

A Taxonomic Study of the Mealybug Genus *Stemmatomerinx* (Homoptera: Coccoidea: Pseudococcidae)¹

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ABSTRACT

Five species of *Stemmatomerinx* Ferris are treated in this study including 4 new species: *acirula*, *adenticulata*, *aristida*, and *beshearae*. Descriptions and illustrations are provided for adult females of all species, for the 2nd

and 3rd instar female of *adenticulata*, and for the 2nd instar male and female and the 3rd instar female of *beshearae*. A key to the species is given.

This paper is the 1st in a series aimed at the eventual revision of the Pseudococcidae of the United States. Because of the large number of systematically difficult taxa in the Pseudococcidae and because 10–20 yr would be required to complete a revision of the U.S. mealybug fauna, we intend to publish the results of our studies as a series of generic revisions. This method has the advantage of making our results available to other coccidologists with the shortest possible delay.

Stemmatomerinx Ferris is 1 of the most unusual mealybug genera in the U.S. It is unique in having characteristic large-sized setae with basally fused trilocular pores.

Prior to this paper, *Stemmatomerinx* was monobasic and was known only from the warm areas of the western United States. However, the description of 4 new species from the East indicates that the genus is predominantly an eastern group. Members of *Stemmatomerinx* are restricted to grasses, where they presumably occur on grass blades.

Measurements given in species descriptions are based on all available specimens and are in microns unless otherwise indicated. The numbers in parentheses are averages rounded off to the nearest whole number.

It is difficult to define the term "cerarius" in this genus because of the large amount of structural variation in the cerarii in some species. Frequently the typical pseudococcid, bisetose cerarius is replaced by a single truncate seta. For the purposes of this paper, this unisetose structure is referred to as a cerarius when it is positioned where a cerarius normally occurs on other mealybugs.

Depositories of specimens mentioned in the "Specimens Examined" sections are abbreviated as follows: British Museum (Natural History), London (BM); California State Department of Agriculture, Sacramento (CDA); University of California, Davis (UCD); University of Georgia, Experiment (UG); U.S. National Museum of Natural History, Washington, D. C. (USNM).

Additional abbreviations are: Ad.=adult; H=holotype; L=lectotype; P=paratype; PL=paralectotype.

Stemmatomerinx FERRIS

Type-species.—*Stemmatomerinx decorata* Ferris, 1950:245 by original designation and monotypy.

Stemmatomerinx Ferris, 1950: 245; 1953: 282; McKenzie, 1960: 690; 1962: 638; 1967: 453; Morrison and Morrison, 1966: 188.

Etymology.—The generic name is feminine and is derived from the Greek *stemma* meaning "one who wears a wreath or crown" and *merinx* meaning "bristle or seta."

Diagnosis of Adult Female.—Characterized by having many large, dorsal truncate setae with several trilocular pores fused to base.

Cerarii present, sometimes in reduced numbers. With large truncate and smaller conical setae on dorsum; truncate setae arranged in longitudinal lines. Trilocular, multilocular, and discoidal pores present; quinelocular pores restricted to venter. Oral-collar tubular ducts present on both body surfaces. Ventral anal-lobe area unsclerotized. Circulus and ostioles present or absent. Hind tibiae with translucent pores on dorsal surface; tarsal digitules acute; claw digitules apically capitate; claw with denticle on all but 1 species. Antennae with 6–9 segments, normally with 6 or 9.

Notes.—The unusual form of the large-sized dorsal setae immediately separates *Stemmatomerinx* from all other known genera. The presence of ventral quinelocular pores, a denticle on the claw (absent from one species), and dorsal conical setae places this genus in the tribe Phenacocini.

Species variation in the number of ostioles, in the presence or absence of the claw denticle, and in the number of antennal segments suggest the possibility of more than 1 genus within this group of species. However, until adult males and more immatures can be examined, it would be premature in trying to describe additional generic segregates.

KEY TO ADULT FEMALE OF *Stemmatomerinx*

1. Most cerarii with 1 truncate seta (without stout setae) 2
- Most cerarii with more than 1 truncate or stout seta 3
- 2(1). Oral-collar tubular ducts surrounded by cluster of multilocular pores
.....*beshearae* Howell and Miller, n. sp.
- Oral-collar tubular ducts not surrounded by

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- multilocular pores
*aristida* Howell and Miller, n. sp.
- 3(1). Multilocular pores absent from dorsum; dorsal oral-collar tubular ducts restricted to medial and submarginal areas, absent mediolaterally; claw without denticle
*adenticulata* Howell and Miller, n. sp.
- Multilocular pores present on dorsum; dorsal oral-collar tubular ducts scattered over surface; claw with denticle 4
- 4(3). Circulus and ostioles present; abdomen with 2 pairs of longitudinal lines of truncate setae excluding those in cerarii*decorata* Ferris
- Circulus and ostioles absent; abdomen with 3 pairs of longitudinal lines of truncate setae excluding those in cerarii
*acircula* Howell and Miller, n. sp.

Stemmatomerinx acircula

HOWELL AND MILLER, N. SP.

Etymology.—The epithet *acircula* is derived from the Latin *circulus* meaning "circle" and refers to the lack of a circulus on this species.

Holotype Data.—Holotype adult female (middle specimen of 3 on slide), with right side label "Stemmatomerinx acircula Howell and Miller, Holotype, Paratypes", left label "Stemmatomerinx sp., on grass, Miami, Fla., 10/11/56, John E. Porter, Camp. 5215761, 57-0128" (USNM).

Specimens Examined.—Same data as above (H. ad ♀ USNM, 2 P. ad ♀ USNM).

Field Features.—No information.

ADULT FEMALE (4TH INSTAR)

(Fig. 1)

Recognition Characters.—Holotype, mounted, 3.3 mm long [paratypes 3.7 and 4.5 (4.1)], 1.3 mm wide [paratypes 1.6 and 1.9 (1.8)]. Body elongate, anal lobes not protruding.

Dorsum with 14 cerarii on one half and 15 on the other [paratypes 14–16 (15)] and with 2 pairs on posteromedial part of abdomen (paratypes with 2 and 3). Anal-lobe cerarii each with 6 large truncate setae with associated basal trilocular pores, 0–1 smaller conical setae, 6–8 discoidal pores, and area of basal sclerotization. Remaining cerarii with 2–9 truncate setae [paratypes 2–10 (4)], with or without small conical setae, normally with a few discoidal pores, and with small area of basal sclerotization; frontal cerarii each with 9 or 10 truncate setae [paratypes 5–10 (7)]. Truncate setae in transverse rows over surface, arranged on abdomen to form 3 pairs of longitudinal lines excluding cerarian clusters; truncate setae, including cerarian setae, with 1–12 (6) associated trilocular pores forming a wreath around setal base; segment V with 15 truncate setae (paratypes 13 and 14). Small conical setae scattered over surface, occasionally with 1 or 2 associated trilocular pores. Trilocular pores abundant over surface; discoidal pores few. Multilocular pores abundant over surface, except few on head. Oral-collar tubular ducts abundant on surface, of 2 sizes, smaller size most abundant. Ostioles absent.

Anal ring apical, with 4 rows of pores; setae ca. 2 times longer than greatest diameter of ring.

