New eriophyoid mites (Acari: Prostigmata: Eriophyoidea) from cultivated plants from northeastern Brazil, including the second taxon in the Prothricinae

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Two new genera and three new species of eriophyoid mites are described from cultivated plants from northeastern Brazil, including native or introduced ornamental species widely used in urban landscapes. A new genus and a new species are described in the family Phytoptidae, Neoprothrix hibiscus gen. nov., sp. nov. from the flowering shrub Hibiscus rosa-sinensis. This taxon represents the second genus and the second species to be described in the subfamily Prothricinae. A new genus and two new species are described in the family Eriophyidae both from Brazilian ornamental trees, Auriculatus clitoria gen. nov., sp. nov. from Clitoria fairchildiana and Thamnacus paubrasil sp nov. from Caesalpinia echinata. In addition, the Eriophyidae Tegolophus indica Chakrabarti and Mondal from the fruit tree Artocarpus heterophyllus, is redescribed including a description of the male.

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Keywords: Phytoptidae; Eriophyidae; taxonomy; new species; Neotropical

Introduction

Several species of trees and shrubs have been used in urban landscapes in northeastern Brazil, including introduced and native species. Hibiscus rosa-sinensis L. (Malvaceae), known as Chinese hibiscus, is an evergreen flowering shrub native to East Asia and the African continent, which is found throughout the tropical and subtropical regions (Lorenzi and Souza 2000). The tree Caesalpinia echinata Lam. commonly known as “Pau-Brasil” (Brazilwood) is named after the country Brazil, and is native to the Atlantic Brazilian forest (Carvalho 2003). Its wood is regarded worldwide as the best material for the bows of stringed musical instruments (Pivetta 2003). The tree butterfly-pea, Clitoria fairchildiana Howard (Fabaceae), is also a native tree originating in north Brazil and widely used when designing urban landscapes because of its fast growth and beautiful flowers (Lorenzi 1992).

Three eriophyoid mites have been reported associated with H. rosa-sinensis: Aceria hibisci (Nalepa, 1906) and Shevtchenkella biseta (Nalepa, 1906) described from Suva, Fiji Islands; and Tegolophus hibiscellus (Keifer, 1946) from Hawaii, USA. Only one

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eriophyid species is reported associated with *C. echinata*: *Aceria inusitata* Britto and Navia, 2008 from northeast Brazil. No eriophyoid mites have been reported from *C. fairchildiana*.

The jackfruit *Artocarpus heterophyllus* Lam. (Moraceae) is a large fruit tree originating in South and South East Asia (India, Malaysia, the Philippines) but introduced into Brazil by the Portuguese. It is a fruit-bearing tree cultivated across all the Amazonian and tropical coasts of Brazil (Gomes 1977). Regarding the occurrence of eriophyid mites, only one species is reported associated with *Artocarpus heterophyllus*, *Tegolophus indica* Chakrabarti and Mondal, 1979 from India.

New taxa of the superfamily Eriophyoidea are here described as follows: a new genus and a new species of the Phytoptidae: Prothricinae from *H. rosa-sinensis* L., *Neoprothrix hibiscus* gen. nov., sp. nov., which represents the second genus and the second species in this subfamily, previously comprising only *Prothrix aboula* Keifer, 1965; a new genus and two new species of the Eriophyidae: Phyllocoptinae: Anthocoptini, *Auriculatus clitoria* gen. nov., sp. nov. from *C. fairchildiana*, and *Thamnacus paubrasil* sp. nov. from *C. echinata*. In addition, *Tegolophus indica* (Eriophyidae: Phyllocoptinae: Anthocoptini), previously known from *A. heterophyllus*, is redescribed and includes a description of the male and comments on supplementary morphological characters. All material studied was collected in the State of Pernambuco, northeastern, Brazil.

**Material and methods**

Mites were collected from leaf samples by hand using direct examination under a dissecting stereomicroscope and mounted in modified Berlese medium (Amrine and Manson 1996). Slide-mounted specimens were studied using a research microscope (Olympus BX41) with phase-contrast and a × 100 objective.

