

ERIOPHYID STUDIES C-9

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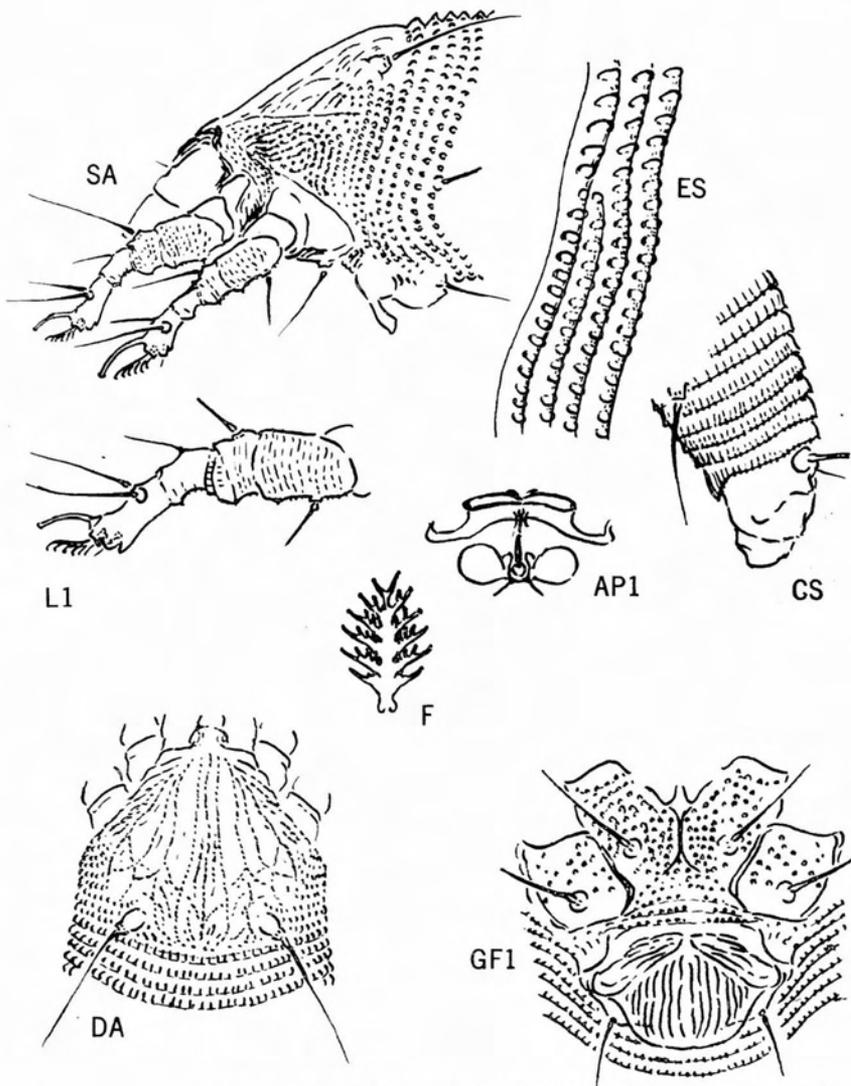


Plate 1 - *Acerimina terminaliae*, new species

Acerimina terminaliae, new species

Plate 1

The genotype of *Acerimina* is *cedrelae* which is a leaf-bead-gall mite on its host in New South Wales. The new species differs from the genotype in a number of details: shield lines made up of granules rather than of solid lines, presence of heavy granulations on forecoxae, and 6-rayed featherclaw. The genotype has 4-rayed featherclaws. The genus *Acerimina*, in the Eriophyinae, differs from *Eriophyes* by lacking the first forecoxal seta. This feature is not prevalent in the Eriophyinae, but in the subfamily Nothopodinae nearly all of the genera lack the forecoxal first seta and this setal lack in part defines the Nothopodinae.

Female length from the anterior shield margin 152 μ -168 μ long, 35 μ -38 μ thick; body wormlike, evidently light yellowish-white in life. Rostrum 20 μ long, curving down; antapical seta 3.5 μ long. Shield 28 μ long by 22 μ wide, design a series of lines of granules. Median line complete, meeting a dart-shaped mark just ahead of rear shield margin; admedian lines complete, close to median anteriorly, diverging to some extent past shield middle and recurving centrad at rear margin, with some granular lines within the area toward rear. First submedian line from front shield area, gently sinuate, subparallel to admedian and irregularly forking in front of dorsal tubercle; curved lines of granules between fork and dorsal tubercle. Second and third submedian lines present, the third generally straight and ending in partial rings toward shield rear. Laterally the shield somewhat bulging above second coxa and with irregular concentric lines of granules; three longer partial rings below dorsal tubercle at rear margin. Dorsal tubercles 20 μ apart; dorsal setae about 17 μ long, projecting divergently to rear. Foreleg measured from trochanter base about 26 μ long; tibia 5.5 μ long, with 5 μ seta from 1/3; tarsus 7 μ long; claw 5.5 μ long, downcurved; featherclaw 6-rayed, or irregularly 5-rayed on one side. Hind-leg 25 μ long, tibia 4.5 μ long, tarsus 6.5 μ long, claw 8 μ long. Coxae especially the forecoxae, with numerous granules on surface, the granules extending onto suboral plate; first coxal tubercle missing; second tubercle somewhat ahead of third tubercle. Abdominal thanosome with about 61 rings and showing slight ring reduction dorsad. Rings heavily microtuberculate, the microtubercles elongate-elliptical on anterior 4/5 of thanosome, and in all cases touching ring margins; microtubercles slightly acuminate above, especially toward rear. On rings ahead of telosome the microtubercles more in form of small beads on ring margins and slightly pointed over margins. Lateral thanosomal seta 20 μ long, on ring 6 or 7 behind shield; first ventral seta about 44 μ long, on ring 19; second ventral seta 40 μ long, on ring 40. Telosome with about 6 rings and fine bead-like microtubercles on ring margins, these microtubercles with more or less faint anterior lines, but these lines stronger and more elongate ventrally; telosomal seta 15 μ long. Accessory seta 4 μ long. Female genitalia 22 μ wide, 15 μ long, coverflap projecting somewhat beyond rear body line of genitalia. Genital coverflap basally with diagonally lateral lines and somewhat lobed laterally; most of rear part of coverflap with about 16 closely parallel and rather long longitudinal ribs; genital seta about 8 μ long.

Males numerous, about size of females.

Type locality: strand at Pattaya, Thailand

Collected: October 28, 1973 by Dr. L. C. Knorr (Food and Agr. Org. of UN) and sent under his number T-21b.

Host: *Terminalia catalpa* L. (Combretaceae-Myrtiflorae) tropical almond

Relation to host: the mites infest calyx lobes at base of nuts, the infestation on these nuts being heavy.

Type material: six slides from which drawings were made

also an envelope with dry parts of calyx lobes bearing mites
the type and paratypes designated from the slides.

Reference for *Acerimina* - Bul. Cal. Dept. Agr. XLVI(3):242, 1957

Copies of the 'C' Series are obtainable from -

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California Department of Agriculture
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Eriophyes tantali, new species

Plate 2

On this species the foretibia usually lacks a seta. When the seta is present it is minute. Perhaps a stereoscan would reveal the seta when it is too small to detect under a phase microscope. *Tantali* is assigned to *Eriophyes* because of the presence of the seta on some of the foretibiae, including at times on the foretibia of only one side. The fore femora has a strong seta which also shows the mite is referable to *Eriophyes* and not to *Acalitus*. The most easily observed features on true *Acalitus* spp. are the absence of both the forefemoral and foretibial setae. Supplementary features referring to an eriophyid to *Acalitus* are: usual poor distinction between forecoxae, with the sternal line absent and the fusing of the forecoxae on some species. The forecoxal setae on *Acalitus* are moved ahead, with the second seta almost in a line between the first and third setae. On *tantali* there is a strong sternal line and the second setae are moved back to almost the line between the third setae. *Tantali* has a 4-rayed featherclaw.

Female measured from front of shield above chelicerae bases, to end of terminal lobes from 165 μ -177 μ long, 40 μ -45 μ thick, wormlike, evidently light colored in life. Rostrum 18 μ long, downcurved; antapical rostral seta not seen. Shield 29 μ long by 40 μ wide. Shield design mainly of longitudinal lines; median line complete, sinuate, ending at rear margin, with a broken cross line at about 2/3 and reaching cross line at rear margin, which line extends laterally, curving forward in front of dorsal tubercle and touching rear ends of lateral lines. Admedian line complete, roughly parallel to median line, somewhat divergent to rear. First submedian line weak anteriorly, forming an outwardly obtuse angle at about 1/2 and ending at transverse broken line at rear shield margin. Second submedian line present only on rear 1/2, extending back toward dorsal tubercle to anterior-curving end of broken transverse line. Shield laterally with two longitudinal lines and extensive granular areas above coxae. Three or 4 partial rings below dorsal tubercle. Dorsal tubercles sitting astride first thanosomal ring and 25 μ apart, projecting dorsal setae divergently to rear. Dorsal setae about 15 μ long. Foreleg from trochanter base 23 μ long; forefemur with strong seta; foretibia 5 μ long, with or without minute seta at about 1/2; tarsus 5.5 μ long; claw 5 μ long; featherclaw 4-rayed. Hindleg 21 μ long, tibia 5 μ long, tarsus 5.5 μ long, claw 4.5 μ long. Forecoxae divided by strong sternal line which ends between second setae without forking. First coxal setae slightly farther apart than second and based somewhat behind anterior coxal approximation. Second coxal setae almost on a line between third setae. Coxae unornamented. Abdominal thanosome with about 50 rings, completely microtuberculate. Subdorsal and dorsal microtubercles somewhat elongate, slightly above rearing margins and touching margins. Supraventral and ventral microtubercles more bead-like, slightly acuminate, ahead of margins anteriorly but touching margins toward rear. Lateral seta 7 μ long, on ring 8 behind shield; first ventral seta 16 μ long, on ring 19; second ventral 6 μ long, on ring 33. Abdominal telosome with 5 rings, completely microtuberculate, the microtubercles fine, slightly pointed over margins; seta 16 μ long. Accessory seta 2 μ long. Female genitalia 15 μ long, 33 μ wide; coverflap lacking surface ornamentations; genital seta 5 μ long.

