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FIRST REPORT OF THE GENUS *TELAMOPTILIA* FROM THE WESTERN HEMISPHERE WITH DESCRIPTIONS OF TWO NEW SPECIES (GRACILLARIIDAE)

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ABSTRACT. The genus *Telamoptilia* (Acrocercopinae) is reported from the Western Hemisphere for the first time. Two new species, *Telamoptilia hibiscivora*, from the eastern United States, and *T. pavoniae* , from western Cuba, are described and illustrated. The larvae initially begin as serpentine leafminers and eventually form mostly full depth blotch leafmines on Malvaceae. *Telamoptilia hibiscivora* mines the leaves of *Hibiscus moscheutos* L. and the lavae of *T. pavoniae* mine *Pavonia fructicosa* (Mill.), Malvaceae.

Additional key words: *Hibiscus moscheutos*, *Pavonia fruticosa*, leafminer, Cuba, North America.

The genus *Telamoptilia*, with *Acrocercops cathedraea* Meyrick as the generotype, was first proposed by Kumata and Kuroko (1988) to include four species from Japan, India, Taiwan, Madagascar, and South Africa. Subsequently, three additional species have been added, although *T. phalarotis* (Lefroy) has been considered an unavailable name (De Prins & De Prins 2005, De Prins & De Prins 2017). Kumata and Kuroko considered *Telamoptilia* to be most related to *Spulerina* Vári, and differing from *Spulerina* by the presence of a minute flap on the antennal scape, by the absence of a palmate pectinifer on the male valvae, and by the different shape of the female signa.

The larvae of all *Telamoptilia* are leafminers, with three plant families having been reported as hosts: Amaranthaceae, Convolvulaceae, and Malvaceae ((De Prins & De Prins 2005, De Prins & De Prins 2017). Vári (1961) described the biology and larvae of *T. geyeri* (Vári) from South Africa, Kumata et al (1988) described the biology of *T. cathedraea* (Meyick), *T. hemistacta* (Meyrick), *T. prosacta* (Meyrick) from Japan, Taiwan, and India, and *T. tiliae* (Kumata and Ermolaev) from Japan and USSR. Liu et al (2015) reported on the biology of *T. grewiae* Liu, Wang, and Li from China, and included a detail discussion of the immature stages.

Materials and Methods

Specimens examined in this study are deposited in the former United States National Museum (USNM), now the National Museum of Natural History,

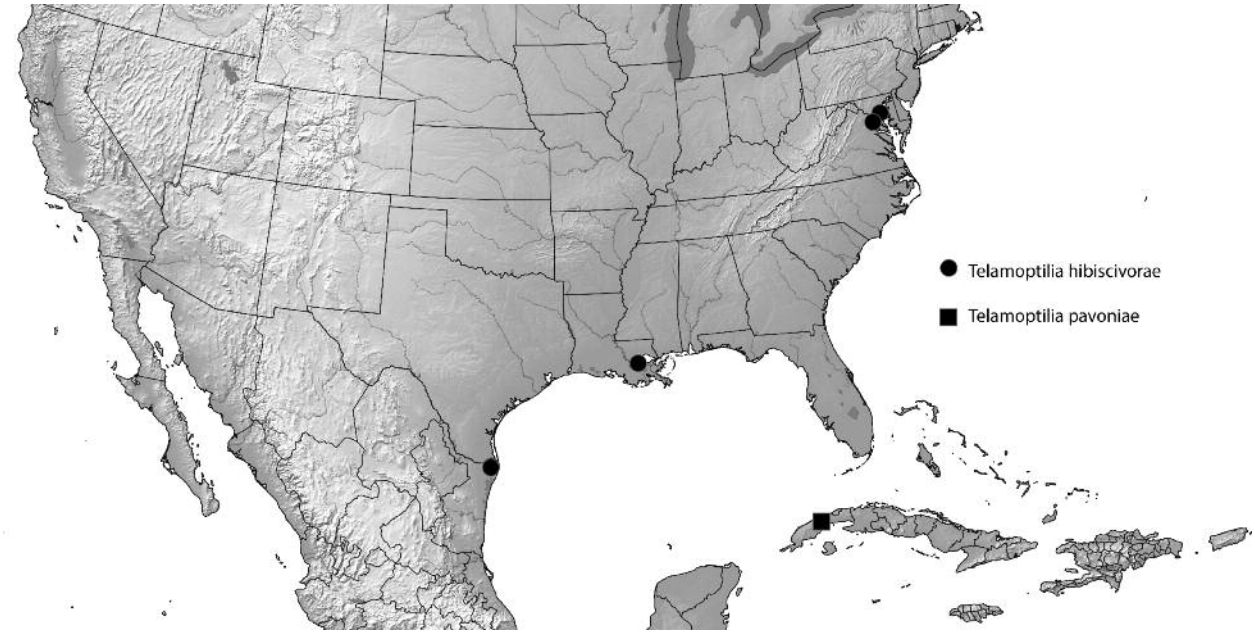
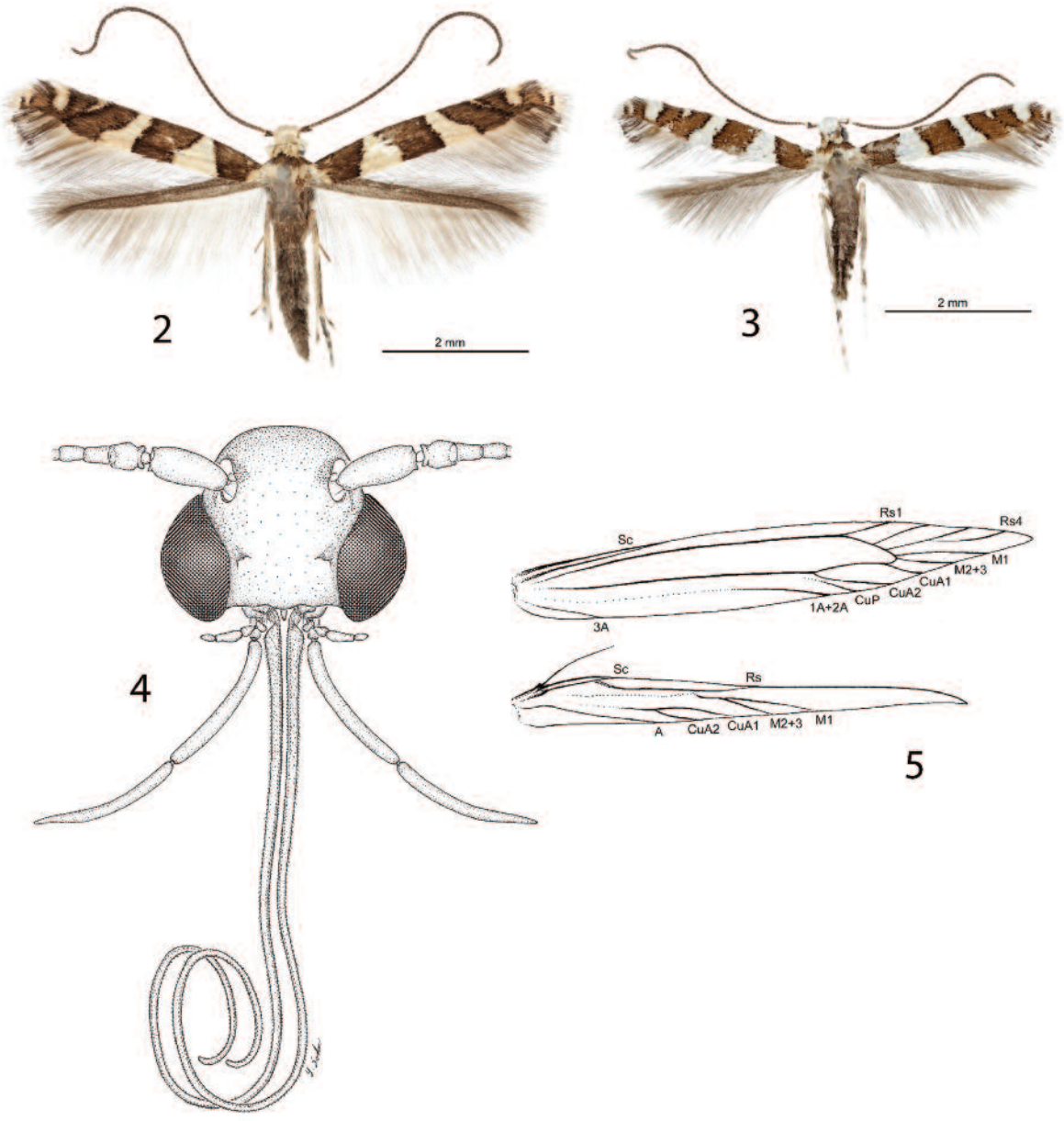