Venter with an occasional marginal seta, without associated trilocular pores. Multilocular pores restricted to abdomen and lateral areas of thorax and head. Quinquelocular pores scattered over surface. Trilocular pores in marginal areas only; discoidal pores in small numbers over surface. Oral-collar tubular ducts of same 2 sizes as on dorsum: larger size restricted to marginal areas; smaller size scattered over surface. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe broken on all available specimens.

Circulus absent. Legs with 15 and 20 [paratypes 12–29 (20)] small translucent pores on dorsal surface of each hind tibia; hind tibia/tarsus ratio 2.3 [paratypes 2.1–2.2 (2.1)]; hind tibia + tarsus length 305 [paratypes 281–293 (287)]; tarsal digitules acute; claw digitules capitate; claw with conspicuous denticle. Antennae 8-segmented, 1 with 8th segment partially divided, other with 4th segment partially divided, 311 and 329 long [paratypes 299–311 (302)].

Variation.—The ventral multilocular pores may be absent from the head; of the 4 antennae on the 2 paratypes, 3 are 8-segmented, 1 is 9-segmented.

Notes.—This species is most closely related to *S. decorata* but differs in having no circulus, no ostioles, 3 rather than 2 pairs of longitudinal lines of truncate setae on abdomen, and shorter antennae.

Stemmatomerinx adenticulata

HOWELL AND MILLER, N. SP.

Etymology.—The epithet *adenticulata*, derived from the Latin *denticulus*, refers to the lack of a claw denticle on members of this species.

Holotype Data.—Holotype adult female, No. HHT-272-73A, On *Panicum* sp., GA, Irwin Co., near entrance gate to Crystal Lake, off Highway 32, XI-27-73, Coll. R. Beshear (USNM).

Specimens Examined.—On *Panicum* sp.: No. HHT-272-73A (Holotype data, see above). No. JOH-06-75, from Holotype locality, II-13-75 (6 P. ad ♀, 2 3rd ♀, 1 2nd ♀: USNM, UG). No. HHT-26-74, GA, Dekalb Co., on Highway 155, south side of South River, near Panola Mountain, II-5-74 (1 P. ad ♀ UG). No. HHT-24-73A/GA., Echols Co., ca. 8 mi W of Fargo, off Highway 94, II-17-73 (1 P. ad ♀ USNM).

Field Features.—One specimen collected directly from the host was a light whitish pink, but turned pale green when dropped into 70% ethanol. Other specimens were recovered from Berlese samples of the host material.

ADULT FEMALE (4TH INSTAR)

(Fig. 2)

Recognition Characters.—Holotype, mounted, 2.0 [paratypes 1.7–2.3 (2.3)] mm long, 1.1 [paratypes 0.9–1.4 (1.1)] mm wide. Body elongate oval, anal lobes protruding.

Dorsum with 17 pairs of cerarii [paratypes 16–17

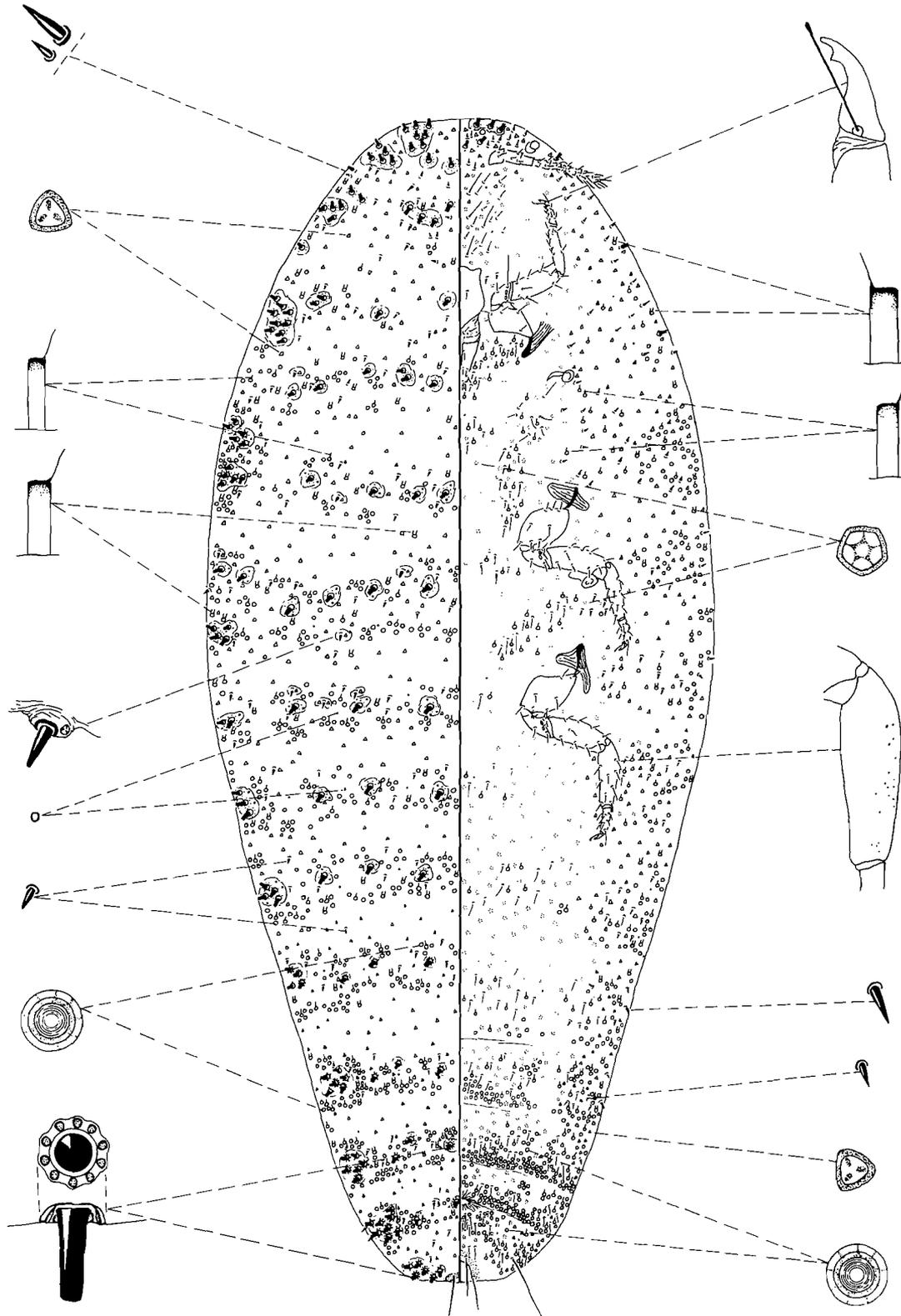


FIG. 1.—*S. acircula*, n. sp., adult female.

