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TAXONOMIC NOTES ON *ZAGRAMMOSOMA*, A KEY TO THE NEARCTIC SPECIES AND DESCRIPTIONS OF NEW SPECIES FROM CALIFORNIA (HYMENOPTERA: EULOPHIDAE)

Gordon Gordh

Abstract.—*Zagrammosoma intermedium*, new species, and *Z. melinum*, new species, are described from California; *Z. intermedium* parasitizes *Lithocolletis nemoris*, and *Z. melinum* parasitizes *Bucculatrix* sp. The female of *Z. nigrolineatum* Crawford is described. *Zagrammosoma interlineatum* Girault is synonymized with *Z. multilineatum* (Ashmead) (NEW SYNONYMY); *Z. sanguineum* Girault is synonymized with *Z. nigrolineatum* Crawford (NEW SYNONYMY). A key to North American species of *Zagrammosoma* is provided; and distribution, host associations and taxonomic notes are given for each North American species.

The name *Zagrammosoma* was proposed by Ashmead (1904) as a replacement name for *Hippocephalus* Ashmead, 1888, which was preoccupied by *Hippocephalus* Swainson, 1839, in fishes. Catalogs of North American *Zagrammosoma* have summarized published taxonomic and biological information about the species (Muesebeck et al., 1951; Peck, 1963; Burks, in press). Presently eight species are included in *Zagrammosoma* from North America. Two new species are described in this paper, and two species are synonymized.

European and American workers differ in opinion regarding the generic position of *Zagrammosoma* and *Cirrospilus* Westwood. Bouček and Askew (1968) regard *Zagrammosoma* as a subgenus of *Cirrospilus.* This position was followed by Kerrich (1969). American workers consistently have maintained *Zagrammosoma* and *Cirrospilus* as generically distinct. Twenty species of *Cirrospilus* (*sensu* American authors) are recognized in North America. These will be considered in another paper.

The biologies of both genera are poorly studied but host relationships seem to be slightly different. Representatives of both genera are parasites of leafmining Lepidoptera and Diptera, but some species of *Cirrospilus* also parasitize leafmining Hymenoptera. *Cirrospilus* frequently acts as a hyperparasite of braconids and ichneumonids that attack leafminers, but only rarely have species of *Zagrammosoma* been found acting in a hyperparasitic role. When the biological associations of species in both genera are studied, more subtle differences may be found.

Zagrammosoma is abundant in the western states of North America and is especially well represented in California. *Cirrospilus* appears more common in the central and eastern states.

Some morphological characters may be of importance in separating these genera. There is a difference in the shape of the head: *Zagrammosoma* species have the vertex vaulted between the compound eyes, and the head is elongate; *Cirrospilus* species do not have the vertex vaulted between the compound eyes and the head shape is usually oval. Most specimens in both genera shrivel after death so this character is not always visible. Specimens of *Cirrospilus* have a well-developed median propodeal carina (except one undescribed species). Specimens of *Zagrammosoma* do not have a median propodeal carina, or it is weakly developed.

Generic concepts in the Eulophinae show that differences between genera are often slight and qualitative. If *Zagrammosoma* and *Cirrospilus* are considered congeneric, then a strong argument could be made for synonymizing *Microlycus* Thomson with *Necremnus* Thomson and *Hemiptarsenus* Westwood with *Notanisomorpha* Ashmead because the differences between these genera are qualitative and slight.

Thus it seems that we do not know enough about the biology, distribution and morphological variation of *Zagrammosoma*, *Cirrospilus* and related genera of Eulophinae. For the present it seems more appropriate to maintain them as generically distinct until they are better known.

Genus *Zagrammosoma* Ashmead

Hippocephalus Ashmead, 1888:App. VIII. Type species: *Hippocephalus multilineatus* Ashmead. Monotypic.

Zagrammosoma Ashmead, 1904:354, 393. Replacement name for *Hippocephalus* Ashmead, not *Hippocephalus* Swainson.)

Zagrammatosoma Schulz, 1906. Spolia Hym., pg. 142. Unjustified emend.

