

**A REVISION OF THE NEARCTIC SPECIES OF THE GENUS
ZAOMMOMYIA ASHMEAD (HYMENOPTERA, EULOPHIDAE)**

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Abstract.—The nearctic species of the genus *Zaommomyia* Ashmead are revised. Two new species, *Z. minuta* and *Z. sulciscuta* are described. Two additional species, *Chrysocharis beckeri* Yoshimoto and *Gastrancistrus vonones* Walker are transferred to *Zaommomyia*. *Derostenus acutus* Ashmead, *Sympiesis grenadensis* Howard and *Chrysocharis majoriani* are new synonyms of *Z. vonones* (Walker). Lectotypes are designated for *S. grenadensis* Howard, *C. majoriani* Girault and *Chrysocharis stigmata* Ashmead. *Zaommomyia* has its main distribution in the Neotropical Region, and nearctic species are mainly found in the southern parts of the Region. Hosts are known only for one species, *Z. vonones*, a parasitoid of Agromyzidae (Diptera).

When Ashmead (1904) described *Zaommomyia*, he diagnosed the genus in a key where he included all neotropical genera of his tribe Omphalini. A thorough description was never presented and the genus has never been treated taxonomically or otherwise since it was described. According to the original diagnosis *Zaommomyia* was similar to *Chrysocharis* Förster, differing mainly in having a very narrow malar space, "malar space wanting."

Zaommomyia is similar to *Chrysocharis*, the main differences being in the appearance of the frons and the antennae. The diagnostic character used by Ashmead, a narrow malar space in *Zaommomyia*, is based on an artifact. The type specimen of *Chrysocharis stigmata* Ashmead, which is the type species of *Zaommomyia*, has the lower part of the compound eyes disrupted and the malar space appears very narrow. I have, however, seen intact specimens conspecific with *stigmata* and the malar space is quite wide (as in Figs. 1, 2). Males of *Zaommomyia* have verticillate setae on flagellar segments (Figs. 8, 11), i.e. with projecting setae concentrated to the basal half of each segment, in nearctic species usually in two rows. Females have conspicuously long ventral setae on flagellar segments (Figs. 7, 9, 10). The appearance of the frons in *Zaommomyia* (Figs. 1, 2) is quite unlike that of *Chrysocharis* (Fig. 14). In *Zaommomyia* the antennal scrobes never meet as in *Chrysocharis*, and the lower part of the frons above the fork is flattened in *Zaommomyia*, a feature never seen in *Chrysocharis*. The appearance of the frons is similar in both sexes in *Zaommomyia*; in *Chrysocharis* there are usually pronounced differences between the sexes in this character. Nearctic species of *Zaommomyia* always have a narrow costal cell and tridentate mandibles. These characters are, however, present in some *Chrysocharis* species and are not diagnostic

for *Zaommomyia*. Otherwise, *Zaommomyia* is similar to *Chrysocharis* (diagnosis in Hansson, 1985).

Zaommomyia appears to be most diverse and widespread in the Neotropical Region. The nearctic species are mainly found in the southern parts of the Region, except for *Z. beckeri* which reaches as far north as southern parts of Quebec (Gatineau Park). Hosts are known only for *Z. vonones*, a parasitoid of leafmining Agromyzidae (Diptera).

Morphological terms used are explained in Hansson (1985), the exception being POO, the distance between posterior edge of hind ocelli and occipital margin. Abbreviations of museums and private collections used in the text were as follows; BMNH = British Museum (Natural History), London, England; CH = collection of author; CNC = Canadian National Collections, Ottawa, Canada; LUZM = Lund University Zoological Museum, Sweden; USNM = National Museum of Natural History, Washington, D.C., USA.

Genus *Zaommomyia* Ashmead

Zaommomyia Ashmead, 1904: 340. Type-species: *Chrysocharis stigmata* Ashmead, 1894: 175, by original designation.