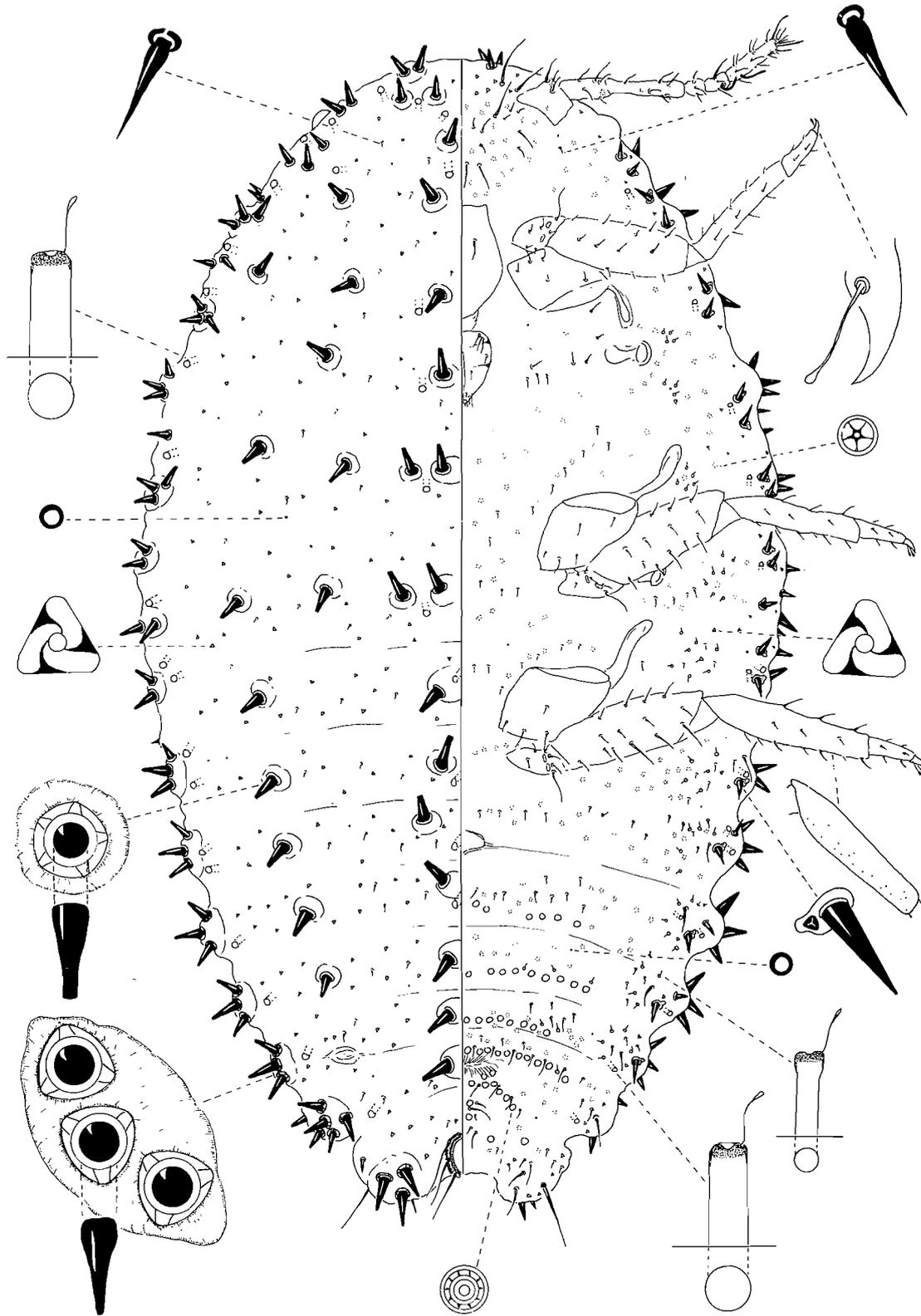


FIG. 2.—*S. adenticulata*, n. sp., adult female.

(17)]; medial cerarii on segments 5-8 with 2 stout truncate setae, a few discoidal pores, and a small area of basal sclerotization. Anal-lobe cerarii each with 3-4 stout setae with associated basal trilobular pores, 4-6 smaller conical setae, and area of basal sclerotization; stout cerarian setae slightly more rounded apically than stout truncate setae on rest of dorsum. Remaining marginal cerarii with 2-3 [paratypes 2-5 (3)] stout setae, usually without small conical setae, normally with a few discoidal pores, and with a small area of basal sclerotization; frontal cerarii each with 2 large setae. Truncate setae form 2 pairs of longitudinal lines on abdomen and 3 pairs on cephalothorax; 1 pair of middorsal lines partially formed by medial cerarii; on cephalothorax, medial setae occasionally doubled and each with an area of basal sclerotization. Truncate setae, including cerarian setae, with 1-4 [paratypes 1-5 (3)] associated trilobular pores forming a wreath around setal base. Segment V with 10 truncate setae [paratypes 9-11 (10)]. Small setae of various sizes scattered over surface. Trilobular pores numerous; discoidal pores few, both evenly arranged. Multilobular pores absent. Oral-collar tubular ducts all approaching 1 size, in a submarginal line, with 1 or 2 near each cerarius, with 1 or 2 medially on each of segments II-V, and usually with 2 medially near each large medial truncate seta on cephalothorax. Ostioles represented by posterior pair only.

Anal ring apical with 3 rows of pores; setae ca. 2 times longer than greatest diameter of ring.

Venter with a marginal row of stout, conical setae smaller than those on dorsum, present around body except for last 2 abdominal segments; base of each of these setae with 1 associated trilobular pore. Multilobular pores restricted to abdomen. Quinquelobular pores scattered over surface. Trilobular pores restricted to marginal areas; discoidal pores few and scattered. Oral-collar tubular ducts of 2 sizes: larger size restricted to marginal areas, absent from head and anal lobes; smaller size in submarginal clusters on abdomen and thorax. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe ca. 148 long.

Circulus present. Legs with 72 and 85 [paratypes 52-78 (64)] translucent pores on dorsal surface of each hind tibia; hind tibia/tarsus ratio 3.3 [paratypes 2.6-3.2 (3.0)]; hind tibia + tarsus 400 long (paratypes 370-403); tarsal digitules acute; claw digitules capitate; claw without denticle. Antenna usually 6-segmented (one paratype with 5 segments on one side), 448 and 453 [paratypes 389-437 (422)] long.

Notes.—*S. adenticulata* is unlike other *Stemmatomerinx* species in having no dorsal multilobular pores, and no denticle on the claw.

THIRD INSTAR FEMALE

(Fig. 3)

Recognition Characters.—Mounted, 0.9 mm long, 0.6 mm wide. Body oval, anal lobes protruding.

Dorsum with 17 pairs of cerarii; medial cerarii present along midline of body. Anal-lobe cerarii

each with 3 stout setae with 1 or 2 associated basal trilobular pores, 2 small conical setae, 1 discoidal pore, and area of basal sclerotization; stout cerarian setae slightly more rounded apically than stout truncate setae on remainder of dorsum. Remaining marginal cerarii with 2-4 (3) stout setae, often with discoidal pore and small area of basal sclerotization; frontal cerarii each with 2 stout setae. Truncate setae arranged in same pattern as on adult female. Truncate setae, including cerarian setae, with 0-3 (1) associated trilobular pores forming wreath around each seta base. Segment V with 10 truncate setae. Small conical setae of various sizes scattered over surface. Trilobular pores scattered over surface. Discoidal pores normally associated with truncate setae. Multilobular pores and oral-collar tubular ducts absent. Ostioles represented by posterior pair only.