Terminology follows that of Lindquist (1996) and classification is based on Amrine et al. (2003). Measurements are given in micrometers (µm) and, unless stated otherwise, refer to the length of the structure. In the description of the female, each measurement of the holotype precedes the corresponding range for the paratypes. Some measurements of the holotype or paratypes could not be taken because of the positions in which the specimens were mounted. The count of ventral opisthosomal annuli starts from the first full annulus behind the genitalia. Dorsal opisthosomal annuli were counted from the first full annulus behind the middle of the prodorsal shield rear margin. When the length of cheliceral stylets is not given, it means that it was not possible to measure this character because they were in a bundle that was immersed with other gnathosomal structures. Measurements were conducted according to de Lillo et al. (2010) except for the following: (1) the body length, which was measured from the tip of the frontal lobe to the rear end of the anal lobe, not considering pedipalps; (2) the *sc* tubercles space measurement, which was based on the distance between the tubercles and not the setal distance; (3) empodium length, which includes its basal portion inserted into the tarsus.

Micrographs were obtained using a digital imaging system consisting of both a phase-contrast microscope (Olympus BX41) equipped with phase-contrast connected to a digital camera (Samsung SDC – 415), which was in turn connected to a computer with appropriate software.
**Taxonomy**

Family **PHYTOPTIDAE**  
Subfamily **PROTHRICINAE**  

*Neoprothrix* Reis and Navia, gen. nov.  
(Figures 1 and 2)

**Diagnosis**  
*Neoprothrix* gen. nov. is a Prothricinae with opisthosomal ventral setae I \((d)\) and II \((e)\) missing. This new genus is near *Prothrix* Keifer, 1965 in the presence of dorsal shield tubercles of vertical externa \((ve)\) setae moved forward; in the absence of tibial seta \((l')\); in the presence of lateral solenidion knobbed \((\varphi)\) on tibia I; and in the presence of dorsal seta \((c)\). However, it differs from this genus mainly in the absence of opisthosomal ventral setae II \((e)\) (present in *Prothrix*); and dorsal annuli with pointed lateral projections (not pointed in *Prothrix*).

**Type species**  
*Neoprothrix hibiscus* sp. nov.

**Etymology**  
Neo, from the Greek “neos”, meaning new, combined with “prothrix”, the name of the first and unique genus in the Prothricinae, subfamily to which the new genus belongs.

*Neoprothrix hibiscus* Reis and Navia, gen. nov., sp. nov.

**Female \((n = 10)\)**  
Body fusiform, flattened, 167 (153–168), 79 (75–87) wide; yellowish in life. **Gnathosoma** short, down-curved, 18 (16–20); basal seta \((ep)\) 3 (2–3); antapical seta \((d)\) 11 (9–11) long. **Prodorsal shield** 53 (48–54), 77 (73–84) wide, subquadragular, delicate granules covering the entire prodorsal shield; simplified ornamentation: two sublateral longitudinal lines connected posteriorly, near rear shield margin, by a transversal line (probably delimiting a central elevation). Vertical external setae \((ve)\) placed anterolaterally on the “shoulders” of the shield, which is anteromedially declivitous forming a transverse line which bears vertical internal \((vi)\) setae tubercles, 15 (14–16) long, on tubercles, 44 (41–44) apart, directed up and forward; paired \((vi)\) minute, 1 (1–2) long, set on tubercles, 8 (8–9) apart. Frontal lobe 9 (7–13), 22 (15–22), rounded or slightly flat, wide-based. **Legs** with all segments; lacking tibial seta \((l')\) on legs I and II. Leg I 35 (32–36); femur 11 (10–12), femoral seta \((bv)\) 8 (6–11); genu 6 (5–6), genual seta \((l')\) 26 (24–27); tibia 8 (7–8), solenidion knobbed \((\varphi)\) 11 (10–11), distal; tarsus 6 (5–6), lateral seta \((ft')\) 17 (16–17), dorsal seta \((ft)\) 15 (16–17), unguinal seta \((u')\) not visible, solenidion \((\omega)\) 5 (5–6) knobbed, empodium simple 5 (4–5), five-rayed, apically bifurcate. Leg II 33 (32–34); femur 11 (10–11), \((bv)\) 9 (8–10); genu 5, \(l'\) 21 (20–23); tibia 7 (6–7); tarsus 5 (5–6), \(ft'\) 15 (15–17), \(ft\) 3 (2–3), \(u'\) not visible, \(\omega\) 5
(5–6); empodium simple 4 (4–5), five-rayed. **Coxae** of legs I are fused. Coxal I and II smooth. Coxal seta I (Ib) 6 (5–7) long, 15 (14–17) apart; coxal seta II (Ia) 15 (12–15) long, 9 (8–11) apart; coxal seta III (2a) 20 (20–28) long, 32 (31–35) apart. **Genitalia** 18
(15–19), 18 (17–20) wide, coverflap smooth, widely rounded; genital seta (3a) 14 (11–14). Coxi-genital annuli not seen. Opisthosoma with 15 (14–15) dorsal annuli, broad, with pointed lateral projections, except the last four or five annuli; 30 (30–31) ventral annuli, narrow, with slightly elongated microtubercles restricted to the median ventral area. Dorsal seta (c1) 3 (3–4), on side of the second annulus; lateral seta (c2) 27 (22–27), on annulus 2. Ventral seta I (d) and II (e) absent; ventral seta III (f) 27 (23–27), on annulus 26 (26–27), 22 (19–23) apart, 12 (12–19) microtubercles apart. Caudal seta (h2) 39 (40–60); accessory seta (h1) absent.
Male (n = 5)

