

Mite (Arthropoda: Acari) associates of palms (Arecaceae) in Brazil. IV. Descriptions of four new species in the Eriophyoidea

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Abstract

Four new species of eriophyoids collected from Arecaceae are described: *Notostrix butiae* **sp. nov.**, from *Butia eriopatha* (Mart.) Becc.; *Notostrix nasutiformes* **sp. nov.**, from *Cocos nucifera* L.; *Knorella geonomae* **sp. nov.**, from *Geonoma schottiana* Mart. and *Propilus syagris* **sp. nov.**, from *Syagrus romanzoffiana* (Cham.) Glassman.

Key Words: Acari, Eriophyoidea, taxonomy.

Introduction

A considerable increase in areas used to cultivate crops of the family Arecaceae has occurred in southern Brazil, involving mainly coconut (*Cocos nucifera* L.) and palm heart (*Euterpe edulis* Mart. and *Bactris gasipaes* Kunth.). Knowledge of the mite fauna associated with this plant group is pertinent to facilitate the interpretation of future status of those mites in commercial cultivation of those plants. This paper refers to eriophyoid mites associated with palm trees in southern Brazil, in natural forest habitat (Atlantic Forest) and in areas where those species are planted as ornamentals. This work is the continuation of an on-going effort to evaluate the mite species on palm trees in Brazil, initiated by one of the authors of this paper (Flechtmann 1998; Santana & Flechtmann 1998).

Materials and methods

Part of the mite sample was mounted in modified Berlese medium (Amrine & Manson 1996), for observation under light microscopy. Another part was prepared using a technique normally employed for transmission electron microscopy (Alberti & Nuzzaci 1996), except that prefixation was done during 1 week, rinsing was not done, mites were critical point dried after dehydration, mounted on stubs and coated with gold for 210 sec. Those mites were subsequently observed under scanning microscope (Zeiss DSM 940 A) to complement the descriptions. Measurements are given in micrometers (µm); values preceding parentheses correspond to the holotype; values within parentheses correspond to ranges of the paratypes.

***Notostrix butiae* sp. nov. (Fig. 1)**

DIAGNOSIS

Notostrix jamaicae Keifer, 1970 and *Notostrix exigua* Flechtmann, 1998 differ from this new species by the simple shape of the empodia; they are simple, ending in a pair of rays in *N. jamaicae*, and divided in three branches in *N. exigua*. In addition, *N. jamaicae* and *N. exigua* have 2 rows of longitudinal striae separated by a relatively wide area of smooth cuticle on the epigynium, whereas *N. butiae* sp. nov. has a single row of longitudinal striae, which are broken anteriorly and occupy the whole epigynium. *Notostrix flabellifera* Mohanasundaram, 1982 has a single, distal row of longitudinal striae on the epigynium; whereas the epigynium of *Notostrix attenuata* Keifer, 1963 has a symmetrical pattern composed mostly of curved lines tending to touch each other in the central part of the shield. The latter 2 species further differ from *N. butiae* sp. nov. by the longer *sc* (8 and 21, respectively); *N. flabellifera* further differs from the new species by having the *sc* tubercles inserted near posterior margin of prodorsal shield.

DESCRIPTION

Adult female (holotype and 9 paratypes). Idiosoma: Slender, elongate, 256 (194-256) long, 56 (47-57) wide, color in life light greenish with wax fringes along sides of the idiosoma. Gnathosoma: 28 (23-28) long; pedipalp coxal setae *ep* on tubercles, 3 (3-4) long; dorsal pedipalp genual setae *d* 4 (4) long; cheliceral stylets 20 (18-20) long. Prodorsal shield: 54 (48-54) long, 56 (47-57) wide, smooth, triangular, with anterior angle elongate and overhanging gnathosoma; emarginated along most of its lateral margins. Scapular setae *sc* on tubercles, 10 (9-11) anterior of posterior margin of the prodorsal shield, 17 (17-19) apart, convergent and posteriorly directed, 5 (5) long. Legs: No setae on genu II. Leg I: 31 (29-31) long; trochanters 3 (3-4) long; femora 12 (11-12) long, basiventral femoral setae *bv* 9 (8-9) long; genua 5 (4-5) long, antaxial genual setae *l'* 25 (24-27) long; tibiae 6 (6) long, paraxial tibial setae *l'* 5 (5) long; tarsi 5 (5-6) long, paraxial fastigial tarsal setae *ft'* 15 (14-15) long, antaxial fastigial tarsal setae *ftc* 18 (18-19) long, paraxial unguinal tarsal setae *u'* 2 (2) long, solenidia ω 6 (6) long, empodia simple, ending in an unpaired branch, 5 (5) long and 7 pairs of branched rays. Leg II: 29 (28-29) long; trochanters 5 (4-5) long; femora 13 (12-13) long; basiventral femoral setae *bv* 7 (6-7) long; genua 4 (3-4) long; tibiae 5 (5) long; tarsi 5 (5) long, paraxial fastigial tarsal setae *ft'* 4 (4-5) long, antaxial fastigial tarsal setae *ft''* 21 (21-22), paraxial unguinal tarsal setae *u'* 2 (2-3) long, solenidia ω 6 (6) long, empodia as on leg I. Coxisternal region: Proximal setae on coxisternum I *Ia* on tubercles, 15 (15-17) long, 7 (7) apart; anterolateral setae on coxisternum I *Ib* on tubercles, 8 (7-8) long, 11 (10-11) apart. Proximal setae on coxisternum II *2a* on tubercles, 35 (32-37) long, 22 (20-22) apart. Sternal line 14 (12-14) long; area between coxisternum II and epigynium with 9 (9-11) annuli provided with acuminate microtubercles. Coxisternal region and ventral area anterior to it with mammillate microtubercles. Epigynium: 23 (22-23) long, 16 (16-17) wide, with a single row of 17 (15-19) longitudinal striae, which are broken anteriorly and occupy the whole epigynium. Anterior genital apodeme connected to a pair of broad lateral structures; wide posterior genital apodeme at the same level as spermathecae; spermathecal duct short. Proximal setae of coxisternum III *3a* 13 (12-13) long. Opisthosoma: Thanosoma with 39 (38-39) dorsal annuli, smooth; with a central depression fading posteriorly. With 68 (59-68) ventral annuli provided with acuminate microtubercles. Telosoma with 7 (7-8) dorsal annuli, smooth; 8 (8-9) ventral annuli provided with acuminate microtubercles. Setae *c*₂ on tubercles, 19 (18-19) long, on ventral annulus 5 (4-5). Setae *d* 57 (53-58) long, 26 (25-28) apart, on ventral annulus 20 (18-20). Setae *e* 50 (47-53) long, 15 (15-16) apart, on ventral annulus 39 (34-39). Setae *f* 24 (23-25) long, 23 (20-23) apart, on ventral annulus 68 (59-68). Setae *h*₁ absent. Setae *h*₂ 70 (67-76) long.