I have examined the lectotype (present designation) of *Chrysocharis stigmata*, a ♂ in BMNH labelled “St. Vincent, W.I. H. H. Smith,” “W. Indies 99-331,” “Type,” “*Chrysocharis stigmatus* Ashm. ♂ Type,” “B.M. Type Hym. 5.1324,” “*Zaommomyia stigmata* (Ashm.) det. Z. Bouček 1975.” This species was described from the West Indies. It differs from known nearctic species in having the following combination of characters: forewing with setae on marginal fringe 2× as long as in Fig. 3, speculum closed, with a fuscous spot below stigmal vein, coxae dark and metallic, propodeum with a complete carina between petiolar foramen and spiracular sulcus (as in Fig. 4) and petiole dark.

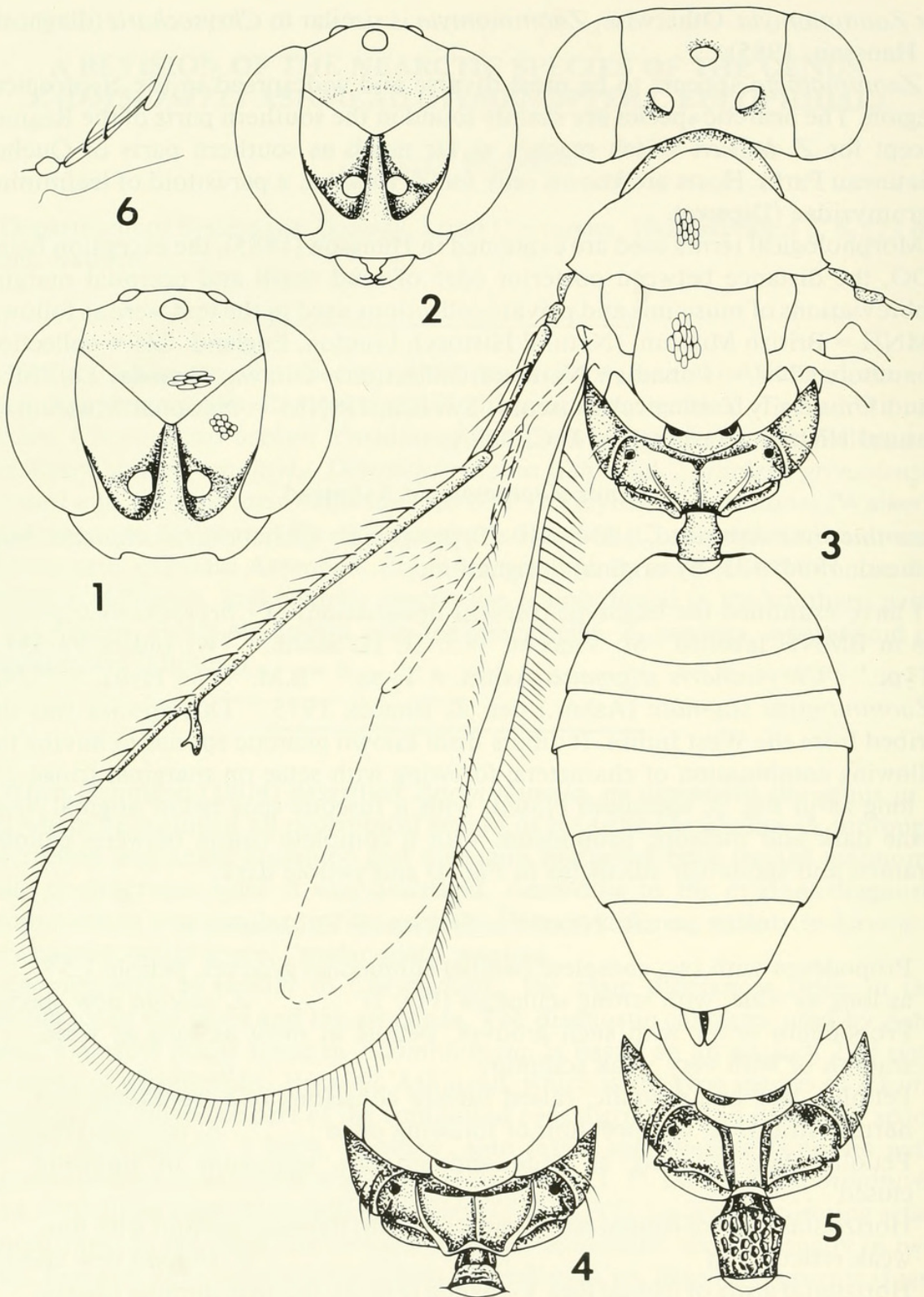
KEY TO THE NEARCTIC SPECIES OF *ZAOMMOMYIA*