Fig. 1. Distribution of Western Hemisphere *Telamoptilia*

Smithsonian Institution, Washington, D.C., USA,

Specimen preparation: Genitalic dissections were cleared by heating in hot 10% KOH for ~ 30 minutes, and subsequently cleaned and stained with either 2% chlorazol black E or mercurochrome solutions. Some genitalic illustrations were drawn from dissections temporarily stored in glycerine, which were later permanently embedded in Canada balsam. Genitalic terminology follows Klots (1970) and Kristensen (1984b).

Molecular support for the recognition of the two new species was obtained through sequencing specimens of *Telamoptilia* for the 'barcode region' of the cytochrome oxidase I (COI) gene (Hebert et al. 2003). Legs from the specimens (Figure 14) were used for sequencing. The collection data, COI sequence information, and an image for each specimen are available in the Barcode of Life Data Systems (BOLD, www.boldsystems.org) (Ratnasingham & Hebert 2007) in the public dataset 'Western Hemisphere *Telamoptilia*' (DS-TELA2016).



FIGS. 2–5 (*Telamoptilia*: adult moths, head, and wing venation): **2**. *T. hibiscivora*, holotype ♂. **3**. *T. pavoniae*, holotype ♂. **4**. Head, *T. hibiscivora*. **5**. Wing venation, *T. hibiscivora*.

Sequences have also been deposited in GenBank (www.ncbi.nlm.nih.gov/genbank/) under the accession numbers KX038711-KX038714.

Results

Telamoptilia Kumata and Kuroko
Telamoptilia Kumata and Kuroko, 1988: 57
Type species: *Acrocercops cathedraea* Meyrick, 1908.

ADULT. - *Head* (Fig. 4). Smooth scaled with a small tuft of frontal scales from anterior rim of eye; scales of vertex directed forward, a pair of occipital scale tufts arising near dorsal rim of eye. Ocelli absent. Antenna filiform, 1.0-1.1x length of forewing; scape elongate, ~ 2x the diameter of flagellomeres; pedicel less than half the length of scape but nearly equal in diameter; each flagellomere with a single annulus of slender scales. Haustellum naked, long, ~ 2.5x length of labial palpus. Labial palpus long, ~ 0.4x length of haustellum; slightly upcurved; second segment slightly rough scaled ventrally; apical segment nearly as long as second, entirely smooth scaled. Maxillary palpus 4-segmented, reduced in length, 1-3-1/2 the length of apical segment of labial palpus. *Thorax*: Smoothly scaled. Forewing (Fig. 5) lanceolate; discal cell ~ 0.8x length of wing; R with 4 branches, R_1 absent, Rs with 4 branches and with Rs3 and 4 stalked about half their length; M 2 branched with M2+3; Cu_1 and Cu_2 widely separated. Hindwing extremely slender; cell open between M_{2+3} and Cu_{A1}; frenulum a single stout bristle in both sexes. Legs long and slender; foreleg with slender epiphysis arising from distal third of tibia, accompanied by a scattered row of ~ 12 small bristles immediately distad of epiphysis; midleg with a pair of apical tibial spurs, and hindleg with a 2 pairs of long tibial spurs located at basal third and apex of tibia.

Male genitalia: Tegumen elongate, weakly sclerotized, with an elongate, moderately clustered series of fine setae laterally. Uncus undeveloped. Valva elongate, relatively slender and typically without lobes or processes, with gradually curved costal and hind margins tapering to a variable (according to species), acute to rounded apex. Vinculum relatively broad anteriorly, tapering to broad, V-shaped apex. Anellus a relatively short, membranous tube. Phallus slightly longer than valva, cylindrical and relatively straight, with a single to a few slender, sometimes uncinate cornuti.

Female genitalia: Anal papillae short, triangular when viewed laterally. Anterior and posterior apophyses slender, relatively short and of approximately similar lengths. Ostium bursae a moderately small oval opening located near anterior margin of sternum A8. A short, sclerotized, ring-shaped antrum present, with a length ~ half its width. Ductus bursae sometimes lined with scale-like granules caudally, then enlarging gradually to elongate, membranous corpus bursae. A single signum usually present (absent in *T. tiltiliae* Kumata and Ermolaev); signum elongate, mostly slender except for a pair of uncinate median processes which project from wall of corpus bursae.

Discussion: As mentioned previously, Kumata et al (1988) reported *Telamoptilia* to be most related to the South African genus *Spulerina* Varí, based in part by the absence of the R_1 vein and the stalking of Rs_3 and Rs_4 in the forewings. The male pregenital segments are also similar in possessing a slender anterior apodeme with its median sclerotization extending caudad into the eighth tergite. Their larval chaetotaxy are also similar in having D2 and SD2 positioned on the meso- and metathorax and with setae D1 and D2 arising close together on abdominal segments 1–8.

A recent molecular analysis of the family Gracillariidae (Kawahara et al, 2016) established *Telamoptilia* (based on *T. hibiscivora* D. and M. Davis) as a distinct genus closely associated with *Spulerina* within the newly proposed subfamily Acrocercopinae Kawahara and Ohshima, one of eight subfamilies recognized in this study for the Gracillariidae.

