

Article

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Description of a new species of *Phyllocoptruta* (Acari: Eriophyoidea) on *Azadirachta indica* from West Bengal, India

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Abstract

A new species, *Phyllocoptruta neemae* sp. nov. of the family Eriophyidae was found on both surface of leaves of *Azadirachta indica* Juss (Meliaceae), and described and illustrated from specimens collected at Kalyani, West Bengal, India. This is the third eriophyoid mite species described from *A. indica* in India. The key of the Indian *Phyllocoptruta* species was given.

Key words: Eriophyidae; taxonomy; eriophyid mite; neem; Phyllocoptinae.

Introduction

Azadirachta indica Juss (Meliaceae) is commonly known as Neem, Nim tree or Indian Lilac and is native to India, Pakistan and Bangladesh. This plant has a huge importance for medicinal value as well as a source of botanical pesticide. Three eriophyoid mite species have been reported on this host plant species in different parts of the world: *Calepitrimerus azadirachtae* ChannaBasavanna, 1966; *Phyllocoptes azadirachtae* Chandrapatya, 1992 (in Boczek & Chandrapatya, 1992a); and *Diptilomiopus azadirachtae* (Boczek, 1992) (in Boczek & Chandrapatya, 1992b). The present paper includes the description and illustration of a new species infesting both the surface of neem leaves collected from Kalyani, West Bengal, India.

Material and methods

During survey on plant mites, leaves of *A. indica* were collected in air-tight polyethylene bags and taken to the laboratory. These were examined under a dissecting microscope and the mites found were mounted on microscopic slides in modified Berlese medium (Amrine and Manson 1996). The morphological traits of mounted specimens were examined under Olympus BX 41 phase contrast microscope (100X oil immersion objective with 10X eye-piece) equipped with ocular micrometer and drawing tube. All measurements were taken as recommended by de Lillo *et al.* (2010), are given in micrometers (μm) and refer to the length unless specified otherwise. The measurements of the traits of the holotype female precedes the range of the corresponding traits for paratypes (given in parentheses). Only ranges are given for male. The morphological terminologies and abbreviations used here were given by

Lindquist (1996) and the generic classification system followed is that of Amrine *et al.* (2003).

Key to the species of the genus *Phyllocoptruta* collected in India

1. Prodorsal shield ornamented with prominent lines2
- Prodorsal shield ornamented with scorings or cells5
2. Setae *h1* absent; scapular setae projecting posterior; coxisternal plate smooth.....
..... *P. daturae* Mohanasundaram & Ranganath, 1985
- Setae *h1* present; scapular setae not projecting posterior; coxisternal plate usually ornamented with dots and lines 3
3. Scapular setae projecting lateral; tarsal solenidion not knobbed.....
..... *P. himalayana* (Chakrabarti & Roy, 1980)
- Scapular setae projecting up or centrad; tarsal solenidion knobbed4
4. Tarsal empodium 5-rayed at each side; accessory setae (*h1*) minute; basal area of epigynium ornamented with dots *P. oleivora* (Ashmead, 1879)
- Tarsal empodium 4-rayed at each side; accessory setae (*h1*) 3.7 to 4.6 μm in length; basal area of epigynium smooth
..... *P. citricola* Chakrabarti & Sarkar, 2011
5. Prodorsal shield ornamented with scorings; tarsal solenidion not knobbed; coxisternal plates granulated *P. malligai* (Mohanasundaram, 1980)
- Prodorsal shield ornamented with cells; tarsal solenidion knobbed; coxisternal plates ornamented with dots and lines *P. neemae* **sp. nov.**

Results

Phyllocoptruta neemae sp. nov. (Figs. 1 and 2)

Female (n = 10) - Body fusiform, 182 (150–189), 57 (55–66) wide, pinkish in live.

Gnathosoma - Projecting straight down, 27 (26–28), pedipalp coxal setae (*ep*) 3 (3–4), dorsal pedipalp genual setae (*d*) 5 (5–6), simple.