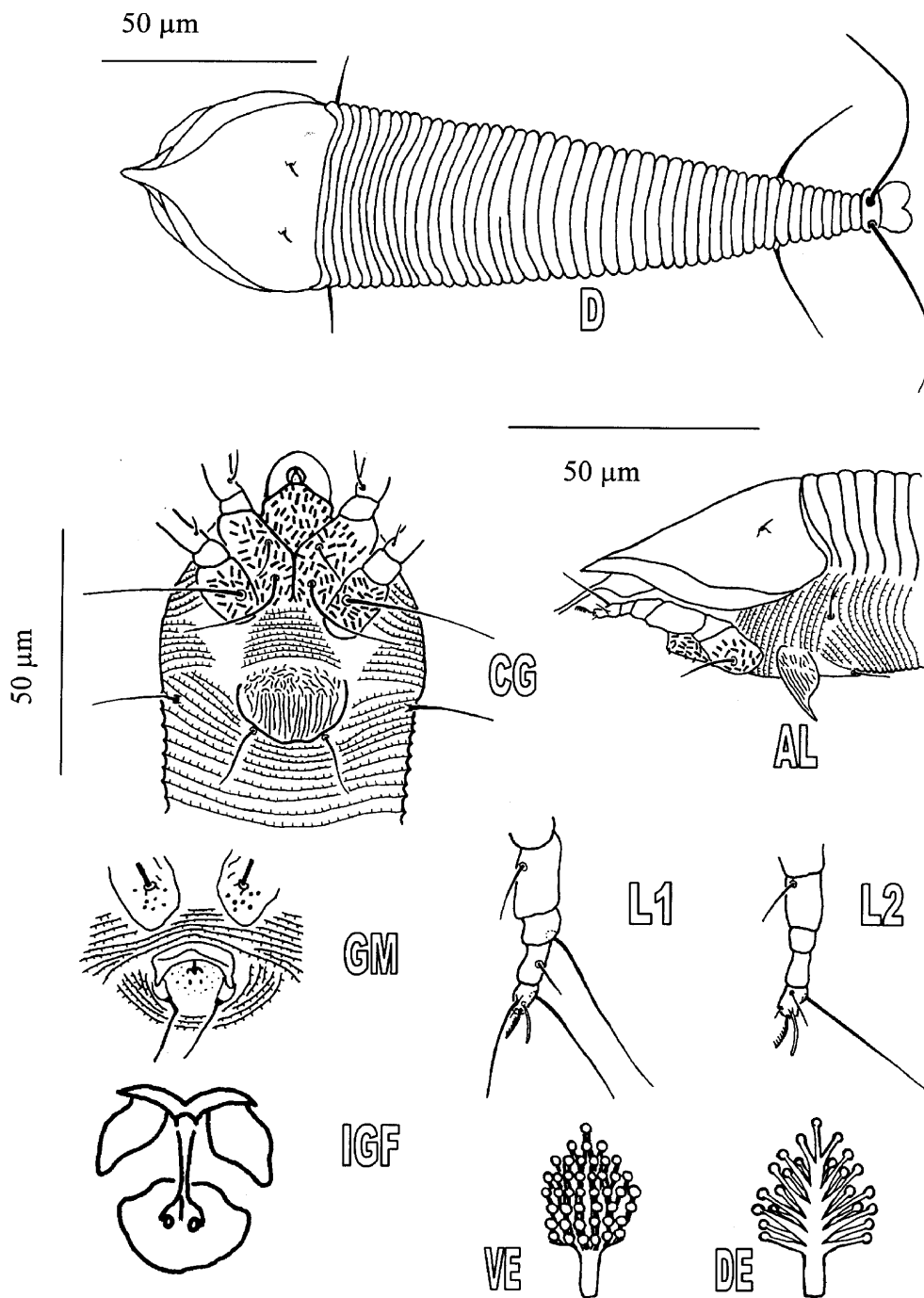


FIGURE 1. *Notostrix butiae* n. sp. D - Dorsal; CG - Coxigenal area; AL - Anteriorlateral view; L1 - Leg I; L2 - Leg II; GM - Genital area of male; IGF - Internal genital structures of female; DE - Empodium of leg I (dorsal view); VE - Empodium of leg I (ventral view).

