NEW SPECIES OF MITES FROM PINE

(ACARINA: TARSOCHELIDAE, EUPALOPSELLIDAE, CALIGONELLIDAE, CRYPTOGNATHIDAE, RAPHIGNATHIDAE, and NEOPHYLLOBIIDAE)

ROBERT L. SMILEY[1] and JOHN C. MOSER[2] #40

The purpose of this paper is to describe several new species of mites, most of which were found in the outer bark of *Pinus taeda* L. at Elizabeth, in central Louisiana. They were discovered in the course of research on the seasonal ecology of *Dendroctonus frontalis* Zimmerman.

Between January 1, 1966, and April 17, 1967, bolts were cut from trees every two weeks at various heights of infestation, and bark beetle galleries examined for mites. When all beetles had emerged (1–6 months after bolts were cut) galleries, loose inner bark, and boring dust were again examined.

Most of the mites studied were apparently not associated with bark beetles, and are probably allied with the outer bark niche. Bark beetles live and feed in the inner bark, which has a completely different fauna. No observations were made on the mites' feeding habits.

TARSOCHELIDAE

Hoplocheylus pickardi, n. sp.

(Figs. 1–2)

The large apophysis on the palpus will separate this species from other known members of the genus.

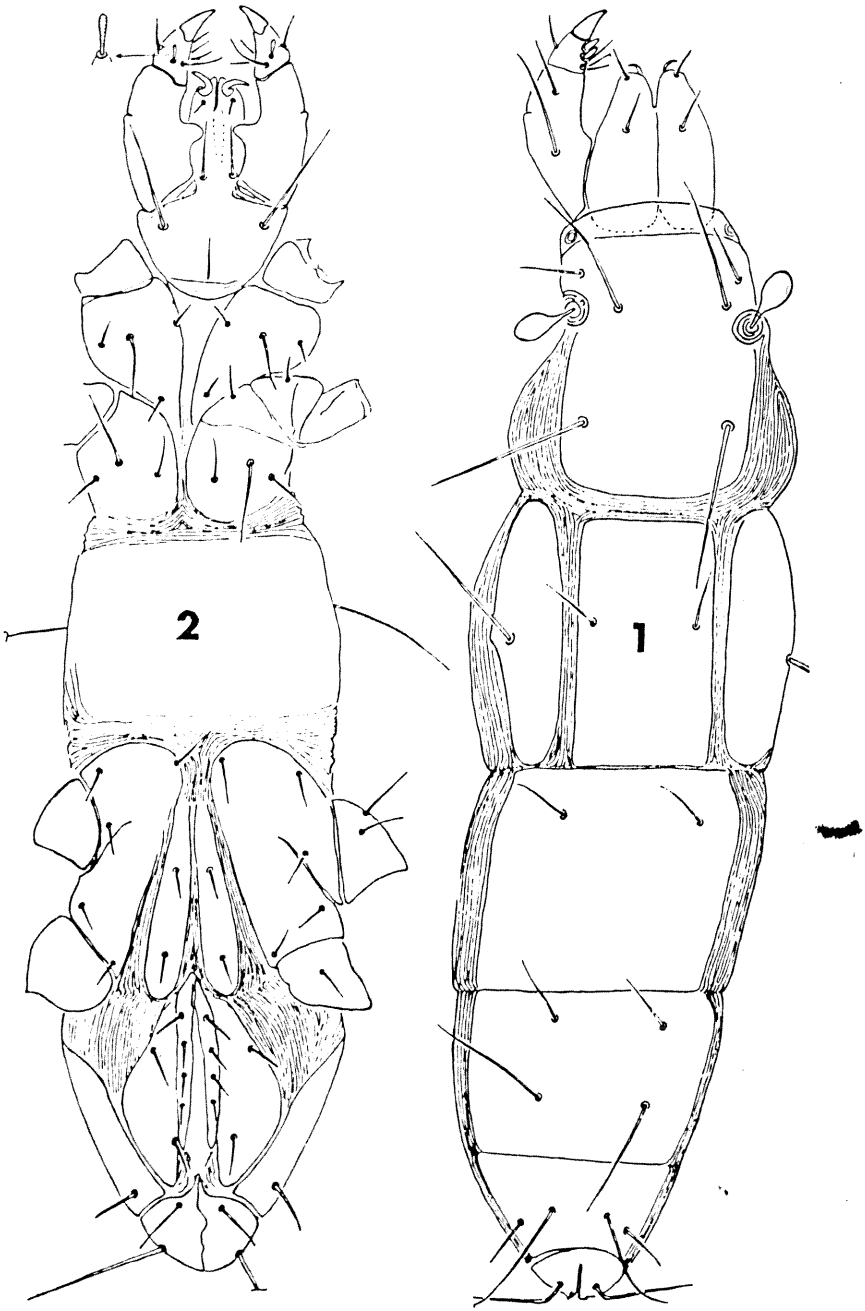
Female. Palpus with genu incompletely fused with femur; tibiotarsus with 5 simple setae, 1 solenidion, 2 short blunt subterminal spines; proximal spine slightly stronger. Body elongate, broadest in region of metopodosoma. Propodosoma with a dorsal plate bearing a pair of pseudostigmata near the anterolateral margin; 1 pair of pseudostigmatic organs, and 3 pairs of simple setae. Hysterosoma with 4 plates. First plate with a single pair of dorsocentral simple setae; adjacent pair of lateral plates with a pair of simple setae subequal in length to posterior medial propodosomal setae. Second plate wider and longer than the third plate; each plate with a single pair of dorsocentral setae subequal in length. Fourth plate with 2 pairs of dorsocentral setae; anterior pair about one-half length of posterior pair. Fifth plate with a pair of dorsocentral setae, subequal in length to posterior pair of the fourth plate; and with a pair of lateral simple setae. Dorsal anal region terminating with a pair of simple setae, subequal in length to those of the fifth plate. Venter as figured. Legs I longest. Legs II shortest. Legs III slightly longer than legs II, but not as long as legs IV. Solenidion on tibiae I–III. Body including gnathosoma 533 μ long by 133 μ wide.