Key to the species of New World *Telamoptilia*

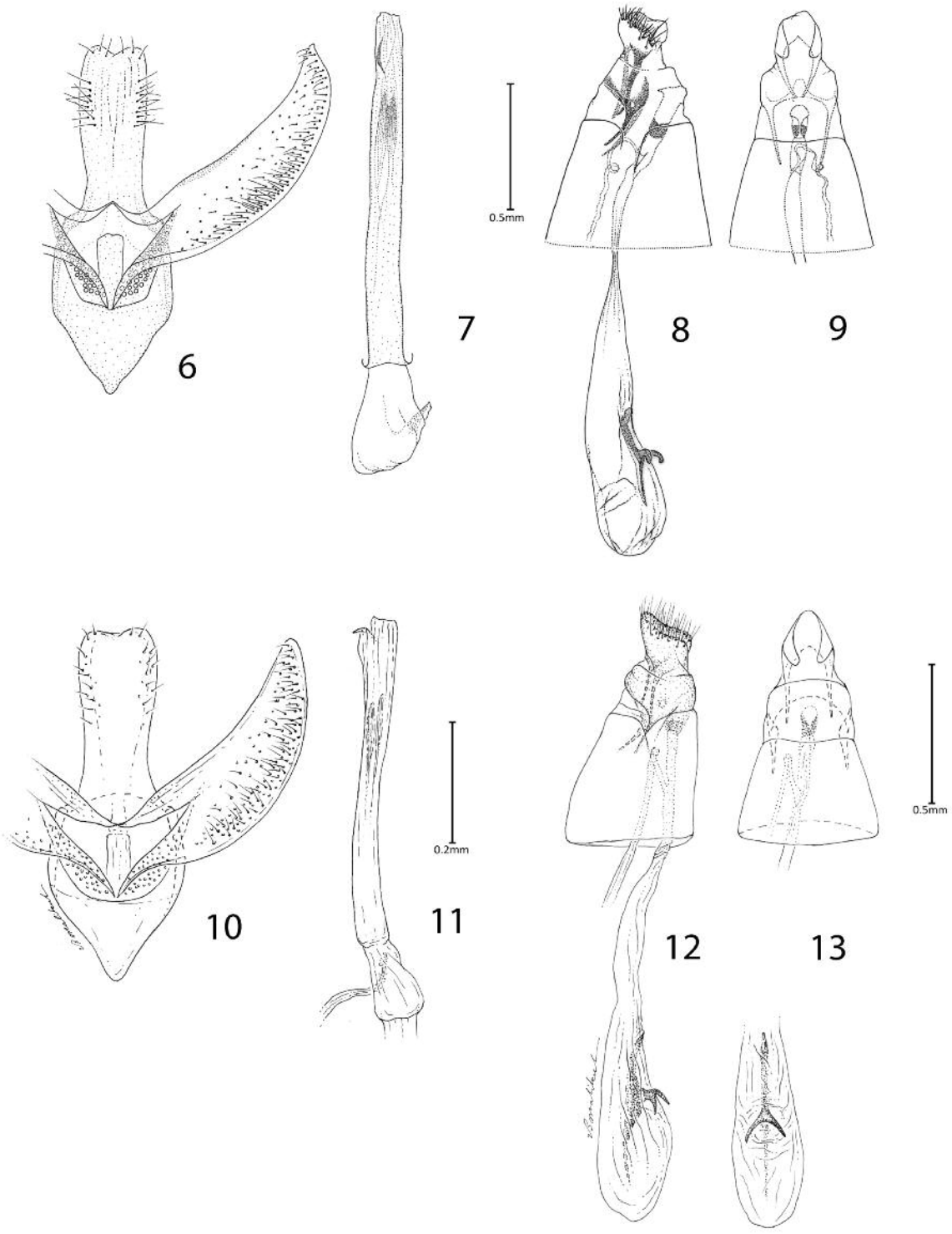
Forewing with very slender, oblique, white costal fascia across ~ half of wing at distal fourth (Fig. 2); male valva more slender with acute apex (Fig. 6); female signum relatively short, ~1.6x the length of posterior apophysis (Fig. 8); distribution (Fig. 1) eastern and southern United States to northern Mexican border.....*T. hibiscivora*

Forewing with a small, white costal spot at distal fourth and another, smaller white spot obliquely opposite on dorsal margin (Fig. 3); male valva more broad and with more rounded apex (Fig. 10); female signum relatively long, ~ 2.75x the length of posterior apophysis (Fig. 12); distribution Cuba (Fig. 1) ..... *T. pavoniae*

Telamoptilia hibiscivora D. and M. Davis, **new species**

Figs. 1–2, 5–9, 14–67

Adult Description (Fig. 2). Forewing length 3.0 – 4.1 mm. *Head* (Fig. 4) – Vertex and frons mostly smooth, appressed; scales broad, light golden brown; frons with a loose tuft of more slender scales projecting beneath scape inwards from anterior margin of eye; scales of vertex directed forward, very broad and flat; occipital tufts extending from dorsal margin of eye and



FIGS. 6–12. *Telamoptilia* Genitalia: **6**. *T. hibiscivora*: male, ventral view. **7**. Phallus. **8–9**. Female genitalia: **8**. lateral view. **9**. Ventral view. **10**. *T. pavoniae*: male, ventral view. **11**, Phallus; **12-13**: Female genitalia: **12**. Lateral view. **13**. Ventral view.

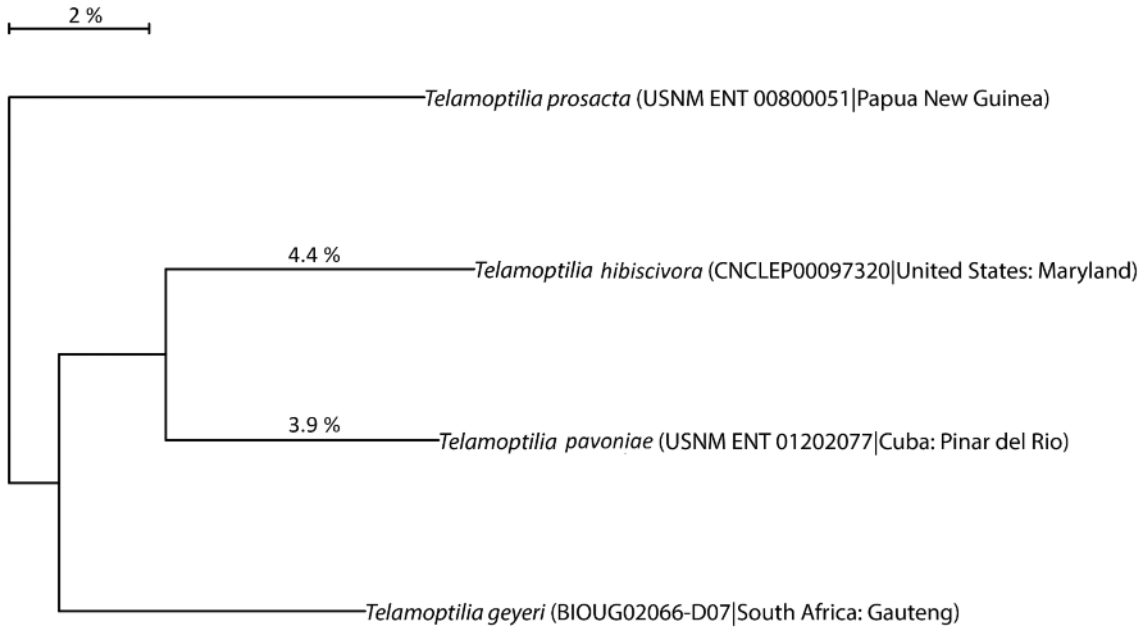


Fig. 14. Neighbor-joining tree of genetic distances (K2P model) for cytochrome c oxidase I (COI) for select *Telamoptilia*, including *T. hibiscivora* D. and M. Davis and *T. pavoniae* D. and M. Davis. End-branch labels are specimen Sample IDs, followed by the geographic origin. GenBank numbers for the specimens sampled are: KX038714 (*T. prosacta*), KX038712 (*T. hibicivora*), KX038711 (*T. pavoniae*), KX038713 (*T. geyeri*).

converging at vertex, and consisting of moderately broad, flat, mostly white scales; anterior occipital scales dark brown. Antenna ~ equal to length of forewing; scape either brown or white dorsally, brown ventrally; flagellomere 2 dark brown; flagellomere 3 usually white, sometimes brown; all other flagellomeres smoothly scaled, uniformly dark brown dorsally, slightly paler brown ventrally. Labial palpus slightly curved, directed ventrad, smooth scaled, and mostly white with apices of second and third segments dark brown.

