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SOME NEW RECORDS OF PLANT ASSOCIATED MITES (ACARI) FROM BANGLADESH

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INTRODUCTION

Mite fauna from plants in Bangladesh is known only recently through the works of Sanyal *et al.* (2004) and Gupta *et al.* (2004). They recorded 17 species collected on different host plants from Dhaka. The first author of the present paper while visiting Bangladesh in December, 2003, collected mites from some plants and this paper is based on that collection. This communication reports 11 species under 2 families and 3 genera under the orders Prostigmata and Mesostigmata. All the species except *Tetranychus urticae* appear to be new records from Bangladesh.

SYSTEMATIC ACCOUNT

Key to the families, subfamilies and genera of plant mites from Bangladesh

1. One or two pairs of trichobothria on prodorsum or a pair on the posterodorsal aspect of hysterosoma usally without conspicuous pseudostigmata; stigmata situated at the base of gnathosoma or between chelicerae; palpi modified into thumb-claw complex ..... PROSTIGMATA, 2

— Pedipalpal ambulacrum represented by a tined claw like structure called apotele near the inner basal angle of the palptarsus; stigmata situated lateral to coxae II–IV and one on each side, usually with elongate peritremes ..... MESOSTIGMATA, 3

2. Each claw terminating in a pair of tenent hairs or bordered with combs of tenent hairs, campodial claw pad-like (rarely appearing absent) often divided distally or with a basal divided spur, with or without tenent hairs, caudal aspect of idiosoma without highly modified setae ..... TETRANYCHIDAE, 4

**IC/10 Anandam Housing Complex, 7, K. B. Sarani, Kolkata-700 080*

3. Sternal shield with 0–4 pairs of setae, corniculae not modified distally, normally with fewer than 20 pairs of dorsal setae ..... PHYTOSEIIDAE, 7

4. Empodium claw like with proximoventral hairs, duplex setae on tarsus I distal and approximate ..... ***Oligonychus***, 5

— Empodium splits distally usually into 3 pairs of hairs, duplex setae on tarsus I well developed ..... ***Tetranychus***, 6

5. Aedeagus bent ventrad, tarsus I with not more than single tactile on venter just distad of duplex setae ..... ***sapienticolus***

— Aedeagus bent dorsal, along the distal end may be directed ventrad, tarsus I with 2 tactile setae on venter just distad of duplex setae ..... ***indicus***

6. Upper surface of aedeagus knob straight or rounded with some kind of projection ..... ***urticae***

— Upper surface of aedeagus knob concave with anterior and posterior rounded projections .. ***neocaledonicus***

7. Dorsal shield with 5 pairs of postlateral setae 8

— Dorsal shield with less than 5 pairs of postlateral setae ..... ***Amblyseius (Paraphytoseius) multidentatus***

8. Setae Z_5, s_4, Z_4 long and whip like, longer than distance between their basis; leg IV with macrosetae on genu and erect seta on tarsus ..... ***Amblyseius (Amblyseius)***, 10

— Seta, Z_5 shorter, at most as long as distance between their bases; leg I with macroseta or only one on genu, no erect seta on tarsus 9

9. Peritreme extends anteriorly upto j_3; anterior pair of preanal setae adjacent to anterior margin of ventrianal shield ..... ***A. (Typhlodromaus) kalimpongensis***

— Peritreme not extends upto j_3; anterior pair of preanal setae removed from anterior margin ..... ***A. (Euscius)***, 11

10. Cevix of spermetheca elongated and of parallel diameter ..... ***A. (A.) largoensis***

— Cervix of spermatheca fundibuliform ..... ***A. (A.) herbicolus***

11. All setae on dorsal shield minute except j_1, and Z_5 ..... ***A. (E.) ovalis***

— Besides Z_5 and j_1 some other setae also long 12

12. Spermatheca bell shaped ..... ***A. (E.) coccineae***

— Spermatheca not bell shaped, rather elongated ..... ***A. (E.) pruni***

Order PROSTIGMATA

Family TETRANYCHIDAE Donnadieu

Subfamily TETRANYCHINAE Berlese

Tribe **Tetranychini** Reck

1. Genus ***Oligonychus*** Berlese, 1886

1. ***Oligonychus indicus*** (Hirst.)

1923. *Paratetranychus indicus* Hirst, *Proc. zool. Soc. Lond.*, 990.