Adult male (5 paratypes). Idiosoma: Slender, elongate, smaller than female, (161-221) long, (42-49) wide, color in life light greenish with wax fringes along sides of the idiosoma. Gnathosoma: Pedipalp coxal setae *ep* on tubercles, (4-5) long; dorsal pedipalp genual setae *d* (11) long; cheliceral stylets (16-18) long. Prodorsal shield: (46-50) long, (42-49) wide, smooth, triangular, with anterior angle elongate and overhanging gnathosoma; emarginated along most of its lateral margins. Scapular setae *sc* on tubercles, (9-11) anterior of posterior margin of the prodorsal shield, (14-15) apart, convergent and posteriorly directed, (4) long. Leg: No setae on genua II. Leg I: (30-32) long; trochanters (3-4) long; femora (12) long, basiventral femoral setae *bv* (9-11) long; genua (4-5) long, antaxial genual setae *l''* (22-23) long, tibiae (6) long, paraxial tibial setae *l'* (5) long; tarsi (5) long, paraxial fastigial tarsal setae *ft'* (13) long, antaxial fastigial tarsal setae *ft''* (16-18) long, paraxial unguinal tarsal setae *u'* (2) long, solenidia ω (6-7) long, empodia as in female, (5-6) long. Leg II: (28-30) long; trochanters (4-5) long; femora (12-13) long; basiventral femoral setae *bv* (7) long; genua (3-4) long; tibiae (4-5) long; tarsi (5) long; paraxial fastigial tarsal setae *ft'* (3-4) long, antaxial fastigial tarsal setae *ft''* (18-19) long, paraxial unguinal tarsal setae *u'* (2) long, solenidia ω (6-7) long, empodia as in female, (6) long. Coxisternal region: Proximal setae on coxisternum I *Ia* on tubercles, (19-21) long, (4-5) apart; anterolateral setae on coxisternum I *Ib* on tubercles, (6-7) long, (8-11) apart. Proximal setae on coxisternum II *2a* on tubercles, (36-38) long, (18-19) apart. Sternal line (19) long; area between coxisternum II and epigynium with (9-10) annuli provided with acuminate microtubercles. Coxisternal region and ventral area anterior to it striate, without microtubercles. Epigynium (14-15) wide; cuticle of genital fossa granulate. Proximal setae on coxisternum III *3a* (17-20) long. Opisthosoma: Thanosoma with (37-41) dorsal annuli, smooth, with a central depression fading posteriorly. With (65-67) ventral annuli provided with acuminate microtubercles. Telosoma with (8-9) dorsal annuli, smooth; (8-9) ventral annuli provided with acuminate microtubercles. Setae *c*₂ on tubercles, (19-21) long, on ventral annulus (5-6). Setae *d* (59-67) long, (21-23) apart, on ventral annulus (17-18). Setae *e* (45-50) long, (11-12) apart, on ventral annulus (36-37). Setae *f* (22-28) long, (19-21) apart, on ventral annulus (56-67). Setae *h*₁ absent. Setae *h*₂ (67-77) long.

Type Material. Female holotype, 31 female and 9 male paratypes, on 10 microscopic preparations deposited in the collection of SZDE (Setor de Zoologia of Departamento de Entomologia), Fitopatologia e Zoologia Agrícola da Universidade de São Paulo-ESALQ, Piracicaba, São Paulo, Brazil. Seven female and 1 male paratypes on 2 microscopic preparations deposited in the USNM, Washington, D.C., U.S.A.

Type Locality. Campus of Escola Superior de Agricultura "Luiz de Queiroz" (USP- ESALQ), Piracicaba, São Paulo, Brazil; collected by M.G.C. Gondim Jr. in V-1999 at 22°42'30" of south latitude and 47°37'54" of west longitude.

Host Plant. Collected on lower surface of *Butia eriospatha* (Marc.) Becc. (Arecaceae) leaves.

Etymology. *Butiae*, refers to the genus of the host plant of this mite, that was the only plant where the species was found.

***Notostrix nasutiformes* sp. nov. (Fig. 2)**

DIAGNOSIS

Notostrix jamaicae Keifer, 1970 and *Notostrix exigua* Flechtmann, 1998 differ from this new species by the shape of the empodia; they are simple, ending in a pair of rays in *N. jamaicae*, and divided into 3 branches in *N. exigua*. In addition, *N. jamaicae* and *N. exigua* have 2 rows of longitudinal striae separated by a relatively wide area of smooth cuticle on the epigynium. *N. butiae* differs from this new species by having a single row of longitudinal striae, which are broken anteriorly. *N. flabellifera* has a distal row of longitudinal striae on the epigynium, whereas the epigynium of *N.*

attenuata has a symmetrical pattern composed mostly of curved lines tending to touch each other in the central part of the shield. The latter 2 species further differ from *N. nasutiformes* **sp. nov.** by the longer *sc* (8 and 21, respectively). In addition, *N. flabellifera* has *sc* tubercles inserted near posterior margin of prodorsal shield.