Anal ring same as on adult female.

Venter with only 1 or 2 stout conical setae along body margin, without associated basal trilobular pores. Multilobular pores absent. Quinquelobular pores scattered over surface. Trilobular pores lateral; discoidal pores scattered. Tubular ducts absent. Anal-lobe area unsclerotized; longest seta associated with anal lobe ca. 150 long.

Circulus present. Legs without translucent pores; hind tibia/tarsus ratio 1.7 and 1.6; hind tibia + tarsus ca. 234; tarsal digitules acute; claw digitules capitate; claw without denticle. Antennae 6-segmented, 288 long.

Note.—The above description is based on 1 specimen.

SECOND INSTAR FEMALE

(Fig. 4)

Recognition Characters.—Mounted 0.8 mm long, 0.5 mm wide. Body elongate oval, anal lobes slightly protruding.

Dorsum with ca. 4 pairs of cerarii becoming less distinct anteriorly. Anal lobe cerarii each with 3 conical setae, 2 trilobular pores, 1 discoidal pore, and a large area of basal sclerotization. Other cerarii with 2 conical setae, 1 trilobular pore, and a small area of basal sclerotization. Additional conical setae arranged in 2 pairs of longitudinal lines, each of these setae usually with an associated trilobular pore. Smaller pointed setae interspersed in the rows of large conical setae, other setae of various sizes scattered over surface. Segment V with 7 conical setae. Trilobular pores numerous over surface; discoidal pores few, scattered, more common mesolaterally. Oral-collar tubular ducts absent. Ostioles represented by posterior pair only.

Anal ring apical, with 3 rows of pores; each of its 6 setae ca. 1½ times as long as greatest diameter of ring.

Venter without stout marginal setae. Multilobular pores absent. Quinquelobular pores scattered over abdominal segments, usually restricted to lateral and mediolateral areas on thoracic segments, and scattered over derm of head. Trilobular pores restricted to lateral areas; discoidal pores scattered over sur-

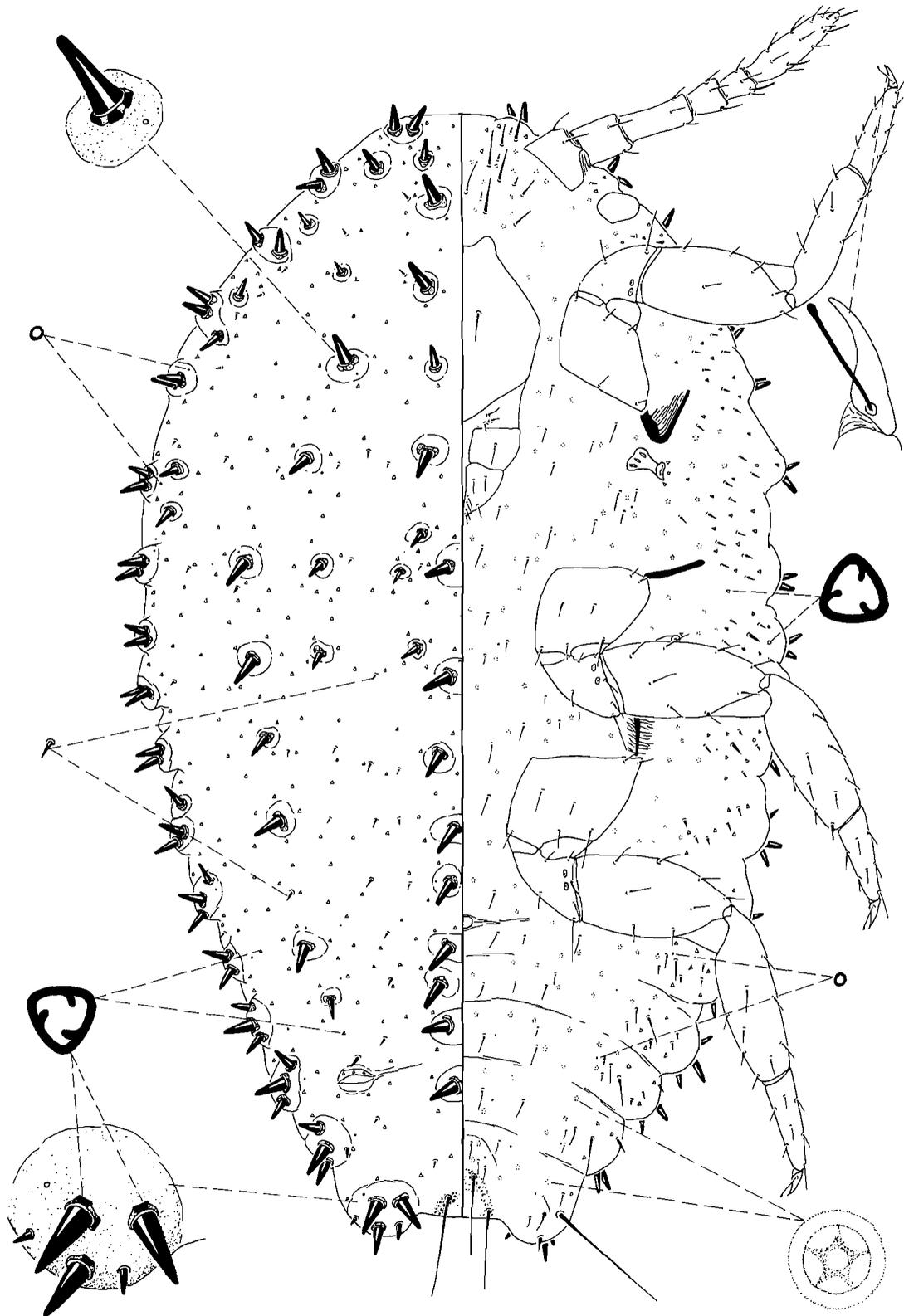


FIG. 3.—*S. adenticulata*, 3rd instar female.

face. Oral-collar tubular ducts absent. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe 126 long.

Circulus absent. Legs without translucent pores; hind tibia/tarsus ratio 1.3 and 1.3; hind tibia + tarsus ca. 171; tarsal digitules acute; claw digitules slightly capitate; claw without a denticle. Antennae 6-segmented, 241 long.

Notes.—The above description is based on 1 specimen. The 2nd instar female is easily distinguished from the 3rd instar female in having fewer dorsal conical setae and fewer cerarii.

Stemmatomerinx aristida

HOWELL AND MILLER, N.SP.

Etymology.—The epithet *aristida* is derived from the association of this species with the wiregrass genus *Aristida*.

Holotype Data.—Holotype adult female, No. HHT-137-74B, on *Aristida* sp., GA, Irwin Co., near entrance gate to Crystal Lake, off Highway 32, VII-9-74, Coll. R. Beshear (USNM).

Specimens Examined.—On *Aristida* sp.: Same data as above, Nos. HHT-137-74A-C (H. ad. ♀, 2 p. ad. ♀ USNM and UG). No. HHT-100-74, FL, Levy Co., off Highway 24, ca. 5 mi W of Archer, VI-4-74 (1 P. ad. ♀ UG). On unidentified grass: No. HHT-144-74, GA, Richmond Co., off Highway 278, east of Harlem near Ft. Gordon Military Res., VII-23-74 (1 P. ad. ♀ BM).