Male about 117 μ long.

Eriophyes tantali continued on p. 5 at bottom

Designations on Plates

- AP1 - Internal female genital structures
- CS - Lateral caudal section of mite
- D - Dorsal diagram of mite
- DA - Dorsal view of anterior section
- ES - Lateral skin structures
- F - Empodium, or featherclaw
- GF1 - External female genitalia and coxae
- L1 - Left anterior leg
- L2 - Left second leg
- S - Side diagram of mite
- SA - Anterior side section of mite

Telosome - caudal abdominal section beginning with third ventral seta

Thanosome - abdomen from rear shield margin to telosome

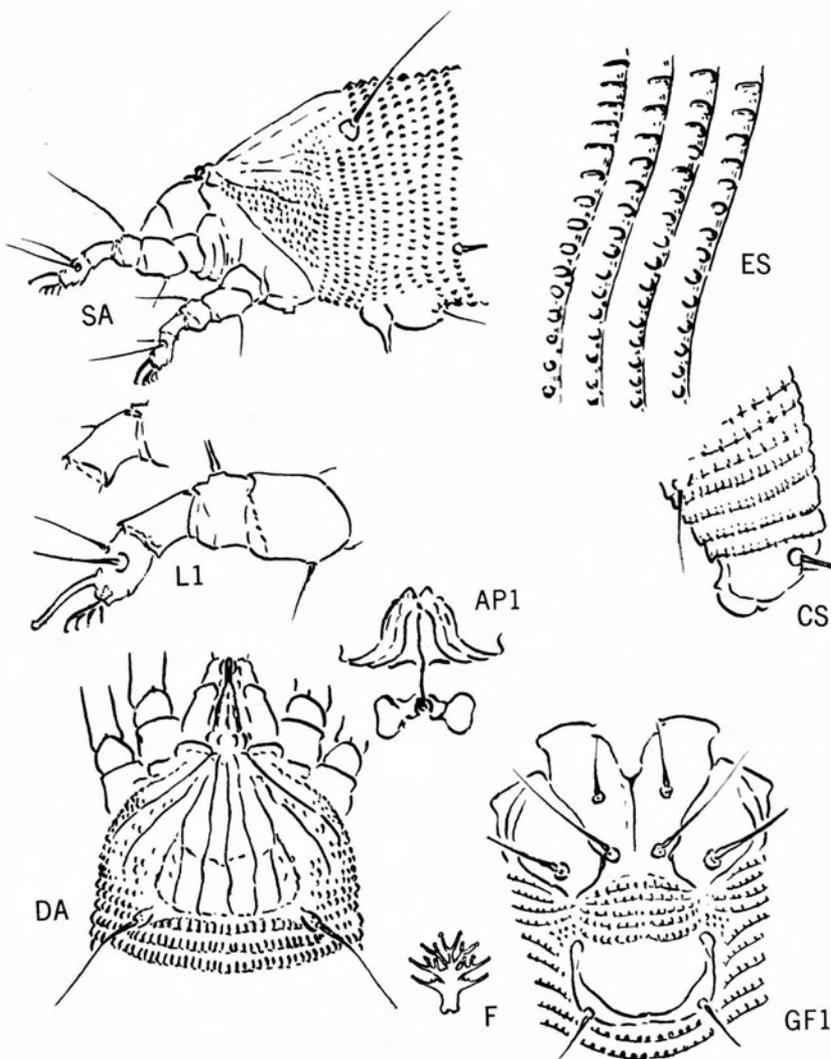


Plate 2 - *Eriophyes tantali*, new species

Eriophyes tribuli, new species

Plate 3

The common name of this mite could be: 'puncture vine bud mite'. The species resembles many other members of Eriophyes that have 6-rayed featherclaws. While the host, Tribulus terrestris, is a member of the Zygophyllaceae, this mite is more like grass infesting species in the tenuis group. This resemblance is due to the deep bowl shape of the female genitalia. Tribuli differs from the tenuis group by the longer median shield line and the much greater lateral shield granular area. The only zygophyllaceous infesting mite available for comparison is the bud or leaf gall mite on desert creosote bush, Larrea divaricata Cav., which has an extensive southwestern range in North America. The mite, Eriophyes larreae K., (Bul. Cal. Dept. Agr. XXIX(1):26, Mar. 1940), differs from tribuli by the shorter median line and less extensive lateral shield granular areas. Also on larreae each microtubercle is extended into a point, whereas on tribuli these are but slightly acuminate.

Female from anterior shield end over chelicerae bases to ends of terminal lobes 164 μ -220 μ long, wormlike, light yellowish-white, thickness about 40 μ . Rostrum 25 μ long, curved down; antapical seta 7.5 μ long. Shield 28 μ long, 36 μ wide, anteriorly subhemispherical in lateral outline. Median shield line nearly complete, weaker anteriorly, ending at rear shield margin with suggestions of a broken dart-shaped mark at rear. Admedian lines complete, slightly sinuate, subparallel to median. First submedian line starting at chelicera base and ending ahead of dorsal tubercle in a small broken fork, the inner parts of which trail off toward the end of admedian. Additional submedian lines indicated beyond first submedian but largely obscured by extensive large lateral granules on shield. Five or 6 partial rings between coxa and dorsal tubercle at lateral rear of shield. Dorsal tubercles 17 μ apart, directing setae divergently to rear; dorsal setae 50 μ -60 μ long. Forelegs from trochanter base 32 μ long; tibia 6 μ long, with 7 μ seta from 1/4 or 1/5; tarsus 9 μ long; claw 8 μ long; featherclaw 6-rayed. Hindleg 28 μ long, tibia 6.5 μ long, tarsus 6 μ long, claw 8.5 μ long. Sternal line represented by two inwardly convex curves that touch just ahead of second tubercles and form a slight fork between these tubercles. General coxal area set with curved lines of granules. First coxal setae from tubercles slightly farther apart than second and ahead of closest approximation of sternal curves. Second coxal tubercles ahead of third tubercle level. Abdominal telosome with about 65 completely microtuberculate rings. The microtubercles elongate subdorsally and dorsally, touching rear ring margins. Slightly acuminate at rear. Subventral and ventral microtubercles bead-like and set ahead of margins; slightly acuminate. Lateral seta 36 μ long, on ring 8 behind shield; first ventral seta 60 μ -70 μ long, on ring 21; second seta 30 μ long, on ring 30. Abdominal telosome with about 8 rings, completely set with fine pointed microtubercles which extend slightly over ring margins and have fine elongate anterior extensions. Telosomal seta on first ring 22 μ -28 μ long. Accessory seta 5 μ long. Female genitalia 17 μ long by 21 μ wide; cover-flap deep bowl-shaped, somewhat acuminate to rear, about 1 longitudinal ribs, partially broken; seta 21 μ -28 μ long.

Male about 165 μ -170 μ long.

Type locality: Shambat near Khartoum, Sudan

Collected: Sept. 19, 1973 by El Fatih Osman Hassan

Host: Tribulus terrestris L. (Zygophyllaceae- Geraniales) puncture vine

Relation to host: the mites are found on the stems and leaves of the vine. It is not possible to make a statement as to the damage sustained by the vine at this time.

Type material: a type slide, so labelled, with above data. Two paratype slides are also in this series. In addition there is a vial with plant parts and mites from which the slides were made.

Eriophyes tantali continued from p. 3

Type locality: Tantalus, Oahu, Hawaii

Collected: October 25, 1973 by L. M. Nakahara,
and submitted by Frank H. Haramoto.

Host: Pipturus albidus (H&A) Gray (Urticaceae- Urticales)

Relation to host: the mites make upper surface leaf galls, with openings on the undersurface. Gall interior with projecting lobes.

Type material: a type slide, so designated, with the above data. Four paratypes are also in the series, and a small bottle with leaves and mites in liquid.

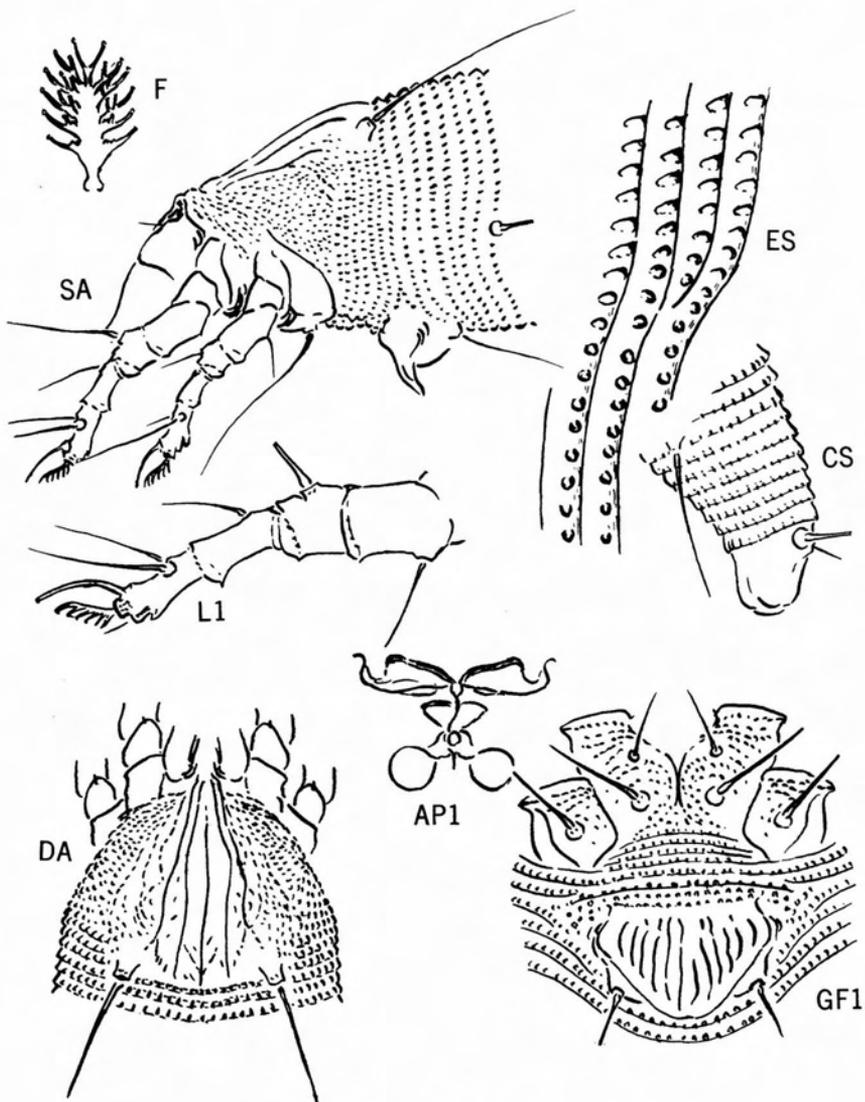
Plate 3 - *Eriophyes tribuli*, new species

