# ERIOPHYID STUDIES B-3

by H. H. KEIFER

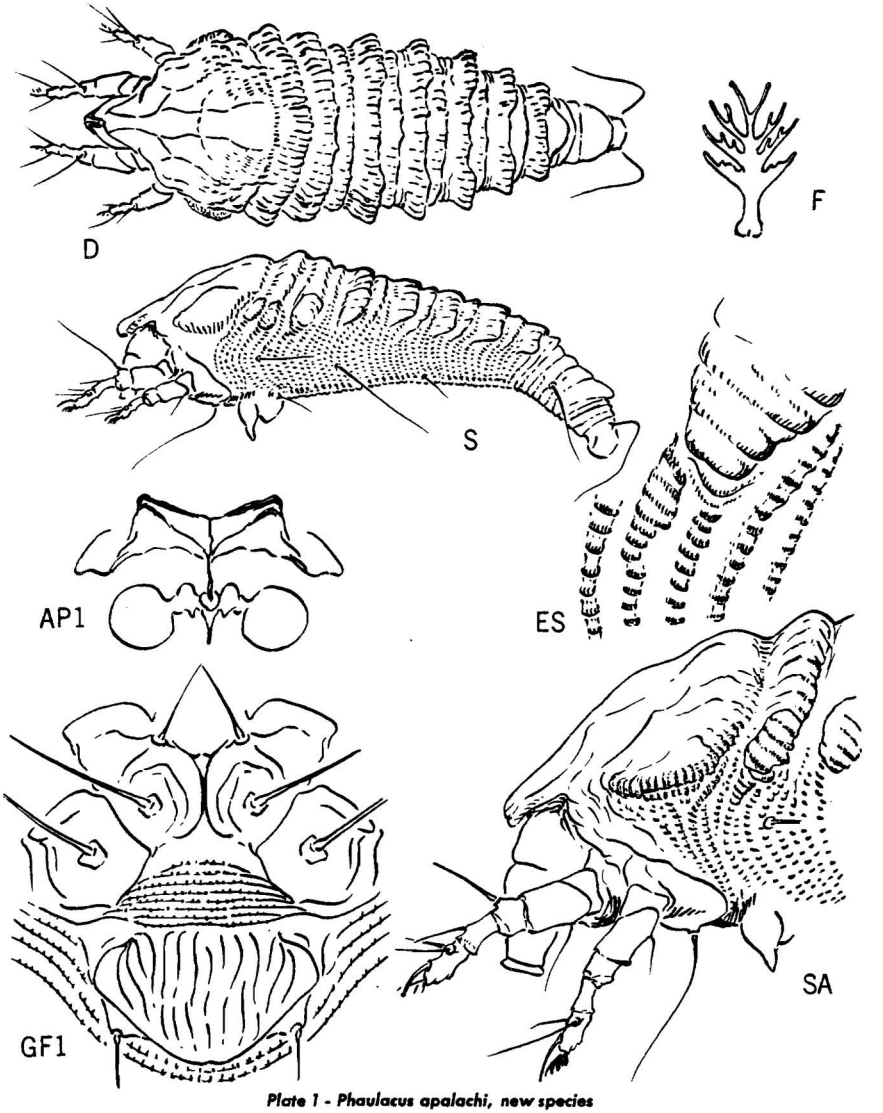


*Plate 1 - Phaulacus apalachi, new species*

ISSUED - MAY 22, 1961

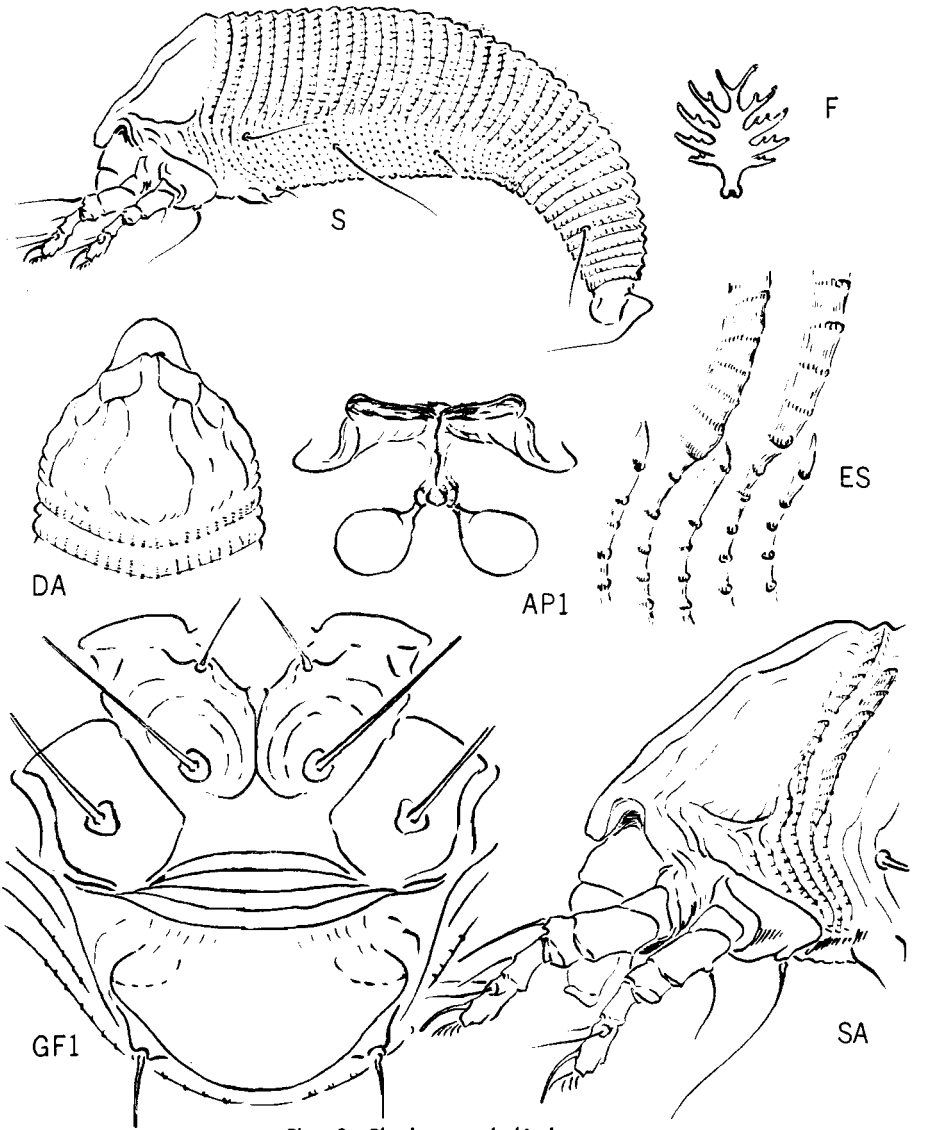


***Plate 2 - Phaulacus apalachi, deutogyne***

The genotype, by lacking dorsal tubercles and setae, would fall into the Cecidophyes group of genera, but the internal anterior female apodeme of the genotype is of moderate anterior length. In Cecidophyes this apodeme does not extend forward to any extent. The anterior coxae of the genotype are more broadly joined than is typical in the Cecidophyes group. Another notable character of the genotype is the absence of the patellar seta from the second leg. The name is composed of phaulos, meaning rough, with acus added as a contraction of acarus.