1994. *Oligonychus indicus*, Gupta and Gupta, *Mem. zool. Surv. India*, **18**(1) : 104-105.

Diagnosis : Greyish-green body with black blotches scattered over the body; aedeagus forms acute angle with axis of the shaft; tibia I with 2 sensory and 11 tactile setae in male; in female, tibia I with 1 sensory and 8 tactile setae; sensillum on palp tarsus 2 times as long as broad.

Material examined : Bangladesh : Chittagong, Cox's Bazar, Himchari, 3♀, 1♂, ex. banana leaf (*Musa sapientum*), 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : India, Pakistan.

Remarks : The infestation of this mite species caused the appearance of reddish patches on banana leaves and such infested leaves gradually withered.

2. ***Oligonychus sapienticolus*** Gupta

1976. *Oligonychus sapienticolus* Gupta, 1976, *Oriental Ins.*, **10** : 342-343.

Diagnosis : Dorsal propodosomals and hysterosomals being longer than interval between their bases; in male, tibia I with 3 sensory and 9 tactile; in female, tibia I with 3 sensory and 7 tactile setae.

Material examined : Bangladesh : 2♀♀, 2♂♂, Chittagong, Himachari, ex. banana leaf (*Musa sapientum*), 24.xii. 2003, coll. A. K. Sanyal.

Distribdution : Bangladesh : Chittagong. *Elsewhere* : India.

Remarks : No noteworthy damage was caused by this species.

2. Genus ***Tetranychus*** Dufour, 1832

3. ***Tetranychus neocaledonicus*** Andre

1933. *Tetranychus neocaledonicus* Andre, *Bull.Mus.natn. Hist. Nat.Paris*, **5**(2) : 302.

1994. *Tetranychus neocaledonicus*, Gupta and Gupta, *Mem. zool. Surv. India*, **18**(1) : 131-133.

Diagnosis : Berry-like aedeagal knob in male, anterior rounded portion better developed than the rounded posterior projection; in female, tibia I with 1 sensory and 7 tactile setae, tarsus I with 2 sensory and 3 tactile setae.

Material examined : Bangladesh : 4♀♀, Chittagong, Cox's Bazar, Himchari, ex. arum leaf (*Colocassia esculenta*), 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : Cosmopolitan.

Remarks : The species is a serious pest of agri-horticultural crops. The plants become sickly and the leaves turn yellow. However, in the present case, the infestation was of mild nature producing no noticeable damage symptoms.

4. ***Tetranychus urticae*** Koch

1836. *Tetranychus urticae* Koch, *Deu, Crust. Myr. Arach.*, **1** : 10.

1994. *Tetranychus urticae*, Gupta and Gupta, *Mem. zool. Surv. India*, **18**(1) : 139-142.

Diagnosis : Female greenish or yellowish with two large black spots on either side of the body; anterior and posterior projections of aedeagal knob similar, axix of aedeagal knob parallel with axis of shaft; striae in female bears dorsal lobes.

Material examined : Bangladesh : 6♀♀, Chittagong, Cox's Bazar, Himchari, ex. arum leaf (*Colocassia esculenta*), 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : Cosmopolitan.

Remarks : *T. urticae* is a very serious pest of a number of important crop plants. It is known to attack over 200 plants all over the world (Smith-Meyer, 1987, Gupta, 1985, Gupta and Gupta, 1994). The infestation causes yellowing of leaves and then producing brownish patches on the leaves. The species was earlier recorded from Bangladesh (Dhaka) by Sanyal *et. al.*, (2004) and Gupta *et. al.*, (2004).

Order MESOSTIGMATA

Family PHYTOSEIIDAE Berlese

3. Genus ***Amblyseius*** Muma

5. ***Amblyseius (Amblyseius) herbicolus*** (Chant)

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

2003. *Amblyseius (Amblyseius) herbicolus*, Gupta, *Mem. zool. Surv.India,* **20** : 18-20.

Diagnosis : Female : 357 μm. long, 255 μm wide; dorsal shield slightly rugose, with 17 pairs of setae; measuring j_1-25, j_3-33, s_4-107, Z_5-205, Z_4-125. Ventrianal shield 116-120, 70-80 wide, macrosetae on genu IV-129, tibia IV-90, basitarsus IV-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-$1\frac{1}{1}\frac{2}{1}1$, spermatheca with fundibuliform cervix. Chelicera with 2 teeth.