Male. Not known.

The female holotype, USNM 3252, and a female paratype were taken at Elizabeth, Louisiana from loose inner bark of *Pinus taeda* L., infested with *Dendroctonus frontalis* Zimmerman. The former was

[1] Systematic Entomology Laboratory, Entomology Research Division, Agr. Res. Ser., USDA, Washington, D. C. 20250.

[2] Southern Forest Experiment Station, U. S. Forest Service, USDA, Pineville, Louisiana 71360.



Figs. 1 & 2, *Hoplocheylus pickardi*, n. sp., ♀: 1, dorsum; 2, venter.

collected July 27, 1967 from a bolt cut July 26 at 16 feet. The latter was found August 1 from a bolt cut July 17. *Hoplocheylus pickardi* is named for Lloyd S. Pickard, who has contributed to our knowledge of the relationship of bark beetle attacks to lightning-struck pines.

CALIGONELLIDAE

Molothrognathus rosei, n. sp.

(Figs. 3–5)

This species keys out to *Molothrognathus leptostylus* Summers and Schlinger but differs by having slender dorsal setae, stronger peritremal segments, and dorsal genitalia.

Female. Stylophore tapered roundly, cleft anteriorly at mid-line to movable digit which is short and stout; fixed digit shorter and stronger than movable digit. Peritreme strong, with 4 pairs of segments. Palpus robust and about twice the length of rostrum. Idiosoma slender, widest in the region of the propodosoma; with 11 pairs of simple dorsal setae (excluding those of the genitalia) subequal in length; with 3 pairs of integumental pores, first pair directly behind the eyes, second pair arising over coxae IV, and third pair laterad to the genitalia. Genitalia with 3 pairs of setae, anterior pair two-thirds the length of medial and terminal pair. Venter as figured. Legs slender; legs I longest, legs II shortest, and legs III and IV subequal in length. Body 363 μ long and 166 μ wide.

Male. Not known.