Body of protogyne fusiform, flattened. Rostrum moderate in size; apical recurved portion of oral stylet short. Cephalothoracic shield subtriangular; with anterior lobe extending forward well over rostrum; dorsal tubercles and setae missing. Legs with all usual segments and setae except hind patellar seta missing (also missing in deutogyne). Anterior coxae broadly joined centrally; all usual coxal setae present. Abdomen with broad tergites and narrow sternites; tergites 1, 2, 4, 8, 10, 12, projecting laterally beyond body line. Abdomen generally microtuberculate with those on tergites as elongate roughenings. All usual abdominal setae present except accessory setae which are missing. Female genitalia not appressed to rear coxae; coverflap with longitudinal ribs partly in two ranks; internal apodeme nearly normal length.

Genotype: Phaulacus apalachi, new species

## Phaulacus apalachi, new species

### Plates 1 and 2

This new species infests the leaves of native chestnut, a host which is slowly becoming extinct. The mite associated here as the deutogyne lives intimately with the other form. Its differences are illustrated in Plate 2, including the differently rayed featherclaw.

Protogyne 160μ-180μ long, 60μ wide, 45μ thick; fusiform, flattened, color light yellowish. Rostrum 30μ long, projecting down; antapical seta 40 long. Shield 50μ long, 56μ wide, subtriangular, a prominent lobe over rostrum. Median shield line absent; admedians complete, sinuate, a lateral branch at 1/3. Rear shield area more or less granulate; lateral lobes not projecting far beyond body outline, roughened. Forelegs 30μ long; tibia 6.5μ long, with seta 4μ long from 2/3; tarsus 7μ long; claw 6.5μ long, tapering; featherclaw 4-rayed. Hindlegs 29μ long; tibia 4.5μ long; tarsus 8μ long; claw 6.5μ long. Coxae with some curved lines around second tubercles; anterior coxae moderately broadly joined centrally; first setiferous coxal tubercles ahead of second tubercles and a little ahead of anterior coxal junction; second coxal tubercles well ahead of transverse line through third coxal tubercles. Abdomen with about 22 tergites, the first 13 of which are broad; a caudal broad tergite overhangs some of the posterior rings; abdomen completely microtuberculate, the microtubercles elongate dorsally as rough ridges; small ventrally. About 60-65 sternites present. Lateral seta 20μ long, on about sternite 7; first ventral 53μ long, on sternite 22; second ventral 13μ long, on sternite 36; third ventral 33μ long, on sternite 5 from rear. Accessory seta absent. Female genitalia 23μ wide, 15μ long; coverflap with about 14 longitudinal ribs, broken into partial double ranks; seta 10μ long.

Deutogyne 190μ-200μ long, 50μ thick; fusiform. About 33 narrow tergites present with elongate microtubercles. Featherclaw 5-rayed. Female genitalia with smooth coverflap.

Type locality: Skyland, Skyline Drive, Virginia

Collected: July 25, 1959 by John F. Keifer and the writer

Host: Castanea dentata Marsh (Fagaceae) chestnut

Relation to host: the mites are undersurface leaf vagrants.

Type material: as well as a type slide and 11 paratype slides, there are leaves with mites in liquid, and dry leaves bearing mites.

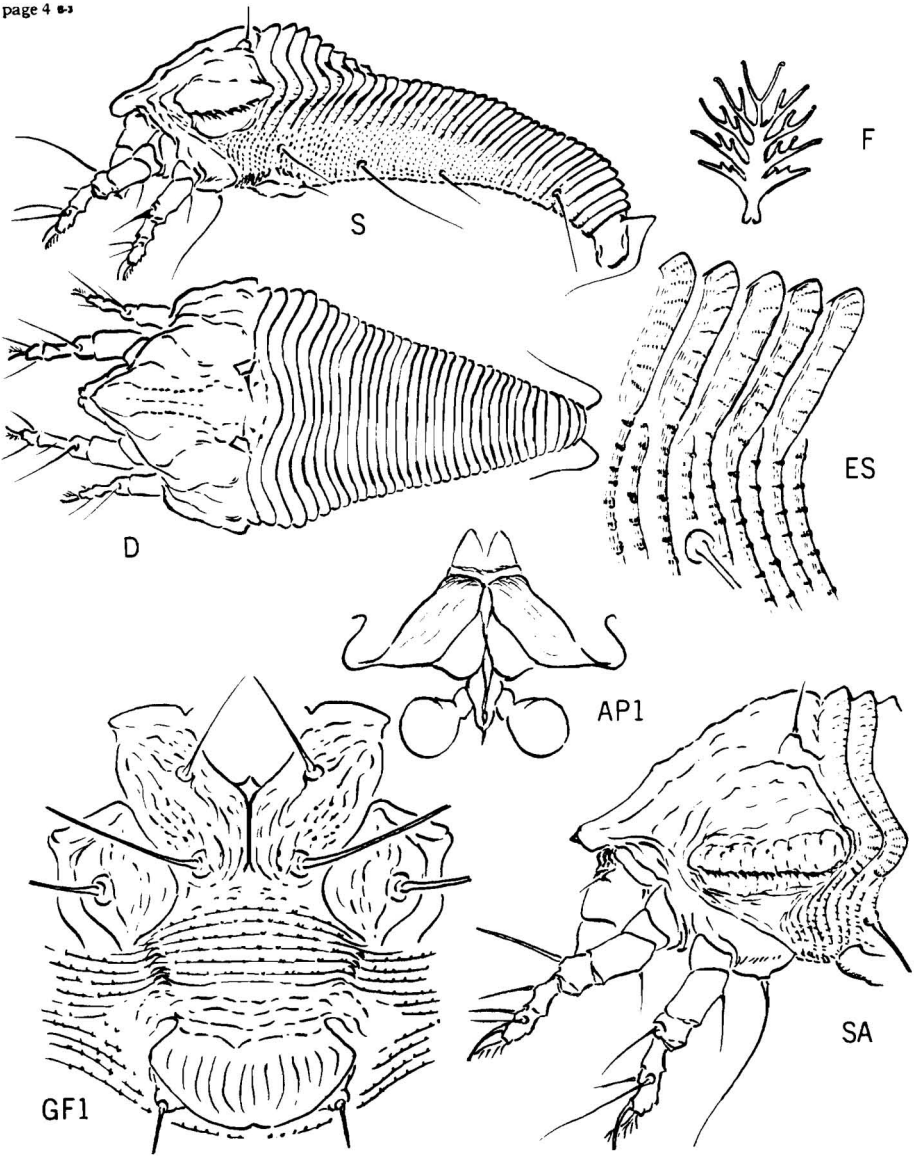


***Plate 3 - Notalox rubigator, new species***

## Notalox, new genus

This genus stands between Tetra and Phyllocoptruta in dorsal structure. The broad longitudinal dorsal trough on the abdomen is present on all three genera. On Phyllocoptruta the dorsal tubercles are ahead of the rear shield margin and their axes are longitudinal. On Tetra the dorsal tubercles are on the rear shield margin and the tubercle axes are transverse, the setae diverging to the rear. On Notalox the dorsal tubercles touch the rear shield margin, but their axes converge diagonally to the front and the setae point up and centrad. The genus name is a combination of notum, and alox, meaning furrow.