Smaller than female, 140–142, 64–73 wide. Gnathosoma 15–19; basal seta (ep) 2–3; antapical seta (d) 10. Prodorsal shield as in female, 43–48, 63–77 wide. External seta (ve) 15 long, on tubercles, 36–43 apart; internal seta (vi) 1–2 long, on tubercles, 6–8 apart. Frontal lobe 8–9, 18–25 wide. Legs as in female. Leg I 30–32; femur 9–10; genu 5, genual seta (l′) 18–23; tibia 6–7, solenidion knobbed (φ) 9–10; tarsus 5, lateral seta (ft′) 15–16, dorsal seta (ft″) 14–15, unguinal seta (u″) no visible, solenidion (ω) 5, knobbed, empodium simple 4, five-rayed. Leg II 28–31; femur 9–10, femoral seta (bv) 7; genu 4–5, genual seta (l″) 19–21; tibia 5–6; tarsus 5, ft″ 14–15, ft′ 2–3, u′ no visible, ω 5; empodium 4, five-rayed. Coxae as in female. Coxigenital region with 3–4 annuli, smooth. Coxal seta I (1b) 5–6, 12–15 apart; coxal seta II (1a) 12–14, 8–10 apart; coxal seta III (2a) 18–24, 27–33 apart. Genitalia 8, 13–16 wide, eugenital setae as figured; genital seta (3a) 9–10. Opisthosoma as in female, 14–15 dorsal annuli; 30–32 ventral annuli. Dorsal seta (c1) 3 (3–4), on side of the second annulus; lateral seta (c2) 20–22, on annulus 1–2. Ventral seta III (f) 18–23, on annulus 27–28, 18–21 apart, 12–18 microtubercles apart. Caudal seta (h2) broken; accessory seta (h1) absent.

Type material
Female holotype, 60 female and 26 male paratypes, from Hibiscus rosa-sinensis L. (Malvaceae), Recife, Pernambuco, Brazil, 15 August 2009 collected by A.C. Reis, 08° 01′07″ S, 34°56′41″ W, on six microscope slides. Holotype and paratypes (30 specimens, 20 females and 10 males, on six microscope slides) deposited in the collection of the Laboratório de Acarologia, Departamento de Agronomia, Universidade Federal Rural de Pernambuco, Recife, PE, Brazil. Paratypes (56 specimens, 40 females and 16 males, on 11 microscope slides) also deposited in the collection of Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil.

Relation to host
No symptoms seen.

Etymology
The specific designation “hibiscus” refers to Hibiscus, the host plant genus. It was coined by apposition of the tree genus to the mite genus.