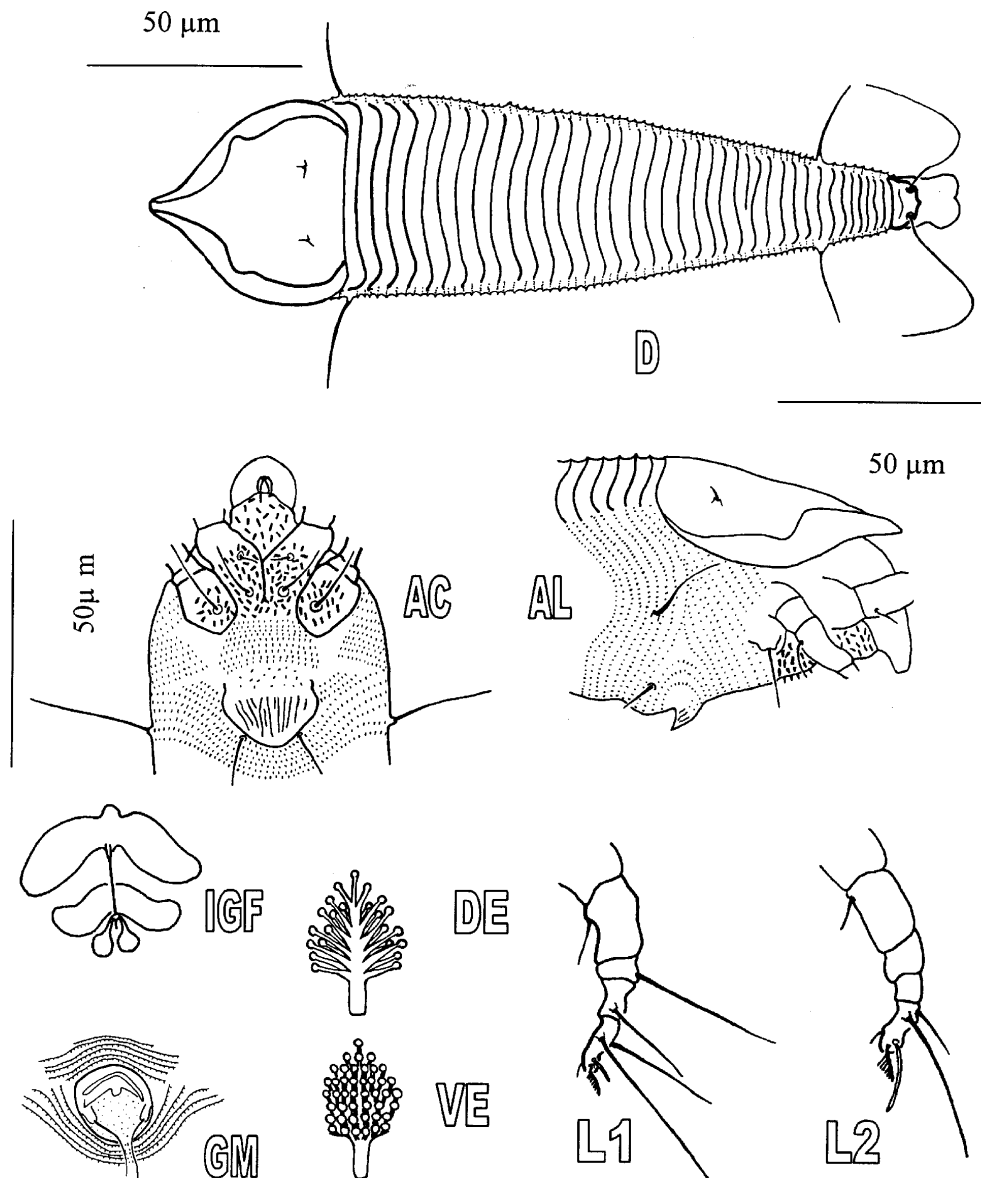


FIGURE 2. *Notostrix nasutiformes* **n. sp.** D - Dorsal; AC - Coxigenal area; AL - Anteriorlateral view; L1 - Leg I; L2 - Leg II; IGF - Internal genital structures of female; GM - Genital area of male; DE - Empodium of leg I (dorsal view); VE - Empodium of leg I (ventral view).

DESCRIPTION

Adult female (holotype and 9 paratypes). Idiosoma: Slender, elongate; 213 (186-231) long; 50 (50-53) wide, color in life light greenish with wax fringes along sides of the idiosoma. Gnathosoma: 30 (30) long; setae *ep* on tubercles, 4 (4-5) long; setae *d* 4 (4-5) long; cheliceral stylets 19 (18-19) long. Prodorsal shield: 50 (48-51) long, 50 (50-53) wide, smooth, triangular, with anterior angle elongate and overhanging gnathosoma; emarginated along most of its lateral margins and with a median lobe on the submarginal line. Setae *sc* on tubercles, 11 (9-11) anterior of posterior margin of the prodorsal shield, 18 (18-19) apart, convergent and posteriorly directed, 4 (4) long. Leg: No setae on genua II. Leg I: 28 (27-28) long; trochanters 3 (3-4) long; femora 10 (10-11) long, seta *bv* 8 (8-9) long; genua 4 (4) long, seta *l''* 23 (23-24) long; tibiae 5 (5) long, setae *l'* 14 (13-15) long; tarsi 5 (5-6) long, setae *ft'* 12 (11-12) long, setae *ft''* 16 (16) long, setae *u'* 3 (2-3) long, solenidia (ω) 5 (5) long, empodia simple, ending in an unpaired branch, 5 (4-5) long and with 7 pairs of branched rays. Leg II: 27 (26-28) long; trochanters 3 (3-4) long; femora 11 (11) long, seta *bv* 7 (7-8) long; genua 4 (3-4) long; tibiae 4 (4) long; tarsi 6 (6) long, setae *ft'* 6 (5-7) long, setae *ft''* 21 (20-21) long, setae *u'* 2 (2-3) long, solenidia ω 9 (9) long, empodia as on leg I, 5 (5) long. Coxisternal region: Setae *1a* on tubercles, 15 (15-17) long, 7 (7-8) apart; setae *1b* on tubercles, 6 (6-7) long, 9 (9) apart. Setae *2a* on tubercles, 34 (32-37) long, 21 (20-22) apart. Sternal line 11 (11-12) long; area between coxisternum II and epigynium with 11 (9-11) annuli provided with acuminate microtubercles. Coxisternal region and ventral area anterior to it with mamillate microtubercles. Epigynium 17 (15-17) long, 21 (20-21) wide, with a single row (12-14 lines) of longitudinal striae on its distal half and a granulate pattern on anterior half. Anterior and posterior genital apodeme curved backward distally; spermathecal duct short. Setae *3a* 15 (14-15) long. Opisthosoma: Thanosoma with 30 (28-31) dorsal annuli, smooth, with a central depression vanishing posteriorly. With 71 (67-73) ventral annuli provided with acuminate microtubercles. Telosoma with 9 (8-9) dorsal annuli, smooth; 9 (8-9) ventral annuli provided with acuminate microtubercles. Setae *c₂* on tubercles, 30 (28-32) long, on ventral annulus 5 (5-6). Setae *d* 66 (63-70) long, 29 (27-29) apart, on ventral annulus 22 (20-22). Setae *e* 57 (53-61) long, 16 (15-17) apart, on ventral annulus 42 (38-42). Setae *f* 25 (24-26) long, 25 (24-26) apart, on ventral annulus 71 (67-73). Setae *h₁* absent. Setae *h₂* 68 (64-74) long.