Material examined : Bangladesh : 4♀♀, Chittagong, Cox's Bazar, Himchari, ex. banana leaf and arum leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : India, Brazil, British West Indies, Taiwan, Thailand, Japan, Madagascar, Mexico, North America, Philippines, Portugal, South America, Taiwan, Thailand.

Remarks : The paper reports banana and arum as the first record of the habitat of the mite species. It is a very efficient predator of mostly tetranychid mites.

6. ***Amblyseius (Amblyseius) largoensis*** (Muma)

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

2003. *Amblyseius (Amblyseius) largoensis* (Muma), Gupta, *Mem. zool. Surv. India*, **20**(1) : 22-23.

Diagnosis : Smooth dorsal shield with 17 pairs of minute setae except j_1, j_3, s_4, Z_5 and Z_4; which mesure 30-36, 45-49, 94-100, 247-268 and 95-106, respectively. Sternal shield longer (86) than broad (74) with 3 pairs of setae. Ventrianal shield 105-110 long, 70-75 wide with 3 pairs of setae. Macrosetae on leg IV : genu 95-105, tibia 67-76, basitarsus 40-54. 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.

Material examined : Bangladesh : 4♀♀, Chittagong, Cox's Bazar, Himchari, ex. banana leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : Angola, Brazil, China, Costa Rica, Guatemala, Hondurus, Hong Kong, India, Israel, Jamica, Japan, Kenya, Mexico, New Calidonia, New Zealand, Papua New guinea, Philippines, Puerto Rico, South Africa, Taiwan, Thailand, Trinidad, USA, Western and Northern Iran.

Remarks : This abundantly available mite species were recorded on a number of plant species. This species in India is reported to be efficient predator of tetranychid (*Panonychus citri, Oligonychus mangiferus, Tetranychus urticae*), tenuipalpid (*Brevipalpus lewisi*) and eriophyid (*Aceria litchi*) mites (Gupta, 2003).

7. ***Amblyseius (Euseius) coccineae*** Gupta

1975. *Amblyseius coccineae* Gupta, *Internat. J. Acarol.*, **1**(2) : 33.

2003. *Amblyseius (Euseius) coccineae*, Gupta, *Mem. zool. Surv. India*, **20**(1) : 35-36.

Diagnosis : Reticulate dorsal shield with 17 pairs of minute setae; measuring : j_1-25, j_4-j_5-10-20 each, J_2-15, J_5-6, j_3-30, z_2-20, z_4-20, s_4-35, Z_1-11-14, S_2-20, S_4-22, S_5-26, Z_5-60, z_5-9, Z_4-13. Macrosetae on leg IV : genu-37-45, tibia-35, basitarsus-50. Leg chaetotactic formula genu III-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. Ventrianal shield vase-shaped with 3 pairs of preanal setae.

Material examined : Bangladesh : 5♀♀, Chittagong, Coxs' Bazar, Himchari, ex. banana leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : India.

Remarks : The species is known to feed on eggs of *Oligonychus indicus* and *Eutetranychus orientalis* (Gupta, 2003).

8. ***Amblyseius (Euseius) ovalis*** (Evans)

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

2003. *Amblyseius (Euseius) ovalis*, Gupta, *Mem. zool. Surv. India*, **20**(1) : 42-43.

Diagnosis : Dorsal shield with 17 pairs of small setae measuring j_1-30, j_4-j_6, J_2-J_5-4-5 each, Z_5-50, z_5-4, Z_4-6. Macrosetae on leg IV : genu-35, tibia-27, basitarsus-49. Ventrianal shield oval, with 3 pairs of preanal setae and a pair of crescent-shaped preanal pores; spermatheca bowl-shaped.

Material examined : Bangladesh : 1♀, Chittagong, Cox's Bazar, Himchari, ex banana leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong, *Elsewhere* : Africa, Australia, Hawai, Hong Kong, India, Indonesia, Japan, Malay, Mauritius, Mexico, Philippines, New Zealand.

Remarks : The species is reported to be an efficient predator of a large number species of tetranychid and tarsonemid mite as well as of white fly (Gupta, 2003).

9. ***Amblyseius (Euseius) pruni*** Gupta

1975. *Amblyseius (Euseius) pruni,* Gupta, *Internat. J. Acarol.*, **1**(2) : 40-42.