The female holotype, USNM 3253, was taken from a vial of alcohol containing numerous adults of *Dendroctonus frontalis* Zimmerman and *Ips bonanseai* (Hopk.) from *Pinus leiophylla* Shaw and *P. montezuma* Lamb which were collected by Dr. W. E. Rose from August to December 1964, near Puebla, Mexico.

Molothrognathus rosei is named for Dr. W. E. Rose, who has contributed to our knowledge of pine bark beetles in Mexico.

NEOPHYLLOBIIDAE

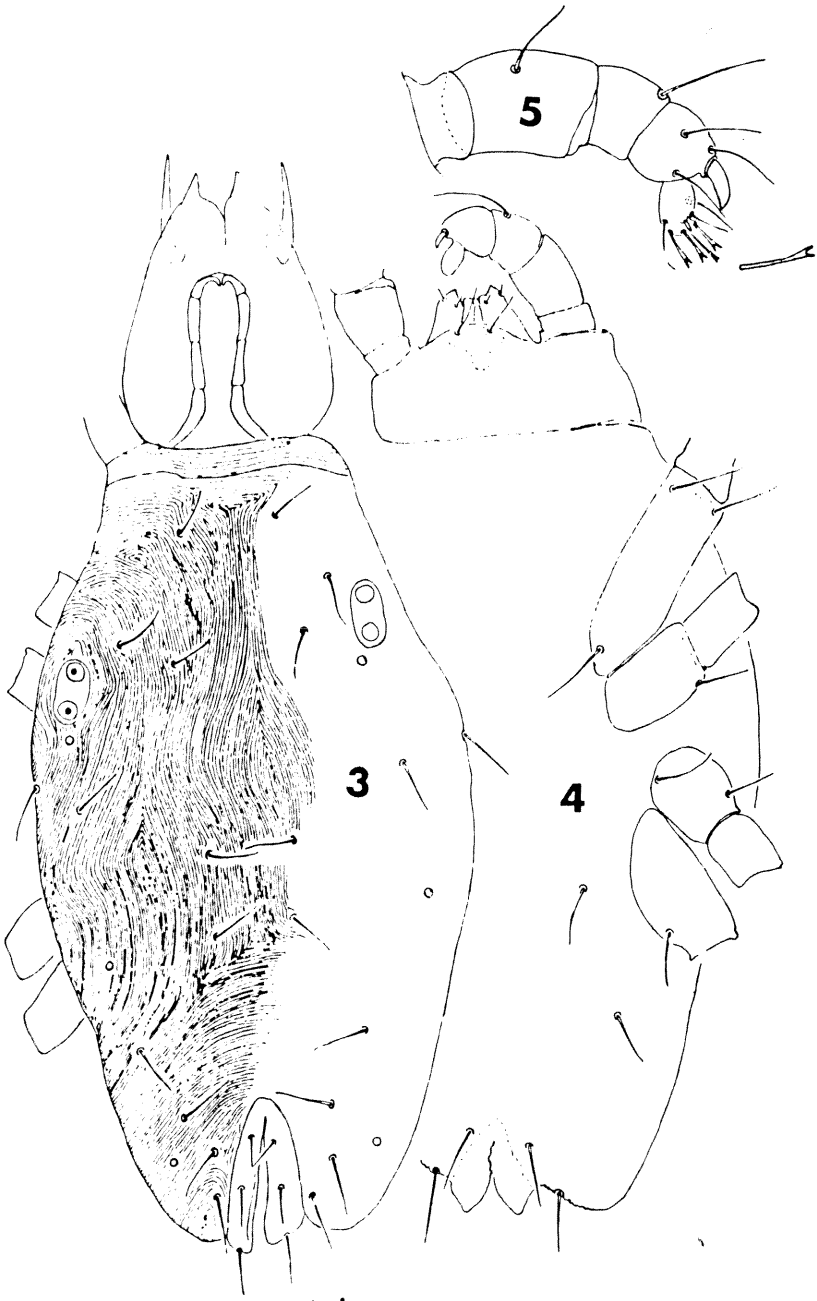
Neophyllobius lorioi, n. sp.