Adult male (4 paratypes). Idiosoma: Slender, elongate, (186-192) long, (45-49) wide, color in life light greenish with wax fringes along sides of the idiosoma. Gnathosoma: (21-23) long, setae *ep* on tubercles, (4-5) long; setae *d* (4-5) long; cheliceral stylets (15-18) long. Prodorsal shield: (42-45) long, (45-49) wide, smooth, triangular, with anterior angle elongate and overhanging gnathosoma; emarginated along most of its lateral margins and with a median lobe on the submarginal line. Setae *sc* on tubercles, (8) anterior of posterior margin of the prodorsal shield, (15-17) apart, convergent and posteriorly directed, (4) long. Leg: No setae on genua II. Leg I: (28-39) long; trochanters (3) long; femora (9) long; setae *bv* (8-9) long; genua (3-4) long, setae *l''* (22-24) long; tibiae (5-6) long, setae *l'* (11-13) long, tarsi (5-6) long, setae *ft'* (11-12) long, setae *ft''* (14-16) long, setae *u'* (3) long, solenidia ω (6-7) long, empodia as in female. Leg II: (27-28) long; trochanters (3-4) long; femora (9-11) long, setae *bv* (7-8) long; genua (3-4) long; tibiae (4) long; tarsi (5-6) long, setae *ft'* (5-6) long, setae *ft''* (19-21) long, setae *u'* (2-3) long, solenidia ω (8-9) long, empodia as in female. Coxisternal region: Setae *1a* on tubercles, (20-21) long, (7-8) apart, setae *1b* on tubercles, (5-6) long, (9) apart. Setae *2a* on tubercles, (32-35) long, (21) apart. Sternal line (8-9) long; area between coxisternum II and epigynium with (8-9) annuli provided with acuminate microtubercles. Coxisternal region and ventral area anterior to it striated, without microtubercles. Epigynium (11-12) wide; cuticle of genital fossa granulate. Setae *3a* (18-20) long. Opisthosoma: Thanosoma with (30) dorsal annuli, smooth; with a central depression fading posteriorly. Ventral annuli (62-67) provided with acuminate microtubercles. Telosoma with (9-11) dorsal annuli, smooth; (10-11) ventral annuli provided with acuminate microtubercles. Setae *c₂* on tubercles, (26-28) long, on ventral annulus (8-9). Setae *d* (61-63)

long, (20-21) apart, on ventral annulus (15-18). Setae *e* (50-53) long, (11-12) apart, on ventral annulus (35-37). Setae *f* (27-29) long, (22-23) apart, on ventral annulus (62-67). Setae *h*₁ absent. Setae *h*₂ (62-63) long.

Type Material. Female holotype, 53 female and 4 male paratypes, in 12 microscopic preparations, in the collection of Setor de Zoologia, do Departamento de Entomologia, Fitopatologia e Zoologia Agrícola da Universidade de São Paulo-ESALQ, Piracicaba, São Paulo, Brazil. Five female and 1 male paratypes on 1 microscopic preparation deposited in the USNM, Washington, D.C., U.S.A.

Type Locality. Igarassu, Pernambuco, Brazil, collected by M.G.C. Gondim Jr. in VI-1999 on *Cocos nucifera* L., at 27°53'28'' of south latitude and 34°58'35'' of west longitude.

Host Plant. Collected on the lower surface of leaves of *Attalea dubia* (Mart.) Burret. (São Paulo), *Attalea phalerata* Mart. ex. Spreng. (São Paulo), *Bactris gasipaes* Kunth. (São Paulo), *Bactris ferruginea* Burret. (Pernambuco), *Bactris setosa* Mart. (São Paulo), *Cocos nucifera* L. (Pernambuco) (Arecaceae).

Etymology. *Nasutiformes*, refers to the nose shaped anterior portion of the dorsal shield.

***Knorella geonomae* sp. nov. (Fig. 3)**

DIAGNOSIS

Knorella gigantochloae Keifer, 1975a and *Knorella fuzhoui* Amrine & Stasny, 1994 differ from this new species by having lateral projections on annuli (1, 3, 6, 9, 12 and 15) of the thanosoma, whereas *Knorella thailandica* (Hong, 1996) differs by its totally striate epigynium. The new species further differs from the former species and from the only other known species in the genus, *Knorella bambusae* (Kuang & Feng, 1989), by having a triangular area laterad of coxisternum II with a tuberculate pattern.

DESCRIPTION

Adult female (holotype and 6 paratypes). Idiosoma: Short, fusiform, 138 (137-150) long, 61 (56-62) wide, color in life light yellow. Gnathosoma: 20 (20-21) long, setae *ep* 2 (2-3) long, setae *d* 2 (2) long, cheliceral stylets 12 (11-13) long. Prodorsal shield: 44 (44-49) long, 59 (56-62) wide, without setae, smooth, with a short anterior lobe overhanging gnathosoma. Leg: No setae on femora I and II and genua II. Leg I: 22 (20-23) long; trochanters 2 (2-3); femora 10 (9-10) long; genua 2 (2-3) long, setae *l*' 15 (15-16) long; tibiae 3 (3) long, setae *l*' 14 (13-14) long; tarsi 5 (5) long, setae *ft*' 11 (11-12) long, setae *ft*' 16 (14-16) long, setae *u*' 2 (2-3) long, solenidia ω 5 (5) long, tarsal empodium 5 (4-5) long, basally divided, each branch with 6 rows of 3 rays. Leg II: 19 (18-20) long; trochanters 3 (2-3) long; femora 8 (7-8) long; genua 2 (2) long; tibiae 2 (2) long; tarsi 5 (4-5) long, setae *ft*' 5 (4-5) long, setae *ft*' 13 (13-15), setae *u*' 2 (2-3), solenidia ω 5 (5), tarsal empodium similar to that of leg I, 4 (4-5) long. Coxisternal region: Setae *Ia* on tubercles, 9 (9-10) long, 6 (6-7) apart; setae *Ib* on tubercles, 8 (8-9) long, 14 (13-14) apart. Setae *2a* on tubercles, 15 (14-16) long, 22 (21-22) apart. Sternal line 11 (9-11) long; area between coxisternum II and epigynium with granulate ornamentation. Coxisternum I and II with granulate ornamentation. Triangular area laterad of coxisternum II with tuberculate pattern. Epigynium 17 (17-19) long, 19 (19-20) wide, with a proximal row of longitudinal striae that show up as broken lines under light microscopy, but most of which are clearly entire under scanning microscopy, except for the most lateral striae which are broken. Anterior genital apodeme curved backward distally; posterior genital apodeme curved forward distally; spermathecal duct short. Setae *3a* 8 (7-8) long. Opisthosoma: Thanosoma with 20 (20) dorsal annuli, smooth, with large lateral expansions on annuli (2, 4, 7, 10, 12 and 15) and small lateral expansions on other annuli; with 34 (33-35) ventral annuli provided with acuminate and elongate microtuber-

cles. Telosoma with dorsal annuli fused, smooth, and 5 (5) ventral annuli, provided with acuminate and elongate microtubercles. Setae *d* and *e* absent. Setae c_2 14 (13-15) long, on ventral annulus 2 (2-3). Setae *f* 14 (13-15) long, 17 (15-17) apart, on ventral annulus 34 (33-35). Setae h_1 absent. Setae h_2 26 (25-27) long.