Body fusiform, flattened;shield subtriangular in dorsal view, acuminate anteriorly with prominent lobe over rostrum.Dorsal tubercles touching rear shield margin, their axes converging diagonally toward front; dorsal setae projecting up and caudocentrad. Abdomen with broad longitudinal trough, a central hump at rear of shield. Rostrum small; apical downward portion of oral stylet short. Legs and coxae with all usual setae; featherclaw simple. Abdomen with all usual setae. Internal anterior apodeme of female genitalia long.

Genotype: Notalox rubigator, new species

## Notalox rubigator, new species

### Plate 3

Female 130u-140u long, 56u wide, 40u thick; light yellowish in color. Rostrum 23u long, projecting down; antapical seta 8u long. Shield lobe over rostrum with one or more small terminal points. Design unclear: indications of admedian lines; some diagonal side lines; lateral lobes of shield forming elongate projecting bosses, their outer margins straight, and diverging to rear.Dorsal tubercles 7u apart; dorsal setae 6.5u long. Forelegs 30u long; tibia 6.5u long, with seta 6.5u long at 1/2; tarsus 6.5u long; claw 7.5u long, with small knob; featherclaw simple, with five rays. Hindlegs 27u long, tibia 5u long, tarsus 6.5u long, claw 7.5u long. Coxae with lines and lines of granules; first setiferous coxal tubercles well ahead of and slightly farther apart than second tubercles; a little ahead of anterior coxal junction; second coxal tubercles slightly ahead of transverse line through third tubercles. Abdomen with about 35 tergites and 55 sternites; the ventral microtubercles small and on rear ring margins; the dorsal microtubercles faint and elongate. Lateral seta 30u long, on about sternite 7 behind shield;first ventral seta 42u long, on sternite 20; second ventral 10u long, on sternite 35; third ventral 24u long, on sternite 5 from rear.Accessory seta minute. Female genitalia 17u wide, 13u long; coverflap with about 12-14 longitudinal ribs; genital seta 9u long.

Type locality: West Hyattsville, Maryland

Collected: J ly 29, 1959 by John P. Keifer and the writer.

Host: Acer saccharinum L. (Aceraceae) silver maple

Relation to host: the mites are undersurface leaf inhabitants, causing considerable rusting of the foliage.

Type material: as well as a type slide and 4 paratype slides, there are mites in liquid and on dry leaves.

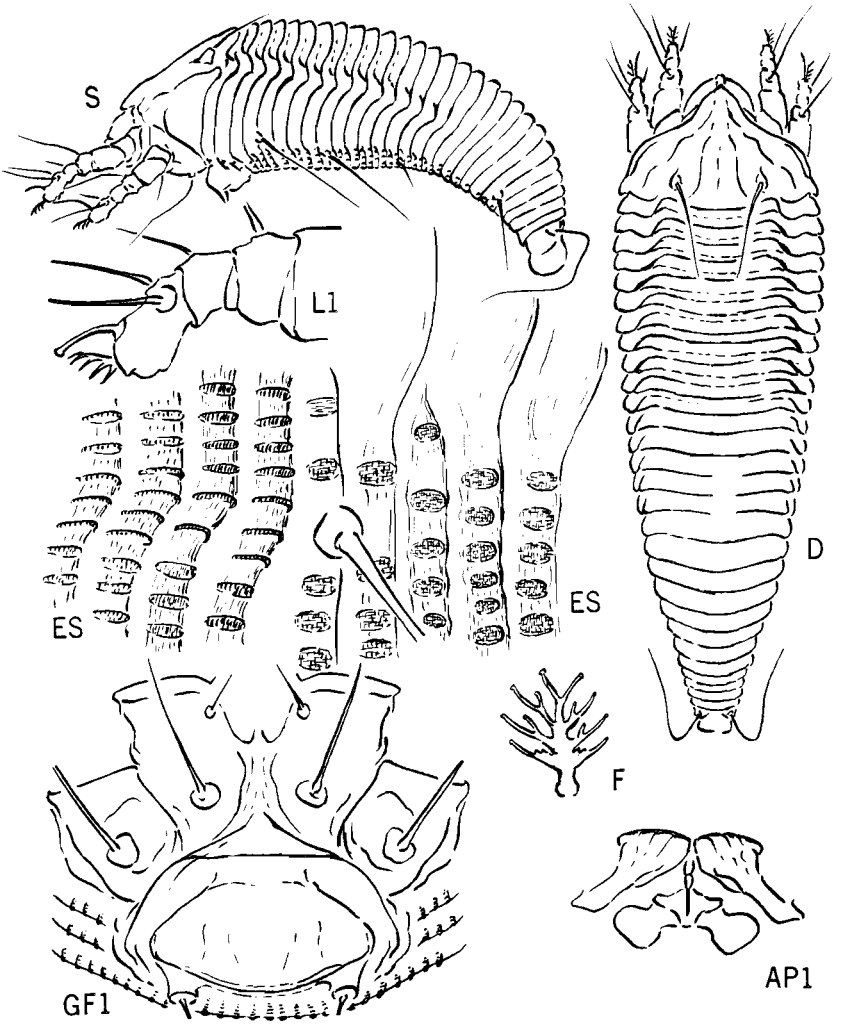


*Plate 4 - Cenalox nyssae, new species*

## Cenalox, new genus

The distinctive structure defining this new genus is the dorso-lateral groove running from just below the dorsal tubercles, diagonally downward toward the rear, fading about at the 2/3 point. The tergites are nearly as numerous as the sternites and extend far around the body. The genus name is composed of keneon, meaning side, and alox, meaning furrow.

Body fusiform, flattened; rostrum small, curved down;apical portion of oral stylet short. Dorsal shield subtriangular, with moderate sized lobe over rostrum base; dorsal tubercles with longitudinal axes, set just inside rear shield margin; dorsal setae projecting caudad and converging diagonally. All regular setae present on legs, coxae and abdomen. Anterior coxae apparently not centrally connate. Abdomen with subdorsal groove from just below dorsal tubercles, running caudad and a little downward, fading to rear. Female genitalia somewhat appressed to coxae but with internal anterior apodeme of normal length.