Prodorsal shield - Suboval 43 (41–46), 54 (53–62) wide and lateral view is slightly rounded on its longitudinal axis; frontal lobe broad, triangular in dorsal view; dorsal shield lines little bit elevated forming a network of different depressed close cells. Dorsal shield pattern composed of 3 anterior and 8 posterior cells along with 2 separate cells at the base of each of the scapular tubercle. Scapular setae (*sc*) 8 (7–10); scapular tubercle subcylindrical, set ahead of rear shield of margin, basal axes longitudinal to the body, directed inwards, 27 (25–30) apart.

Legs - With all usual segments. Leg I 32 (31–33), femur 10 (9–10), basiventral femoral setae (*bv*) 13 (10–13); genu 5 (5–6), antaxial genual setae (*l''*) 17 (17–20); tibia 7 (7–8), paraxial tibial setae (*l'*) 7 (6–7); tarsus 5 (5–6), paraxial fastigial tarsal setae (*ft'*) 22 (20–23), antaxial fastigial tarsal setae (*ft''*) 23 (19–23), paraxial unguinal tarsal setae (*u'*) 5 (4–5); tarsal empodium (*em*) 5 (4–5), simple, 4-rayed; tarsal solenidion knobbed (ω) 7 (6–7). Leg II 28 (28–31), femur 10 (9–10), basiventral femoral setae (*bv*) 17 (16–19); genu 4 (4–5), antaxial genual setae (*l''*) 10 (9–11); tibia 6 (5–6), paraxial tibial setae (*l'*) absent; tarsus 6 (6–7), paraxial fastigial tarsal setae (*ft'*) 7 (5–7), antaxial fastigial tarsal setae (*ft''*) 20 (19–22), paraxial unguinal tarsal setae (*u'*) 5 (4–5); tarsal empodium (*em*) 5 (4–5), simple, 4-rayed; tarsal solenidion knobbed (ω) 7 (6–7).

