

EndNote  
25.8.05

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Reprinted from  
IOWA STATE COLLEGE JOURNAL OF SCIENCE  
Vol. XIII, No. 2, January, 1939, pp. 181-186.

## NEW SPECIES OF PSYLLIDAE FROM THE WESTERN UNITED STATES

L. D. TUTHILL

*From the Department of Zoology and Entomology, Iowa State College*

Received February 3, 1939

In working over the North American Psyllidae several species have been encountered which herein are described as new. They all occur in the western part of the United States, an area in which these insects are especially abundant. I am indebted to Mr. P. W. Oman of the United States National Museum, Dr. R. H. Beamer of the University of Kansas and Mr. Joe Schuh of Oregon State College for assistance and the loan of material. The disposition of the types is indicated after each description.

### *Aphalara cuyama* n. sp.

This extremely small species seems to resemble most the *A. artemesiae* group. Length to tip of folded wing 1.3 mm.

*Color:* General color greenish. Wings white with scattered brown spots.

*Structure:* Vertex with very prominent discal foveae, deeply cleft in front. Clypeus large, prominent. Antennae one and one third times as long as width of head.

*Genitalia:* Caudal lobe of male proctiger not extending beyond forceps, blunt, ventral hooks small. Forceps large, in lateral view flabellate, anterior half of apex excavate; in dorsal aspect both anterior and posterior apical margins incurved as hooks, black margined. Female genital segment quite small, shorter than remainder of abdomen.

*Holotype*, male, *allotype*, female, 2 male paratypes, Cuyama Ranch, California, July 25, 1935, R. H. Beamer.

Types in Snow Collection, University of Kansas, paratype in author's collection.

### *Aphalaroida californica* n. sp.

Resembling *Aphalaroida inermis* but forewings without any glandular hairs, more rhomboidal and with a single brown macula before apex, remainder yellow or white. Length to tip of folded wings 2.00-2.25 mm.

*Color:* General color yellow. Forewings with irregular white areas and broad brown macula across apex.

*Structure:* Vertex smooth and broad. Antennae one fourth longer than width of head. Forewings very broad, flaring, somewhat rhomboidal, twice as long as greatest width.

*Genitalia:* Very similar to *A. pithecolobia*, male forceps broader and black margined apically.

*Holotype*, female, *allotype*, male, Indio, California, Aug. 5, 1935, R. H. Beamer; one female paratype Indio, California, June 29, 1933, R. H. Beamer.

Types in Snow Collection, University of Kansas.

*Calophya oweni* n. sp.

Resembling *Calophya californica* but vertex more rounded, genal cones very short and wings rugose and fumate. Length 2 mm.

*Color:* Head (except genal cones and antennae), thorax including legs (except hind tibiae), and proximal 1/7 of forewings fuscous. Remainder of body yellowish. Forewings with a narrow hyaline area proximal of the black portion.

*Structure:* Vertex evenly rounded downward in front. Genal cones very small, sharp. Forewings rugose and semi-opaque, evenly rounded, pterostigma very large.

*Genitalia:* Male proctiger almost straight-sided in lateral view, not enlarged as in other members of the genus. Forceps broad, enlarged toward apex, notched, anterior portion incurved, black tipped, apex black margined. Female genital segment slightly shorter than remainder of abdomen, valves about equal in length.

*Holotype*, male, *allotype*, female, 13 male and 9 female paratypes, Mesa Verde Park, Colorado, June 30, 1938, L. D. Tuthill, taken on *Phorodendron juniperinum* Engelm.

This species is named in honor of Mr. Truit L. Owen whose interest and assistance made its collection possible.

Types in author's collection, Snow Collection, and United States National Museum.

*Trioza phorodendrae* n. sp.

Resembling *Trioza mexicana* Crawford but vertex rounding more evenly into genal cones, yellow in color, female genital segment shorter. Length to tip of folded wings 2.5 mm.

*Color:* Uniformly yellow except eyes, tip of female genital segment, ovipositor and black margins of male forceps.