Field Features.—Adult females are easily seen on the leaves of the host. The ovisac is elongate, with the adult female protruding from the anterior portion. A number of empty ovisacs were found in the field, indicating that the adult female leaves the ovisac and drops off the host after the eggs are deposited.

ADULT FEMALE (4TH INSTAR)

(Fig. 5)

Recognition Characters.—Holotype, mounted, 4.2 mm [paratypes 3.2–4.1 (3.7)] long, 2.0 mm [paratypes 1.4–1.9 (1.6)] wide. Body elongate oval, anal lobes only slightly protruding.

Dorsum with 14 or 15 pairs of cerarii. Anal-lobe and penultimate cerarii each with 2 truncate setae; other cerarii each with 1 truncate seta except for cerarii on head which may have 2 or 3 truncate setae. Truncate setae also present in 2 pairs of longitudinal lines, excluding cephalic clusters. Truncate setae, including cerarian setae, with 3–6 [paratypes 3–8 (5)] associated trilocular pores forming a wreath around setal base. Segment V with 5 truncate setae [paratypes with 4–5 (5)]. Small conical setae scattered over surface, most numerous on abdomen, with 1 or 2 associated trilocular pores. Other smaller setae scattered over surface. Trilocular pores numerous and fairly evenly distributed; discoidal pores rare, usually found posteriorly. Multilocular pores in transverse rows on each abdominal segment, and on cephalothorax. Oral-collar tubular ducts numerous over surface, of 2 sizes, larger size most abundant.

Ostioles present, anterior pair unusually close to body margin.

Anal ring dorsal, touching apex of abdomen, with 3 rows of pores; seta ca. 1.5–2 times longer than greatest diameter of ring.

Venter with 1 small conical seta near each lateral margin of most abdominal and thoracic segments, normally with 1 associated trilocular pore. Multilocular pores arranged in transverse rows on each thoracic and abdominal segment. Quinquelocular pores numerous medially. Trilocular pores scattered over surface; discoidal pores rare. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe 140 long. (Holotype with tips of elongate anal-lobe setae broken. One paratype with seta 154 long.)

Circulus present. Legs with 51 and 55 [paratypes 17–54 (37)] translucent pores on dorsal surface of each hind tibia; hind tibia/tarsus ratio 2.7 [paratypes 2.6–2.8 (2.7)]; hind tibia + tarsus 414 [paratypes 386–420 (404)] long; tarsal digitules acute; claw digitules capitate; claw with prominent denticle. Antenna 6-segmented, 412 and 434 [paratypes 384–434 (412)] long.

Variation.—The paratype from Richmond Co., GA has more trilocular pores associated with the base of the large truncate setae, and the antennae are 7- and 8-segmented. One paratype from Irwin Co., GA has 3 posterior cerarii on $\frac{1}{2}$ of the body with 2 truncate setae.

Notes.—*S. aristida* is distinguished from all other *Stemmatomerinx* species except *S. beshearae* in having most cerarii with only 1 truncate seta. *S. aristida* differs from *S. beshearae* in lacking the clusters of multilocular pores which surround the oral-collar tubular ducts.

Stemmatomerinx beshearae

HOWELL AND MILLER, N. SP.

Etymology.—This species is named in honor of Ramona J. Beshear, whose avid collecting has resulted in the discovery of numerous coccoid species including 3 described in this paper.

Holotype Data.—Holotype adult female, No. HHT-217-73. On *Panicum* sp., Chattooga Co., GA, off highway 68, ca. 6 mi E of Menlo, IX-13-73, Coll. R. Beshear (USNM).

Specimens Examined.—On *Panicum* sp.: Same data as above (H. ad. ♀ USNM; 3 P. ad. ♀ USNM and UG; 3 P. 2nd ♂ USNM and UG; 1 P. 2nd ♀ USNM). HHT-272-73, Irwin Co., Crystal Lake, XI-27-73 (1 P. 3rd ♀ USNM). On unidentified grass: HHT-172-74A-B, VIII-15-74, locality same as for holotype (2 P. 2nd ♀ USNM and UG). HHT-203-73, Jasper Co., IX-5-73 (1 P. 2nd ♂ UG).

Field Features.—Only specimens recovered from Berlese samples of host material were available.

ADULT FEMALE (4TH INSTAR)

(Fig. 6)

Recognition Characters.—Holotype, mounted, 1.5 mm long [paratypes 1.4 and 1.5 (1.4)], 0.7 mm wide

(paratypes 0.7). Body elongate oval, anal lobes protruding.

Dorsum with ca. 15 pairs of cerarii, each composed of 1 truncate seta and several basal trilocular pores. Truncate setae also in 2 pairs of irregular longitudinal lines. Truncate setae, including cerarian setae, with 4-8 [paratypes 4-9 (5)] associated trilocular pores forming a wreath around setal base. Segment V with 3 truncate setae (paratypes each with 5). Small conical setae most abundant on abdomen, with 1 or 2 associated trilocular pores. Additional setae most abundant on abdomen, scattered over surface. Trilocular pores numerous, scattered over surface; discoidal pores few and evenly arranged. Multilocular pores usually arranged in clusters of 2-7 (4), with a single oral-collar tubular duct present in the center of each cluster. Oral-collar tubular ducts primarily of 1 size, though somewhat variable. Ostioles present.

Anal ring dorsal, touching apex of abdomen, with 2 rows of pores; setae ca. 1.5 times longer than greatest diameter of ring.

Venter with a few stout, marginal setae near lateral margin of thorax, normally with 1 associated trilocular pore. Multilocular pores arranged in transverse rows on each of posterior 6 abdominal segments; on cephalothorax these pores usually arranged in clusters of 2-4 with single oral-collar tubular duct in the center of each cluster; these ducts smaller than those on dorsum. Oral-collar tubular ducts of abdomen present in transverse rows along anterior margin of multilocular pore bands and on anal lobes. Quinquelocular pores numerous on medial and mesolateral areas of cephalothorax, and in smaller numbers medially on abdomen. Trilocular pores scattered over surface; discoidal pores few and evenly distributed. Ventral anal-lobe area unsclerotized, longest seta associated with anal lobe 126 long [paratypes 109-126 (118)].

Circulus present. Legs with 18 and 20 translucent pores [paratypes 23-30 (27)] on dorsal surface of each hind tibia; hind tibia/tarsus ratio 2.1 [paratypes 2.1-2.7 (2.4)]; hind tibia + tarsus 311 [paratypes 297-328 (313)] long; tarsal digitules acute; claw digitules capitate; claw with noticeable denticle. Antenna 6-segmented, 375 and 384 long [paratypes 336-378 (359)].

Notes.—The above description is based on 4 specimens from 1 locality.

In general appearance, *S. beshearae* resembles *S. decorata* but can be easily separated from *decorata* and all other species in the genus by the presence of clusters of multilocular pores around the oral-collar tubular ducts, a character previously thought to be unique to *Peliococcus*.