- 1. Propodeum with two complete parallel submedian grooves, petiole 1.5× as long as wide, with strong sculpture (Fig. 5) *Z. sulcata* new species
- Propodeum never with such grooves, petiole at most as long as wide, smooth or with very weak sculpture 2
- 2. Petiolus dark and metallic, raised surface consisting of a transverse and narrow strip (Fig. 4), speculum of forewing open *Z. vonones* (Walker)
- Petiolus pale, as long as wide and smooth, speculum of forewing closed 3
- 3. Horizontal arms of frontal fork almost straight, thoracic dorsum with fine, weak reticulation *Z. minuta* new species
- Horizontal arms of frontal fork V-shaped (Fig. 2), thoracic dorsum usually with strong reticulation *Z. beckeri* (Yoshimoto)

***Zaommomyia vonones* (Walker)**

Figs. 1, 4, 7, 8

Gastrancistrus vonones Walker, 1839: 67, **NEW COMBINATION**.
Derostenus acutus Ashmead, 1894: 174, **New Synonymy**.
Sympiesis grenadensis Howard, 1897: 163, **New Synonymy**.



Figs. 1-6. *Zaommomyia* spp. 1, *Z. vonones* (Wlk.) ♀, head, front view. 2-3, *Z. beckeri* (Yshm.) ♀. 2, Head, front view. 3, ♀ habitus. 4, *Z. vonones* ♀, dorsellum + propodeum + petiolus, dorsal view. 5-6, *Z. sulcata* n. sp. 5, ♀, dorsellum + propodeum + petiolus, dorsal view. 6, Base of right fore wing. Scale = 0.25 mm for antennae, 0.50 mm for remaining illustrations.

Pediobius grenadensis (Howard), transferred by Ashmead, 1900: 263.

Chrysocharodes majoriani Girault, 1917: 10, **New Synonymy**.

Chrysocharis majoriani (Girault), transferred by Burks in Krombein & Burks, 1967: 232.

Chrysocharis vonones (Walker), transferred by Graham, 1969: 851.

Chrysocharis acuta (Ashmead), transferred by Bouček, 1977: 4.

Achrysocharella acutus (Ashmead), transferred by deSantis, 1979: 279.

Diagnosis.—Mid- and hindcoxae completely pale (♀), speculum open, propodeum usually with complete carinae between petiolar foramen and spiracular sulcus, petiole dark and metallic with raised surface consisting of a transverse and narrow strip.

Description.—*Female*: Length of body: 1.4–1.5 mm. Head: Scape pale, remainder of antenna dark. Flagellum with three apical segments more fused than basal two, segments I and III about $1.9\times$, II and IV $2.2\text{--}2.4\times$, and V about $4.1\times$ as long as wide. Face and clypeus golden-purple. Ratios height of eye/malar space/mouth opening; 3.9/1.0/1.9. Malar space $1.5\times$ as wide as width of scape. Frons below fork golden-purple, reticulation with quite high and quite narrow—quite wide septa, with small meshes. Frontal fork Y-shaped. Lower triangle on frons above fork with same color and reticulation as below fork, meshes transversely elongate, remaining parts of frons above fork and vertex golden green, reticulate with very low and very narrow septa, or smooth. Inner orbit of compound eye with one row of setae. Ratios POL/OOL/POO; 2.7/1.4/1.0. Occipital margin rounded. Ratio width of head/width of thorax across shoulders; 1.20.