(Figs. 6–7)

Neophyllobius lorioi keys out to *N. quadrisetosus* De Leon but differs from this species by having long subequal spinose whiplike setae on all four genu.

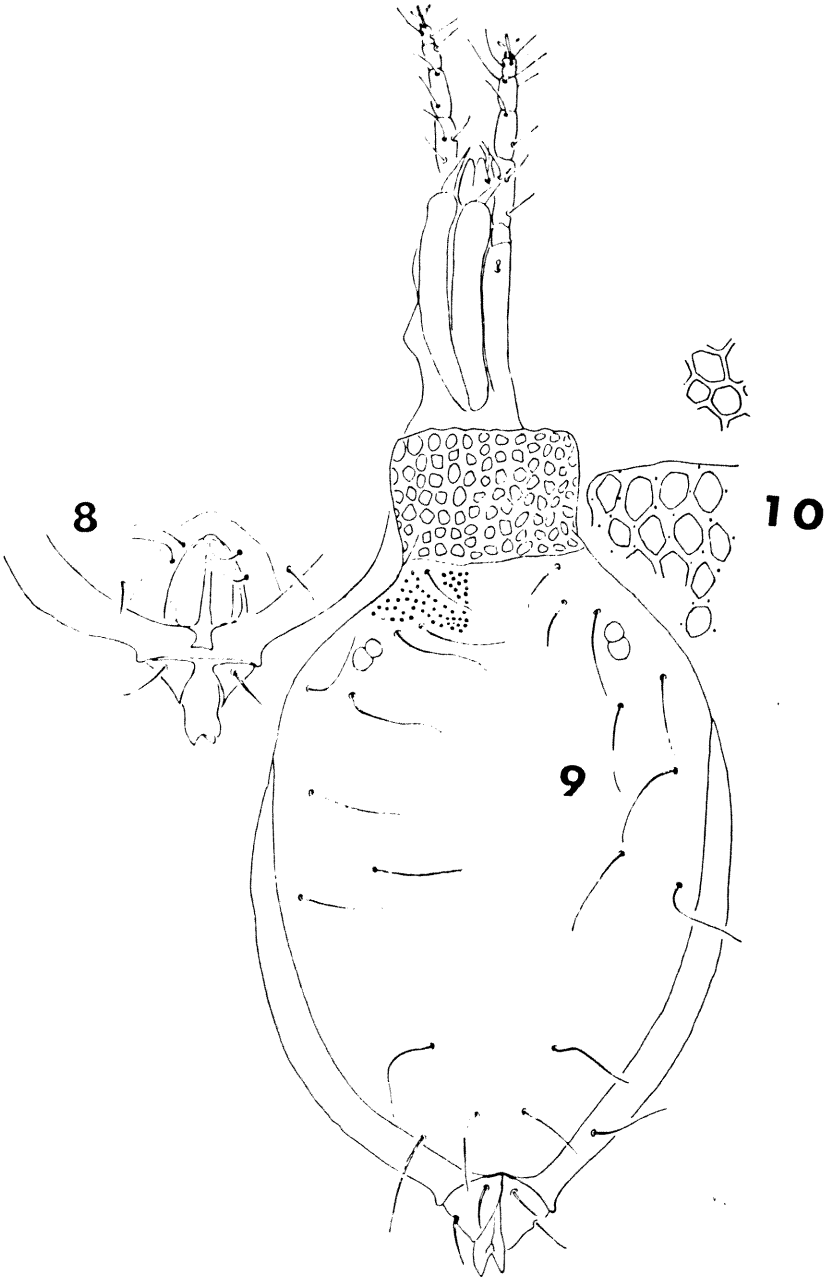
Female. Gnathosoma slightly oval; peritreme composed of 5 segments. Palpus long and slender; palpus femur without setae; genu with 2 spinose setae; tibia with 1 simple seta; tarsus with 4 simple setae, 1 spinose seta and terminating with 2 solenidia. Dorsum with 15 pairs of spinose saberlike setae, those on the distal margin of the body shortest. Striae of dorsum as figured. Legs I longest; femur 159 μ long. Legs II not as long as legs III; femur 127 μ long. Legs III longer than legs IV; femur 127 μ long. Legs IV shortest; femur 153 μ long. Tarsus I and II each with a short solenidion; setae spinose proximally and finely serrate distally. Tarsus III and IV each without solenidion. Setae on these appendages same as those on tarsus I and II. Tibia III and IV each with a long solenidion. Anal region with 3 pairs of simple setae and genitalia with 2 pairs. Body 366 μ long and 223 μ wide.