Genotype: Cenalox nyssae, new species

## Cenalox nyssae, new species

Plate 4

There seem to be two forms of this species. One is completely microtuberculate, and the other has microtubercles restricted to the sternites. In most cases of deuterogyny unusual abdominal structures possessed by the protogyne are not present on the deutogyne. In this species the lateral oblique furrow is present in both forms so the relationship these have to eachother cannot be determined at this time.

Female 100μ-120μ long, 40μ wide, 28μ thick; fusiform, somewhat flattened; light yellowish in color. Rostrum 10μ long, curved down; antapical seta very small.Shield 34μ long, 36μ wide; anterior lobe over rostrum of moderate size, acuminate; shield design obscure: admedian lines diverging to rear; submedian lines running outward past dorsal tubercles; sides of shield ummarked, not prominent; dorsal tubercles 17μ apart; dorsal setae 17μ long. Forelegs 27μ long; tibia 4.5μ long, with seta 4.5μ long from 2/3; tarsus 7μ long; claw 5μ long, curved; featherclaw 4-rayed. Hindlegs 25μ long, tibia 4μ long, tarsus 6.5μ long, claw 8.5μ long.Coxae without lines or granulations; anterior coxae apparently separate; first coxal setiferous tubercles near anterior end of coxae, ahead of second tubercles; second tubercles well ahead of transverse line through third tubercles.Abdomen with about 28 tergites and 30 sternites; completely microtuberculate on one form, or with microtubercles restricted to sternites on other form; diagonal abdominal groove fading laterally to about 17th tergite; microtubercles mostly ahead of rear margin when restricted to sternites, on rear margin when present on tergites also. Lateral seta 23μ long, on about sternite 5;first ventral seta 27μ long, on sternite 13; second ventral 7μ long, on sternite 22; third ventral 16μ long, on sternite 5 from rear. Accessory seta absent Female genitalia somewhat appressed to coxae; genitalia 16μ wide, 10μ long; coverflap without markings; seta 7μ long.

Type locality: Beltsville, Maryland

Collected: July 17, 1959 by the writer

Host: Nyssa sylvatica Marsh (Cornaceae) black tupelo. (var. biflora?)

Realtion to host: the mites live along the ribs on the underside of the leaves.

Type material: as well as a type slide and four paratype slides, there is the envelope with dry leaves from which the mites were taken.

The species Aceria nyssae (Trotter) also occurs in the dry leaves referred to above. Examples are on part of the slides with Cenalox nyssae. This tupelo Aceria is a species with 3-rayed featherclaws allied to the oak-walnut group of species in the genus.

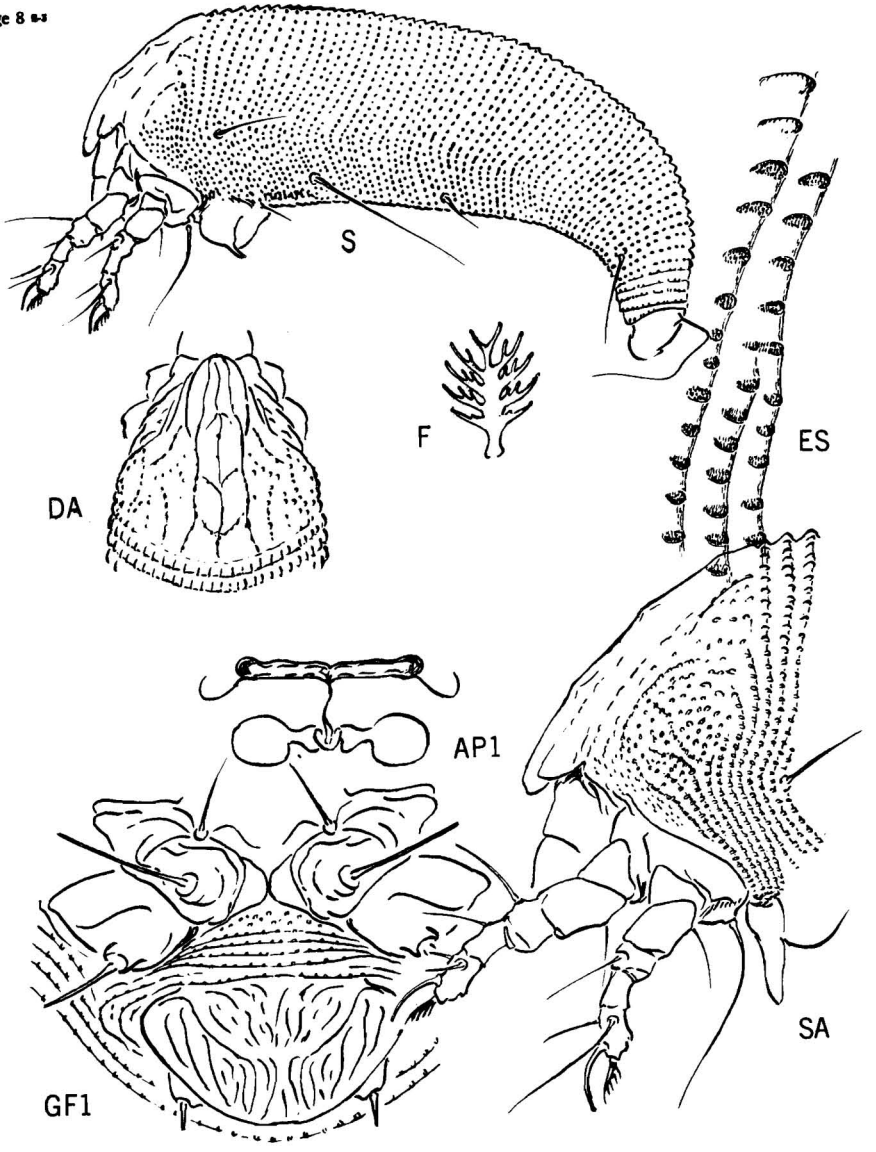


***Plate 5 - Cecidophyes harperi, new species***

Cecidophyes harperi, new species

Plate 5

The distinctive features of this mite are the solid lines in the shield design on and just behind the anterior lobe, and the 5-rayed featherclaw.