2003. *Amblyseius (Euseius) pruni*, Gupta, *Mem. zool. Surv. India,* **20** : 43-44.

Diagnosis : Female : 315 µm long, 230 µm wide; dorsal shield reticulate, with 17 pairs of setae measuring j_1-30, j_4, j_5, J_5-15, J_5-6, z_2, z_4-22, each, s_4-34, Z_1-15, S_2-22, S_4-22, S_5-26, Z_5-65 (serrrate), z_5, Z_4-12-14 and 4 pairs of pores; sternal shield with 3 pairs of sternal setae, slightly longer than wide, metasternal plate slightly oval with a seta; genital shield wide with a pair of genital setae; ventrianal shield longer than wide, with 3 pairs of preanal setae, one pair of semilunar preanal pores, 4 pairs of setae and a few small platelets around ventrianal shield; spermatheca filamentous; chelicera with one or two teeth; macrosetae on leg IV : genu-35, tibia-30, basitarsus-49. 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 II-1 $\frac{1}{1}\frac{2}{1}$1.

Material examined : Bangladesh : 6♀♀, Chittagong, Cox's Bazar, Himchari, ex. banana leaf, 24.xii. 2003. coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : India.

Remarks : The record of this mite on Banana leaf (*Musa sapientum*) is made here for the first time. The economic importance of the species is not clearly known.

10. ***Amblyseius (Paraphytoseius) multidentatus*** (Swirski and Shechter)

1961. *Paraphytoseius multidentatus* Swirski and Shechter, *Israel J. agric. Res.*, **11**(2) : 114-116.
2003. *Amblyoseius (Paraphytoseius) multidentatus*, Gupta, *Mem. zool. Surv. India*, **20**(1) : 59-60.

Diagnosis : Dorsal shield elongate, notched at the level of s_4, with 14 pairs of setae; setae j_1, j_3, s_4, Z_4 and Z_5 long, thick and serrate; measuring j_1-30-36, 78-88, 115-120, 85-100 and 70-82, respectively. Ventrianal shield with 3 pairs of preanal setae. Macrosetae on leg IV : genu-30, tibia-35, basitarsus-40.

Material examilned : Bangladesh : 2♀♀, Chittagong, Cox's Bazar, Himchari, ex. banana leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : China, Hong Kong, India, Madagaskar, Malaysia, Nigeria, Philippines, Thailand.

Remarks : This is an abundantly occurring species of mite on different plants and is known to be feeding on or associated with tetranychid, tenupalpid and tarsonemid mites. However, predatory habit of the species is doubtful.

11. ***Amblyseius (Typhlodomalus) kalimpongensis*** Gupta

1970. *Amblyseius kalimpongensis* Gupta, *Bull. Ent.*, **10** : 128-129.
2003. *Amblyoseius (Typhlodomalus) kalimpongensis*, Gupta, *Bull. zool. Surv. India*, **20**(1) : 68-69.

Diagnosis : Smooth dorsal shield with 17 pairs of setae measuring j_1-20, j_4-18, j_5-18, j_6-18, J_2-18, J_5-6, j_3-27, z_2-25, z_4-25, s_4-30, Z_1-18, S_2-25, S_4-20, S_5-25, Z_5-5, z_5-16, Z_4-25 and 5 pairs of pores; metasternal plates absent, only seta present; ventrianal shield vase-shaped, strongly concave laterally, with 3 pairs of preanal setae and a pair of pores. Macrosetae on leg IV : basitarsus-32.

Material examined : Bangladesh : 3♀♀, Chittagong, Cox's Bazar, Himchari, ex. banana leaf, 24.xii.2003, coll. A. K. Sanyal.

Distribution : Bangladesh : Chittagong. *Elsewhere* : India.

Remarks : This species is not regarded as an efficient predator.

SUMMARY

The paper reports 11 species of plant associated mites belonging to the orders of Prostigmata and Mesostigmata collected from banana (*Musa sapientum*) and arum (*Colocasia esculenta*) leaves from Cox's Bazar, Chittagong, Bangladesh. Of the 11 species belonging to 2 families and 3 genera, 10 are reported here for the first time from Bangladesh. The species *T. urticae* is already known from Bangladesh. Keys to identification of orders, families, genera and species; diagnostic features, distribution, collection data and economic importance if any of the species involved are incorporated in this paper.

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