Plate 4

The two native black walnuts in California are Juglans hindsii Jepson, and J. californica Wats. Both kinds have the same species of eriophyid mite that makes upper surface leaf galls that are of moderate size and pouch shaped. The mite is Eriophyes brachytarsus K. (Bul. Cal. Dept. Agr. XXVIII(5):328, July 1939). The galls are internally developed in a rather surprising manner, with succulent lobes made up of cellular papillae. Most leaf galls either have internal hairs, papillae, or lobes not constructed as those on California walnut leaves.

The new species here named lives on Juglans major (Torr.) and J. microcarpa Berlander, and makes galls superficially much like those on native California walnut leaves. But the interior of these galls has spine-like papillae, and no suggestion of lobes which are of fused papillae.

The new species here described differs from brachytarsus on the shield by having central longitudinal shield lines on the protogyne which are fairly well developed their full length, except for being weak anteriorly. Also, on the protogyne of the new species the accessory seta is not longer than 6μ , whereas on brachytarsus this seta is 7.5μ long. Microcarpi averages about 235μ in the protogyne stage, whereas the brachytarsus protogyne is often about 280μ in length.

The deutogyne of the new species has even better distinctions. This stage of microcarpi is 180μ - 200μ long, whereas brachytarsus deutogyne are 230μ - 240μ long. Perhaps the best distinction between these walnut gall makers is in the microtubercle formation. Brachytarsus deutogyne have microtubercles in central areas that are somewhat truncate posteriorly, with this edge notably thickened. On microcarpae comparable microtubercles are smaller, rounder with no reinforced rear edge.

Protogyne (primary ♀) 200μ - 240μ long, 45μ - 55μ thick; wormlike; probably in life light yellow in color. Rostrum 19μ long, downcurved; antapical seta 6μ long. Shield 34μ - 38μ long, about 28μ wide, somewhat acuminate anteriorly, design of a few longitudinal lines. Median shield line present only as a short dash at rear margin; admedian lines close, weakly sinuate toward rear, weak anteriorly, slightly recurving near rear margin. Submedian lines very weak or absent; a low partial lobe below and ahead of dorsal tubercle; a moderately strong cross line along rear margin between dorsal tubercles. Laterally the shield with ocellar spot above rear coxa; 3 or 4 partial rings below dorsal tubercle. Dorsal tubercles 15μ apart, directing setae nearly straight to rear; dorsal setae 15μ long. Foreleg from trochanter base 33μ long; tibia 5μ long, with 10μ seta from $1/4$ - $1/3$; tarsus 9μ long; claw 8.5μ long; featherlike 3-rayed. Hindleg 29μ long, tibia 4μ long, tarsus 9μ long, claw 9.5μ long. Coxae with unornamented surfaces; sternal line strong, ending enlarged just in front of closest hind coxal approximation. First coxal tubercles slightly ahead of anterior coxal approximation and slightly farther apart than second; second coxal tubercles well ahead of level of third tubercles. Abdominal thanosome with 50 to 55 rings, completely microtuberculate; microtubercles all pointed, the points about 2μ long. Lateral seta 20μ long, on ring 6 behind shield; first ventral seta 22μ long, on ring 19; second ventral 13μ long, on ring 33. Telosome with 5-6 rings, completely set with pointed microtubercles that project over margins; no elongate microtubercles ventrally; seta 20μ long. Accessory seta 5μ - 6μ long. Female genitalia 9μ - 11μ long, 19μ wide; coverflap lacking ribs; genital tubercle not projecting, seta 10μ long.

Deutogyne 175μ - 185μ long, noticeably smaller than protogyne, probably reddish in color when alive. Microtubercles rounded, lacking points, with rear edge not strengthened.

Male about 224μ long, 44μ thick.

Type locality: in Chavis County, New Mexico, southwest of Lewis Peak

Collected: Sept. 10, 1973 by W. A. Iselin of the New Mexico Dept. of Agriculture

Host: Juglans microcarpa Berlander (Juglandaceae- Juglandales) little walnut

Relation to host: the mites make upper surface pouch gall on leaves; internally these galls with low lobes bearing spine-like papillae.

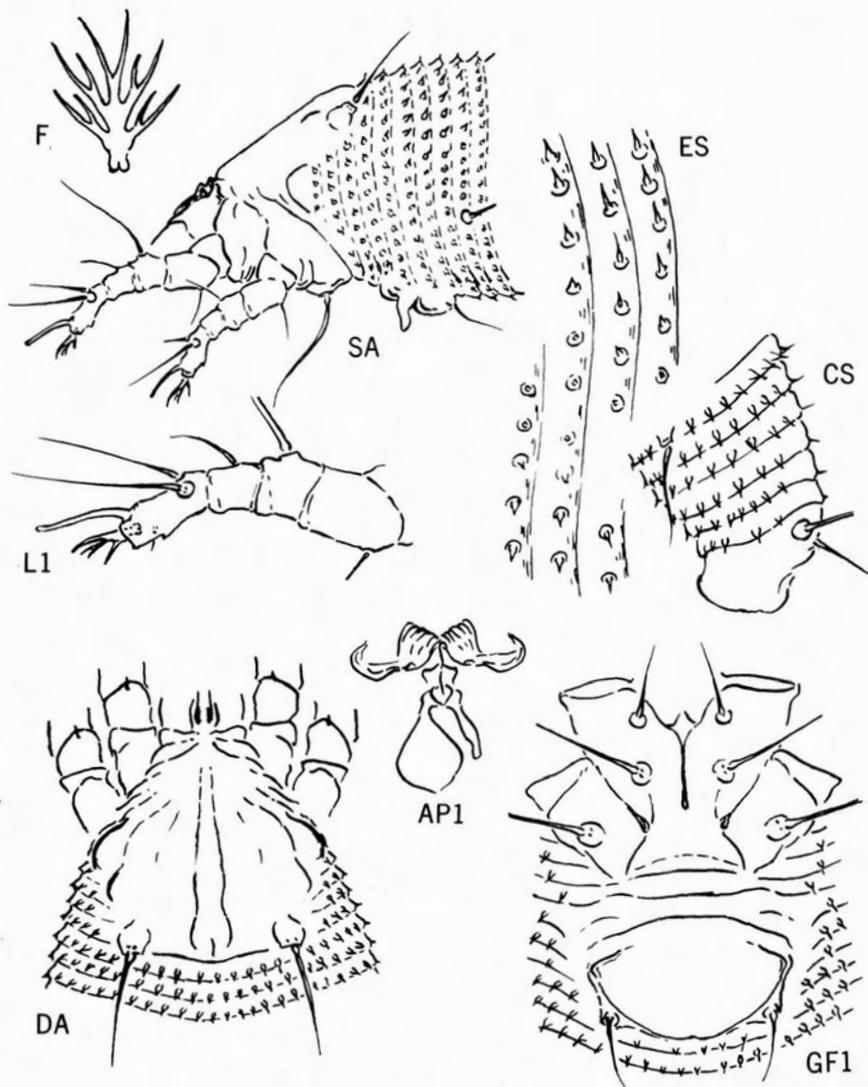
Type material: dry leaves and galls with the above locality data which bear mites from which the slides were made.

Type slide, so designated, with the above data.

Three paratype slides also with this data.

In addition Bill Iselin collected this same mite in Hildago County, New Mexico, west of Virden, Sept. 5, 1973.

Another collection of what seems to be this same mite species, coinciding both in size and in type of gall, comes from Juglans major (Torr.). In this case the specimens were collected by the writer at Basin Junction, Big Bend National Park, Texas, October 31, 1960.

Plate 4 - *Eriophyes microcarpae*, new species

Acalitus mikaniae, new species

Plate 5

The broken median and admedian lines on the shield; the weak sternal line between the forecoxae, that trails off into a series of dots, and is surrounded anteriorly by outwardly convex lines; and the curved transverse lines of granules on the female genital coverflap, partly define this species. While *mikaniae* resembles various *Acalitus* spp. in various ways, *A. brevitarsus* (Focke), the alder leaf bead gall maker, is perhaps the most similar. On *brevitarsus* the two lines of granules surrounding the short sternal line between the forecoxae, are similar. *Brevitarsus* has coverflap granules but it differs from *mikaniae* by having unbroken admedian shield lines, and it lacks strong submedian lines. For ref. to *brevitarsus* see Nalepa, Verh. Ges., Wien 69:32, 1919, and Marcellia 24:21, 1927.