Family ERIOPHYIDAE
Subfamily PHYLLOCOPTINAE
Tribe ANTHOCOPTINI

Auriculatus Reis and Navia, gen. nov. (Figures 3 and 4)
Figure 3. *Auriculatus clitoria* gen. nov., sp. nov. CGM, coxigenital region, male; D, dorsal habitus, female; em, empodium, leg I, female; LM, lateral habitus, female; L1, leg I, female; L2, leg II, female; V, ventral habitus, female.
Diagnosis

*Auriculatus* gen. nov. is an Anthocoptini with three dorsal opisthosoma ridges, middorsal and sublateral ridges begin on third annulus, middorsal ridge stronger than sublaterals; deep cleft between prodorsal shield and opisthosoma; first dorsal opisthosomal annulus formed into a broad plate bearing round lateral lobes (like shoulder blades). This new genus is near *Notallus* Keifer, 1975 and can be distinguished from it by the first dorsal opisthosomal annuli modified into a broad plate (in *Notallus* first dorsal annuli are narrow and subequal dorsoventrally, followed by tergites).

Type species

*Auriculatus clitoria* sp. nov.

Etymology

*Auriculatus*, from “auricula”, Latin. Feminine, meaning ear-lobe and the suffix -atus, meaning possession. It refers to the pair of lobe-like flaps on the first dorso-opisthosomal annulus. Gender: Feminine.

*Auriculatus clitoria* Reis and Navia, gen. nov., sp. nov.
Female \((n = 10)\)

Body fusiform, 144 (140–155), 54 (50–55) wide. **Gnathosoma** down-curved, 31 (26–31); basal seta \((ep)\) 3(3); antapical seta \((d)\) 7 (6–8) long, chelicera 25 (24–26), oral stylet 22 (21–23). **Prodorsal shield** 38 (33–38), 52 (45–52) wide, subtriangular, entirely covered with sparse granules, with discontinuous diagonal lines in the anterolateral areas, separated from the first dorsal annulus by a deep cleft. Scapular seta \((sc)\) 25 (23–25) on prominent tubercles, cylindrical, directed up or lateroposteriorly, 22 (22–27) apart.

Frontal lobe 6 (4–7), 15 (14–17) wide, apically rounded and broad-based, with some longitudinal lines extending over two-thirds of lobe. **Legs** with all segments; lacking 
tibial seta \((l')\) on leg II. Leg I 30 (27–30); femur 9 (8–9), femoral seta \((bv)\) 12 (11–13); genu 5 (4–5), genual seta \((l')\) 19 (19–21); tibia 8 (7–8), tibial seta \((l')\) 7 (6–7); tarsus 5 (5), lateral seta \((ft'')\) 20 (16–22), dorsal seta \((ft')\) 15 (15–17), unguinal seta \((u')\) 5 (4–5), solenidion blunt \((ω)\) 8 (7–8), empodium simple 7 (6–7), eight-rayed. Leg II 28 (26–28); femur 9 (8–9), femoral seta \((bv)\) 12 (10–12); genu 5 (4–5), \(l'\) 9 (8–9); tibia 6 (5–6); tarsus 5 (5), ft” 21 (18–21), ft’ 8 (5–8), \(u'\) 4 (3–4), \(ω\) 8 (7–8), blunt, empodium simple 8 (7–8), eight-rayed. **Coxae** I and II with short dashes. Coxae I partially fused. Sternal line 5 (4–5). Coxisternal region with 5 (4–6) annuli, microtuberculated. Coxal seta I (\(I\)) 12 (10–13) long, 10 (8–10) apart; coxal seta II (\(Ia\)) 21 (20–26) long, 8 (7–8) apart; coxal seta III (\(2a\)) 30 (27–35) long, 22 (20–23) apart. **Genitalia** 10 (10–14), 18 (16–19) wide, coverflap proximal area with 4 (2–4) irregular curved transversal lines, and distal area with 11 (9–11) longitudinal lines; genital seta (\(3a\)) 15 (12–15). **Opisthosoma** 25 (25–26) dorsal annuli, moderately broad. First opisthosomal dorsal annuli formed into a broad plate bearing round lateral lobes. Three dorsal longitudinal ridges, beginning on third annulus, the middorsal ridge extending until the level dorsal of the ventral seta III \((f)\), and the two lateral ridges extending two rings above the ventral seta III \((f)\), with microtubercles; 47 (39–47) ventral annuli, rounded microtubercles. Lateral seta \((c_2)\) 25 (22–26), on annulus 4 (3–4). Ventral seta I (\(d\)) 30 (30–58), on annulus 16 (14–17), 34 (34–40) apart, 25 (25–27) microtubercles apart; ventral seta II (\(e\)) 10 (10–13), on annulus 28 (24–28), 15 (14–17) apart, 13 (11–15) microtubercles apart; ventral seta III \((f)\) 15 (12–15), on annulus 41 (35–41), 10 (9–11) apart, 11 (9–11) microtubercles apart. Caudal seta \((h_2)\) 52 (45–57); accessory seta \((h_1)\) 3 (3–4).