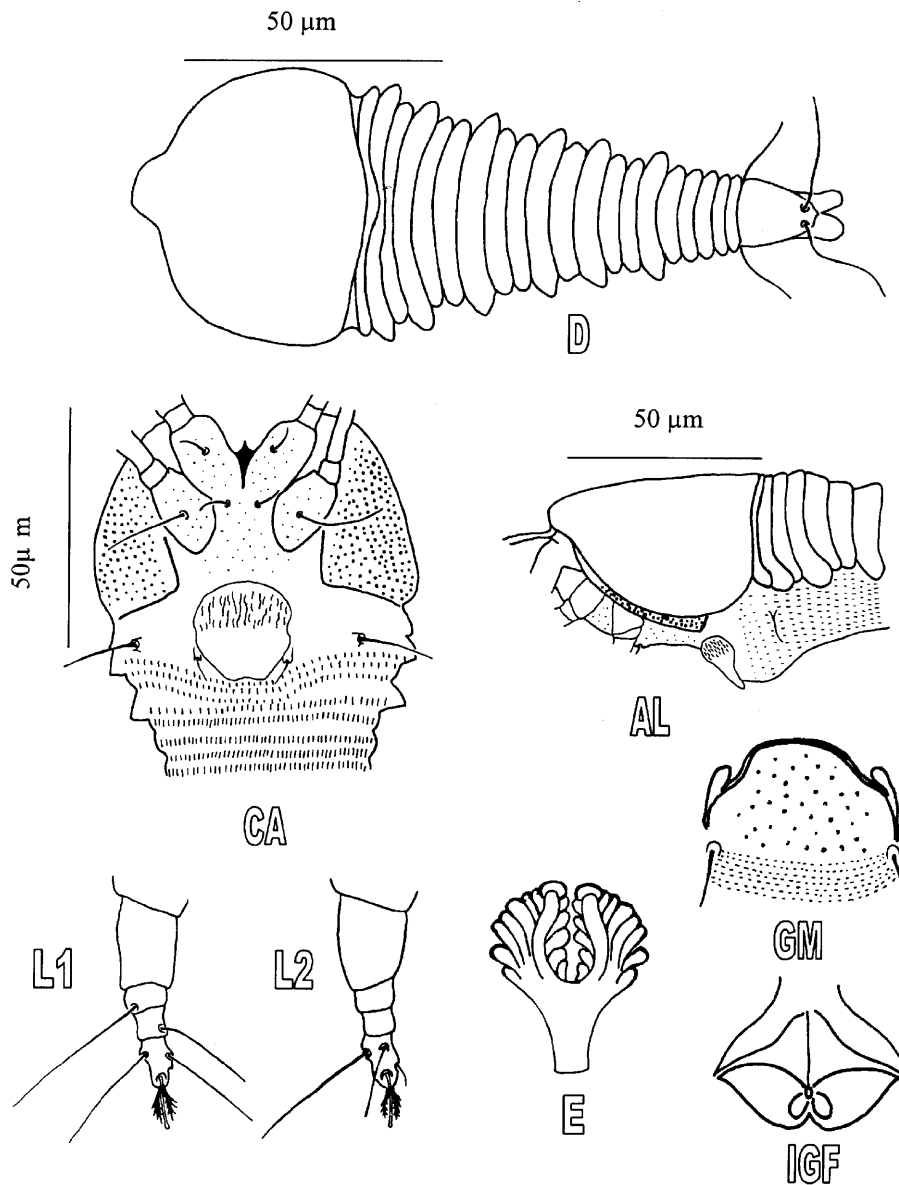


FIGURE 3. *Knorella geonomae* n. sp. D - Dorsal; CA - Coxigenal area; AL - Anteriorlateral view; L1 - Leg I; L2 - Leg II; E - Empodium; GM - Genital area of male; IGF - Internal genital structures of female

Adult male (2 paratypes). Idiosoma: Short, fusiform, (137-138) long, (56-58) wide, color in life light yellow. Gnathosoma: setae *d* not seen; setae *ep* (2-3) long. Prodorsal shield: (43) long, (56-58)

wide, without setae, smooth, with a short anterior lobe overhanging gnathosoma. Leg: No setae on femora I and II and genua II. Leg I: (22-23) long; trochanters (2-3) long; femora (9-10) long; genua (2) long, setae l'' (15) long; tibiae (3) long, setae l' (11) long; tarsi (5) long, setae ft' (10-11) long, setae ft'' (13-14) long, setae u' (3) long, solenidia ω (5-6) long, tarsal empodium similar to that of female, (4) long. Leg II: (18) long; trochanters (3) long; femora (6-7) long; genua (2) long; tibiae (2) long; tarsi (4) long, setae ft' (4-5) long; setae ft'' (14-15) long, setae u' (3) long, solenidia ω (5-6) long, tarsal empodium similar to female, (4-5) long. Coxisternal region: Setae Ia on tubercles, (9) long, (6) apart; setae Ib on tubercles, (7-8) long, (12-13) apart. Setae $2a$ on tubercles, (15-16) long, (22) apart. Sternal line (10) long; area between coxisternum II and epigynium with granulate ornamentation. Coxisternum I and II with granulate ornamentation. Triangular area laterad of coxisternum II with tuberculate pattern. Epigynium indistinct; genital opening (17-21) wide, with granulate cuticle of genital fossa. Setae $3a$ (7-8) long. Opisthosoma: Thanosoma with (20) dorsal annuli, smooth, with large lateral expansions on annuli (2, 4, 7, 10, 12 and 15) and small lateral expansions on other annuli; with (34-36) ventral annuli, provided with acuminate and elongate microtubercles. Telosoma with dorsal annuli fused, smooth, and (5) ventral annuli, provided with acuminate and elongate microtubercles. Setae d and e absent. Setae c_2 (12) long, on ventral annulus (2-3). Setae f (13) long, (16) apart, on ventral annulus (34-36). Setae h_1 absent. Setae h_2 (25) long.