Female from front of shield to terminal lobes 144 μ -180 μ long, about 32 μ thick; wormlike in shape; color in life perhaps light yellowish-white. Rost-rum 15 μ long, curved down diagonally; antapical seta apparently absent. Shield 23 μ long by 25 μ wide. subtriangular in dorsal view with outcurved sides. Design on shield of longitudinal lines and a broad granular area laterally. Median line complete but broken at about 2/3, and with slight dart-shaped mark before rear end. Admedian lines broken centrally, complete and curved, outcurved convexly on rear half. Submedian shield lines irregular, forming a 'cell' in front of dorsal tubercle. Laterally the shield with two longitudinal lines above a granular area, which is above the coxae. Dorsal tubercles 12 μ apart, directing the setae divergently to rear; dorsal setae 23 μ long. Foreleg from trochanter base 25 μ long; tibia 3.5 μ long, tarsus 7.5 μ long, claw 5 μ long, featherclaw 4-rayed. Hindleg 23 μ long, tibia 2.5 μ long, tarsus 6.5 μ long, claw 5.5 μ long. Sternal line between coxae very weak, trailing off behind as line of dots. Coxae ornamented with sparse lines of small granules, particularly the outwardly convex lines framing the sternal line for 2/3 its length. First coxal tubercles ahead of anterior coxal approximation, and slightly closer than second tubercles; second tubercles moved ahead and just inside line between first and third tubercles. Abdominal thanosome with about 75 rings, completely microtuberculate, the microtubercles slightly acuminate; the upper microtubercles somewhat elongate and touching rear ring margins. Sublateral and ventral microtubercles more bead-like and slightly ahead of margins. Lateral seta 11 μ long, on ring 9 behind shield; First ventral seta 40 μ long, on about ring 25; second ventral 11 μ long, on about ring 47. Telosome with 5-6 rings, completely set with fine microtubercles on margins, the dorsal ones on first 2-3 rings heavier. Telosomal seta 13 μ long. Accessory seta minute. Female genitalia 12 μ long by 16 μ wide; coverflap with 3 or 4 transverse curved lines of coarse granules; genital seta 8 μ long.

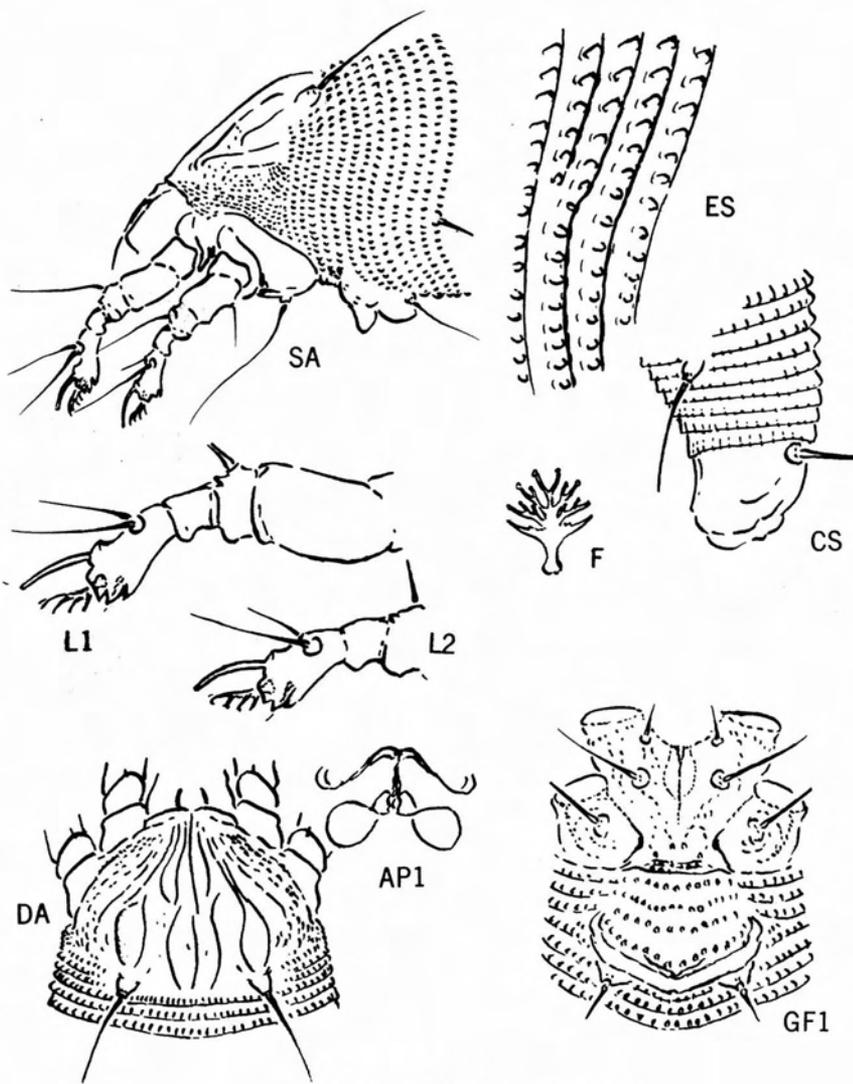
Type locality: Palm Beach County, Florida

Collected: May 10, 1973, by W. H. Pierce, and sent to me by H. A. Denmark

Host: *Mikania scandens* (L.) Willd. (Compositae-Campanulatae)

Relation to host: unstated but perhaps a bud mite.

Type material: 1. a vial with some mites in liquid
2. a type slide, so designated, with the above data
3. five paratype slides

Plate 5 - *Acalitus mikaniae*, new species

Acalitus salvadorae, new species

Plate 6

This species is the second one in this genus to be found in deformations on mustard plant, *Salvadora persica* L. The first one, *A. hassani* K. (C-8:11 Oct. 15, 1973) occurs principally in erineum on twisted leaves. This second species is smaller than the first and is more numerous on deformed tips. The new species differs from *hassani* mainly by lacking strong central shield lines, and by having a noticeably long second claw. Other differences on this new species are the 6-rayed featherclaw as compared to the 7 on *hassani*, and while *hassani* has no sternal line between the forecoxae, the new species has a moderately strong line in this position.

Female 140 μ -176 μ long, about 35 μ -40 μ thick; wormlike; color probably light yellowish-white. Rostrum 21 μ long, downcurved; antapical seta not seen. Shield 21 μ long, by 35 μ wide; sides approximately straight, converging anteriorly, broad front. Central shield design faint or absent. Laterally the shield has 3 or 4 short curved lines below dorsal tubercle; about 3 partial rings below tubercle. Dorsal tubercles 21 μ apart, directing setae divergently to rear; dorsal setae 20 μ long. Foreleg 24 μ long from trochanter base; femur with short spine or two underneath; tibia 3.5 μ long, tarsus 7 μ long; claw 5.5 μ long, featherclaw 6-rayed. Hindleg 23 μ long, tibia 3 μ long, tarsus 5.5 μ long, claw 10 μ long. Coxal surface lacking ornamentation; moderate sternal line present, slightly forked in front and at rear. First setiferous coxal tubercle set well ahead of anterior coxal approximation; second tubercle nearly in line with first and third tubercles. Abdominal thanosome with about 42 rings, the rings with microtubercles except last 8-10 dorsal side, or these last rings with fine microtubercles approaching telosome. Thanosomal microtubercles with short acuminations, the microtubercles larger dorsally and touching rear margins; below the microtubercles more bead-like and ahead of margins. Lateral seta 15 μ long, on ring 5 behind shield; first ventral seta 40 μ long, on ring 14; second ventral seta 34 μ long, on ring 27. Telosome with 5 rings, with fine microtubercles on margins, sometimes without these small tubercles dorsally; microtubercles elongate ventrally; telosomal seta 20 μ long. Accessory seta absent or minute. Female genitalia 16 μ wide, 11 μ long, with a few moderate granules basally and a curved cross line broken centrally; genital seta 16 μ long.

Male about 100 μ -110 μ long.

Type locality: Shambat, Khartoum district, Sudan

Collected: July 1973 by El Fatih Osman Hassan

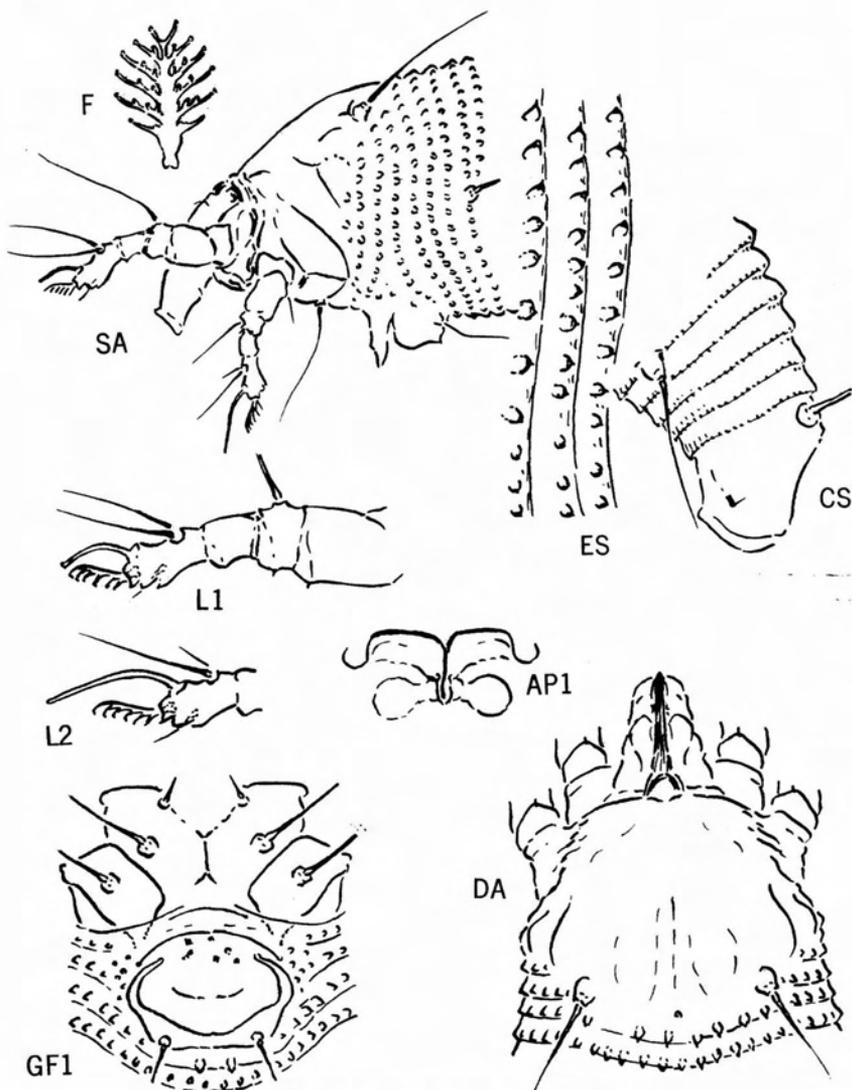
Host: *Salvadora persica* L. (Salvadoraceae - Sapindales) mustard plant

Relation to host: while these mites are thoroughly mixed with *Acalitus hassani* on all parts of the plant, *hassani* is much more frequent in leaves deformed by erineum, whereas the new species seems to prefer deformed twig tips.