Male \((n = 5)\)

Smaller than female, 123–143, 47–51 wide. **Gnathosoma** 27–29; basal seta \((ep)\) 3; antapical seta \((d)\) 6–7; chelicerae 23–25; oral stylet 21–23. **Prodorsal shield** as in female, 33–35, 46–49 wide. Scapular seta \((sc)\) 20, 20–24 apart. **Legs** as in female. Leg I 27–30; femur 7–9, femoral seta \((bv)\) 10–12; genu 5, genual seta \((l')\) 18–20; tibia 6–7, tibial seta \((l')\) 6–7; tarsus 5–6, lateral seta \((ft'')\) 17–20, dorsal seta \((ft')\) 15–16, unguinal seta \((u')\) 4–5, solenidion blunt \((ω)\) 7; empodium simple 6–7, eight-rayed. Leg II, 26–27; femur 8–9, \(bv\) 10–12; genu 4–5, \(l'\) 8–10; tibia 5–6; tarsus 5, \(ft''\) 18–19, \(ft'\) 5–6, \(u'\) 3–4, \(ω\) 7–8; empodium 7, eight-rayed. **Coxae** as in female. Sternal line 4–6. Coxisternal region with 7 annuli, with granules. Coxal seta I (\(I\)) 9–12, 9–10 apart; coxal seta II (\(Ia\)) 17–22, 6–8 apart; coxal seta III (\(2a\)) 30–37, 18–22 apart. **Genitalia** 9–11, 13–15 wide, eugenital setae as figured; genital seta (\(3a\)) 12–16. **Opisthosoma** as in female, 24–25 dorsal annuli; 39–42 ventral annuli. Lateral seta \((c_2)\) 21–24, on annulus 3–4. Ventral seta I (\(d\)) 36–58, on annulus 12–
15, 31–34 apart, 19–25 microtubercles apart; ventral seta II (e) 9–12, on annulus 23–24, 14–17 apart, 9–12 microtubercles apart; ventral seta III (f) 11–13, on annulus 35–38, 9–11 apart, 8–9 microtubercles apart. Caudal seta (h₂) 47–60; accessory seta (h₁) 3–4.

Type material
Female holotype, 14 female and 10 male paratypes, from Clitoria fairchildiana Howard (Fabaceae), Recife, Pernambuco, Brazil, 08°01′07″ S, 34°56′41″ W, 16 September 2010, collected by A.C. Reis, on nine microscope slides. Holotype and paratypes (24 specimens, 14 females and 10 males, on nine microscope slides) deposited in the collection of the Laboratório de Acarologia, Departamento de Agronomia, Universidade Federal Rural de Pernambuco, Recife, PE, Brazil. Paratypes (17 specimens, 10 females and seven males, on five microscope slides) also deposited in the collection of Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil.

Relation to host
No symptoms seen.

Etymology
The specific designation “clitoria” refers to the genus of the host plant. It was coined by apposition of the tree genus to the mite genus.