Male. Not known.



Figs. 3–5, *Molothrognathus* ~~*kilei*~~ rosei, n. sp., ♀: 3, dorsum; 4, venter; 5, left palpus.

Figs. 6 & 7, *Neophyllobius lorioi*, n. sp., ♀: 6, dorsum; 7, left leg I.


8
9
10

The female holotype, USNM 3254, was taken from the outer bark of a six-inch diameter breast high *Pinus taeda* L. February 17, 1966 near Pineville, Louisiana. No bark beetles were found on or in the tree. Two paratypes were collected near Elizabeth, Louisiana from bolts cut at a 32 foot height from *P. taeda* L. infested with *Dendroctonus frontalis* Zimmerman and *Ips* spp. One was found under loose inner bark April 20, 1966 of a tree cut April 19; the other was found in beetle boring dust June 1, 1966 from a tree cut May 2.

Neophyllobius lorioi is named for Dr. Peter L. Lorio, Jr., who has added greatly to the information concerning attacks by pine bark beetles in relation to soil type.

CRYPTOGNATHIDAE

Cryptognathus barrasi, n. sp.
(Figs. 8–10)

This species according to Summers and Chaudhri (1965) belongs to the Favus Group and keys out to *Cryptognathus ochraceus* Summers and Chaudhri. This new species is distinctive in having more slender dorsal setae and fewer dimplelike depressions on the prosternal apron.

Female. Hood wider than long; with as many as 7–8 dimples per longitudinal row. Dimples hexagon shaped; a pore adjacent to each angle of the dimple. Chelicerae fused together proximally. Dorsum with 11 pairs of smooth and slender setae (excluding those of the genital covers), subequal in length except for the anterior pair which are shorter; striae fine but visible, and longitudinal; punctation small and densely scattered. Ventral plating with punctation and striae spaced and similar to dorsum. Genital and anal region as figured. Legs I and IV longest and subequal in length; legs II and III shortest and subequal. Body excluding gnathosoma 300 μ long by 236 μ wide.