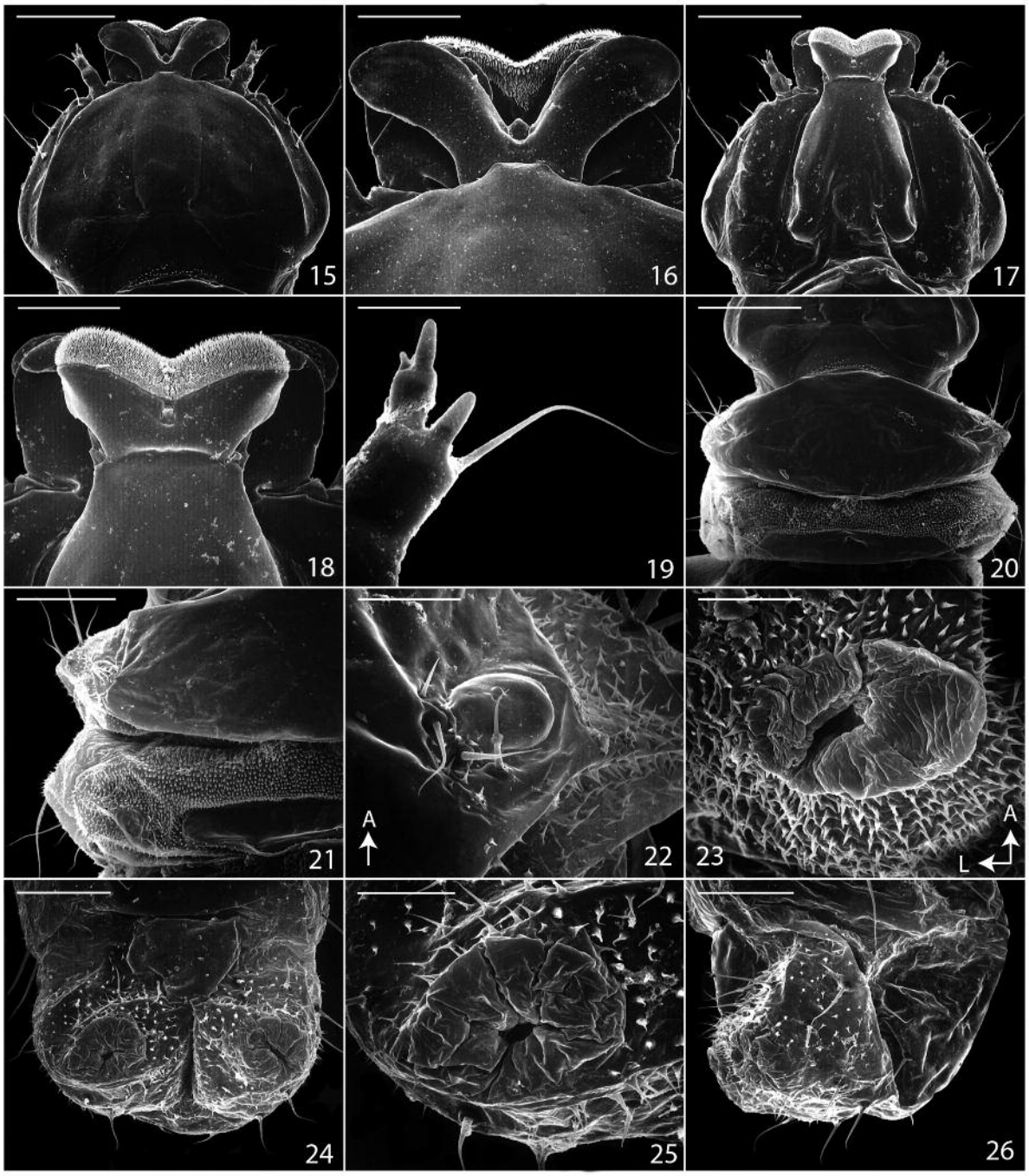
Thorax – Dorsum white posteriorly; anterior third including pronotum and anterior portion of tegula brown; thorax mostly white to pale brownish white ventrally with suffusion of dark brown beneath wings. Forewing predominantly dark brown with two, broad, somewhat triangular white fasciae traversing basal third and distal third of wing; a moderately large, costal, subapical, white, fasciate spot extending two thirds across the wing; a much smaller, very slender white costal spot located midway between outer fascia and subapical fasciate spot and extending half way across wing; all white fascia and spots bordered by darker brown margins; apical fringe white, largely divided by a narrow, transverse, dark brown band; subapical dorsal fringe brown; most of dorsal fringe pale brown to white. Hindwing and fringe uniformly brown. Legs with femur entirely or predominatly dark brown especially dorsally; tibiae predominatly dark brown, encircled with a white band near middle; tibial spurs dark brown with white scaling near apex; tarsomeres banded with white and dark fuscous of variable widths.

Abdomen – Dark brown dorsally; predominantly white ventrally, with caudal margins of each segment bordered with dark brown.

Male genitalia (Figs. 6–7) – Vinculum broadly V-shape; vinculum-saccus ~ half the length of tegumen. Valva slender, nearly 2x the length of anellus, gradually narrowing to acute apex; dorsal and ventral margins smoothly curved; dorsal margin of valva with numerous, moderately long setae. Anellus membranous, ~ equal to length of vinculum-saccus. Tegumen weakly sclerotized, ~ 0.8x the length of valva, caudal apex mostly truncate with a shallow median cleft. Phallus slender, slightly longer than valva; cornutus indistinct, resembling a narrow, subapical, crescentic, internal ridge.

Female genitalia (Figs. 8–9) – Anal papillae reduced, obliquely transverse in lateral view. Both pairs of apophyses reduced in length and ~ equal is size; base of anterior apophyses slightly broadened. Eighth abdominal segment short. Ostium simple, membranous, with a short, sclerotized ring near middle of antrum. Ductus bursae ~ equal in length to seventh abdominal segment and gradually enlarging to elongate, relatively slender corpus bursae. Signum consisting of a single, elongate (~ 1.6x length of posterior apophysis), slightly curved, darkly sclerotized internal rod, with a pair of short, uncinate processes projecting ~ midway along rod through wall of corpus bursae.

Larva: Sap-feeding instar (Figs. 15 – 26).- Head: Greatly depressed, approximately round (dorsal view). Most setae lost or reduced. Stemma 2 pairs, immediately caudad to antennae;



FIGS. 15–26. *Telamoptilia hibiscivora*. Third instar (sap-feeding) larva. **15**. Head, dorsal view (167 µm). **16**. Labrum (67 µm). **17**. Head, ventral view (167 µm). **18**. Labium (67 µm). **19**. Left antenna, ventral view (20 µm). **20**. Thorax, T 2, ventral view (214 µm). **21**. Thorax, T 2, ventral view (136 µm). **22**. Thorax, T 2, ventral callus (30 µm). **23**. Proleg, A4 (30 µm). **24**. Segments A 9 – 10, venter (67 µm). **25**. Proleg, A10 (27 µm). **26**. Lateral view A10 (67 µm).