Family ERIOPHYIDAE
Subfamily PHYLLOCOPTINAE Tribe ANTHOCOPTINI
Thamnacus paubrasil Reis and Navia, sp. nov.
(Figures 5 and 6)

Diagnosis
Thamnacus sp nov. is distinct in having a short posterior lobe extending over the first opisthosomal annulus; dorsal opisthosoma with transverse thickened bands; coverflap with granules on the proximal area and longitudinal and radial lines. It differs from T.separabilis Huang, 2001 and T.vacuus Huang, 2001 in the smooth dorso-opisthosomal annuli (microtuberculated in these species). It also differ from other Thamnacus species in the six-rayed empodium (six paired and one unpaired apical in T.euphorbiae Channabasavanna, 1966, five-rayed in T.acanthae Umapathy, 1999, seven-rayed in T.elaeagnae Umapathy, 1999, and four-rayed in T.rhamnicolus (Keifer, 1938), T.solani Boczek and Michalska, 1989, T.separabilis and T.vacuus).

Female (n = 10)
Body fusiform, 155 (143–179), 51 (49–60) wide; Gnathosoma down-curved, 21 (20–22); basal seta (ep) 2 (2–3); antapical seta (d) 5 (4–5) long, not branched.
Figure 5. *Thamnacus paubrasil* sp. nov. CGM, coxigenital region, male; D, dorsal habitus, female; em, empodium, leg I, female; LM, lateral habitus, female; L1, leg I, female; L2, leg II, female; V, ventral habitus, female.
Prodorsal shield 38 (38–41), 49 (44–54) wide, smooth, with a posterior lobe (or projection) extending over the first 1–2 opisthosomal annulus. Scapular seta (sc) 16 (14–16), on prominent tubercles, starting a little under the posterior lobe, 22 (21–24) apart. Frontal lobe broad-based, apically rounded with three spines, 6 (6–7), 17 (17–20) wide. Legs with all segments; all setae present except for tibial seta (l') on leg II. Leg I 25 (24–26); femur 8 (7–9), femoral seta (bv) 7 (7–9); genu 4 (4–5), genual seta (l'') 20 (18–21); tibia 5 (4–5), tibial seta (l') 5 (4–6); tarsus 5 (4–6), lateral seta (ft'') 12 (12–20), dorsal seta (ft') 14 (14–16), unguinal seta (u') 4 (4–5), solenidion (ω) 9 (9–10), blunt, empodium simple 5 (5–6), six-rayed, apically bifurcate. Leg II 22 (21–24); femur 8 (6–8), bv 7 (7–8); genu 4 (3–4), l'' 5 (5–6); tibia 3 (3–4); tarsus 5 (4–5), ft'' 18 (16–18), ft' 5 (5–6), u' 3 (3–4), ω 9 (9); empodium simple 5 (5–6), six-rayed. Coxae I with irregular lines. Sternal line 6 (5–6). Coxigenital region with 3 (3) annuli, microtuberculated. Coxal seta I (Ib) 6 (5–6), 9 (9–13) apart; coxal seta II (1a) 13 (13–16), 7 (7–11) apart; coxal seta III (2a) 29 (26–33), 18 (18–23) apart. Genitalia 13 (11–13), 15 (15–18) wide; cover flap with granules on the proximal area and 7 (7–8) longitudinal and radial lines of unequal length near posterior margin; genital seta (3a) 11 (11–14). Opisthosoma 20
(20–21) dorsal annuli, broad, without microtubercles, with a longitudinal middorsal ridge and two lateral ridges fading above the level of ventral seta III (f). Ventral annuli with elongated microtubercles, 48 (46–53). Lateral seta (e2) 16 (16–20), on annulus 4 (3–4). Ventral seta I (d) 40 (35–44), on annulus 16 (15–17), 28 (28–39) apart, 19 (19–22) microtubercles apart; ventral seta II (e) 10 (8–11), on annulus 30 (27–31), 13 (13–19) apart, 7 (7–11) microtubercles apart; ventral seta III (f) 13 (13–15), on annulus 44 (42–49), 10 (10–12) apart, 9 (7–9) microtubercles apart. Caudal seta (h2) 43 (43–54); accessory seta (h1) 2 (1–2).