Thorax (including propodeum): Pronotal collar without transverse carina. Mesoscutum and scutellum golden green, reticulation with quite high and quite wide septae. Dorsellum flat, smooth and shiny. Borderline between lower and upper epimeron almost straight. Forecoxa pale—dark and metallic, mid- and hindcoxae pale. Remaining parts of legs pale. Wings hyaline, forewing rounded with speculum open. Ratios length of marginal-/postmarginal-/stigmatal veins; 8.9/2.3/1.0. Propodeum with same color as thorax, anteromedian part with or without a very short but wide fovea, usually with complete carinae between petiolar foramen and spiracular sulci, median carina complete, and median part with or without reticulation. Propodeal callus with 2 setae. Petiolar foramen rounded triangular.

Petiole: Small, raised surface forming a transverse and narrow strip, dark and metallic.

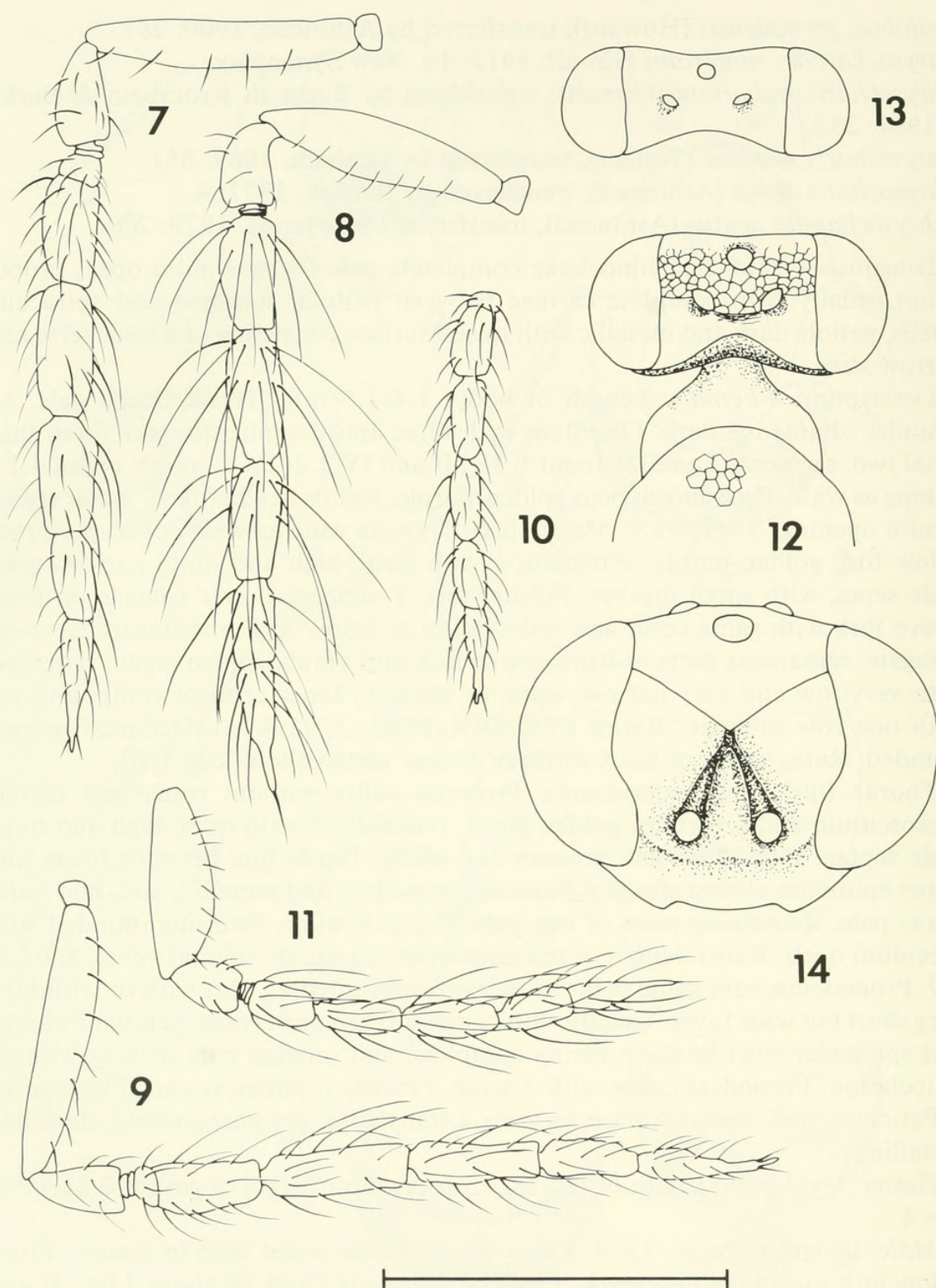
Gaster: Oval, ratio length of thorax + propodeum/length of gaster; 0.83–0.91, $n = 4$.