Labrum broadly bilobed, almost completely divided into a pair of elongate, slender lobes; labral setae absent. Mandibles a pair of flat, mostly rounded lobes. Labium broadly bilobed, with anterior ventral margin bearing a broad band of dense, spines. Maxillary and labial palpi absent. Antenna reduced in length, 3-segmented, with two moderately large and one minute basiconic sensillae as illustrated (Fig. 19). Body: Maximum length ~ 4.0 mm. Setae generally absent or reduced except laterally along body. Legs absent; prolegs reduced to smooth planta without crochets (Figs. 23).

Last instar, tissue-feeding larva (Figs. 27 – 54). – Head: Maximum length ~ 7.5 mm. Head: Dark reddish brown; maximum width ~ 6 mm. Frons (Fig. 28) elongate, extending almost to epicranial notch. Ecdysial line terminating near epicranial notch. AF2 present. P1 arising slightly laterad to AF1. Setae A1, A2, S2, and SS2 the most elongate; L1 reduced and arising slightly caudad to most posterior stemmata; 4 pairs of stemmata present and of ~ equal size (Fig. 47); labrum with 5 pairs of setae, with M3 absent. Thorax: Pronotum with 4 pairs of setae including D1, D2, XD1 and SD1; SD2 arising close and anterior to SD1; all 3 lateral setae present anterior to spiracle; SV1 and SV 2 arising from reduced pinnaculum; lateral setae bisetose on segments A2 and 3. Bases of thoracic legs well separated; tarsal claw with broad base terminating in slender, strongly curved claw (Fig. 50). Abdomen: D1 and D2 arising close together on segments A1 – 9; lateral setae bisetose on A1 – 8, only L1 present on A9. Prolegs present on A3 – 5 and 9; anterior half of planta smooth; with a single circular row of 5 – 6 crochets present along anterior margin on abdominal prolegs 3 – 5 (Fig. 51); a vestigial proleg present on A6 without crochets; anal prolegs without crochets.

Leafmine (Fig. 66 – 67) – The larva begins forming a narrow, serpentine mine which abruptly enlarges to a mostly full depth, elongate blotch that often obliterates the earlier serpentine mine. The blotch tends to turn pale yellow with age and is usually located between leaf veins and near the leaf edge. The larval frass is typically pushed to the edge and usually to one end of the mine. When mature, the larva exits the mine ventrally and forms an elliptical, white to brownish white cocoon usually on the leaf surface.

Pupa (Figs. 55 – 64). Maximum length ~ 4.0 mm. Vertex with moderately short, broadly rounded and minutely serrated frontal process (cocoon cutter, Figs. 56, 58 – 59). Forewing extending to caudal margin of A5. Dorsum of A2 – 8 densely covered with evenly scattered minute, stout spines, with anterior spines the largest and decreasing in size caudally (Fig. 61). Terminal cremaster consisting of 4 short dorsal spines and 3 short ventral spines (Figs. 62 – 64).

Holotype - ♂, USA: MARYLAND: Anne Arundel Co: South River Marsh: Rt. 450:38°59´ N, 76°36´40" W: ♂, 17 Sep 1989, em.17 Feb 1990, HOST: DRD: 307.4, *Hibiscus moscheutos* L., digital image, BOLD sequence USNMENT 00657240, D. R. Davis, Type No. 013254 15, (USNM).

Paratypes (42 ♂, 47 ♀, 28 larvae, 3 pupae) – USA: MARYLAND: Anne Arundel Co: N. Riv. Hwy. 50: 6 ♂, 2 ♀, 26 Jul – 2 Aug 1941, em. 5-12 Aug 1941, ex. *Hibiscus palustris* L, [= *Hibiscus moscheutos* L]; 1 ♀, em. 16 Sep 1951, J. F. G. Clarke, Div. Ins. Id. No. 33 – 41 L (USNM). Anne Arundel Co: South River Marsh: Rt. 450: 38°59´ N, 76°36´40" W: 6 ♂, 11♀, 28 Jul 1974, DRD 30765 ♀, em.1 ♂, 10 ♀, 19 Jan 1975, 5 ♂, 1 ♀, 29 Jan 1975; HOST: DRD: 307 *Hibiscus moscheutos* L., D. R. Davis, (USNM); HOST: DRD: 307.2 *Hibiscus moscheutos* L, 24 Aug 1975; 1 ♂, em. 15 Nov 1975; Rt. 450, 38°59´ N, 76°36´40" W, 10 ♂, 5 ♀, 17 Sep 1989, D. R. Davis, (USNM); HOST: DRD: 307.4, *Hibiscus moscheutos* L; 6 tissue feeding larvae, larval slides USNM 30473, 30478, 2 ♂, 2 ♀, em. Dec 1989; 1 ♂, 3 ♀, Jan, 2 ♂, BOLD 00657246, 00657247, 1 ♂ BOLD 00657240; digital image, D. R. Davis, (USNM); DRD 307.5, 4 sap feeding larvae, 15 tissue feeding larvae, SEM larval slide USNM 30507, 17 Sep 1989, 4 ♂, em Feb 1990, D. R. Davis, (USNM); 3 pupae SEM pupal slide USNM 31352, 26 Sep 1993, HOST: DRD 1399, *Hibiscus moscheutos* L., D. R, Davis, (USNM). Prince Georges Co: Piscataway Park: 3 tissue feeding larvae, larval slide 30969, 8 Sep 1991, HOST: DRD 996, *Hibiscus moscheutos* L; 1 ♂, 29 Jul 2012; HOST: DRD: 2720 *Hibiscus moscheutos* L, em.13 Aug 2012, D. R. & M. M. Davis, (USNM). LOUISIANA: St. John Par: Edgard: 2 ♀, 28 Jul 1981, DRD 34679 ♀, 1 ♂, 7 Jul 1981, LNAUU4533-15/USNM ENT 01202081; 1 ♂, 5 Aug 1981; 1 ♂, 9 Sep 1981, DRD 23566, at UV light trap, V. A. Brou, (USNM). TEXAS: Brownsville: 10 ♀, 23-28 Jan 1932, DRD 32127, Plant 24, S. W. Frost, (USNM). MEXICO: Tamaulipas: Matamoros: 2 ♂, 2 ♀, 21 Jul 1937; slide DRD ♀ 34678; on *E. cisneros*, #19084 Brownsville, (USNM). USNM 34706

Distribution (Fig. 1). Primarily confined to the coastal wetlands of North America, from Maryland to Brownsville, Texas and adjacent Matamoros, Mexico.

Host plant (Fig. 65). Malvaceae: *Hibiscus moscheutos* L

Etymology. The species name is derived from the generic name of the host plant, *Hibiscus*, and the Latin *voro* (to eat, devour).