THIRD INSTAR FEMALE

(Fig. 7)

Recognition Characters.—Mounted, 1.2 mm long, 1.5 mm wide. Body elongate, tapering slightly posteriorly, anal lobes slightly protruding.

Dorsum with cerarii becoming less obvious ante-

riorly; anal-lobe pair each with 4 conical setae, 1 large truncate seta, ca. 4 trilocular pores (excluding those around setal bases), ca. 4 discoidal pores, and an area of basal sclerotization. Other cerarii indefinite, normally composed of a single truncate seta and 1 conical seta. Truncate setae also in 2 pairs of longitudinal lines excluding anterior clusters. Truncate setae, including cerarian setae, with 2-6 (4) associated trilocular pores forming a wreath around setal base. Segment V with 5 truncate setae. Small conical setae with 1-2 associated trilocular pores. Additional setae of various sizes scattered over surface. Trilocular pores numerous; discoidal pores few, scattered over surface. Oral-collar tubular ducts absent. Ostioles present.

Anal ring apical, with 2 rows of pores; setae ca. 1.6 times longer than greatest diameter of ring.

Venter without stout marginal setae. Multilocular pores absent. Quinquelocular pores most numerous medially, also lightly scattered over rest of surface. Trilocular pores restricted to lateral and sublateral areas; discoidal pores scattered over surface. Oral-collar tubular ducts absent. Ventral anal-lobe area unsclerotized, longest seta associated with anal lobe 115 long.

Circulus present. Legs without translucent pores; hind tibia/tarsus ratio 1.5 and 1.6; hind tibia + tarsus length ca. 258 long; tarsal digitules acute; claw digitules capitate; claw with prominent denticle. Antennae 6-segmented, each ca. 325 long.

Notes.—The above description is based on 1 specimen.

The 3rd instar female is similar in general appearance to the adult, but lacks multilocular pores, oral-collar tubular ducts, and translucent pores on the hind tibia.

SECOND INSTAR FEMALE

(Fig. 8)

Recognition Characters.—Mounted 0.9-1.0 (1.0) mm long, 0.4-0.5 (0.4) mm wide. Body elongate oval, anal lobes slightly protruding.

Dorsum usually with 2 easily discernible pairs of cerarii. Anal-lobe cerarii each with 3 conical setae, 6-7 trilocular pores, 1-2 discoidal pores, and a large area of basal sclerotization. Penultimate cerarii each with 2 conical setae, 2-3 trilocular pores, and a small area of basal sclerotization. Additional conical setae arranged in 3 pairs of longitudinal lines, with 1 line near each body margin, with ca. 22 setae extending from penultimate cerarius to anterior portion of head. Setae forming longitudinal lines often with 1 or 2 associated trilocular pores. Other setae of various sizes scattered over surface. Segment V with 6 conical setae. Trilocular pores numerous over surface; discoidal pores few, scattered. Oral-collar tubular ducts absent. Ostioles present.

Anal ring apical, with 2 rows of pores; setae ca. 1½ times as long as greatest diameter of ring.

Venter without marginal stout setae. Multilocular pores absent. Quinquelocular pores on medial and

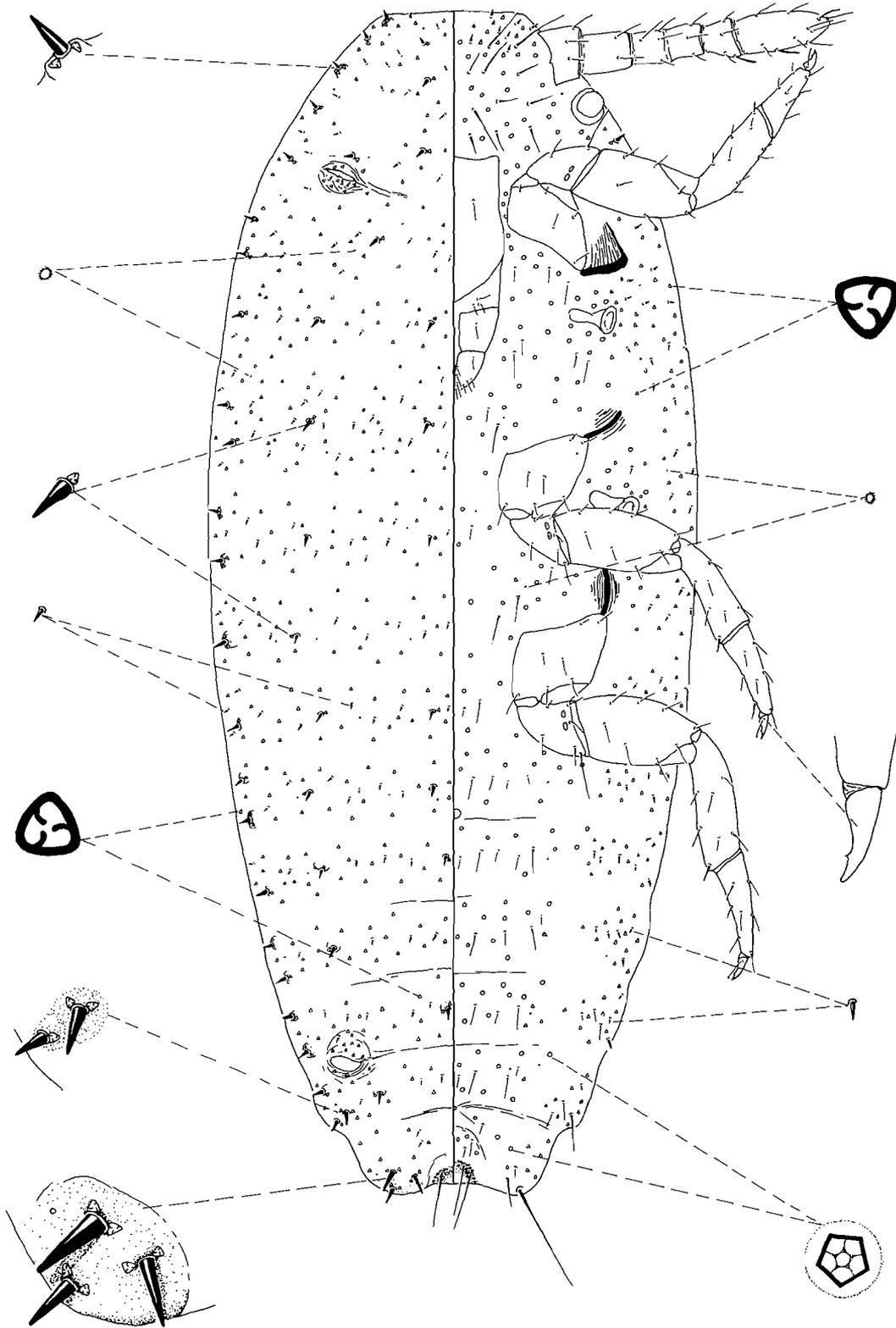


FIG. 8.—*S. beshearae*, 2nd instar female.

mediolateral areas from abdominal segment IX through head. Trilocular pores restricted to lateral and mediolateral areas; discoidal pores scattered over surface. Oral-collar tubular ducts absent. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe 96–101 long.