Type material: an envelope with dry plant parts bearing numerous mites.

A type slide, so designated, with the above data. (Partly a mixture of the species)

Four paratype slides, also designated.

Plate 6 - *Acalitus salvadorae*, new species

Phytoptus melaleucaae, new species

Plate 7

The features on this species are the long central shield lines, the 6-rayed featherclaw, and the dorsal elongate microtubercles that are slightly acuminate. There are not many 6-rayed featherclaw species in this genus to compare melaleucaae with. Two such species: Er. junipereti K., and Er. callitris K., (Eriophyed Studies B-1:20, 1960, and B-1:9 respectively) are far distant structurally. On both of these conifer infestors from North Africa the shield lines are shorter, granular, and the sternal line is absent.

Female, measured from front of shield to end of terminal lobes, about 170 μ to 180 μ long, 35 μ thick; wormlike; color in life probably light yellowish-white. Rostrum 21 μ long, downcurved; antapical seta 2 μ long. Shield 23 μ long by 28 μ wide, sides somewhat outcurved, with rather broad front. Median line faint on anterior 1/4, somewhat broken to rear margin and ending in dart-shaped mark; admedian lines complete, gently sinuate, near to and subparallel to median and ending slightly recurved centrally at rear, where they interrupt third ring behind dorsal tubercles. First submedian line sinuate, broken, nearly complete; additional two submedian lines incomplete, present as outwardly arched lines. Shield laterally with heavy granular area above coxae and with 3 or 4 partially short rings below tubercle. Dorsal tubercles 12 μ apart, somewhat ahead of rear margin; dorsal setae directed divergently ahead, 20 μ long. Foreleg from trochanter base 28 μ long; tibia 5 μ long, with 5 μ seta at 1/3; tarsus 5.5 μ long; claw 7 μ long; featherclaw 6-rayed. Hindleg 23 μ long, tibia 4 μ long, tarsus 5.5 μ long, claw 6.5 μ long. Coxae heavily ornamented with curved lines and rather coarse granules; sternal line between forecoxae moderately heavy but unforked to rear. First setiferous coxal tubercles farther apart than second and slightly ahead of anterior coxal approximation; second tubercles well ahead of level of third tubercles. Abdominal thanosome with about 46 rings; rings completely microtuberculate, the microtubercles elongate above, slightly acuminate posteriorly and touching margins; below microtubercles more bead-like and ahead of margins. Lateral seta 12 μ long, on ring 6 behind shield; first ventral seta 35 μ long, on ring 15; second ventral 5 μ long, on ring 29. Abdominal telosome with 6 rings, the rings completely set with fine microtubercles on rear margins, the microtubercles more elongate dorsally anteriorly. Telosomal seta 11 μ long. Accessory seta absent. Female genitalia rather deep bowl-shaped; 19 μ long by 11 μ wide. Female genital coverflap with about 12 irregular and long longitudinal ribs; 2 curved lines of cross granules basally. Genitalia with 8 μ long seta.

Male about 150 μ -155 μ long.

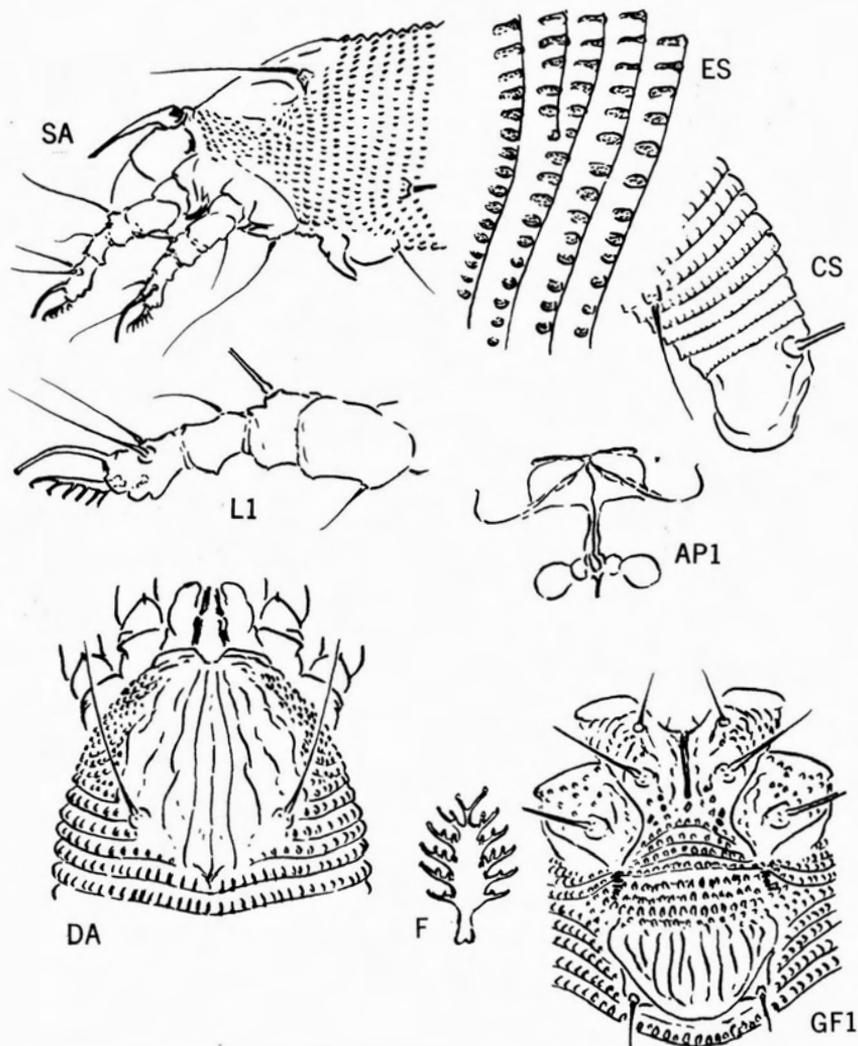
Type locality: Toowoomba, Queensland

Collected: July 4, 1972, by J. W. Turner and sent by T. Passlow, Director of the Entomology Branch, Department of Primary Industries

Host: Melaleuca linearifolia (Myrtaceae, Myrtoidea - Myrtiflorae)

Relation to host: the mites deform leaves, bending them toward the underside and to an extent forming shallow elongate cups.

Type material: a vial of plant parts with mites in liquid with the above data type slide, so labelled, with the above data seven paratype slides, two sent to T. Passlow

Plate 7 - *Phytoptus melaleucae*, new species

Phyllocoptruta comorensis, new species

Plate 8

The genus *Phyllocoptruta* is distinguished by the longitudinal broad thanosomal trough plus the dorsal shield tubercles being ahead of the rear shield margin and directing the setae up or ahead. The dorsal tubercles essentially have their axes longitudinal to the body. The tropicopolitan *P. oleivora* (Ashm.), known as the citrus rust mite, is the genotype. The present new species is particularly instructive since it differs from other mites previously referred to this genus by having the dorsal tubercles set near the rear margin and with the longitudinal tubercle axis extending ahead diagonally toward the center. The setae are still short but are directed up and diagonally centrad to rear.

Female, from anterior shield lobe to end of terminal lobes, 168 μ -196 μ long, 68 μ wide, 52 μ thick; body elongate fusiform; color in life possibly yellowish. Rostrum 23 μ long, projecting down; antapical rostral seta 6 μ long. Shield 48 μ long by 50 μ wide, subtriangular in dorsal view. Anterior shield lobe acuminate, strongly bent down over rostrum. Shield design of central and lateral lines; median line faint on anterior half but heavy and granular just beyond 1/2. Admedian lines thin anteriorly but heavy and granular just beyond 1/2 where they join a cross line to anterior end of heavy median section. The admedians diverge outwardly in dorsal tubercle area where they join a cross line to median and then diverge further to rear margin. A strong submedian line curves around upper area of anterior lobe and thence divergently back to lower side of dorsal tubercle. Three lines extend down from undulations of submedian line to join or nearly join a lateral line above coxae. Additional lower lateral line and 2 partial rings below dorsal tubercle. Dorsal tubercles 20 μ apart, set near rear margin with axes directed diagonally forward and centrad; dorsal setae 8 μ long, directed up and diagonally centrad to rear. Foreleg from trochanter base 33 μ long; tibia 9 μ long, with five μ seta from inner side at about 1/2; tarsus 7 μ long; claw 6 μ long; featherclaw 4-rayed. Hindleg 30 μ long, tibia 7 μ long, tarsus 7 μ long, claw 7 μ long. Coxae ornamented with a few curved lines; sternal line short, not forked between second coxal tubercles; forecoxae strongly diverging. First setiferous coxal tubercle farther apart than second and opposite anterior coxal approximation; second coxal tubercles not far ahead of level of third tubercles. Abdominal thanosome with about 32 tergites and 56 sternites. All microtubercles on rear margins, those on tergites strongly extended anteriorly, weak or absent on tergites approaching telosome; ventrally the microtubercles fine and bead-like, not extended far ahead. Lateral seta 23 μ long, on sternite 8 behind shield; first ventral seta 42 μ long, on sternite 20; second ventral 14 μ long, on sternite 37. Telosome with 5 rings which are either completely microtuberculate or with weak microtubercles dorsally; telosomal microtubercles fine and on margins, pointed to rear. Telosomal seta 25 μ long. Accessory seta 3 μ long. Female genitalia 18 μ long by 22 μ wide. Female coverflap with about 10 longitudinal ribs and a basal heavy curved cross line, with granules. Genital seta 20 μ long.

