatus*																+														
199. *A. (Paraphytoseius) multidentatus*	+	+		+	+		+	+	+	+		+				+			+				+	+	+		+			+

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
200. *A. (P.) scleroticus*												+																		
201. *A. (Phytoscutella) salebrosus*	+	+		+				+																						
202. *A. (Proprioseiopsis) arunachalensis*	+																													
203. *A. (P.) peltatus*									+																					
204. *A. (P.) synachattiensis*												+																		
205. *A. (Proprioseius) kumaonensis*												+																		
206. *A. (Typhlodromalus) chikmagalurensis*																									+					
207. *A. (T.) chitradurgae*																									+			+		
208. *A. (T.) eucalypticus*																									+					
209. *A. (T.) ficusi*	+																													
210. *A. (T.) jarooa*																											+			
211. *A. (T.) kalimpongensis*		+		+			+	+	+	+	+	+	+								+		+	+	+					
212. *A. (T.) laaensis*	+																													
213. *A. (T.) lablabi*																									+					
214. *A. (T.) mangiferae*									+																					
215. *A. (T.) manipurensis*			+																											
216. *A. (T.) rosica*									+																					
217. *A. (T.) sorghumae*																											+			
218. *A. (Typhlodromips) arecae*																											+			
219. *A. (T.) bangalorensis*																									+					
220. *A. (T.) crotalariae*	+	+		+	+			+	+																					
221. *A. (T.) eujeniae*																											+			

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
222. *A. (T.) guajavae*	+			+																										
223. *A. (T.) mangiferae*													+																	
224. *A. (T.) meghalayensis*		+		+																										
225. *A. (T.) neocrotalariae*																								+						
226. *A. (T.) neoghanii*	+																													
227. *A. (T.) officinaria*	+						+	+	+																					
228. *A. (T.) polyantheae*					+			+	+																					
229. *A. (T.) potentillae*									+								+													
230. *A. (T.) sapienticola*																											+			
231. *A. (T.) sijiensis*	+																													
232. *A. (T.) suknaensis*	+	+		+	+		+	+	+		+	+														+	+			
233. *A. (T.) syzygii*				+	+		+	+	+	+	+	+																		
234. *A. (T.) tetranychivorus*								+		+		+												+	+	+				
235. *Indoseiulus eharai*	+																													
236. *Indoseiulus ghaiae*																								+						
237. *I. ricini*	+						+	+	+	+		+			+	+					+			+						
238. *Iphiseius (I) andamanicus*	+							+	+			+													+		+			
239. *I. (I.) hapoli*	+						+																							
240. *I. (Trochoseius) bakeri*																											+			
241. *Paraamblyseius fragariae*	+				+		+		+																					
242. *P. mumai*				+	+		+		+																					
243. *Phytoseiulus persimilis*																									+					
244. *Platyseiella mumai*								+																						
245. *Okiseius himalayana*												+																		
246. *O. sikkimensis*							+																							

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
247. *O. yazuliensis*	+																													
248. *Indodromus meerutensis*												+																		
249. *Phy (Pen.) kapuri*	+	+		+				+	+	+	+	+				+	+	+			+	+		+		+	+			+
250. *P (Pen.) minutus*												+	+		+	+														
251. *P (Pen.) namdaphaensis*	+																													
252. *P (Phy.) bandipurensis*																									+					
253. *P (P.) brevicrinis*								+																						
254. *P (P.) coheni*																+														
255. *P (P.) corniger*												+					+													
256. *P (P.) crinitus*		+							+																					
257. *P (P.) domesticus*																	+													
258. *P (P.) indicus*								+	+						+	+														
259. *P (P.) intermedius*								+	+	+		+					+										+			
260. *P (P.) jujuba*																					+	+								
261. *P (P.) macropilis*	+						+		+		+		+																	
262. *P (P.) macrosetosus*																		+												
263. *P (P.) maldahensis*									+																					
264. *P (P.) meyerae*				+																										
265. *P (P.) mixtus*												+					+													
266. *P (P.) mizoramensis*					+																									
267. *P (P.) neocorniger*																						+								
268. *P (P.) neoferox*	+																													
269. *P (P.) nipponicus*																	+													
270. *P (P.) punjabensis*																+														
271. *P (P.) rachelae*									+																	+				

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
272. *P (P.) roseus*								+	+			+				+	+				+			+						
273. *P (P.) rugosus*											+														+					
274. *P (P.) swirskii*									+																+					
275. *P (P.) wainsteini*																	+											+		
276. *T. (A.) arunachalensis*	+																											+		
277. *T. (A.) bambusicolus*		+						+																						
278. *T. (A.) bakeri*																	+													
279. *T. (A.) chrysanthemi*																					+									
280. *T. (A.) dalii*																	+													
281. *T. (A.) darjeelingensis*	+				+		+	+	+			+	+			+								+	+					
282. *T. (A.) denmarki*																	+													
283. *T. (A.) divergentis*												+				+														
284. *T. (A.) fleschneri*		+		+					+	+															+					
285. *T. (A.) gopali*								+	+						+	+						+			+					
286. *T. (A.) himalayensis*												+			+		+											+		
287. *T. (A.) homalii*	+			+			+		+	+	+	+		+	+	+								+		+				
288. *T. (A.) kodaikanalensis*																								+						
289. *T. (A.) mori*																	+													
290. *T. (A.) nilgiriensis*																								+						
291. *T. (A.) persicus*									+																					
292. *T. (A.) rhenanus*													+		+	+	+													
293. *T. (A.) rhododendroni*																									+					
294. *T. (A.) sonprayagensis*												+																		
295. *T. (A.) tarbateijamae*																	+													
296. *T. (A.) umbratus*																	+													

	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal	Bihar	Orissa	Uttar Pradesh	Delhi	Haryana	Himachal Pradesh	Punjab	Jammu & Kashmir	Madhya Pradesh	Maharashtra	Goa	Gujarat	Rajasthan	Andhra Pradesh	Tamil Nadu	Karnataka	Kerala	Andaman & Nicobar Isls.	Lakshadwip	Daman, Diu	Pondicherry
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
297. *T. (A.) vinifera*																	+													
298. *T. (A.) zafari*																	+													
299. *T.(Anthoseius)majumderi*									+																					
300. *T. (Brethria) confusus*													+																	
301. *T. (B.) roshanlali*													+																	
302. *T. (clavidromus) neotransvaalensis*																								+						
303. *T. (Orientiseius) channabasavannai*																								+						
304. *T. (O.) hadii*												+					+													
305. *T. (O.) manipurensis*			+																											
306. *T. (O.) orissaensis*											+																			
307. *T. (O). pruni*	+						+		+																					
308. *T. (O.) rickeri*				+	+	+	+					+						+							+					
309. *T. (Paraseiulus) kuzini*																	+													
310. *T. (P.) neosoleiger*																	+													
311. *T. (Typhloctonus) celtis*																	+													
312. *T. (T.) malviyai*												+																		
313. *T. (T.) nesbitti*													+				+													
314. *T. (T.) transitans*																	+													
315. *T. (Typhlodromus) communis*	+								+															+	+					
316. *T. (T.) garhwalicus*												+																		
317. *T. (T.) neorhenanus*	+			+					+																					
318. *T. (T.) sijiensis*	+																													
319. *Garhwalicus himalayensis*												+																		

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