Male: Length of body: 1.0–1.3 mm. Head: Scape wider than in female. Frons below fork metallic bluish green. Flagellar segments I and IV about $2.0\times$, II and III $2.3\text{--}2.5\times$, and V about $3.5\times$ as long as wide. Ratios height of eye/malar space/mouth opening; 2.7/1.0/1.4.

Thorax: Forecoxa dark and metallic, mid- and hindcoxae pale—predominantly dark and metallic.

Gaster: Ratio length of thorax + propodeum/length of gaster; 1.16–1.18, $n = 3$. Otherwise as in female.

Material studied.—Type material: Holotype *G. vonones* ♀ (BMNH Type No. 5.633); lectotypes *D. acutus* ♀ (BMNH Type No. 5.2409), *S. grenadensis* ♂ labelled



Figs. 7-13. *Zaommomyia* spp. 7, *Z. vonones* ♀, antenna. 8, same, ♂. 9, *Z. beckeri* ♀, antenna. 10, *Z. minuta* n. sp. ♀, flagellum. 11, same, ♂ antenna. 12, *Z. sulcata* ♀, head, pronotum and fore part of mesoscutum, dorsal view. 13, ditto ♂, head, dorsal view. Fig. 14, *Chrysocharis coptodiscae* Yoshimoto ♀, head, front view. Scale = 0.25 mm for the antennae, 0.50 mm for remaining illustrations.

"Chantilly Est. (Windward side) Grenada, W.I. H. H. Smith 14," "Cotype No. 6553 U.S.N.M.," "*Sympiesis grenadensis* How. ♂ type," lectotype hereby designated (USNM), (the type female of this species in BMNH is destroyed, with only legs remaining), *C. majoriani* ♂ labelled "Reared from leafminer of *Commelina*

virginica,” “St. Vincent B.W.I. 2.10.15,” “F. Watts Let. 2 May 16,” “20839” and paralectotypes 1 ♀ 1 ♂ (♀ head on slide) and one specimen with only thorax remaining, with same data as lectotype, lectotype and paralectotypes hereby designated. Additional material: USA: Florida 1 ♀, 1 ♀ ex *Liriomyza sorosis*, 1 ♀ ex *Agromyza parvicornis*, 1 ♂ labelled “Commelina” (all specimens in USNM); Texas 1 ♀ (CNC).

Hosts.—*Agromyza parvicornis* Loew and *Liriomyza sorosis* (Williston) (Diptera, Agromyzidae).