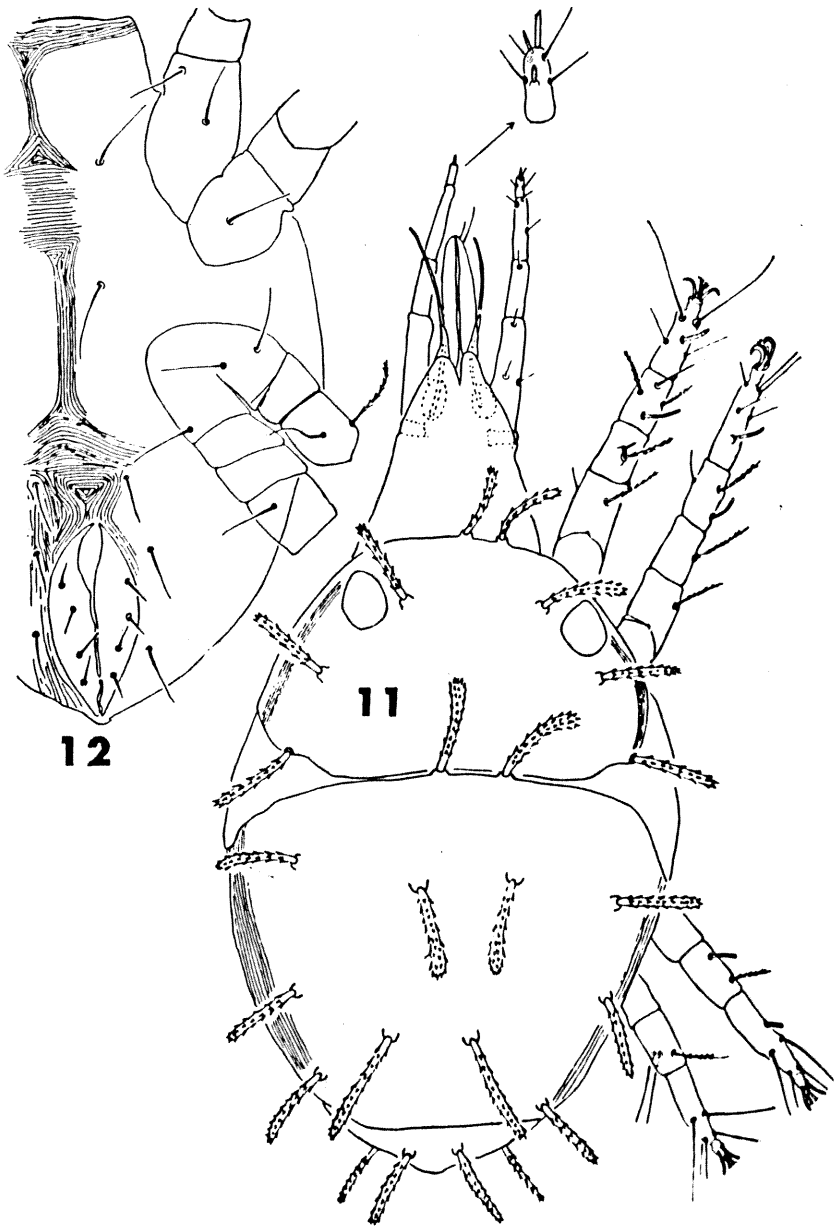
Male. Not known.

The female holotype, USNM 3255, and three paratypes were all collected from underside of bark scales of the same tree as that of *Neophyllobius lorioi*, and were not associated with bark beetles. Two more paratypes were collected at Elizabeth, Louisiana from *Pinus taeda* attacked by bark beetles. One was found November 9, 1965 under bark scales on a bolt infested with *Ips avulsus* (Eichh.) and *I. grandicollis* (Eichh.) cut September 29. The other was collected July 12, 1965 from under loose inner bark of a bolt cut May 30 at a height of 32 feet and infested with *Dendroctonus frontalis* Zimmerman and *Cerambycidae* spp. *Cryptognathus barrasi* is heavily sclerotized and dark red in nature.

The mite is named for Dr. Stanley J. Barras, who has added greatly to our knowledge of the relationship between pine bark beetles and the fungi carried in their mycangia.

←

Figs. 8–10, *Cryptognathus barrasi*, n. sp., ♀: 8, venter, genital and anal region; 9, dorsum; 10, dimplelike depressions of rostrum and prosternal apron.



Figs. 11 & 12, *Paracupalopsellus hodgesi*, n. sp., ♀: 11, dorsum; 1 ...ter.

EUPALOPSELLIDAE

Paraeupalopsellus, n. gen.

Dorsal idiosoma with 2 distinct dorsal shields, anterior and posterior shields with 5 pairs of stout, denticulate setae originating on tubercles. A single pair of large lenslike eyes. Palpal-tarsus less than one-fourth the length of other palpal segments. Summers (1960) clarified the status of Eupalopsellidae.

Type species. Paraeupalopsellus hodgesi, n. sp.

Paraeupalopsellus hodgesi, n. sp.

(Figs. 11–12)

This species may be recognized by the short palpal-tarsus and the two large dorsal shields.