Male not seen.

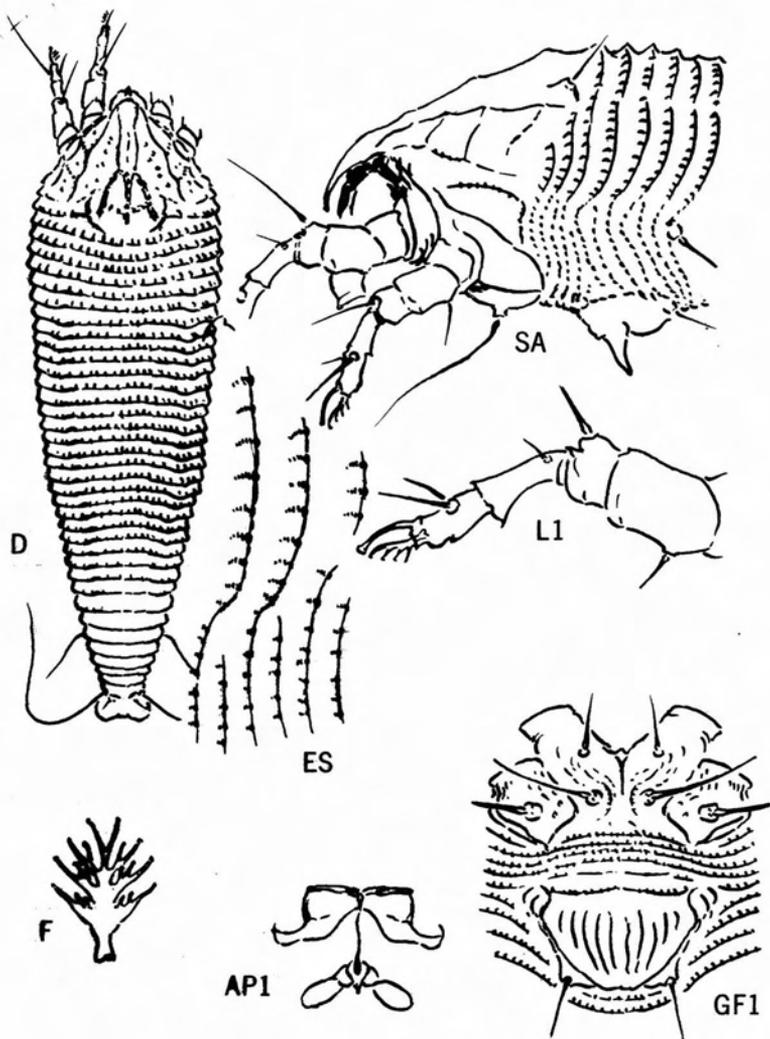
Type locality: at 100m. elevation on Mt. Ramani, Anjouan, Comoros Archipelago, Indian Ocean

Collected: Nov. 9, 1970, by J. Gutierrez and sent under #28

Host: *Jatropha carkas* L. (Euphorbiaceae- Geraniales)

Relation to host: the mites are leaf vagrants

Type material: a vial with a few mites in liquid
one type slide with above data

Plate 8 - *Phyllocoptruta comorensis*, new species

Calacarus pelargonii, new species

Plate 9

This species differs from citrifolii K. (Cal. Dept. Agr. XLIV(3):126-127, 1955) by having a 6-rayed featherclaw (citrifolii has 5 rays), by completely lacking a median line on the shield, and by having short dashes projecting from the admedian lines toward the rear.

Female from anterior shield lobe to terminal lobes 225 μ -240 μ long, about 64 μ thick; robust spindleform body which is likely purple when alive and probably has wax stripes dorsally. Rostrum 36 μ long, projecting down; antapical seta 11 μ long. Shield 54 μ long by 56 μ wide; subsemicircular in anterior outline with somewhat projecting anterior lobe. Design the typical network of curved lines characteristic of the genus. Median line not indicated. Admedian shield lines quite sinuate and extending back from sides of short anterior lobe beginning at lateral ends of curved cross lines that form an acute forward projecting angle centrally; admedians curving inward and meeting a slight cross line just behind anterior shield lobe base, then curving out to lateral line from submedian, recurving to central cross line just before 1/2, then curving outward to fork on rear third, the inner fork arms extending centrad to meet centrally at rear margin, the outer fork arms recurve centrad and end at rear margin; short right angle dashes appended to admedians on rear third. Shield with prominent lateral row of 'cells' the first cell giving off a short curved submedian line. Dorsal tubercles slightly indicated ahead of rear margin at ends of broken submedian line. Foreleg from trochanter base 40 μ long; tibia 11 μ long, with 5.5 μ seta at just before 1/2; tarsus 9 μ long; claw 10 μ long, with prominent club; featherclaw 6-rayed. Second leg 37 μ long, tibia 9 μ long, tarsus 7.5 μ long, claw 9 μ long. Forecoxae with dashes and curved lines; sternal line heavy, extending back to between second tubercles and slightly forking. First setiferous coxal tubercles slightly farther apart than second and slightly behind anterior coxal approximation. Second coxal tubercles almost back to level of third tubercles. Abdominal thanosome with about 72 rings, the rings approximately equal dorso-ventrally. Thanosome dorsally and laterally with total of 5 longitudinal ridges, the rings on ridges heavy for wax-bearing. Microtubercles dorsally weak or absent, but fine and bead-like on margins ventrally. Lateral seta 35 μ long, on ring 10 behind shield; first ventral seta 60 μ long, on ring 31; second ventral 28 μ long, on ring 55. Abdominal telosome with about 7 rings; microtubercles weak or absent dorsally, fine laterally and ventrally, and with short anterior extensions. Telosomal seta 25 μ long. Accessory seta very minute. Female genitalia 23 μ long by 24 μ wide, coverflap somewhat elongate and with short dashes basally and apically. Genital seta 12 μ long.

Male about 170 μ long.

Type locality: Belle-Pierre, Ile de la Reunion, altitude 200 μ

Collected: Oct. 1971 by J. Etienne and sent by J. Gutierrez under #31

Host: Pelargonium zonale L'Herit (Geraniaceae - Geraniales)

Relation to host: the mites are leaf vagrants

Type material: a vial with mites in liquid and with the above data
a type slide, so designated
three paratype slides

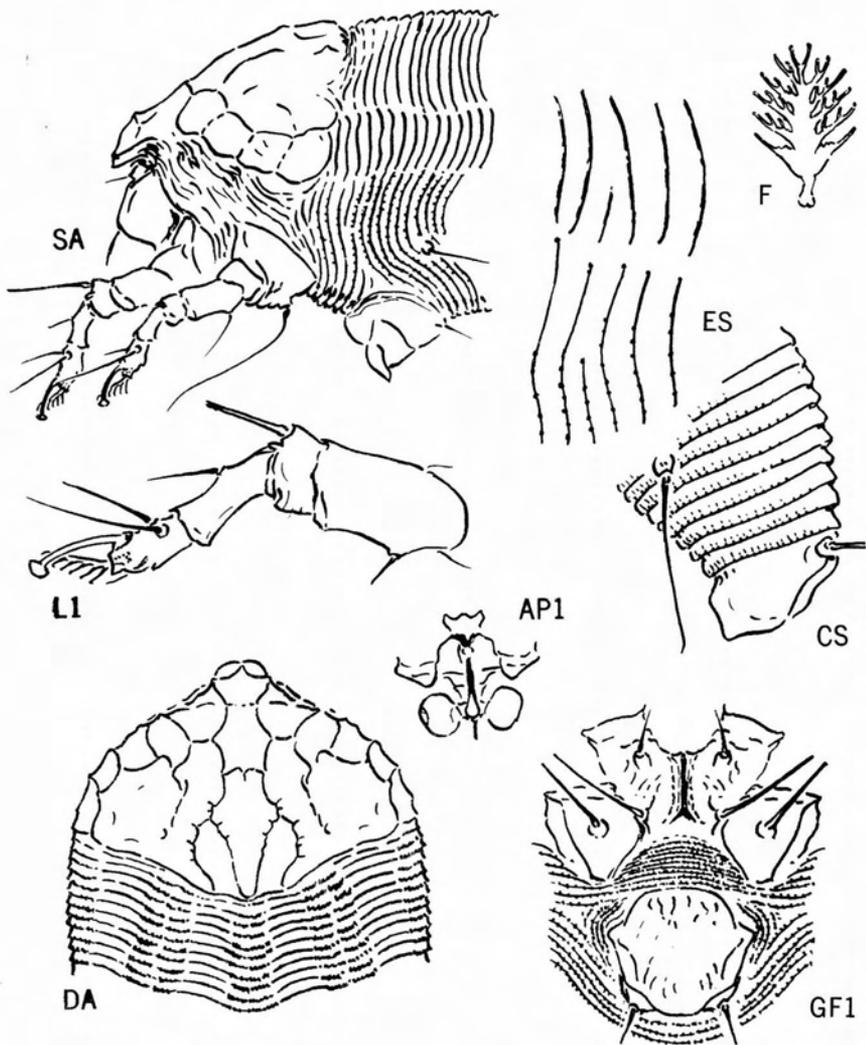


Plate 9 - *Calacarus pelargonii*, new species

Floracarus cyphomandrae, new species

Plate 10

This species functions as a rust mite on leaf undersides, on fruit pedicels, and to some extent on branches. Damaged leaves turn yellow on the upper side and underneath dark areas develop along the ribs. Taxonomically it differs from the genotype, calonyctionis K. (Cal. Dept. Agr. Bul. XLIII(2):69, 1953) by having much less surface granulation on the shield, the shield is less heavily lined laterally, and the thanosomal microtubercles are of a different shape. On calonyctionis the microtubercles are fine beads with linear anterior extensions, whereas on cyphomandrae the microtubercles are subelliptical and somewhat acuminate.