Circulus present. Legs without translucent pores; hind tibia/tarsus ratio 1.3–1.4 (1.3); hind tibia + tarsus length 196–218 (203); tarsal digitules acute; claw digitules capitate; claw with prominent denticle. Antennae 6-segmented, 238–252 (245) long, segments 3 and 4 often appearing partially fused.

Notes.—The above description is based on 3 specimens from 2 localities.

The 2nd instar female is easily distinguished from the 3rd instar female in having no large truncate setae. It differs from the 2nd instar male in having no oral-collar tubular ducts.

SECOND INSTAR MALE

(Fig. 9)

Recognition Characters.—Mounted, 0.6–1.0 (0.8) mm long, 0.3–0.5 (0.4) mm wide. Body elongate oval, anal lobes protruding.

Dorsum with 1–7 pairs of cerarii; anal-lobe cerarius with 3 conical setae, ca. 3 trilocular pores, 1 discoidal pore, and basal area of sclerotization. Other cerarii indistinct, when present with 2 conical setae and 1 trilocular pore. Other conical setae forming 1 pair of longitudinal lines near body margin, extending from anteriormost cerarius to anterior margin of head; marginal conical setae frequently with 1 or 2 associated trilocular pores. Additional small setae of various sizes scattered over surface. Segment V with only 2 marginal conical setae. Trilocular pores numerous, scattered over surface; discoidal pores few, scattered. Oral-collar tubular ducts forming 3 pairs of longitudinal lines over surface. Posterior ostioles present, anterior ostioles present or absent.

Anal ring apical, with 2 rows of pores; setae ca. 1½ times longer than greatest diameter of ring.

Venter without marginal stout setae. Multilocular pores absent. Quinelocular pores scattered over surface. Trilocular pores restricted to lateral areas near body margin; discoidal pores few. Oral-collar tubular ducts scattered over surface, noticeably more slender than those on dorsum. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe 72–148 (92) long.

Circulus absent. Legs without translucent pores, hind tibia/tarsus ratio 1.2–1.3 (1.3); hind tibia + tarsus 132–160 (142) long; tarsal digitules acute; claw digitules capitate; claw with small denticle. Antennae 6-segmented, 176–221 (190) long, segments 3 and 4 often appearing partially fused.

Notes.—The above description is based on 4 specimens from 2 localities.

The 2nd instar male is easily distinguished from all immature ♀ instars in having dorsal oral-collar tubular ducts and no circulus. The anterior ostioles are occasionally absent from the 2nd instar male, but are always present in the female.

Stemmatomerinx decorata FERRIS

Stemmatomerinx decorata Ferris, 1950: 245. McKenzie, 1967: 453.

Lectotype Data.—From the syntypes we have chosen and marked as lectotype an adult female labeled as follows: right label "*Stemmatomerinx decorata* n.sp., On *Distichlis*, about 1 mi N of Beatty, Nevada, Ferris TYPE, July 25, 1947, Stanford University Natural History Museum"; left label "U.C.D. Type Number 737"; label on back of slide "*Stemmatomerinx decorata* Ferris, Lectotype, desig. by Howell and Miller, 1975" (UCD).

Specimens Examined.—On *Distichlis* sp.: CA, Inyo Co., Lone Pine, V-17-72 (3 ad. ♀ CDA). NV, Nye Co., ca. 1 mi N Beatty, VII-25-47, (PL ad. ♀ UCD). On grass: NM, San Miguel Co., Las Vegas, near Gallinas Ranger Station, VII-14-47 (4 ad. ♀ PL UCD). TX, Bailey Co., Muleshoe, 1921 (1 PL ad. ♀ UCD).

Field Features.—According to Ferris (1950), the adult females are slender, and are beset with many long, crystalline rods. An ovisac is formed which may reach 2 cm in length and which encloses most of the adult ♀ body. The species occurs on the upper sides of the leaves of the host.

ADULT FEMALE (4TH INSTAR)

(Fig. 10)

Recognition Characters.—Mounted, 2.0–5.1 (3.7) mm long, 0.8–2.5 (1.7) mm wide. Body elongate oval, with protruding anal lobes

Dorsum with cerarii variable, sometimes indefinite, with 13–17 (15) marginal pairs and 1 or 2 (2) pairs on posteromedial part of abdomen. Anal-lobe cerarii each with 2–4 (3) large truncate setae with associated basal trilocular pores, 1–4 (2) smaller conical setae, 2–4 (3) discoidal pores, and area of basal sclerotization. Remaining cerarii with 2–5 (2) truncate setae, normally without small conical setae, with or without discoidal pores, with area of basal sclerotization; frontal cerarii each with 2–5 (3) truncate setae. Truncate setae in transverse rows over surface, arranged on abdomen to form 2 pairs of longitudinal lines excluding cerarian clusters; truncate setae, including cerarian setae, with 2–8 (5) associated trilocular pores forming a wreath around setal base; segment V with 8–11 (10) truncate setae. Small conical setae of various sizes scattered over surface. Trilocular and discoidal pores scattered over surface. Multilocular pores variable, material from Lone Pine and Beatty with multiloculars restricted to thorax and/or abdomen; material from Muleshoe and Las Vegas with multiloculars scattered over entire dorsal surface. Oral-collar tubular ducts abundant, scattered over surface, of 2 sizes, larger size most numerous. Ostioles present.

Anal ring dorsal or apical, with 3 rows of pores; setae ca. 2 times longer than greatest diameter of ring.

Venter with several stout, conical setae along body margin. Multilocular pores restricted to abdomen on