Female 156u-180u long, 45u-50u thick; body circular in cross section, robust-fusiform; color light yellowish. Rostrum 26u long, projecting down;antapical seta 7u long. Shield 40u long, 46u wide, anterior lobe over rostrum somewhat blunt. Shield design of lines and of lines of granules; anterior third of shield design of solid lines, the remainder are lines of granules. Median line complete;admedian lines complete, gently undulating and generally diverging to rear; first submedian line curving backward from sides of anterior lobe, ending against admedian line at 1/3; additional submedian and lateral lines present.as more or less weak lines of granulations; sides of shield granular. Forelegs 30u long, tibia 6.5u long, with seta 7u long from 1/3;tarsus 7u long;claw 7u long, curved; featherclaw 5-rayed. Hindlegs 28u long, tibia 6u long, tarsus 6.5u long, claw 7.5u long. Coxae with a design of curving lines, especially those surrounding elevation of second coxal tubercles. Anterior coxae narrowly joined centrally. First coxal tubercles ahead of second tubercles, on anterior inner coxal margin, ahead of coxal junction; second tubercles well ahead of transverse line through third coxal tubercles. Abdomen with about 50-55 tergites and 60-65 sternites, completely microtuberculate, the microtubercles resting on rear ring margins and somewhat more elongate dorsally. Lateral seta 14u long, on about sternite 4 behind shield; first ventral seta 50u long, on about sternite 17; second ventral 8.5u long, on sternite 33; third ventral 19u long, on sternite 6 from rear.Accessory seta absent. Female genitalia appressed to coxae; 26u wide, 16u long; coverflap with central basal portion separated by diagonal lines,the remainder of coverflap with numerous irregular longitudinal ribs; genital seta 13.5u long.

Type locality: Oak Glenn Canyon, San Bernardino County, Cal.

Collected: October 16, 1958 by Hene Harper of the San Bernardino County Department of Agriculture, For whom I am naming this species.

Host: Rhamnus californicus Esch. (Rhamnaceae) coffee berry. In this case the plant is the pubescent leaf variety, possibly ursina.

Relation to host: the mites are vagrants among the hairs on the undersides of the leaves.

Type material: as well as a type slide and ten paratype slides there is the envelope with dry leaves from which the mites were taken.

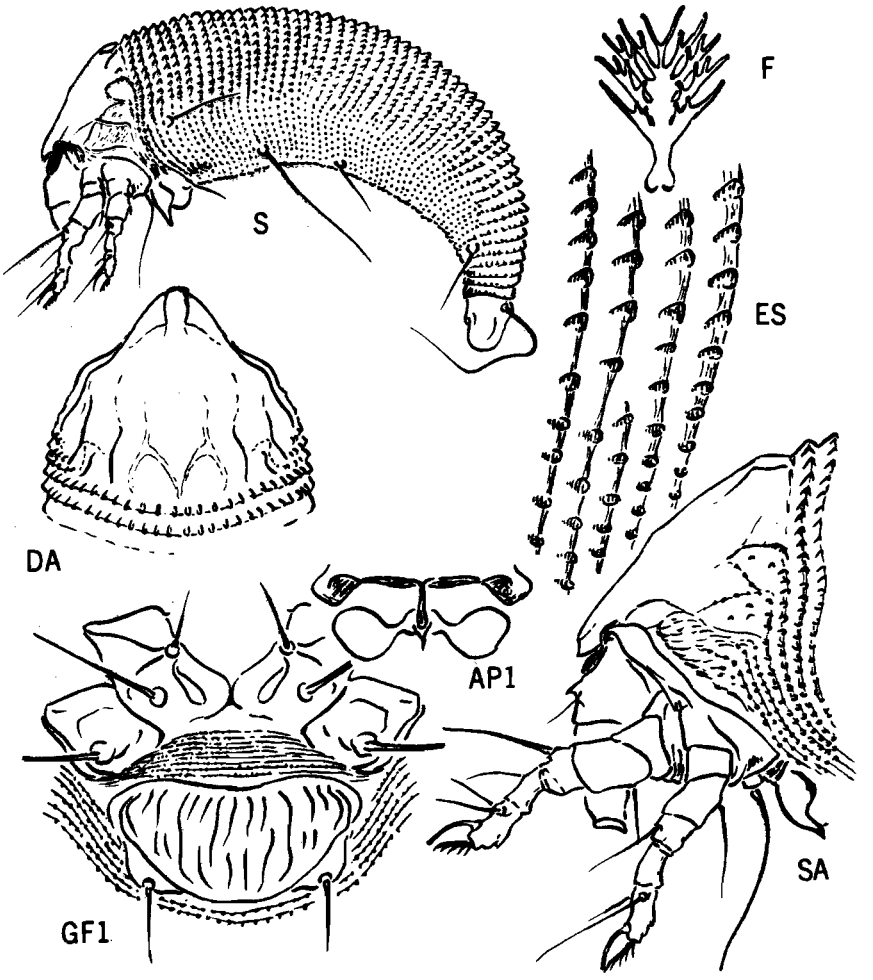


*Plate 6 - Cecidophyes collegiatus, new species*

cecidophyes collegiatus, new species

Plate 6

The 5-rayed featherclaw, plus the nearly obsolete shield design, characterize this mite.

Female 170μ-190μ long, 55μ thick; elongate fusiform, light yellowish-white in color. Rostrum 35μ long, projecting down; antapical seta 7μ long. Shield 47μ long, 50μ wide; anterior lobe short and gradually acuminate to a rounded apex. Shield design obscure; median line absent; admedians present on anterior lobe and again faintly present near rear margin as broad diverging ridges joined centrally by a V-shaped mark. Some lateral lines at rear margin and a few lateral granulations. Forelegs 35μ long; tibia 9μ long, with seta 9μ long at 1/2;tarsus 8.5μ long; claw 8.5μ long, downcurved; featherclaw 5-rayed. Hindlegs 33μ long, tibia 6.5μ long, tarsus 7μ long, claw 9μ long.Coxae with curved lines, the anterior coxae narrowly connate centrally; first setiferous coxal tubercles closer than second tubercles, with radiating lines anterior to coxal junction;second coxal tubercles well ahead of transverse line through third tubercles. Abdomen with 50-55 tergites and 65-70 sternites; completely microtuberculate, the microtubercles slightly elongate, the ventral microtubercles resting on ring margins, the dorsal ones larger, more acuminate,and projecting a little beyond ring margins. Lateral seta 13μ long, on about sternite 7 behind shield; first ventral seta 55μ long, on sternite 22; second ventral 12μ long, on sternite 35; third ventral 26μ long, on sternite 5 from rear. Accessory seta absent. Female genitalia 15μ long, 26μ wide; coverflap with 16-18 longitudinal ribs, partly in two ranks; seta 15μ long.

Type locality: College Park, Maryland

Collected: July 22, 1959 by the writer.

Host: Acer platanoides L. (Aceraceae) Norway maple

Relation ot host: the mites are undersurface leaf vagrants.

Type material: as well as the dry leaves from which the specimens were taken, there is a type slide and 5 paratype slides.