Distribution.—USA (Florida, Texas), Brazil and the West Indies.

Zaommomyia beckeri (Yoshimoto)

Figs. 2, 3, 9

Chrysocharis beckeri Yoshimoto, 1973: 1386, **NEW COMBINATION**.

Diagnosis.—Horizontal arms of frontal fork V-shaped, thoracic dorsum usually with strong reticulation, mid- and hindcoxae pale, petiole pale, smooth, and globular.

Description.—*Female*: Length of body: 1.1–1.6 mm. Head: Scape completely pale or pale with apical part darkened, remainder of antenna dark and sometimes metallic. Flagellum with three apical segments more fused than basal two segments, segment I about $2.1\times$, II and III about $3.2\times$, IV about $2.7\times$, and V about $4.5\times$ as long as wide. Face and clypeus golden purple. Ratios height of eye/malar space/mouth opening; 6.8/1.0/3.1. Malar space as wide as width of scape. Frons below fork golden red or golden green, reticulation with low–quite high and fine–quite wide septa, with small meshes. Frontal fork Y-shaped. Lower triangle on frons above fork with color and reticulation as frons below fork, remaining parts on frons above fork metallic violet or bluish violet, reticulation very fine and engraved or smooth. Inner orbit of compound eye with one row of setae. Vertex inconspicuously metallic violet, reticulation like upper parts of frons above fork. Ratios POL/OOL/POO; 2.9/1.0/1.1. Occipital margin rounded. Ratio width of head/width of thorax across shoulders; 1.30.

Thorax (including propodeum): Pronotal collar without transverse carina. Mesoscutum and scutellum metallic greenish blue, bluish violet, golden green or a combination of these colors (scutellum sometimes completely or partly golden red), reticulation with high and wide septa (weaker in small specimens) with small meshes, notaular depressions with weaker reticulation. Dorsellum more or less flat, smooth and shiny or with very weak reticulation. Borderline between lower and upper epimeron curved. Forecoxa pale—predominantly dark, remaining parts of legs pale. Wings hyaline, forewing with or without a small fuscous spot below stigmal vein, rounded with speculum closed. Ratios length of marginal-/post-marginal-/stigmal veins; 8.8/2.1/1.0. Propodeum with same color as mesoscutum, the very anterior part of propodeum between spiracular sulci with a narrow groove, occasionally with complete carinae between petiolar foramen and spiracular sulci (as in *vonones*), with or without a complete median carina, and propodeal surface with quite weak—quite strong reticulation. Propodeal callus with 2 setae. Petiolar foramen rounded triangular.

Petiolus: Pale, smooth and globular.

Gaster: Oval, mean ratio length of thorax + propodeum/length of gaster; 0.78 ± 0.057 , $n = 10$.

Male: Unknown.

Material studied.—Type material: Holotype *C. beckeri* ♀ (CNC Type No. 12949). Additional material: CANADA: New Brunswick 1 ♀ (CNC); Ontario 12 ♀ (CH, CNC, LUZM); Quebec 5 ♀ (CH, LUZM). USA: Florida 5 ♀ (CH, CNC); Maryland 11 ♀ (CH, CNC); North Carolina 2 ♀ (CNC); Texas 5 ♀ (CH, CNC).

Distribution.—Canada (New Brunswick, Ontario, Quebec), USA (Florida, Maryland, North Carolina, Texas).

Zaommomyia minuta, NEW SPECIES

Figs. 10, 11

Diagnosis.—Horizontal arms of frontal fork almost straight, all coxae pale, thoracic dorsum with fine and weak reticulation, petiole pale, smooth and globular in shape.