*Structure:* Vertex somewhat rounding. Antennae about as long as width of head. Genal cones acute, somewhat divergent, two-thirds as long as vertex, pubescent. Forewings somewhat yellowish, nerves yellow. Apex of hind tibiae with three inner spines.

*Genitalia:* Male proctiger quite broad, anterior margin curved, posterior margin straight. Forceps in lateral aspect curving forward; "folded" so as to appear double in apical half, lateral folds evenly narrowed to apices, medial folds with heavy, black, truncate apices; bearing many very heavy medially projecting setae basally. Female genital segment as long as remainder of abdomen, rounding, produced at apex into a brown styliform portion, at least tip of ovipositor protruding.

*Holotype*, male, *allotype*, female, 7 male and 17 female paratypes, Mesa Verde Park, Colorado, June 30, 1938, L. D. Tuthill.

Taken on *Phorodendron juniperinum* Engelm.

Types and paratypes in author's collection. Paratypes in Snow Collection and United States National Museum.

*Trioza beameri* n. sp.

Resembling *Trioza bakeri* but larger, genal cones longer and extending forward, antennae longer. Length to tip of folded wings 5 mm.

*Color:* The specimens at hand are uniformly whitish yellow except

the eyes and tips of the antennae. This may be due in part at least to fading.

*Structure:* Entire body pubescent, least prominently on abdomen. Vertex plane with two prominent sulcate depressions. Antennae about one and one-third times as long as width of head. Genal cones large, extending forward, three-fourths as long as vertex. Forewings very large, twice as long as body, acute, almost three times as long as broad, first marginal cell larger than second.

*Genitalia:* Male proctiger in lateral aspect broad in basal half, then obliquely truncate to apex. Forceps in lateral view almost straight to apices which are produced posteriorly into blunt black teeth; in caudal view broadest at base, bowed out, evenly narrowed to apices. Female genital segment about as long as remainder of abdomen, valves straight to acute apex, dorsal slightly longer than ventral; very pubescent.

*Holotype*, male, *allotype*, female, 4 male and 5 female paratypes, San Jacinto Mountains, California, July 21, 1929, R. H. Beamer.

This species is named in honor of Dr. R. H. Beamer of the University of Kansas, Department of Entomology.

*Holotype*, *allotype* and paratypes in Snow Collection, University of Kansas. Paratypes in author's collection.

*Trioza forcipula* n. sp.

Resembles *Trioza aylmeriae* but smaller, darker, genitalia distinct. Length to tip of folded wings, 3.0 mm.

*Color:* Dorsum orange-red except center of abdominal tergites, two incomplete lines on thorax, discal foveae and medial suture of vertex and antennae black. Venter black except tips of genal cones and tibiae.

*Structure:* Head wide, almost as wide as thorax. Discal foveae and medial suture of vertex prominent. Genal cones two thirds as long as vertex. Antennae slightly over one and one-fourth times as long as width of head. Forewings a little more than twice as long as wide, rather bluntly angled. Hind tibiae with three inner apical spines.

*Genitalia:* Proctiger of male with very long, upcurved posterior lobes, much as in *T. aylmeriae*, apical tuft of spines much less prominent however. Forceps bent forward and also inward, touching most of their length, apices deeply notched, anterior tooth larger. Female genital segment short, almost globose in lateral aspect, apices of valves black, slightly produced.

*Holotype*, male, *allotype*, female, 4 male and 29 female paratypes, Slumgullion Pass, Colorado, June 29, 1937, L. D. Tuthill; 16 male and 10 female paratypes, same data, collected by R. H. Beamer; 2 male and 2 female paratypes, Pullman, Washington, May.

*Holotype*, *allotype*, and paratypes in author's collection. Paratypes in Snow Collection, University of Kansas, and in United States National Museum.

*Trioza stugma* n. sp.

Resembles *T. viridis* but has short antennae genal cones are much sharper and project downward and the forewings are rounded and have a long Rs vein. Length to tip of folded wings 2.5 mm.

*Color:* General color green. Eyes, antennae, distal portions of leg segments, etc., light fulvous. Forewings slightly infuscated.