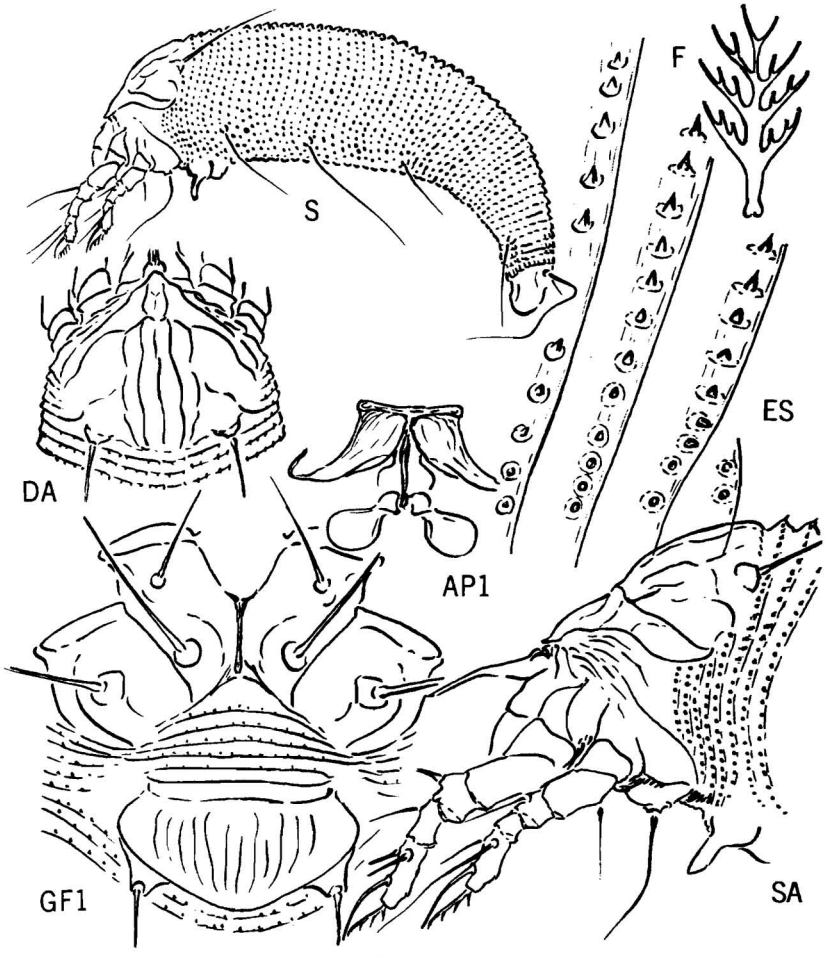


*Plate 7 - Aculus nielseni, new species*

Aculus nielseni, new species

Plate 7

This new species, in common with Aculus nigrus K., has a prominent diagonal line across the side of the shield. It differs by having less distinct tergites, a series of smaller and more pointed microtubercles, and a less prominent anterior shield lobe.

Female 195μ-230μ long, 45μ-50μ thick; robust-fusiform; orange color. Rostrum 26μ long, directed diagonally down; antapical seta 12μ long. Shield 37μ long, 45μ-50μ wide;anterior lobe very small, pointed. Median shield line almost complete, broken; admedian lines subparallel, sinuate, close to median line; a strong diagonal line from admedian line at about 1/5, running laterally to and across lateral lobes; submedian line obscure, branching from lateral line near base and curving caudad to rear margin, converging to end of admedian line; a strong lateral line from side of anterior lobe, curving caudad well above coxae and curving up around end of upper lateral line.Dorsal tubercles large, 32μ apart; dorsal setae strong, 55μ long. Legs with produced empodial sockets.Forelegs 42μ long;tibia 9μ long,with 14μ seta from 1/3; tarsus 12μ long;claw 15μ long, curved, tapering;featherclaw 4-rayed. Hindlegs 36μ long, tibia 6.5μ long,tarsus 11μ long,claw 16μ long.Anterior coxae with strong sternal line at junction; first setiferous coxal tubercles farther apart than second tubercles and slightly ahead of anterior coxal junction;second tubercles ahead of transverse line through third tubercles.Abdomen with 55-60 rings, slightly more numerous ventrally; microtubercles flat, except central short spine, somewhat elongate toward rear. Lateral abdominal seta 23μ long, arising from ring 7 behind shield; first ventral seta 57μ long, on about ring 18; second ventral seta 40μ long, on about ring 34; third ventral seta 22μ long, on ring 5 from rear. Accessory seta long. Female genitalia 26μ wide, 20μ long; coverflap with 12-13 longitudinal ribs; genital seta 23μ long.

Type locality: Monkey Run, Ithaca, New York

Collected: July 16, 1960, by G. R. Nielsen of the New York College of Agriculture, for whom I am naming the species.

Host: Juglans cinerea L. (Juglandaceae) butternut

Relation to host: the mites are vagrants on the undersides of the leaves among the leaf hairs.

Type material: as well as the dry leaves from which the mites were taken there is a type slide and five paratype slides.

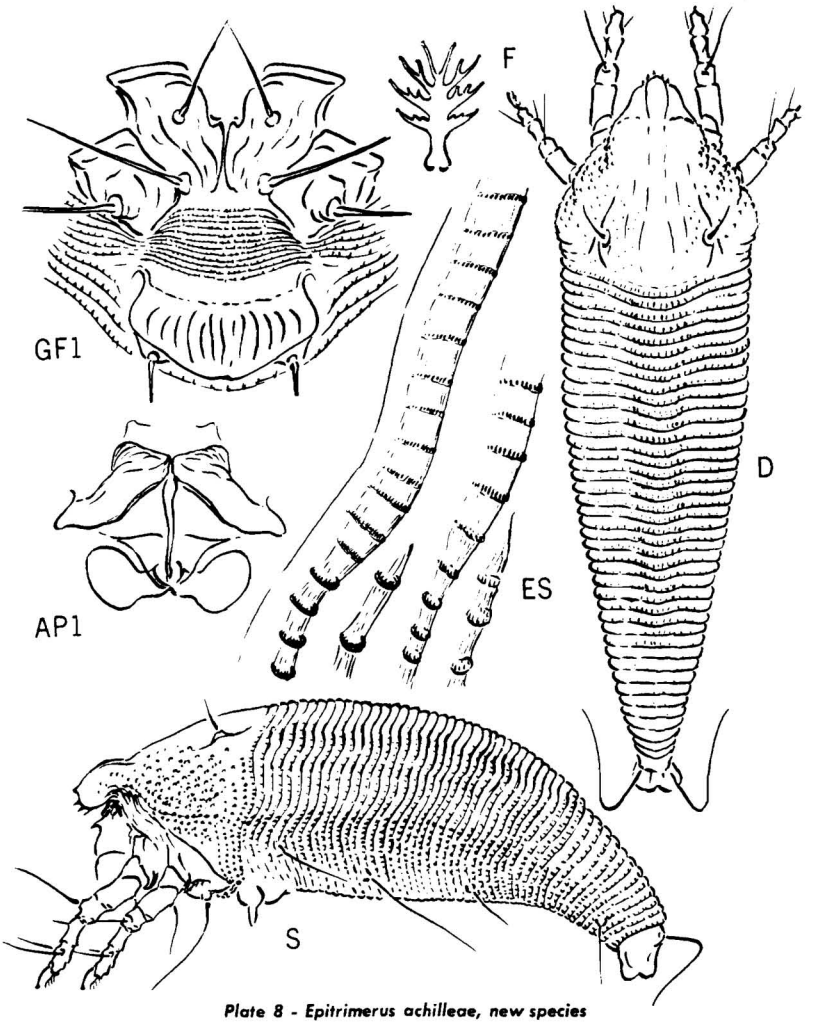


*Plate 8 - Epitrimerus achilleae, new species*

Epitrimerus achilleae, new species

Plate 8

Epitrimerus achilleae is distinguished by the series of fine spines on the apex of the anterior shield lobe. The host is an import and the mite has probably come over from a native plant that is nearly related.