Description.—*Female*: Length of body: 0.8–1.1 mm. Head: Scape pale, remaining antenna dark. Two apical flagellar-segments fused, segment I about $1.7\times$, II and III about $2.5\times$, IV about $1.9\times$, and V about $3.9\times$ as long as wide. Face and clypeus golden purple. Ratios height of eye/malar space/mouth opening; 6.4/1.0/4.6. Malar space as wide as width of scape. Frons below fork golden red, -purple, -green or purple, reticulation with low and narrow septa. Horizontal arms of frontal fork almost straight. Frons above fork metallic bluish violet or bluish-green, smooth and shiny. Inner orbit of compound eye with one row of setae. Vertex like frons above fork, color occasionally golden-green. Ratios POL/OOL/POO; 2.3/1.5/1.0. Occipital margin rounded. Ratio width of head/width of thorax across shoulders; 1.22.

Thorax (including propodeum): Pronotal collar without transverse carina. Mesoscutum metallic bluish violet or golden green, reticulation with very low and very narrow septa, and shiny. Scutellum golden red or, occasionally, with same color as mesoscutum, reticulation somewhat stronger than mesoscutum. Dorsellum convex, smooth and shiny. Borderline between lower and upper epimeron curved. Legs, including coxae, pale. Wings hyaline, fore wing rounded with speculum closed. Ratios length of marginal-/postmarginal-/stigmatal veins; 7.4/2.1/1.0. Propodeum with same color as mesoscutum, entire surface smooth and shiny. Propodeal callus with 2 setae. Petiolar foramen rounded triangular.

Petiole: Pale, smooth and globular in shape.

Gaster: Oval, mean ratio length of thorax + propodeum/length of gaster; 0.92 ± 0.055 , $n = 10$.

Male: Length of body: 0.8–1.1 mm. Head: Scape wider than in female and pale brown. Flagellar segment I about $1.8\times$, II about $2.8\times$, III about $2.5\times$, IV about $2.0\times$, and V about $3.8\times$ as long as wide. Ratios height of eye/malar space/mouth opening; 5.8/1.0/3.4.

Gaster: Mean ratio length of thorax + propodeum/length of gaster; 0.94 ± 0.081 , $n = 10$.

Otherwise as in female.

Types.—Holotype ♀ labelled; "TX: San Jacinto Co, 5 km S Cold-spring, 22.V.83, M. Kaulbars," "Holotypus *Zaommomyia minuta* Hansson." Paratypes: 6 ♀ 3 ♂ same locality as holotype; 9 ♀ 24 ♂ "TX: San Jacinto Co., 5 km S Coldspring, Double Lk Cpdg, 22–24.V.83, M. Kaulbars"; 11 ♀ 6 ♂ "TX: Bastrop Co., Bastrop St Pk, 24–27.V.83, M. Kaulbars"; 1 ♀ "FL: Liberty Co., Torreya St Pk, 7.X.1980, 8022 Masner & Bowen"; 1 ♂ "LA: Grant Parish, 28 km N Alexandria, Stuart Lk

Cpdg, 19.V-17. VIII.83, M. Kaulbars"; 1 ♀ "NC: Pamlico Co., Hwy 55 at Craven Co. junction, 15.X.1980, 8030 Masner & Bowen"; 1 ♀ "Can. B.C. Simon Fraser U., 26.IV.1979, Mal. Trap." Holotype and 33 paratypes in CNC, remaining paratypes in CH.

Distribution.—Canada (British Columbia) and USA (Florida, Louisiana, North Carolina, Texas).

Zaommomyia sulcata, NEW SPECIES

Figs. 5, 6, 12, 13

Diagnosis.—Male head in dorsal view short, vertex smooth and shiny behind lateral ocelli, malar space comparatively wide (about $2.5\times$ as wide as width of scape), pronotum elongate and campanuliform, thoracic dorsum flat, postmarginal vein only $1.6\times$ as long as stigmal vein, propodeum with two complete and parallel submedian grooves, petiole about $1.5\times$ as long as wide, dark and metallic with strong reticulation/sculpture and with anterodorsal part raised in a sharp edge covering petiolar foramen.