Atoposoma Masi, 1907. Bol. Lab. Zool. Gen. Agric., Portici. 1:276. *Atoposoma variegatum* Masi. Monotypic.

Key to North American *Zagrammosoma* Based on Females

1. Metasomal terga predominantly dark reddish, at least mesally, and with ornate color pattern (Figs. 1, 3, 7) 2
– Metasomal terga predominantly pale or without ornate color pattern (Figs. 4, 6) 6
2. Forewing hyaline; dorsal surface of adstigmal area densely setose (Fig. 16) *nigrolineatum* Crawford
– Forewing infuscated; dorsal surface of adstigmal area asetose (Figs. 10, 13, 15) 3
3. Forewing infuscation extending parallel to marginal vein from stigmal vein to basal cell (Figs. 11, 15); area posterior to junction of submarginal vein and marginal vein asetose; postmarginal vein pale, but as long as stigmal vein 4

- Forewing infuscation "U" shaped, extending from stigmal vein to junction of submarginal vein and marginal vein (Fig. 10); area posterior to juction of submarginal vein and marginal vein with coarse dark setae; postmarginal vein about ½ as long as stigmal vein 5

4. Dark brown mesosomal stripe broad (Fig. 4), as wide as distance between parallel longitudinal grooves on scutellum; notaulices pale; area posterior to junction of marginal vein and stigmal vein asetose (Fig. 15) *centrolineatum* Crawford
- Dark brown mesosomal stripe narrow (Fig. 5); notaulices dark brown; area posterior to junction of marginal vein and stigmal vein setose (Fig. 11) *intermedium*, new species

5. Metasoma entirely reddish brown; propodeal callus uniformly reddish brown; apex of hind femur pale, remainder reddish brown *mirum* Girault
- Metasoma dusky reddish brown ventrally with pale spots laterally; propodeal callus pale yellow, remainder of propodeum reddish brown; apex and basal ½ of hind femur pale, remainder dusky *flavolineatum* Crawford

6. Forewing with several infuscated spots or if infuscated spots faint, then junction of submarginal vein and marginal vein, marginal vein, and stigmal vein dusky or darkened; dorsal surface of adstigmal area asetose (Figs. 10–15) 7
- Forewing hyaline; dorsal surface of adstigmal area densely setose (Fig. 16) *nigrolineatum* Crawford

7. Anterior margin of mesoscutum with dark transverse stripe that is enlarged laterally forming a spot (sometimes concealed beneath posterior margin of pronotum) (Fig. 1) *americanum* Girault
- Anterior margin of mesoscutum without transverse stripe 8

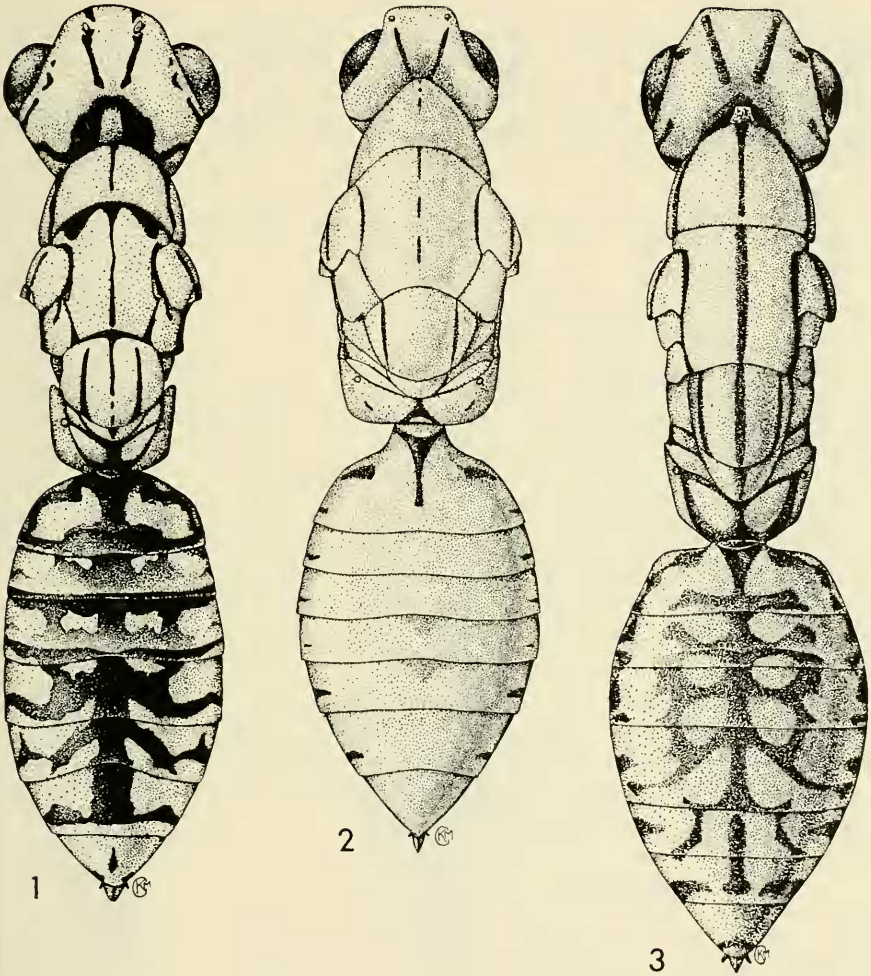
8. Scutellum with longitudinal, medial stripe (Fig. 3); hind femur with dorsal stripe and apical spot; forewing blade with numerous setae (Fig. 12) *multilineatum* (Ashmead)
- Scutellum without longitudinal, medial stripe (Fig. 2); hind femur pale yellow, without stripe or spot; forewing blade with fewer setae (Fig. 14) *melinum*, new species