**Male (n = 5)**

Smaller than female, 121–136, 44–49 wide. **Gnathosoma** 17–21; basal seta (ep) 3 (2–3); antapical seta (d) 3–4; chelicerae 15–16. **Prodorsal shield** as in female, 33–37, 41–42 wide. Scapular seta (sc) 12–14, 18–19 wide. **Legs** as in female. Leg I 22–24; femur 7–8, femoral seta (bv) 6–7; genu 16–18, genual seta (l″) 4–5; tibia 4–5; tarsus 5, lateral seta (ft′) 16–17, dorsal seta (ft″) 14–15, unguinal seta (u′) 3–4, solenidion (ω) 8–9; empodium simple 5–6, six-rayed. Leg II 20–23; femur 7–8, bv 6–7; genu 3, l″ 4–5; tibia 3–4; tarsus 5, ft″ 15–16, ft′ 5, u′ 3, ω 9–10; empodium 5–6, six-rayed. **Coxae** as in female. Sternal line 5–6. Coxisternal region with 3–4 annuli, with granules. Coxal seta I (1b) 5, 8–9 apart; coxal seta II (1a) 12–13, 6–9 apart; coxal seta III (2a) 27–31, 15–19 apart. **Genitalia** 9–10, 12 wide, eugenital setae as figured; genital seta (3a) 9–10. **Opisthosoma** as in female, 20–21 dorsal annuli; 37–41 ventral annuli. Lateral seta (e2) 17–19, on annulus 2–3. Ventral seta I (d) 30–35, on annulus 10–12, 24–26 apart, 15–19 microtubercles apart; ventral seta II (e) 7–8, on annulus 20–23, 11–12 apart, 7–9 microtubercles apart; ventral seta III (f) 11–12, on annulus 33–37, 9–11 apart, 7–9 microtubercles apart. Caudal seta (h2) 31–48; accessory seta (h1) 1–2.

**Type material**

Female holotype, 15 female and six male paratypes, from *Caesalpinia echinata* Lam. (Caesalpiniaeae), Recife, Pernambuco, Brazil, 08°01′07″ S, 34°56′41″ W, 15 October 2009, collected by A.C. Reis, on five microscope slides. Holotype and paratypes (16 specimens, 11 females and five males, on three microscope slides) deposited in the collection of the Laboratório de Acarologia, Departamento de Agronomia, Universidade Federal Rural de Pernambuco, Recife, PE, Brazil. Paratypes (five specimens, four females and one male, on two microscope slides) also deposited in the collection of Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil.

**Relation to host**

No visible damage.

**Etymology**

The specific name “paubrasil” refers to the common name given to the host plant, *Caesalpinia echinata*.
Redescription

*Tegolophus indica* Chakrabarti and Mondal, 1979
(Figures 7 and 8)

Figure 7. *Tegolophus indica*. CGM, coxigenital region, male; D, dorsal habitus, female; DS, detail of prodorsal shield; em, empodium, leg I, female; IG, internal genital structures, female; L1, leg I, female; L2, leg II, female; V, ventral habitus, female.
Female (n = 10)

Body fusiform, 151 (147–169), 65 (58–68) wide; Gnathosoma down-curved, 20 (19–22); basal seta (ep) 3; antapical seta (d) 6 (5–6) long. Prodorsal shield 49 (46–55), 63 (56–65) wide, with dashes in the anterior shield, strongest in the central region of the frontal lobe; median region of the shield elevated and delimited by a pair of submedian lines joined posteriorly. Transversal line extending along the median shield area just over dorsal tubercles. In the region this transversal line is near the curved line (that connects the submedian lines) it is thickened and the area between these lines is densely granulated. Scapular seta (sc) 7 (6–9) long, 25 (24–26) apart, placed near rear shield margin. Frontal lobe 10 (8–10), 25 (21–25) wide, broad-based, apically rounded. Anterolateral margins of frontal lobe granulated. Legs with all segments; all setae present except for tibial seta (l') on leg II. Leg I 29 (27–30); femur 9 (8–10), femoral seta (bv) 9 (8–10); genu 5 (4–5), genual seta (l") 23 (19–23); tibia 7 (6–7), tibial seta (l') 5 (3–5); tarsus 6 (6), lateral seta (lf") 19 (18–20), dorsal seta (fr') 17 (16–20), unguinal seta (u') 5 (4–5),