*Structure:* Head almost as wide as thorax. Vertex with two prominent foveae, very strongly protruded in front on each side of medial sulcus, overhanging the short genal cones, latter one half as long as vertex. Antennae one and one-fourth times as long as width of head. Thorax not strongly arched. Forewings rounded at apex, two and one-half times as long as wide, venation typical. Hind tibiae with two inner apical spines.

*Genitalia:* Male genitalia small. Proctiger short, somewhat produced caudally. Forceps very short and broad in lateral aspect, apex rounded and bearing a large, medially projecting black pointed tooth. Female genital segment short, valves subequal in length, dorsal one straight, ventral concave dorsally.

*Holotype*, male, *allotype*, female, Placer County, California, September, A. Koebele; 4 male paratypes, same data; one female paratype, Strawberry, California, August 8, 1929, L. D. Anderson.

*Holotype*, *allotype* and paratypes in United States National Museum. Paratypes in Snow Collection, University of Kansas, and in author's collection.

*Trioza occidentalis* n. sp.

This species bears a somewhat superficial resemblance to *T. tripunctata* (*Phyllopecta*) but may readily be distinguished from it by the lack of wing maculation, lack of anteriorly projecting coxal spurs and by the very elongate female genitalia. Length to tip of folded wings 4 mm.

*Color:* The specimens at hand are golden brown, lighter ventrally.

*Structure:* Head narrower than thorax. Vertex quite plane, raised. Antennae not quite twice as long as width of vertex. Genal cones large, thick, conical, two-thirds as long as vertex. Thorax very strongly arched, praescutum almost projecting over pronotum. Forewings broad, blunt, two and one-half times as long as wide; marginal cells small. Hind tibiae with two inner apical spines.

*Genitalia:* Female genital segment two-thirds as long as remainder of abdomen, conical, upcurved.

*Holotype*, female, Marin County, California; one female paratype Kaslo Creek, British Columbia, A. N. Caudell. The type bears a label *Corylus rostrata* Ait. and bears the manuscript name, "*Trioza coryli*."

*Holotype* in United States National Museum, paratype in author's collection.

*Trioza pulla* n. sp.

This species resembles *T. maura* somewhat but differs from it in having much longer, more slender genal cones, longer antennae (almost twice as long as width of vertex) and in the genitalia. Length to tip of folded wings 3.5 mm.

*Color:* Head, thorax, femora and apical half of antennae fuscous. Remainder of legs and antennae pale. Abdomen green. Wings milky. Females lighter, vertex and thoracic dorsum fuscotestaceous.

*Structure:* Head broad. Vertex quite flat for *Trioza*. Antennae long, almost twice as long as width of vertex. Genal cones slender, acute, slightly longer than vertex, projecting downward, straight, not touching at all. Thoracic dorsum not very strongly arched. Hind tibiae with two

inner apical spines. Forewings two and one-half times as long as wide. Genal cones, legs and genitalia very pubescent.

*Genitalia:* Male genitalia small. Proctiger with a long blunt caudal lobe. Forceps quite broad at base, sharply narrowed midway then tapering to truncate apex with a small anterior tooth. Female genital segment about one-third as long as remainder of abdomen, dorsal valve rounding down to acute black apex, ventral valve shorter.

*Holotype*, male, Sumner Washington, July 6, 1935, P. W. Oman; one male paratype, same data; *allotype*, female, Vernonia, Oregon, April 21, 1936, K. Gray; 5 male and 5 female paratypes, same data.

Holotype and paratype in United State National Museum, allotype and paratypes in Oregon State College Collection, paratypes in author's collection.

*Trioza inversa* n. sp.

Resembles *T. frontalis* but much darker in color and male genitalia distinct. Length to tip of folded wings 3.0 mm.

*Color:* General color of dorsum ferruginous with a pair of fuscous markings on vertex, a pair on scutum, another pair on scutellum. Venter, femora and antennae fuscous, remainder fulvous. Wings hyaline.