Description.—*Female*: Length of body: 1.3–1.5 mm. Head: Scape infusate, remainder of antenna dark. Flagellum with three apical segments more fused than basal two, segments I, II and III about $2.0\times$, IV about $1.7\times$, and V about $3.3\times$ as long as wide. Face and clypeus metallic purplish black. Ratios height of eye/malar space/mouth opening 2.9/1.0/1.4. Malar space $2.5\times$ as wide as width of scape. Frons below fork metallic purplish black, reticulation with quite high and narrow septa, meshes comparatively large. Frontal fork Y-shaped. Lower triangle on frons above fork flat with same color and reticulation as frons below fork, remaining parts of frons above fork metallic bluish-violet, occasionally purplish in parts and reticulation same as frons below fork. Inner orbit of compound eye with one row of setae. Vertex with part inside ocellar triangle and parts in front of lateral ocelli with same color and reticulation as upper parts of frons above the fork and parts behind lateral ocelli metallic violet and smooth. Ratios POL/OOL/POO; 1.7/1.1/1.0. Occipital margin with a blunt edge behind ocellar triangle, otherwise rounded. Ratio width of head/width of thorax across shoulders; 1.29.

Thorax (including propodeum): Pronotal collar without transverse carina, pronotum elongate and campanuliform. Thoracic dorsum flat. Mesoscutum metallic bluish violet, reticulation with quite high and quite narrow septa, meshes large. Scutellum golden red, reticulation same as mesoscutum, occasionally with smaller meshes. Dorsellum flat, smooth and shiny or with quite weak sculpture. Borderline between lower and upper epimeron curved. All coxae dark and metallic, fore- and midcoxae with weak and hindcoxa with strong reticulation. Remaining parts of legs pale. Wings hyaline, forewing rounded with speculum closed, costal cell very narrow. Ratios length of marginal-/postmarginal-/stigmal veins; 8.7/1.6/1.0. Propodeum with same color as mesoscutum, with two complete and parallel submedian grooves, surface otherwise smooth. Propodeal callus with 2 setae. Petiolar foramen small and rounded.

Petiolus: Dark and metallic, about $1.5\times$ as long as wide with strong reticulation/sculpture, with anterodorsal part raised in a sharp edge covering petiolar foramen (as in *Pediobius* Walker).

Gaster: Elongate-oval. Ratio length of thorax + propodeum/length of gaster; 0.76–1.00 $n = 4$.

Male: Length of body: 1.2 mm. Head: Scape slightly wider than in female and

completely dark. Head in dorsal view short. Flagellar-segment I about $2.3\times$, II about $2.5\times$, III about $2.6\times$, IV about $1.8\times$, and V about $3.8\times$ as long as wide. Ratios height of eye/malar space/mouth opening; $2.8/1.0/1.5$.

Gaster: Ratio length of thorax + propodeum/length of gaster; 0.91 , $n = 1$.
Otherwise as in female.

Type material.—Holotype ♀ labelled; "FL: Jackson Co., Chattahoochee, 8024 Mosquito Ck, 8.X.1980, Masner & Bowen," "Holotypus *Zaommomyia sulcata* Hansson" (CNC). Paratypes: 3 ♀ 1 ♂ from same locality as holotype (1 ♀ in CH, remaining in CNC); 1 ♂ "Leeward side St. Vincent, W.I. H. H. Smith 201," "♂ Type No. 2472 USNM," "*Chrysocharodes petiolata* Ashm. ♂ Type" (USNM).

Distribution.—USA (Florida) and the West Indies (St. Vincent).

Remarks.—Compared to the other species in the genus, *sulcata* is an odd species. The pronotum, propodeum and petiole are quite different in *sulcata*, but because the antennae and frons are identical in all four species, I place them in the same genus. The male in the USNM is part of the syntype material of *Chrysocharodes petiolata* Ashmead. A lectotype, a headless female, has already been designated for this species by Bouček (1977: 8).

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