Female 145μ-190μ long, 46μ-56μ wide, 40μ-45μ thick; fusiform; color dull yellowish. Rostrum 26μ long, projecting down; antapical seta 4μ long. Shield 50μ long, 46μ wide, with prominent anterior lobe, somewhat acuminate, and with a series of small spinules on apex of lobe. Shield design obsolete; heavily granulate laterally, with lateral lobes projecting slightly beyond body margin. Dorsal tubercles 23μ-26μ apart, set ahead of rear margin; dorsal setae 10μ long, projecting up. Forelegs 33μ long; tibia 3.5μ long, with seta 6μ long, from 1/3; tarsus 6.5 μ long; claw 6.5μ long, curved, slightly knobbed apically. Hindlegs 31μ long, tibia 6.5μ long, tarsus 7μ long, claw 6μ long. Coxae with curved lines; anterior coxae approximate or connate for average length; first setiferous coxal tubercles ahead of second tubercles and opposite anterior coxal junction. Second coxal tubercles not much ahead of transverse line through third tubercles. Abdomen with about 47 tergites and 65 sternites; with low central longitudinal ridge and weak lateral ridges, one on each side. Central ridge fading about 36 tergites behind shield. Abdomen completely microtuberculate, the microtubercles reaching rear ring margins, the upper elongate, the ventral more rounded. Lateral seta 23μ long, on sternite 7 behind shield; first ventral seta 43μ long, on sternite 20; second ventral 14μ long, on sternite 37; third ventral 18μ long, on sternite 4 from rear. Accessory seta 3μ long. Female genitalia 23μ wide, 13μ long; coverflap with 12-14 longitudinal ribs; genital seta 23μ long.

Type locality: Turkey Hill, Ithaca, New York

Collected: August 26, 1960, by G. R. Nielsen

Host: Achillea millefolium L. (Compositae-Anthemideae) yarrow

Relation to host: the mites are vagrants among the hairs on the highly dissected leaves.

Type material: as well as a type slide and six paratype slides, there are mites in liquid and on dry leaves.

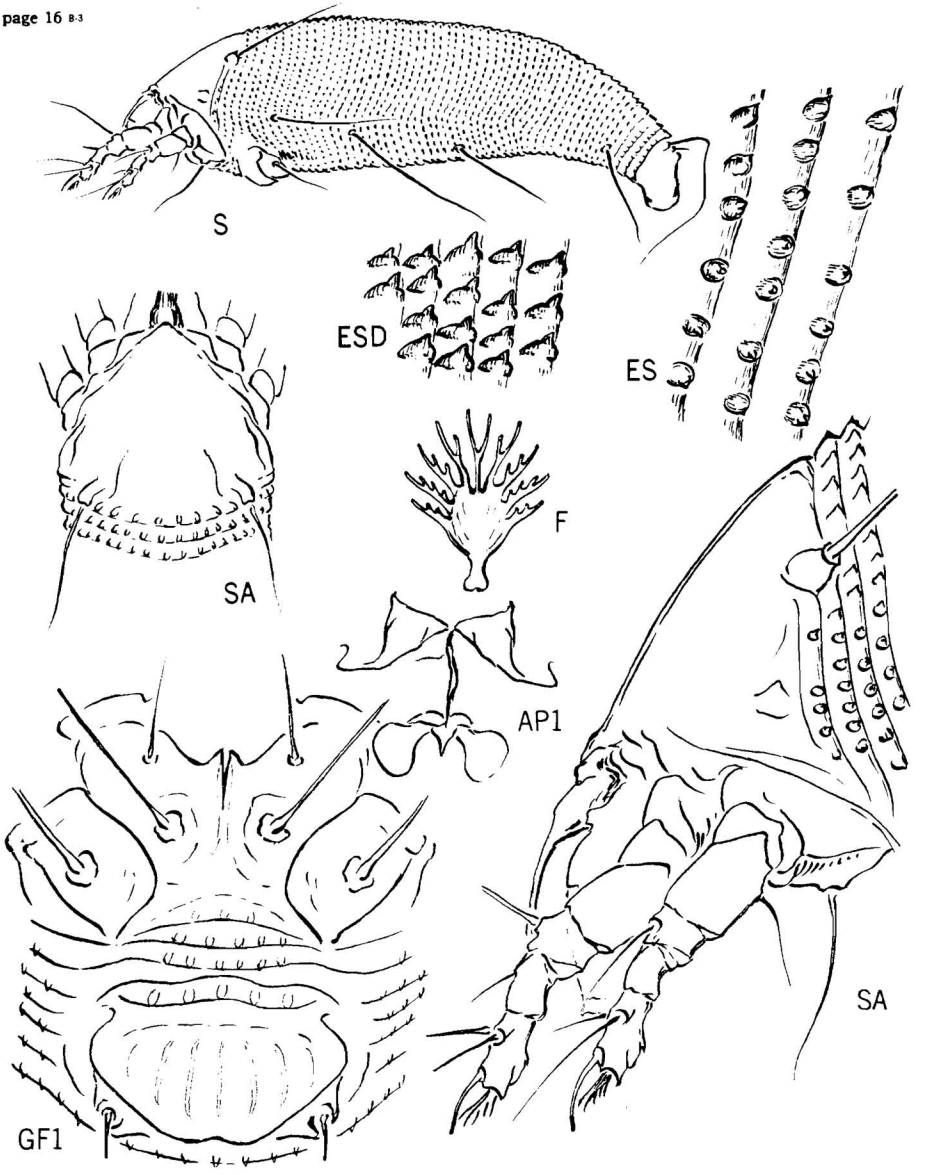


*Plate 9 - Aceria distichli, new species*

Aceria distichli, new species

Plate 9

The palmate featherclaw, with the central elongate stalk from the central emargination, is the most distinctive feature of the species. Other characters are the smooth shield and pointed mcirotubercles.