Female from anterior shield lobe to terminal telosomal lobes 165 μ -200 μ in length, about 50 μ -55 μ thick; robust-fusiform in general shape and somewhat elongate; color in life probably light yellowish-white. Rostrum 21 μ long, projecting down; antapical rostral seta 7 μ long. Shield 40 μ wide by 35 μ long, slight anterior lobe; subsemicircular anteriorly in dorsal outline. Shield design of a linear network; median line complete, broken, heavy beyond a cross line at rear margin. Admedian lines complete, meeting at frontal lobe, then extending sinuately subparallel to median to rear and slowly diverging, meeting cross line from first submedian at about 1/4, meeting another cross line ahead of rear margin and diverging beyond. First and second submedian lines anteriorly placed and ending at cross line at 1/4; third submedian from antero-lateral margin and running in to rear margin past dorsal tubercle on inner side, meeting cross line at just before 1/2 and another at 2/3, and a third cross line from dorsal tubercle base. Laterally the shield with a slight network of lighter lines and a heavy band of granules between lateral line and coxa. Dorsal tubercle 27 μ apart, somewhat ahead of rear margin, directing setae divergently to rear; dorsal seta 47 μ long. Foreleg from trochanter base 26 μ long, tibiotarsus 11 μ long, claw 5.5 μ long, featherclaw 4-rayed. Hindleg 23 μ long, tibiotarsus 9 μ long, claw 5.5 μ long. Forecoxae fused centrally eliminating sternal line; forecoxae and second coxae set with pointed granules. First coxal tubercles absent. Second coxal tubercles somewhat ahead of level of third tubercles. Abdominal thanosome with about 52 rings; completely microtuberculate. Microtubercles behind shield narrow and elongate, ending in round dot on margin and somewhat acuminate; laterally the microtubercles more elliptical, and about half way back on dorsum. Ventrally microtubercles dot-like and tending to be ahead of margins 1/2 way back. Lateral seta 34 μ long, on ring 9 behind shield; first ventral seta 52 μ long, on ring 20; second ventral 16 μ long, on ring 34. Abdominal telosome with 6-8 rings, microtubercles as dots on margins and pointed over, elongate ventrally; seta 15 μ long. Accessory seta absent. Female genitalia 16 μ long by 25 μ wide; coverflap basally with granules and more apically with broken diagonally cross line; seta 12 μ . Male 125 μ -140 μ long.

Type locality: Caldas (Antioquia), Columbia

Collected: September 26, 1973 by E. Urueta S., Sanidad Agropecuaria

Host: Cyphomandra betacea (Cav.) (Solanaceae- Solaninae, Tubiflorae)

Tomato de arbol

Relation to host: the mites inhabit fruit pedicels, the underside of leaves, and cause leaf yellowing, with dark undersurface areas near ribs. Branches on infested trees also have dark spots from mite action.

Type material: vials with mites and some plant parts in liquid and with the above data
a type slide
five paratype slides

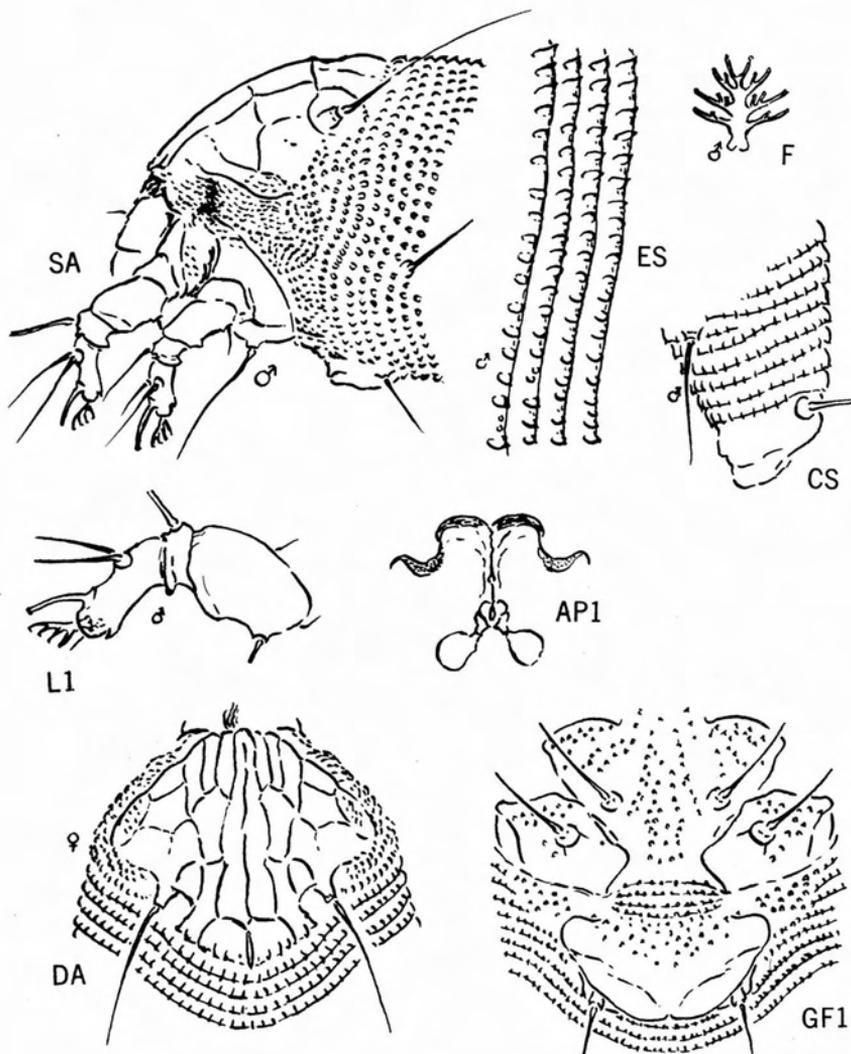


Plate 10 - *Floracarus cyphomandrae*, new species

Rhynacus haramotonis, new species

Plate 11

Perhaps the closest species to haramotonis is globosus K. (Eriophyid Studies C-115, Apr. 15, 1969). Globosus occurs on Anacardium in various places in South America and haramotonis undoubtedly originated on that continent. The new species differs from globosus by having a 6-rayed featherclaw (globosus has a 7-rayed featherclaw), by having narrow admedian lines just beyond 1/2 on the shield, as opposed to broad admedian lines at this point, and by having more generally distributed microtubercles. I am pleased to name this new species after Dr. Frank H. Haramoto, of the University of Hawaii, who has sent many eriophyoids from the Hawaiian Islands, including this one.

Female from anterior edge of shield lobe to end of terminal lobes, 160 μ -180 μ long, 50 μ thick; body robust-fusiform, probably light yellowish-white in life. Rostrum 45 μ long, projecting down; antapical seta probably absent. Shield 38 μ long, 50 μ wide, rather blunt anteriorly with broad and rounded anterior lobe over rostrum base. Shield design of lines mostly faint: median line present only on rear half, thin all the way, meeting curved cross lines from admedians at just ahead of rear margin. Admedian lines complete, thin, sinuate, not far apart, slightly recurved toward rear shield margin. Two short submedian lines, one from anterolateral edge of anterior lobe and the second an extension of side of lobe, these ending at about first 1/4. Laterally the shield with area of curved broken lines and longitudinal short dashes above coxa. Dorsal tubercles present as small round setaless knobs at about 3/4 on shield. Foreleg from trochanter base 32 μ long; tibia 5 μ long with no seta, tarsus 7.5 μ long; claw 7.5 μ long; featherclaw deeply cleft, with 6 rays on a side. Hindleg 29 μ long, tibia 3.5 μ long, tarsus 8 μ long, claw 7 μ long. Coxae ornamented with curved lines of short dashes mainly around tubercles; sternal ridge between forecoxae. First setiferous coxal tubercles about straight ahead of second and well behind anterior forecoxal approximation. Second tubercles somewhat ahead of level of third tubercles on coxae. Abdominal thanosome somewhat elongate and tapering, with central moderately broad ridge which tapers to a fading point at 18 or 20 rings ahead of telosome. Thanosome with about 65 rings about equal dorsoventrally. Thanosomal microtubercles tending to be faint or absent dorsally, laterally in the form of fine points appended on rear edge of ring margins. Lateral seta missing; first ventral seta 55 μ long, on ring 27 behind shield; second ventral seta 38 μ long, on ring 46. Telosome with about 10 rings, completely set with fine microtubercles on margins; telosomal seta 24 μ -26 μ long. Accessory seta absent. Female genitalia 20 μ long by 33 μ wide; coverflap with series of short basal dashes mainly set in longitudinal lines, apically the coverflap with 16-18 short radiating ribs, longitudinal centrally. Genital seta 7 μ -10 μ long.

Male about 160 μ long.