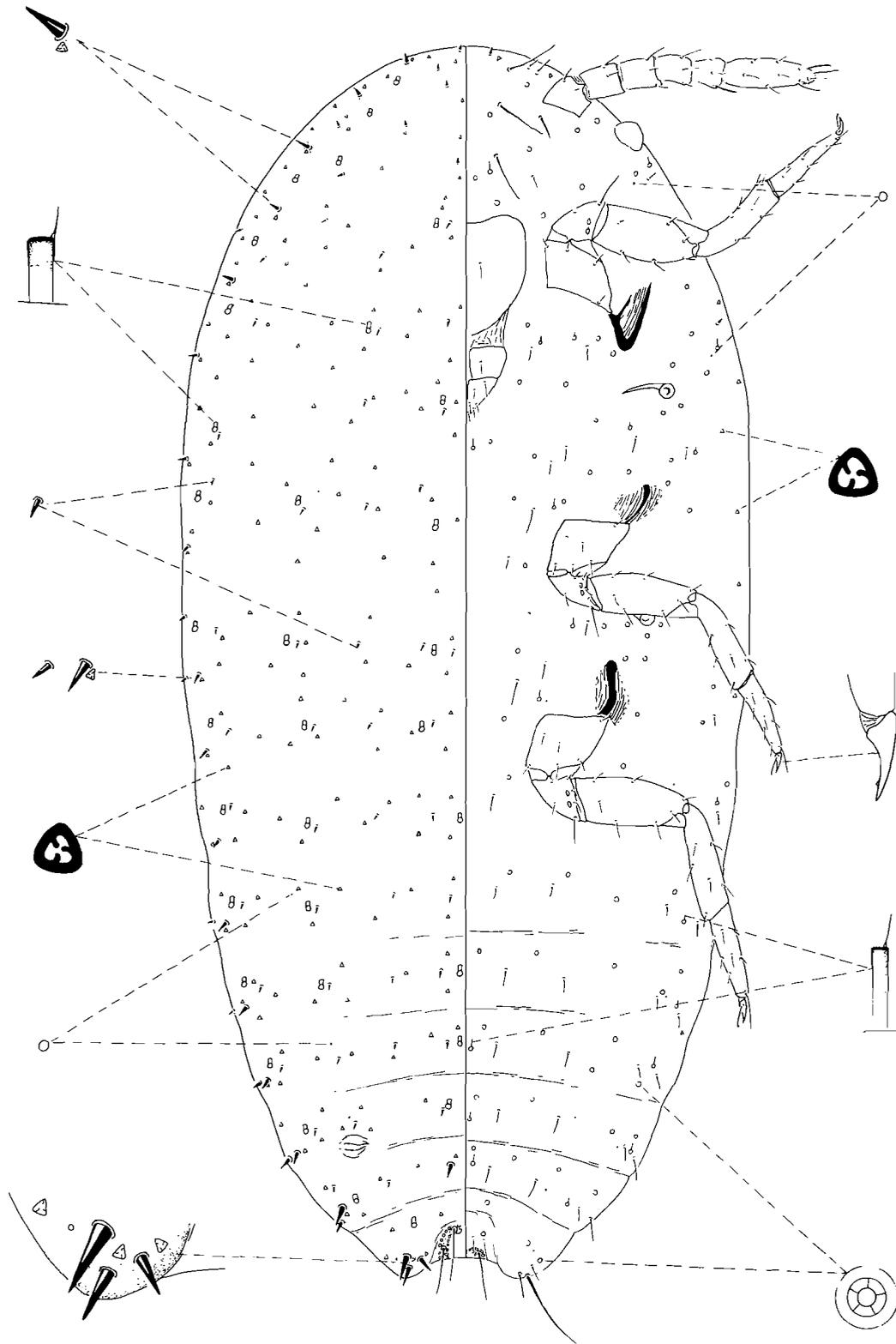


FIG. 9.—*S. beshearae*, 2nd instar male.

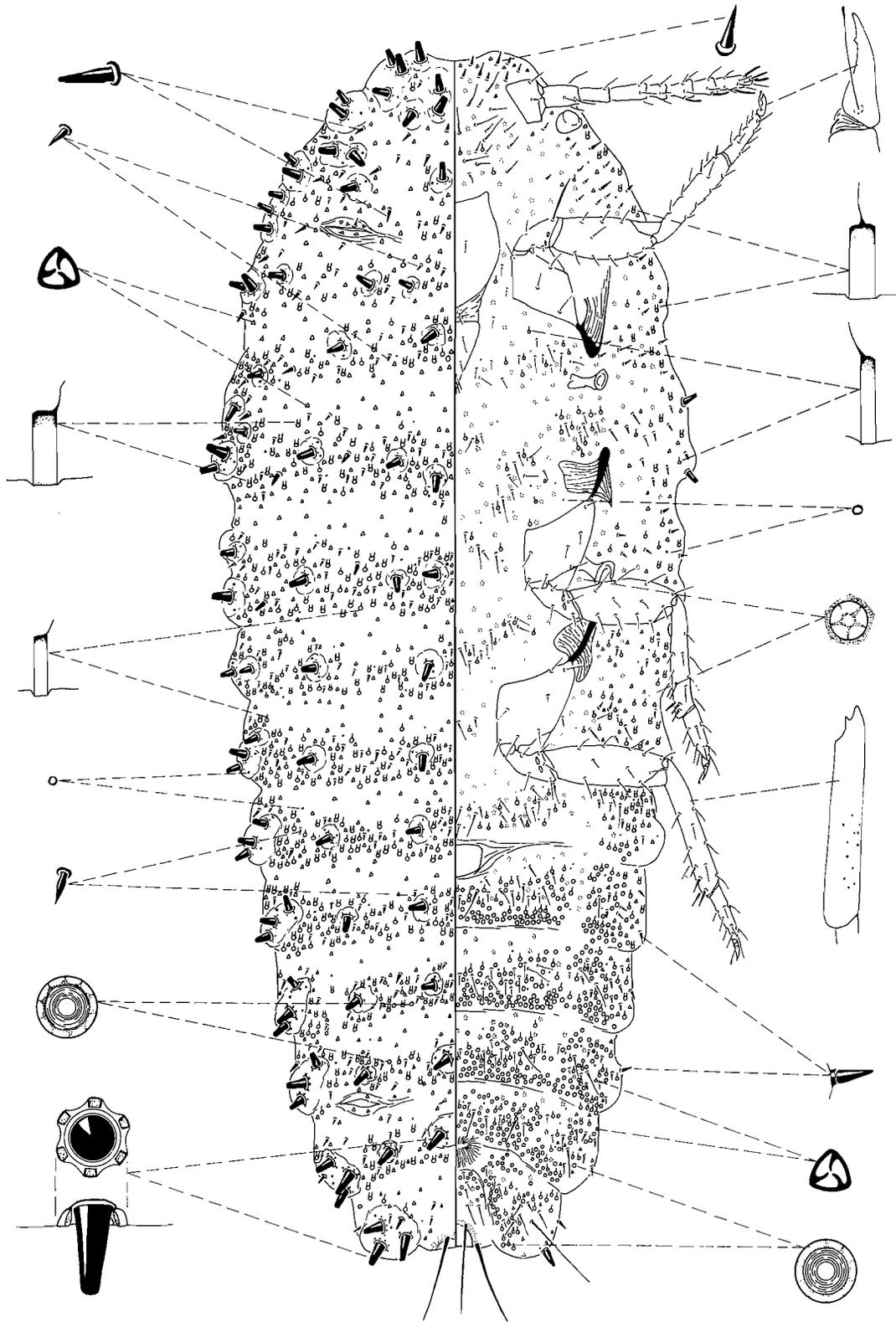


FIG. 10.—*S. decorata* Ferris, adult female.

specimens from Lone Pine and Beatty, also present near body margin of thorax and head on specimens from Muleshoe and Las Vegas. Quinquelocular pores abundant on medial and mediolateral areas of thorax and head, in small numbers on abdomen. Trilocular pores restricted to marginal areas; discoidal pores scattered. Oral-collar tubular ducts of same 2 sizes as on dorsum: smaller size most abundant; larger size restricted to marginal areas. Ventral anal-lobe area unsclerotized; longest seta associated with anal lobe 116-147 (134) long.

Circulus present. Legs with 4-17 (13) translucent pores on dorsal surface of each hind tibia; hind tibia/tarsus ratio 2.1-2.5 (2.3); hind tibia + tarsus length 329-378 (363); tarsal digitules acute; claw digitules capitate; claw with noticeable denticle. Antennae 9-segmented on 17 of 19 antennae examined, 8-segmented on 2, 372-488 (418) long.

Notes.—The above description is based on 10 specimens from 4 localities.

This species is similar to *S. acircula*. For a comparison of these species see "Notes" under *S. acircula*.

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