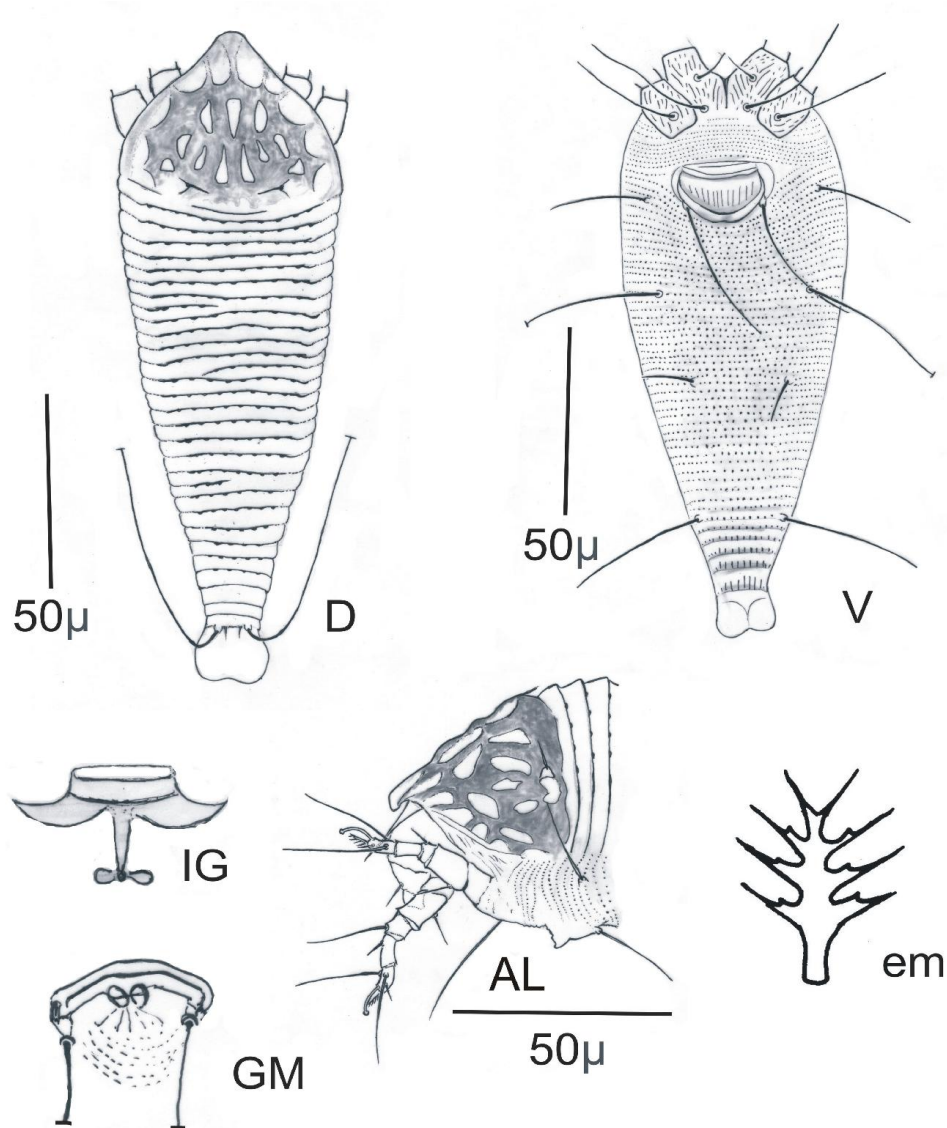


Figure 1. *Phyllocoptruta neemae* sp. nov. - D. dorsal habitus, female; V. ventral habitus, female; AL. anterior lateral habitus; female; IG. internal genitalia, female; GM. genital region, male; em. empodium.

Coxisternum - With minute dots and lines, anterolateral setae on coxisternum I (*1b*) 7 (6–7), 12 (12–13) apart; proximal setae on coxisternum I (*1a*) 20 (18–21), 9 (9–10) apart; proximal setae on coxisternum II (*2a*) 30 (26–35), 26 (24–27) apart. Sternal line 10 (10–11); coxigenital area with 9 (9–10) annuli, microtuberculate.

Genitalia - 20 (19–22) wide, 10 (10–11) long, proximal setae on coxisternum III (*3a*) 40 (39–50), epigynum with 12 (12–15) longitudinal ridges.

Opisthosoma - With 29 (27–31) dorsal semiannuli and with elliptical microtubercles attached with posterior margin of annulus, middle part with broad furrow.

Total ventral semiannuli 50 (47–51), microtuberculate. Opisthosomal setae (*c*₂) 25 (20–25), on semiannulus 3 (3–4); opisthosomal setae (*d*) 71 (60–76), on semiannulus 16 (16–17); opisthosomal setae (*e*) 13 (10–13), on semiannulus 29 (25–29); opisthosomal setae (*f*) 35 (29–35), on semiannulus 45 (41–45). Opisthosomal setae (*h*₂) 76 (65–79); opisthosomal setae (*h*₁) 3 (3–4).