*Structure:* Head broad, almost as wide as thorax. Antennae one and one-third times as long as width of head. Genal cones long, quite sharp, projecting downward, four-fifths as long as vertex. Forewings only slightly angulate, almost three times as long as wide. Hind tibiae with three inner apical spines.

*Genitalia:* Proctiger with a basal caudal projection, apex very narrow. Forceps in lateral aspect large at base, narrowed to spatulate apices; in caudal aspect broad at base, laterally concave to apices, touching most of their length. Female genital segment about half as long as remainder of abdomen, acute, dorsal valve slightly longer than ventral.

*Holotype*, male, *allotype*, female, 7 male and 9 female paratypes, Slumgullion Pass, Colorado, June 29, 1937, L. D. Tuthill; 4 male and one female paratype same locality and dates, R. H. Beamer; one male and one female paratype, Logan Canyon, Utah, May 16, 1934, T. O. Thatcher; 2 male and one female paratype, Bear Lake, British Columbia, July 20-29, 1903, R. P. Currie.

Holotype, allotype and paratypes in author's collection. Paratypes in Snow Collection, University of Kansas, and in United States National Museum.

*Trioza rubra* n. sp.

Length to tip of folded wings 3.75 mm.

*Color:* The color varies through shades of red to almost black, the males being darker in general. The distal parts of the legs lighter. Antennae white except distal third black.

*Structure:* Vertex plane, medial sulcus prominent, bulging in front. Antennae almost twice as long as width of vertex, basal portion somewhat swollen. Genal cones large, divergent, blunt, two-thirds as long as vertex. Forewings rather bluntly angled, almost three times as long as wide. Hind tibiae with two inner apical spines.

*Genitalia*: Male proctiger with two caudally projecting rather sharp lobes, surrounding forceps. Forceps large at base, tapering to long slender black-tipped apices, curving forward throughout their length. Female genital segment short, about one-third as long as remainder of abdomen, dorsal valve slightly longer than ventral, dorsal valve somewhat concave, black apically.

*Holotype*, female, Creede, Colorado, July 9, 1937, L. D. Tuthill; *allotype*, male, Creede, Colorado, July 12, 1938, L. D. Tuthill. Paratypes as follows: 3 females same data as holotype; 4 females, Creede, Colorado, July 8, 1937, L. D. Tuthill; 2 females, Creede, Colorado, July 12, 1938, L. D. Tuthill; 2 males and 2 females, Silver City, New Mexico, July 22-23, 1936, R. H. Beamer; one male, Grand Canyon, Arizona, Aug. 11, 1927, R. H. Beamer; one male, Sun Pass, Oregon, July 1, 1935, R. H. Beamer; 2 females, Colorado, C. F. Baker.

Holotype, allotype and paratypes in author's collection. Paratypes in Snow Collection, University of Kansas, and United States National Museum.

*Psylla phorodendrae* n. sp.

This is a very stout species. Length to tip of folded wings 3 mm.

*Color*: Green, forewings olive green.

*Structure*: Head very broad, wider than thorax. Antennae about twice as long as width of head. Eyes borne on prominent stalk-like area of head. Genal cones short, not as long as broad, rather blunt. Thorax very broad. Wings twice as long as wide, pterostigma large.

*Genitalia*: Male proctiger narrow in lateral aspect, straight. Forceps very slender in lateral view, base somewhat enlarged, remainder bent forward, apices blunt, postero-apical margins sharp, black margined; in caudal aspect bowed out, apices touching, a large mesally projecting, black tipped tooth near base. Female genital segment short, about one-half as long as remainder of abdomen, dorsal valve elongate hood shaped, ventral valve very short with a large median, transparent truncate tooth.

*Holotype*, female, *allotype*, male, 15 female and 6 male paratypes, Huachuca Mountains, Arizona, July 18, 1938, R. H. Beamer; 2 female and 2 male paratypes, Los Angeles County, California, May, A. Koebele. The Arizona specimens were taken on mistletoe on oak, the California specimens bear the label *Phorodendron pubescens*, the latter are accompanied by several nymphs.

Holotype, allotype and paratypes in Snow Collection, University of Kansas; paratypes in United States National Museum and author's collection.