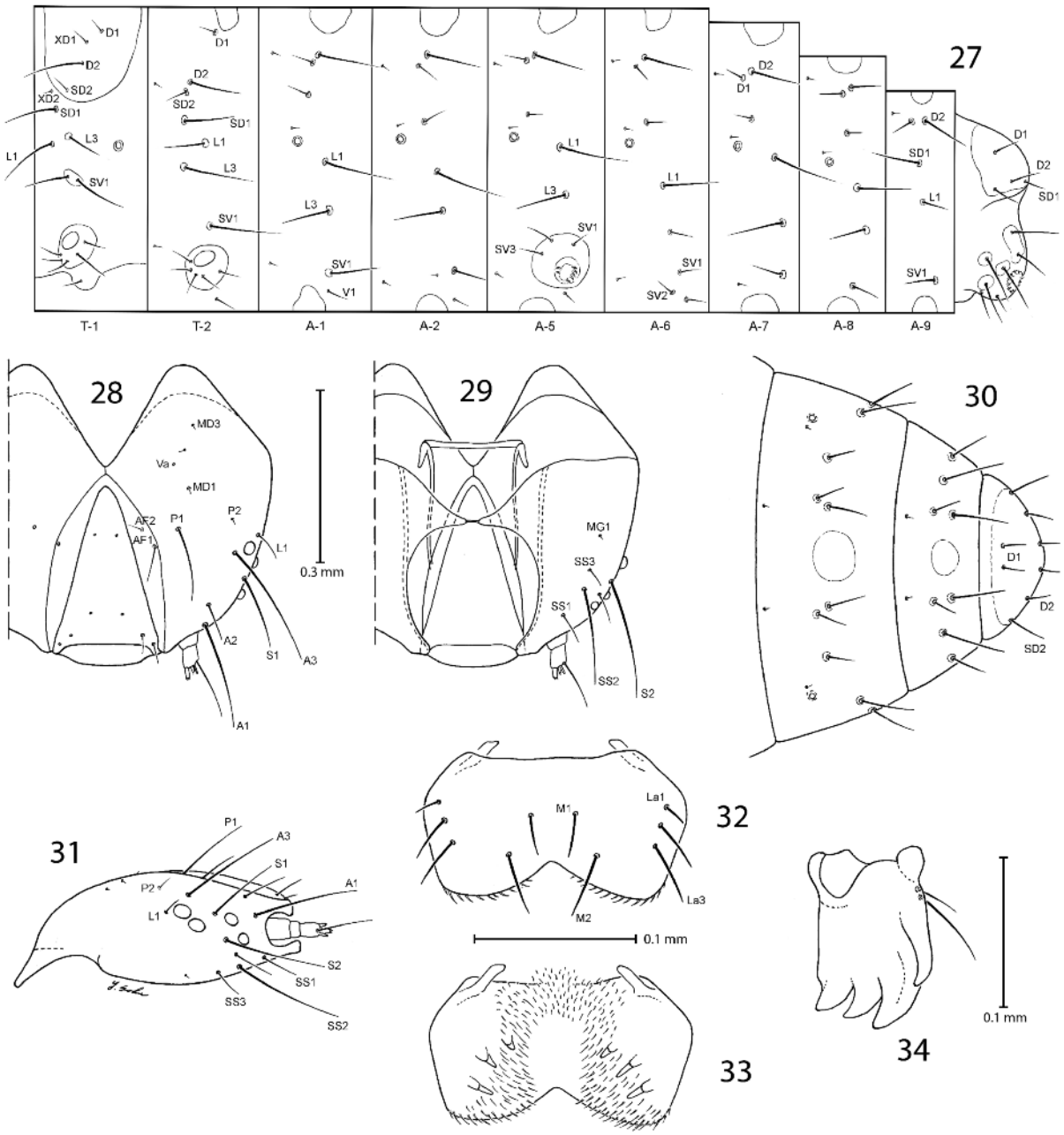
Discussion. This species was first discovered and reared from *Hibiscus moscheutos* by J. F. Gates Clarke (deceased 1990) from marsh habitats in Anne Arundel County, Maryland. The host plant ranges widely through marshy riverine systems of the southeastern United States from Texas to the Atlantic states as far north as southern Ontario, Canada. This species normally overwinters in the pupal stage, with the last instar larva not pupating until subjected to cold temperatures.

Telamoptilia pavoniae D. and M. Davis, **new species**
Figs. 1, 3, 10–13, 14.

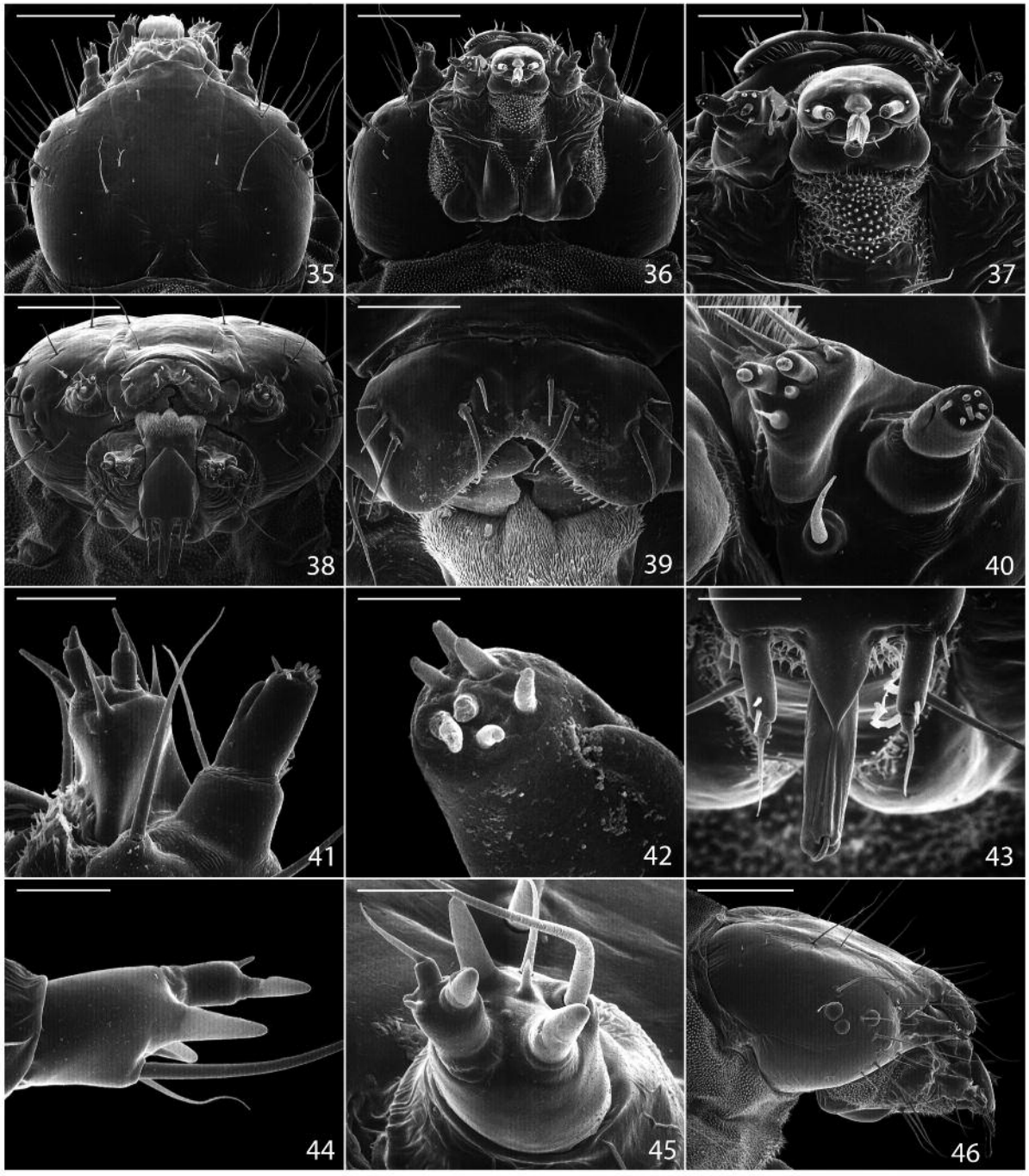
Adult Description. (Fig. 3). Forewing length 2.5–3.0 mm.