Female. Gnathosoma tapering, long and slender. Chelicerae needlelike, long and slender, with fixed movable digits set close together proximally. Palp-tarsus short, less than one-fourth the length of other palpal segments. Dorsum with 11 pairs of stout, denticulate setae originating on tubercles; with 2 dorsal shields; and with a single, large pair of lenslike eyes. Idiosoma oval, broadest at suture separating the propodosoma and hysterosoma. Venter as figured. Legs I longest, legs II longer than legs III and IV; legs III and IV subequal in length. Tibiae and tarsi I, II and III each with a strong solenidion. Only genu I with a duplex setae complex. Body excluding gnathosoma 262 μ long by 178 μ wide.

Male. Not known.

The female holotype, USNM 3256, was found at Elizabeth, Louisiana from under loose inner bark of *Pinus taeda* L. bolt April 4, 1966. This bolt was cut on April 4, at the height of 32 feet and was infested with *Dendroctonus frontalis* Zimmerman, *Ips avulsus* (Eichh.) and *I. calligraphus* (Germ.). The mite was slow moving and reddish-pink in color. *Paraeupallopsellus hodgesi* is named for Dr. John D. Hodges, who has added to our knowledge concerning the success of pine bark beetle attack in relation to food content of trees.

RAPHIGNATHIDAE

Neoraphignathus, n. gen.

Dorsal idiosoma without plates or shields; striae irregular, longitudinally on propodosoma and transversely on hysterosoma; with 11 pairs of setae (excluding the anogenital region); 1 pair of eyes situated centrally above coxae I and II. Coxae I–IV approximate. Cheliceral bases fused forming a conical stylophore. Peritreme terminating at anterolateral margin of propodosoma.

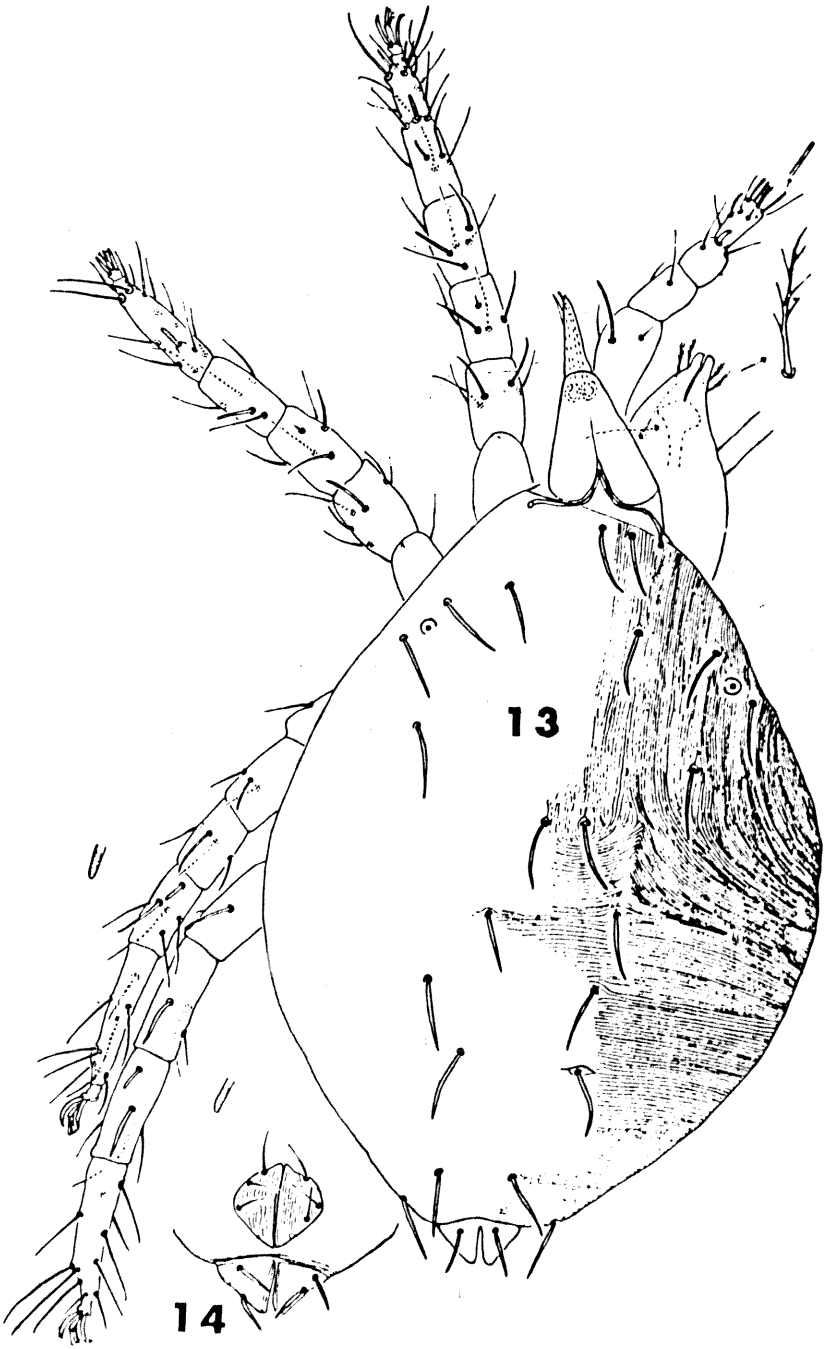
Type species. Neoraphignathus howei, n. sp.