Type material. Holotype female, 25 female and 7 male paratypes, in 12 microscopic preparations deposited in the collection of Setor de Zoologia do Departamento de Entomologia, Fitopatologia e Zoologia Agrícola da Universidade de São Paulo-ESALQ, Piracicaba, São Paulo, Brazil. Five female and 2 male paratypes on 2 microscopic preparations deposited in the USNM, Washington, D.C., U.S.A.

Type Locality. Cananéia, São Paulo, Brazil, collected by M.G.C. Gondim Jr. in IV-1998, X-1998 and VII-1999, at 24°54'45'' of south latitude and 47°51'51'' of west longitude.

Host plant. Collected on the lower surface of *Geonoma schottiana* Mart. (Arecaceae) leaves.

Etymology. *Geonomae*, regarding the genus of the only species of plant known as a host of this mite.

***Propilus syagris* sp. nov. (Fig. 4)**

DIAGNOSIS

Propilus spinosus Keifer, 1975b and *Propilus gentyi* Keifer, 1975b differ from this new species by having setae ve visible in dorsal view, at the anterior margin of the prodorsal shield. *P. spinosus* also differs by having a distinct and anterior lobe on the prodorsal shield, the former with a series of longitudinal lines; in addition, *P. spinosus* has a row of longitudinal striae on the epigynium. The thanosoma of *P. gentyi* lacks lateral spiniform projections, which are found in the new species.

DESCRIPTION

Adult female (holotype and 8 paratypes). Idiosoma: Short, fusiform, 175 (162-175) long; 74 (69-79) wide, color in life light yellow. Gnathosoma: 22 (21-23) long, setae d 11 (9-11) long, cheliceral stylets 16 (14-17) long. Prodorsal shield: With a central region raised and rugose, a lateral region wide and smooth and with an anterior band narrow and slightly more elevated; ventrally bent anteriorly; with 2 lateral spines posterolaterally; 54 (51-56) long; 74 (69-79) wide; scapular setae sc absent; vertical setae ve on tubercles, 4 (4-5) long, on the ventrally bent anterior part of the shield, 18 (16-19) apart. Leg: No setae on tibiae I. Leg I: 33 (32-33) long; trochanters 4 (4-5) long; femora 14 (12-14) long, setae bv 8 (7-8) long; genua 4 (3-4) long, setae l'' 21 (21-23); tibiae 3 (3) long, tarsi 8 (7-8) long, setae ft' 11 (11-12) long; setae ft'' 15 (13-15) long, setae u' 2 (2-3) long, solenidia ω 4 (3-4) long; central axis of tarsal empodium undivided, 3 (2-3) long and with 5 (4-5) pairs of branched

rays. Leg II: 30 (28-30) long; trochanters 4 (3-4) long, femora 12 (11-12) long, setae *bv* 7 (6-7); genua 3 (3-4) long, setae *l''* 15 (13-15); tibiae 3 (3) long; tarsi 7 (7-8) long, setae *ft'* 5 (4-5) long, setae *ft''* 13 (13-14) long, setae *u'* 2 (2-3) long, solenidia ω long, central axis of the tarsal empodium as on leg I, 2 (2-3) long. Legs I and II with granular pattern that could only be observed in SEM observations. Coxisternal region: Setae *Ia* 12 (11-13) long, 14 (13-14) apart; setae *Ib* 7 (6-7) long, 18 (17-19) apart. Setae *2a* 25 (24-26) long, 32 (30-33) apart. Sternal line absent; with a curved line diverging anterolaterally between bases of setae *Ia* and *Ib*; area between coxisternum II and epigynium with 3 (3-4) annuli, without microtubercles. Coxisternum I and II smooth. Epigynium 20 (18-20) long, 23 (21-23) wide, predominantly smooth, but with a differentiated lateral strip. Genital shield bell-shaped; spermathecal duct short. Setae *3a* 11 (11-12) long. Opisthosoma: Thanosoma with 13 (13-14) dorsal annuli, smooth, with lateral spiniform expansions, except for the last two annuli; with 37 (36-38) ventral annuli provided with acuminate and elongate microtubercles. Telosoma: Dorsal annuli fused, smooth; with 4 (4) ventral annuli, provided with acuminate and elongate microtubercles. Setae *c₂* 23 (21-23) long, on ventral annulus 3 (2-3). Setae *d* 9 (9-11) long, 25 (25-27) apart, on ventral annulus 8 (8-9). Setae *e* 8 (7-8) long, 14 (13-14) apart, on the ventral annulus 22 (21-22). Setae *f* 19 (15-19) long, 27 (26-27) apart, on ventral annulus 37 (36-38). Setae *h₁* absent. Setae *h₂* 26 (24-27) long.

Adult male (5 paratypes). Idiosoma: Short, fusiform, (143-160) long, (61-65) wide, color in life light yellow. Gnathosoma: (16) long, setae *d* (9-11) long, cheliceral stylets (14-15) long. Prodorsal shield: With a central region raised and rugose, a lateral region wide and smooth and with an anterior band narrow and slightly more elevated; ventrally bent anteriorly; with 2 lateral spines posterolaterally; (46-53) long, (61-65) wide, setae *sc* absent; setae *ve* on tubercles, (4) long, on the ventrally bent anterior part of the shield, (16-17) apart. Leg: No setae on tibiae I. Leg I: (32-33) long; trochanters (3) long; femora (13-14) long, setae *bv* (6-7) long; genua (4) long, setae *l''* (22-24) long; tibiae (3-4) long; tarsi (9) long, setae *ft'* (11-12) long, setae *ft''* (13-15), setae *u'* (2-3) long, solenidium ω (3-4) long, central axis of the tarsal empodium as in female. Leg II: (29-31) long; trochanters (3) long; femora (12) long, setae *bv* (5-6) long; genua (3-4) long, setae *l''* (14-15); tibiae (3) long; tarsi (8-9) long, setae *ft'* (4) long, setae *ft''* (13-14) long, setae *u'* (2) long, solenidium ω (3-4) long, central axis of the tarsal empodium as in female, (3) long. Leg I and II with granular pattern that could be observed only in SEM observations. Coxisternal region: Setae *Ia* (15-16) long, (9-11) apart; setae *Ib* (6-7) long, (15-16) apart. Setae *2a* (24-27) long, (27-28) apart. Sternal line absent, with a curved line diverging anterolaterally between bases of setae *Ia* and *Ib*, turning slightly backwards at the tips; area between coxisternum II and epigynium with (7-9) annuli, without microtubercles. Coxisternum I and II smooth. Epigynium: (16-17) wide; cuticle of genital fossa smooth; setae *3a* (16-17) long. Opisthosoma: Thanosoma with 13 dorsal annuli, smooth, with lateral spiniform expansions, except the last two annuli; with (36-37) ventral annuli, provided with acuminate and elongate microtubercles. Telosoma: Dorsal annuli fused, smooth; with (4) ventral annuli, provided with acuminate and elongate microtubercles. Setae *c₂* (23-26) long, on the ventral annuli (2). Setae *d* (11-13) long, (21-22) apart, on the ventral annuli (9-10). Setae *e* (11-12) long, (13-14) apart, on the ventral annuli (22). Setae *f* (21) long, (22-24) apart, on the ventral annuli (36-37). Setae *h₁* absent. Setae *h₂* (44-46) long.