Head – Vertex and frons smooth; scales white, moderately broad and directed forward and down; a small tuft of slender, white to brown scales projecting ventrad beneath scape from dorsal - anterior margin of eye; occipital tufts extending from dorsal margin of eye, converging at vertex, and consisting of broad, flat, mostly white scales; anterior occipital scales dark brown. Antenna slightly longer than length of forewing; scape and flagellomere 3 white, flagellomere 2 dark brown; all other flagellomeres smoothly scaled and brown. Labial palpus slightly curved, directed ventrad, smooth scaled, and mostly white with apices of first and second segments dark brown.

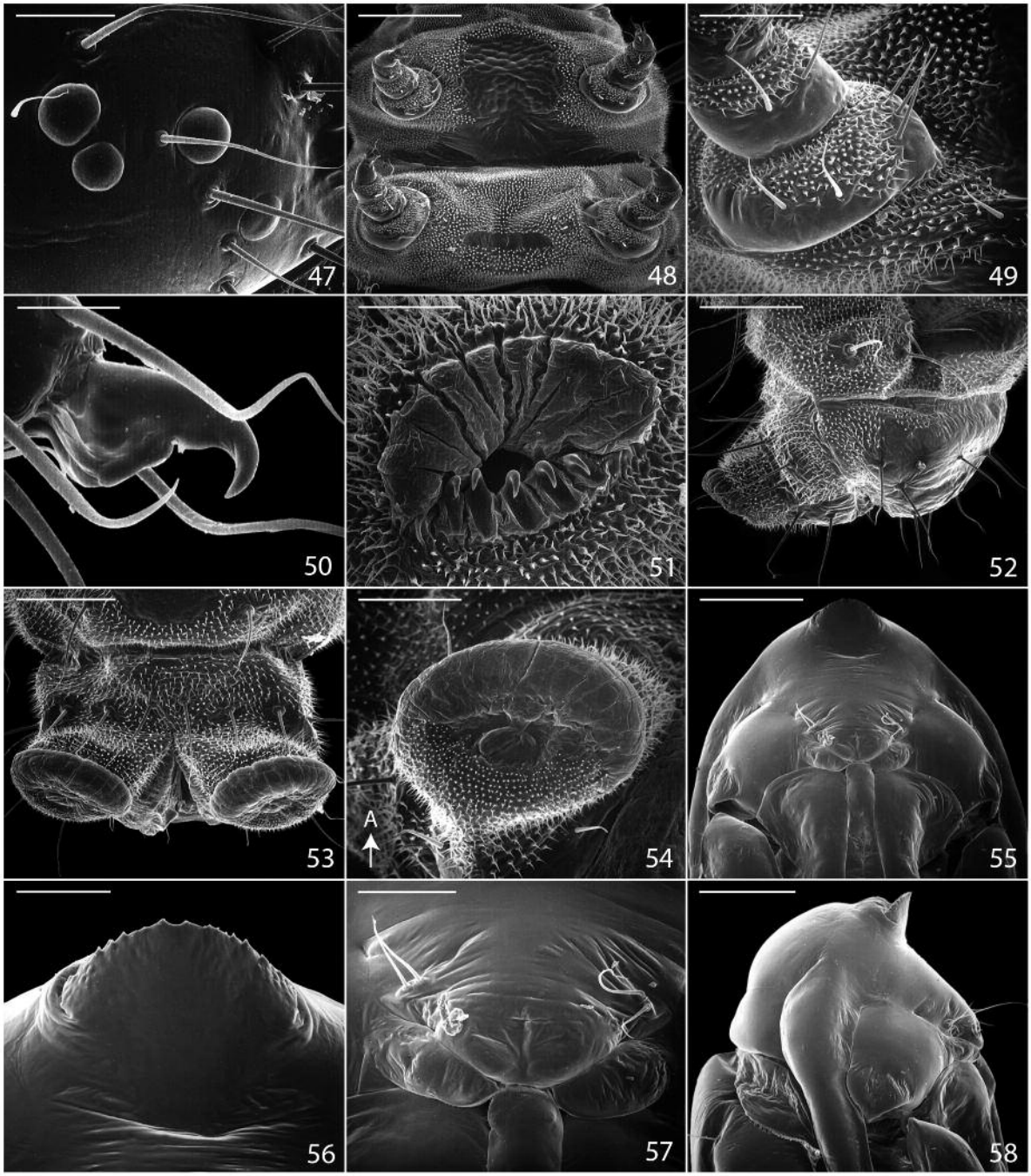
Thorax – Dorsum white posteriorly; anterior third including pronotum and anterior portion of tegula brown; thorax mostly white to pale brownish white ventrally with suffusion of dark brown beneath wings. Forewing predominantly dark brown with two, broad, triangular white fasciae traversing basal third and distal third of wing; a large, costal, subapical, white, fasciate spot (slightly larger than similar spot in *T. hibiscivora*)



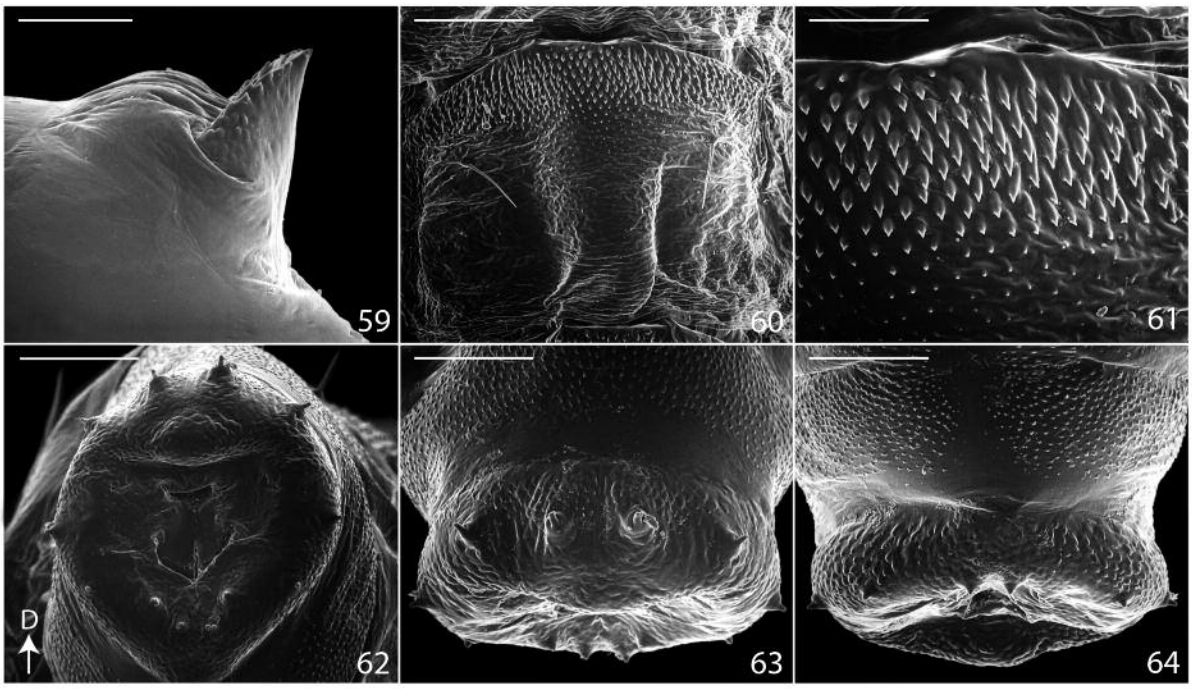
FIGS. 27–34. *Telamoptilia hibiscivora*. Larval chaetotaxy of last instar larva. **27**. Lateral schematic of larval prothorax, mesothorax, and abdominal segments 1–2, 5–10. **28**. Head, dorsal view (0.3 mm). **29**. Head, ventral view. **30**. Dorsal view of abdominal segments 8–10. **31**. Head, lateral view. **32**. Labrum, dorsal view (0.1 mm). **33**. Labrum, ventral view. **34**. Mandible (0.1 mm). (Scale length in parentheses).