Figure 8. Tegolophus indica. (A) Dorsal habitus, female; (B) ventral habitus, female; (C) epigynum; (D) genitalia, male; (E) detail of prodorsal shield; (F) leg I and leg II, female; (G) empodium.
covering whole genitalia; genital seta (more elongated posteriorly to ventral seta II (opisthosoma; 51 (48–54) ventral annuli, with microtubercles becoming gradually more elongated posteriorly to ventral seta II (e). Lateral seta (c2) 33 (31–35), on annulus 3 (3–4). Ventral seta I (d) 45 (40–57), on annulus 11 (9–11), 26 (23–30) apart, 15 (11–16) microtubercles apart; ventral seta II (e) 12 (9–13), on annulus 28 (26–30), 14 (12–16) apart, 12 (10–13) microtubercles apart; ventral seta III (f) 22 (19–24), on annulus 47 (45–50), 19 (18–20) apart, 17 (15–18) microtubercles apart. Caudal seta (h2) 55 (48–55); accessory seta (h1) absent.

Male (n = 5)
Smallers than female, 125–140, 53–58 wide. Gnathosoma 18–22; basal seta (ep) 3; antapical seta (d) 5–6. Prodorsal shield as in female, 40–47, 50–56 wide. Scapular seta (sc) 7–8 long, 21–24 apart. Frontal lobe as in female 8–9, 20–22 wide. Legs as in female. Leg I 26–29; femur 8–9, femoral seta (bv) 8–9; genu 4–5, genual seta (l′) 18–19; tibia 6–7, tibial seta (l′) 4–5; tarsus 5–6, lateral seta (ft′) 17–20, dorsal seta (ft′) 16–19, unguinal seta (u′) 4–5, solenidion (ω) 6 knobbed, empodium simple 5, four-rayed, apically bifurcated. Leg II 24–27; femur 8–10, bv 8–9; genu 4, genual seta (l′) 4–6; tibia 5–6; tarsus 5–6, ft′ 16–18, ft′ 4–5, u′ 3–4, ω 5–6; empodium 5, four-rayed. Coxae as in female. Sternal line 8–10. Coxisternal region with 5 annuli, smooth. Coxal seta I (lb) 6–7, 9–10 apart; coxal seta II (la) 13–15, 6–7 apart; coxal seta III (2a) 25–40, 17–19 apart. Genitalia 13–15, 17–19 wide, eugenital setae as figured; genital seta (3a) 10–11. Opisthosoma as in female, 22–23 dorsal annuli; 43–49 ventral annuli. Lateral seta (c2) 25–29, on annulus 2–3. Ventral seta I (d) 36–49, on annulus 8–9, 21–25 apart, 8–14 microtubercles apart; ventral seta II (e) 10–15, on annulus 22–26, 12–13 apart, 8–10 microtubercles apart; ventral seta III (f) 18–21, on annulus 39–44, 16–18 apart, 15–18 microtubercles apart. Caudal seta (h2) 44–49; accessory seta (h1) absent.

Material examined
Thirty-six females and eight male specimens, from Artocarpus heterophyllus Lam. (Moraceae), Recife, Pernambuco, Brazil, 08°01′07″ S, 34°56′41″ W, 2 December 2010, collected by A.C. Reis, on 10 microscope slides. Material 25 specimens (18 females and seven males, on eight microscope slides) deposited in the collection of the Laboratório de Acarologia, Departamento de Agronomia, Universidade Federal Rural de Pernambuco, Recife, PE, Brazil and 11 specimens (10 females and one male, on two microscope slides) also deposited in the collection of Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil. We had no access to the type material.
Relation to host
No visible damage.

Remarks
A line running between the bases of scapular setae and bearing various refringent bodies or granules was observed; these granules are individualized or clustered.

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