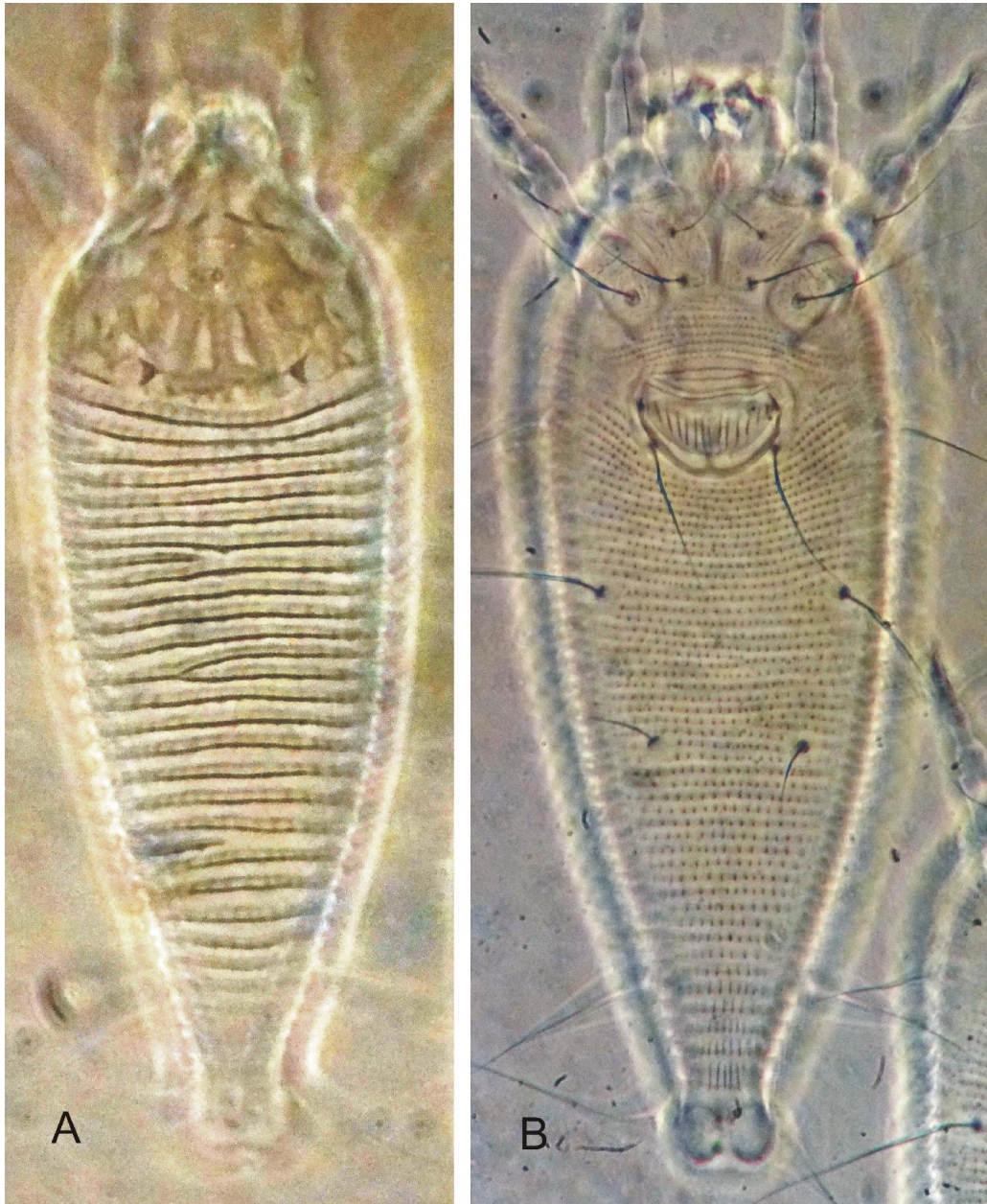


Figure 2. *Phyllocoptruta neemae* sp. nov. (female) - A. Dorsal habitus; B. Ventral habitus.

Male (n = 4) - Smaller than female, 148–160, 54–58 wide, fusiform, white.

Gnathosoma - Projecting straight down, 24–26, pedipalp coxal setae (*ep*) 2–3, dorsal pedipalp genual setae (*d*) 5–6, simple.

Prodorsal shield - As in female, 38–40, 53–55 wide; scapular setae (*sc*) 6–7, set on subcylindrical tubercle ahead of rear shield margin, directed inwards, 20–21 apart.