Type material. Holotype female, 28 female and 16 male paratypes, in 14 microscopic preparations in the collection of the Setor de Zoologia do Departamento de Entomologia, Fitopatologia e Zoologia Agrícola da Universidade de São Paulo-ESALQ, Piracicaba, São Paulo, Brazil. Five female and four male paratypes on 2 microscopic preparations deposited in the USNM, Washington, D.C., U.S.A.

Type locality. Pariquera-açu, São Paulo, Brazil, collected by M.G.C. Gondim Jr. in IV-1998 and VII-1999, at 24°36'39'' of south latitude and 47°53'00'' of west longitude.

Host plants. Collected on the lower surface of *Syagrus romanzoffiana* (Cham.) Glassmann (Arecaceae) leaves.

Etymology. *Syagris*, regarding the genus of the host plant.

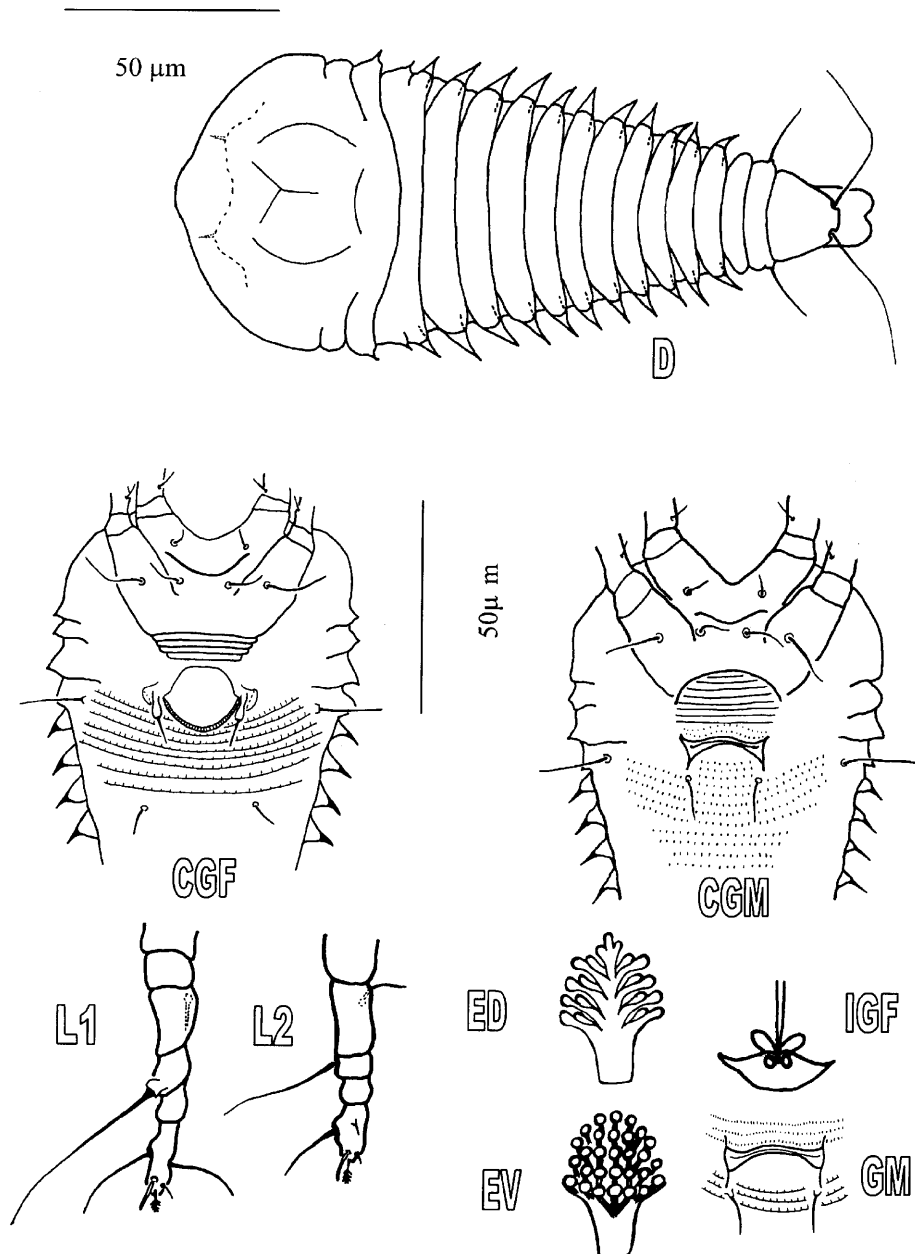


FIGURE 4. *Propilus syagris* n. sp. D - Dorsal; CGF - Coxigenal area of female; CGM - Coxigenal area of male; L1 - Leg I; L2 - Leg II; ED - Empodium (dorsal view); EV - Empodium (ventral view); IGF - Internal genital structures of female; GM - Genital area of male.

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