Neoraphignathus howei, n. sp.

(Figs. 13–14)

Atyeo, Baker, and Crossley (1961) referred only one genus to the family Raphignathidae. This new genus differs in not having dorsal shields.

Female. Gnathosoma conical distally. Cheliceral bases fused, forming a conical stylophore. Peritreme terminating at anterolateral margin of propodosoma.


13
14

Palpus stout and strong; tarsus distally with 4 subequal solenidia, and laterally with a single solenidion and 4 subequal simple setae; tibia with a strong thumb claw and 2 subequal simple setae; genu with 2 subequal simple seta. Venter of rostrum as figured. Dorsum without plates or shields but with irregular striae; striae longitudinal on propodosoma and transverse on hysterosoma; with 11 pairs of subequal saberlike setae; a pair of lateral eyes located above coxae I and II. Anal region ventrally with 2 pairs of saberlike setae and dorsally with a single pair. Genitalia with 3 pairs of simple subequal setae. Legs I and II subequal in length; legs III slightly longer, but not as long as legs IV. Setae for all legs as figured. Body excluding gnathosoma 280 μ long by 217 μ wide.

Male. Not known.

The female holotype, USNM 3257, was taken at Elizabeth, Louisiana from loose inner bark bolt cut December 30, 1964 of *Pinus taeda* L. The bolt was infested with *Dendroctonus frontalis* Zimmerman and *Ips* spp.

Neoraphignathus howei is named for Dr. Virgil K. Howe, who has greatly contributed to our knowledge of the microflora of pines attacked by bark beetles.

References

Atyeo, W. T., E. W. Baker, *and* D. A. Crossley, Jr. 1961. The genus *Raphignathus* Duges (Acarina: Raphignathidae) in the United States with notes on the old world species. Acarologia 3(1):14–20.

DeLeon, D. 1958. The genus *Neophyllobius* in Mexico (Acarina: Neophyllobiidae). Fla. Ent. 41(4):173–181.

McGregor, E. A. 1950. Mites of the genus *Neophyllobius*. Bull. S. Calif. Acad. Sci. 49(2):55–70.

Summers, F. M. 1960. *Eupalopsis* and Eupalopsellid Mites (Acarina: Stigmaeidae, Eupalopsellidae). Fla. Ent. 43(3):119–138.

——— *and* **E. I. Schlinger.** 1955. Mites of the family Caligonellidae (Acarina). Hilgardia 23(12):539–561.

——— *and* **W. M. Chaudhri.** 1965. New species of the genus *Cryptognathus* Kramer (Acarina: Cryptognathidae). Hilgardia 36(7):313–326.

←

Figs. 13 & 14, *Neoraphignathus howei*, n. sp., ♀: 13, dorsum; 14, genital and anal region.

Reprinted from PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF WASHINGTON, volume 70, number 4, pages 307-317. December 1968.