Type locality: Waimanalo, Oahu, Hawaii

Collected: November 9, 1973 by Dick M. Tsuda

Host: Psidium guajava L. (Myrtaceae- Myrtoideae, Myrtiflorae) guava

Relation to host: the mites are leaf vagrants

Type material: a vial with leaves and mites in liquid, with the above data
a type slide
5 paratype slides

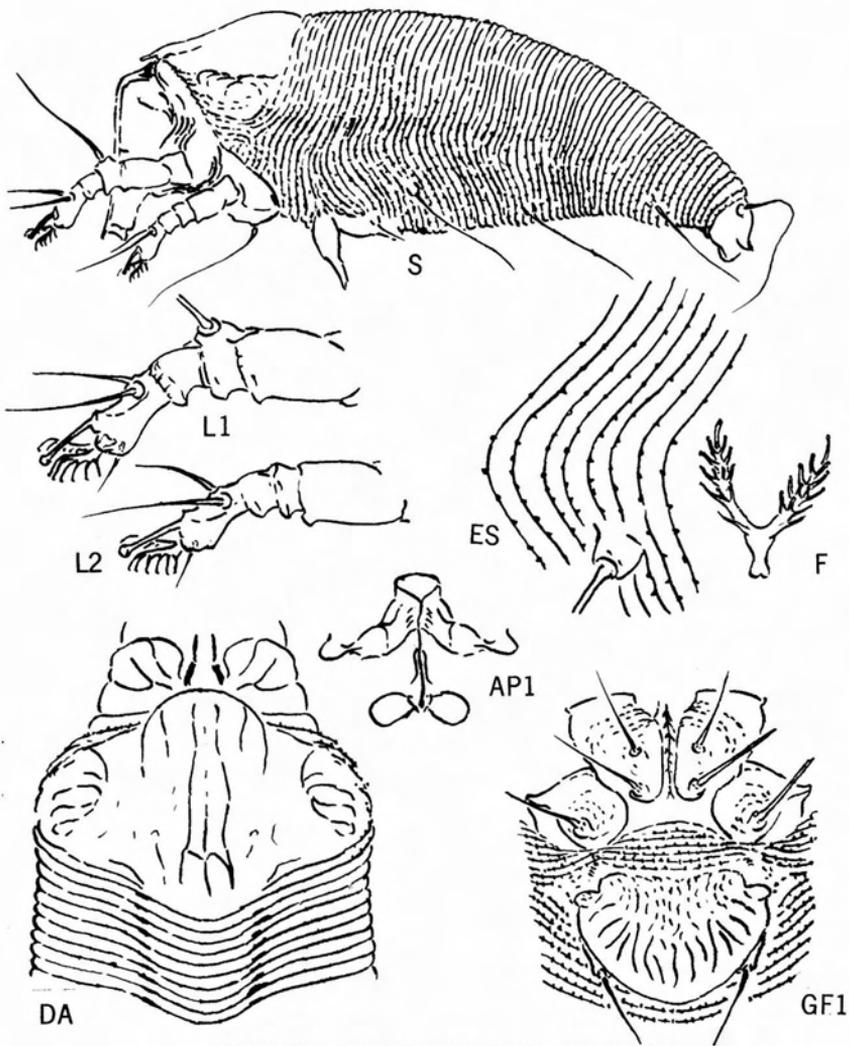


Plate 11 - *Rhynacus haramotonis*, new species

Diptilomiopus knorri, new species

Plate 12

The patella and femur are less completely fused on this species than on other species of *Diptilomiopus* so far studied. The new species is somewhat similar to *assamica* K. (Occ. Papers Cal.Bur.Ent. No.2:14, Dec. 30, 1959) in general respects. *Assamica* has no marks on the female genital coverflap and the lateral shield lines above the front row of 'cells' are plainer. Both species have deeply divided featherclaws with 5 rays on a side. The new species has basal marks on the coverflap and there are fewer lines on the shield above the frontolateral 'cell' row. I am pleased to name this mite for Dr. L. C. Knorr, of the Plant Protection Service of the United Nations.

Female from front edge of shield to end of terminal lobes 165 μ -175 μ long, about 65 μ thick; body elongate fusiform and strongly tapering to rear; color in life evidently some shade of brown or yellowish-brown. Rostrum 47 μ long, projecting down; antapical frontal seta apparently absent, but rear terminal sensillum 4 μ long. Shield 30 μ long by 60 μ wide, broad and blunt in front with slight anterior lobe over rostrum base. Shield design a series of thin and coarse lines radiating toward central rear. Median line present as coarse low ridge on anterior 1/3, absent in central cell, extending back from coarse cross line at 2/3 and ending ahead of rear shield margin. Admedian lines beginning at sides of central 'cell' and just beyond 1/2, joining cross line at 2/3 and ending as incomplete coarse extensions pointing centrad from this line. Submedian line from upper side of first frontal shield 'cell' thin, extending diagonally inward and ending at junction with central shield 'cell'. Coarse line across shield at about 2/3, meeting upper line of lateral 'cells' at rear margin. About three lateral shield 'cells' in a row on each side of shield from anterior lobe to rear margin. Dorsal tubercles, without setae, present just behind rear line across shield and 24 μ apart, these tubercles present as minute knobs. Foreleg from trochanter base 31 μ long; patella fused with femur but more distinct than on most species of the genus studied; tibia 7 μ long; tarsus 8 μ long; claw 5 μ long, with large terminal knob; featherclaw deeply divided and with 5 rays on a side. Hindleg 26 μ long, tibia 4.5 μ long, tarsus 7 μ long, claw 6 μ long. Coxae almost lacking ornamentation; forecoxae somewhat separated centrally; second coxal tubercle well ahead of level of third setiferous coxal tubercle. Abdominal thanosome with about 47 tergites and 61 sternites but not too differentiated from each other laterally; central longitudinal ridge gradually tapering entire length of thanosome. Microtubercles mainly ventral and elongate, present on tergites laterally in front but absent dorsally except toward telosome. Microtubercles elongate laterally and more bead-like ventrally. First ventral seta 8 μ long, on sternite 30; second ventral seta 9 μ long, on sternite 43. Telosome with 8-9 rings, completely set with fine microtubercles on edges which are longer ventrally. Telosomal seta 25 μ long. Accessory seta absent. Female genitalia 18 μ long, 28 μ wide; coverflap basally with first a transverse series of short dashes in irregular longitudinal rows, followed by a transverse series of short, irregular, longitudinal lines; apically the coverflap unmarked. Genital seta 7 μ long.

Male 136 μ long by 53 μ thick.

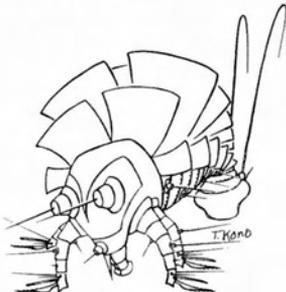
Type locality: Bangkok, Thailand

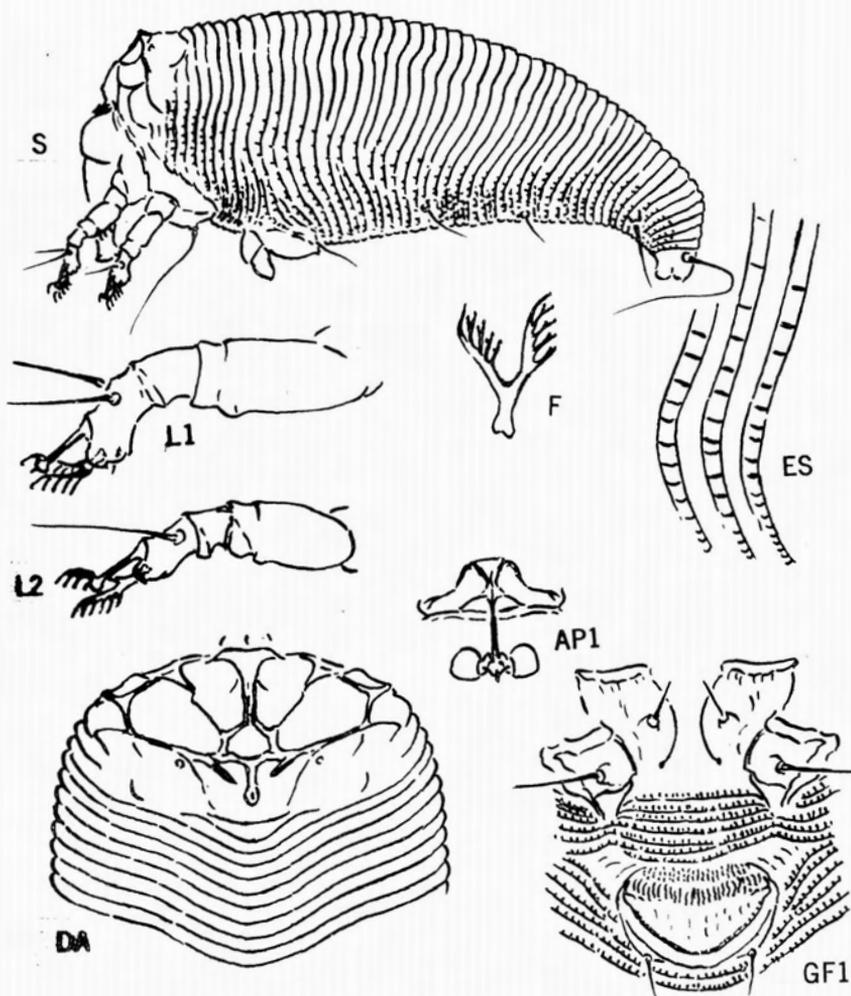
Collected: January 5, 1974 by L. C. Knorr and sent under #T39a

Host: *Gardenia* sp. (Rubiaceae- Cinchonoidea, order Rubiales)

Relation to host: the mites are undersurface leaf vagrants

Type material: dry leaves with reddish-brown mite mummies on undersurfaces, and with the above data on the envelope
a type slide so designated
four paratype slides



Plate 12 - *Diptilomiopus knorri*, new species