Female 180μ-200μ long, 60μ thick; wormlike, light yellowish-white. Rostrum 25μ long, curved down. Shield 40μ long, 43μ wide, slightly pointed over rostrum. Design almost obsolete; indication of a short longitudinal line just inside each dorsal tubercle. Sides of shield smooth. Dorsal tubercles 35μ apart; dorsal setae 40μ long, diverging to rear. Forelegs 37μ long; tibia 6μ long, with seta at 1/2; tarsus 8μ long; claw 6μ long, slender, curved down; featherclaw 5-rayed, palmate, the central rays long-stalked from central invagination. Hindlegs 35μ long, tibia 4.5μ long, tarsus 8μ long, claw 7μ long. Coxae with few lines as ornaments; short sternal line between forecoxae. First setiferous coxal tubercles opposite anterior coxal junction, wider apart than second tubercles; second coxal tubercles somewhat ahead of transverse line through third coxal tubercles. Abdomen with about 45-50 rings, completely microtuberculate, the microtubercles produced into short spines. Lateral seta 45μ long, on about ring 6; first ventral seta 60μ long, on ring 15; second ventral 40μ long, on ring 28; third ventral 30μ long, on ring 5 from rear. Accessory seta very small. Female genitalia 25μ wide, 16μ long; coverflap with 6-7 obscure lingitudinal ridges; genital seta 10μ long; internal anterior apodeme broad, shortened centrally.

Type locality: Howard Ranch, Romero Canyon, Merced County, California

Collected: October 31, 1955, by Margaret K. Bellue

Host: Distichlis spicata (L.) (Graminae-Festuceae) salt grass

Relation to host: the mites live in leaf sheaths and between appressed leaves.

Type material: as well as mites on dry grass samples, there is a type slide and nine paratype slides.

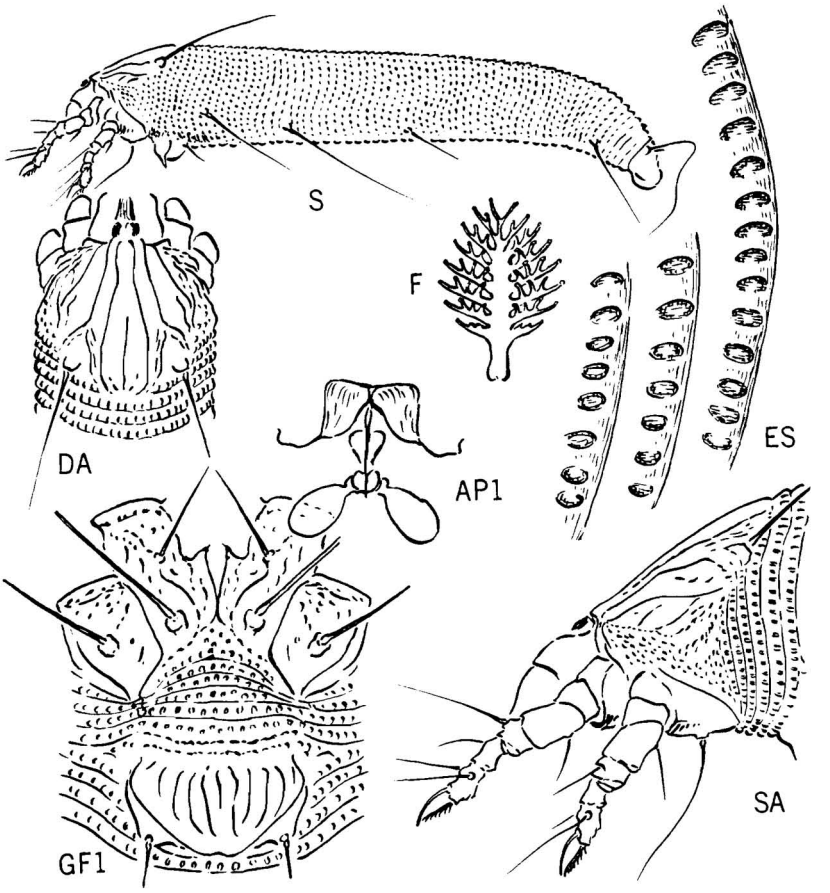


*Plate 10 - Aceria rothi, new species*

Aceria rothi, new species

Plate 10

The new species differs from tradescantiae K. by being more slender, and by having the microtubercles set back from the rear ring margins. From distichli the new species differs in the form of the featherclaw.

Female 180μ-220μ long, 40μ thick; wormlike; light yellowish in color. Rostrum 23μ long, curved down; antapical seta 8μ long. Shield 37μ long, 38μ wide, subsemicircular anteriorly in dorsal view. Shield design of lines: median line present on rear 1/2; admedian lines complete, gradually diverging to rear and converging at rear margin; first submedian line from rostrum base, running back toward dorsal tubercles, forked in front of tubercles; some intersperced short dashes. Side of shield with a prominent longitudinal line and a pattern of granules. Dorsal tubercles 23μ apart; dorsal setae 50μ long, diverging to rear. Forelegs 29μ long; tibia 4.5μ long, with 8μ seta from 1/2; tarsus 5μ long; claw 9μ long, curved down; featherclaw 8-rayed. Hindlegs 27μ long, tibia 4.5μ long, tarsus 6.5μ long, claw 8.5μ long. Coxae with lines and granules; forecoxae contiguous centrally, with lines of granules and strong line from first setiferous tubercles,curving inward around second tubercles; first tubercles opposite anterior coxal junction and a little farther apart than second tubercles; second tubercles a little ahead of transverse line through third tubercles. Abdomen with 65-70 rings, completely microtuberculate, the microtubercles rounded and ahead of rear ring margins. Lateral seta 56μ long, on about ring 8 behind shield; first ventral seta 65μ long, on ring 21;second ventral seta 23μ long, on ring 37; third ventral seta 33μ long, on ring 5 from rear. Accessory seta 4.5μ long. Female genitalia 23μ wide, 16μ long; coverflap with 9-11 longitudinal ribs; genital seta 17μ long.

Type locality: Laguna Hanson, Baja California, at an elevation of about 6000 feet.

Collected: May 30, 1960, by Vincent D. Roth, Farm Advisor of Imperial County, for whom I am naming the species.

Host: Distichlis spicata L. (Graminae-Festuceae) salt grass

Relation to host: the mites live in the terminal sheaths

Type material: as well as a type slide and four paratype slides, there are mites with grass in liquid.

Designations on the Plates

AP1 - internal female genitalia
CS - caudal setae
D - dorsal view of mite
DA - dorsal view of anterior section
ES - lateral surface structures
F - featherclaw
GF1 - female genitalia and coxae
L1 - anterior leg
S - side view of mite
SA - side view of anterior part of mite

The 'B' series of Eriophyid Studies are issued as special publications of the State Bureau of Entomology, California Department of Agriculture. Copies are obtainable by writing to the Bureau, 1220 'N' St., Sacramento 14, California.