Figs. 35–58. *Telamoptilia hibiscivora*. Last instar (tissue-feeding) larva. **35**. Head, dorsal view (176 µm). **36**. Head, ventral view (150 µm). **37**. Head, ventral view (67 µm). **38**. Head, frontal view (150 µm). **39**. Labrum, dorsal view (50 µm). **40**. Right maxillary lobe and palpus (20 µm). **41**. Right maxillary lobe and palpus, ventral view (23.1 µm). **42**. Maxillary lobe, apical view (4850x). **43**. Spinneret and labial palpi, dorsal view (38 µm). **44**. Antenna, lateral view (25 µm). **45**. Antenna, apical view (17.6 µm). **46**. Head, lateral view (176 µm). (Scale length in parentheses).



FIGS. 47–58. T*elamoptilia hibiscivora*. Last instar (tissue-feeding) larva and pupa. **47**. Head, lateral view of stemmata (50 µm). **48**. Thoracic legs, A2 – 3, ventral (231 µm). **49**. Basal segments of third thoracic leg (75 µm). **50**. Tarsal claw, A3 (13.6 µm). **51**. Proleg on A4 (38 µm). 52. Abdominal segments 9-10, lateral view (136 µm). **53**. Anal prolegs (150 µm). **54**. Anal proleg (75 µm). **55**. Pupa (Figs. 55–58), anterior ventral view of head (176 µm). *56*. Frontal process of pupa (cocoon cutter), ventral view (50 µm). **57**. Frontal area of pupa, ventral view (67 µm). **58**. Pupal head, lateral view (176 µm). (Scale length in parentheses).



FIGS. 59–64. *Telamoptilia hibiscivora*. Pupa. **59**. Lateral view of frontal process (cocoon cutter) (60 µm). **60**. Dorsal view of abdominal tergum 3 (150 µm). **61**. Detail of tergal spines in figure 60 (50 µm). **62**. Caudal view of last abdominal segment (91 µm). **63**. Abdominal segments 9–10, dorsal view (75 µm). **64**. Ventral view of figure 63 (75 µm). (Scale length in parentheses).

extending three quarters across the wing; a much smaller, white costal spot (less elongate than similar spot in *T. hibiscivora*) and a similar white spot on dorsal margin obliquely opposite costal spot, both located midway between outer fascia and large subapical spot; all white fascia and spots bordered by darker brown margins; apical fringe white, largely divided by a narrow, transverse, dark brown band; subapical and dorsal fringes slightly darker and more brown than in *T. hibiscivora*. Hindwing and fringe uniformly dark brown, slightly darker than in *T. hibiscivora*. Legs with femur of fore and midlegs entirely or predominatly dark brown especially dorsally; femur of hindleg mostly white ventrally; tibiae predominatly dark brown, encircled with a white band near middle; tibial spurs dark brown with white scaling near apex; tarsomeres mostly white with fuscous apices.

Abdomen – Color similar to that of *T. hibiscivora*: dark brown dorsally; predominantly white ventrally, with caudal margins of each segment bordered with dark brown.

Male genitalia (Figs. 10 – 11) – Similar to *T. hibiscivora* except valva noticeably broader at midlength and apex of cucullus more rounded. Phallus with a single short, minute, apical cornutus that usually projects laterally.

Female genitalia (Figs. 12 – 13) – Similar to *T. hibiscivora* except signum more elongate, ~ 2.75x length of posterior apophysis.

Leafmine – Similar to mines of *Telamoptilia hibiscivora*, with sapfeeding larvae first imitating a slender serpentine mine that enlarges abruptly into a large, full depth, pale gray blotch mine. The larval frass is usually pushed to the perimeter of the blotch. The mature larva eventually exits the mine to form an elliptical silken cocoon often on the leaf surface.

Holotype - ♂, CUBA: Pinar del Rio La Caridad: Soroa: 22°48´N, 83°01´W: 5 Dec 1994; HOST: DRD 1542 *Pavonia fruticosa* (Mill.), em. 20-22 Dec 1994, digital image captured, D. R. Davis, Type No. 013254 16, (USNM).

Paratypes (4 ♂, 6 ♀) - Same locality and host data as holotype, slides USNM ♂ 34674, 34676, USNM ♀ 34675; USNM ENT 01202079, D. R. Davis (USNM).

Distribution (Fig. 1). Known only from the type locality, Soroa, located in Pinar del Rio La Caridad, in western Cuba.

Host plant. Malvaceae: *Pavonia fruticosa* (Mill.)

Etymology. The species name is derived from the genitive form of the generic name of the host plant, *Pavonia*.

Discussion. A second species of *Telamoptilia* is known to feed on *Pavonia* in southern Africa. Vári (1961) described *Acrocercops geyeri* from specimens reared from *Pavonia columella* Cav. in the Transvaal, South Africa and Zimbabwe (Rhodesia). The species was later transferred to *Telamoptilia* by De Prins and De Prins, 2005. In addition to their very disjunct distributions, the forewing patterns of *T. pavoniae* and *T.* geyeri differ with the white forewing bands of *geyeri* being narrower than those of *pavoniae*. Most significantly are the distinct CO1 sequence differences between the two species (Fig. 14). A neighbor-joining tree (Fig. 2) constructed with

FIGS. 65–67. *Hibiscus moscheutos*: **65**. Marsh habitat (arrows indicate plant clusters of *H. moscheutos*), South River Marsh, Anne Arunndel County, Maryland. **66**. Mature leafmine of *Telamoptilia hibiscivora* on *Hibiscus moscheutos*, with pupal shelter indicated by arrow. **67**. Early serpentine mines of *Telamoptilia hibiscivora* as viewed from ventral side of leaf.

the COI sequences revealed that *Telamoptilia pavoniae* and *T. hibiscivora* are clearly distinct with a divergence of 8.3% (p-distance), and this species pair are a minimum of 9.5% from congeneric species. Analyses of all specimens used the 658 bp fragment of mitochondrial CO1 except for *T. prosacta* KX 038714, for which only the 407 bp fragment was available.

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