Legs - As in female. Leg I 26–28, femur 9–10, basiventral femoral setae (*bv*) 10–11; genu 4–5, antaxial genual setae (*l''*) 18–20; tibia 5–6, paraxial tibial setae (*l'*) 5–6; tarsus 5–6, paraxial fastigial tarsal setae (*ft'*) 20–22, antaxial fastigial tarsal setae (*ft''*) 20–22, paraxial unguinal tarsal setae (*u'*) 4–5; tarsal empodium (*em*) 4–5, simple, 4-rayed; tarsal solenidion knobbed (ω) 5–6. Leg II 25–26, femur 8–9, basiventral femoral setae (*bv*) 12–13; genu 4–5, antaxial genual setae (*l''*) 7–8; tibia 5–6, paraxial tibial setae (*l'*) absent; tarsus 5–6, paraxial fastigial tarsal setae (*ft'*) 5–6, antaxial fastigial tarsal setae (*ft''*) 20–23, paraxial unguinal tarsal setae (*u'*) 4–5; tarsal empodium (*em*) 4–5, simple, 4-rayed; tarsal solenidion knobbed (ω) 6–7.

Coxisternum - As in female. Anterolateral setae on coxisternum I (*Ib*) 6–8, 10–11 apart; proximal setae on coxisternum I (*Ia*) 12–13, 7–8 apart; proximal setae on coxisternum II (*2a*) 20–22, 20–21 apart. Sternal line 9–10; coxigenital area with 5–6 annuli, microtuberculate.

Genitalia - 17–18 wide, 10–11 long, eugenital setae as figured, proximal setae on coxisternum III (*3a*) 30–36.

Opisthosoma - as in female, 24–27 dorsal semiannuli with elliptical microtubercles. Opisthosomal setae (*c2*) 17–20, on semiannulus 2–3; opisthosomal setae (*d*) 45–51, 31–33 apart, on semiannulus 13–14; opisthosomal setae (*e*) 8–9, 20–22 apart, on semiannulus 22–24; opisthosomal setae (*f*) 31–36, 24–26 apart, on semiannulus 38–41. Total ventral semiannuli 43–47, microtuberculate. Opisthosomal setae (*h2*) 45–51; opisthosomal setae (*h1*) 2–3.

Type material

Holotype female, 10 paratype females and 4 paratype males from neem, *Azadirachta indica* Juss (Meliaceae) Kalyani, Nadia (22°59'N, 88°25'E), 12th May 2015, coll. K. Karmakar, all on 8 microscopic slides (Acc. No. AINP/Acar. Lab ./BCKV/418.1-418.8/2015), deposited in the collection of AINP, Acarology Laboratory, BCKV, Kalyani, India.

Relation to host

Vagrant on leaf surface; damage symptoms expressed as yellowish pale leaves. Numerous population found to congregate on both the upper and lower leaf surface. The infested leaves fall off eventually.

Remarks

The new species is similar to *P. semialatae* Huang, 1992 and *P. meliae* Keifer, 1977, but can be differentiated from these two species by dorsal shield design which is adorned with depressed cells but there is no line on the shield whereas both *P. semialatae* and *P. meliae* are with dorsal shield lines. This new species has broad based wide frontal lobe which is acuminate in *P. semialatae*. On the other hand, *P. meliae* have two lateral lobes on prodorsal shield which are absent in the new species.

Etymology

The specific designation '*neemae*' is the genitive case derived from the common name of the type host plant, Neem.

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توصیف گونه جدیدی از (Acari: Eriophyoidea) *Phyllocoptruta* روی
Azadirachta indica از بنگال غربی، هند

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* نویسنده مسئول مکاتبات

چکیده

گونه جدید، *Phyllocoptruta neemae sp. nov.*، از خانواده Eriophyidae روی هر دو سطح
برگ‌های (*Azadirachta indica* Juss (Meliaceae) یافت شد و از روی نمونه‌های جمع‌آوری شده
در کالیانی، بنگال غربی، هند توصیف و ترسیم شد. این سومین گونه از کنه‌های اریوفیوید توصیف
شده از روی *A. indica* در هند است. کلید گونه‌های *Phyllocoptruta* هند ارایه شده است.
واژگان کلیدی: Eriophyidae، رده‌بندی، کنه‌های اریوفید، نیم (چریش)، Phyllocoptinae.

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