Zagrammosoma americanum Girault
Figs. 1, 13

Zagrammosoma americanum Girault, 1916:126–127.

Type-locality.—Boulder, Colorado.

Girault described this species from one female. Girault separated *Z. americanum* from *Z. multilineatum* based on the conspicuous, round, black dot near the apex of the hind femur. Some specimens of *Z. americanum*



Figs. 1–3. Dorsal view of *Zagrammosoma* species. 1. Z. *americanum*; 2. Z. *melinum*; 3. Z. *multilineatum*.

have this dot misshapen, and in others it is almost a stripe. The dorsal longitudinal stripe on the hind femur is also variable.

A more reliable character to distinguish these species is a transverse, dark stripe along the exposed margin of the mesoscutum (which also projects beneath the posterior margin of the pronotum). Laterally this stripe becomes two enlarged spots. This character is present only in Z. *americanum*.

The propodeal pigmentation of Z. *americanum* is variable and resembles

Z. multilineatum (the anterior and posterior margins are dark). In most specimens of both species the pigmentation on the meson extends posterolaterally and forms a "W." In some specimens it forms a median dot.

This species is abundant in California and is often found in association with pine. It has been reared from *Coleotechnites milleri* (Busck), *Coleophora laricella* (Hubner) and *Asphondylia* galls.

Zagrammosoma centrolineatum Crawford
Figs. 4, 15

Zagrammosoma centrolineatum Crawford, 1913:256.

Type-locality.—California.

Crawford described this species based on two females taken in Los Angeles County and one female taken in Sonoma, California. The specimen from Sonoma is conspecific with the specimens from Los Angeles. The paratype from Los Angeles is missing the metasoma.

Crawford's original description is accurate; supplementary illustrations of the habitus and forewing (Figs. 4, 15) will make recognition of this distinctive species relatively easy. Based on forewing characters this species is closely related to *Z. mirum*, *Z. flavolineatum* and *Z. intermedium*. It can be distinguished from these species based on characters given in the key.

Little information has been gathered on *Z. centrolineatum*. It has been recovered from Oregon, California and Utah. Hosts include *Caloptilia alnivorella* (Chambers), *Lithocolletes mediodorsella* Braun, *Lithocolletes* sp. on *Populus* spp. and *Quercus dumosa*, "leaf blotch mine" on *Q. wislizenii* and *Tischeria* sp. on *Q. dumosa englemanii*.

Zagrammosoma flavolineatum Crawford
Fig. 10

Zagrammosoma flavolineatum Crawford, 1913:255–256.

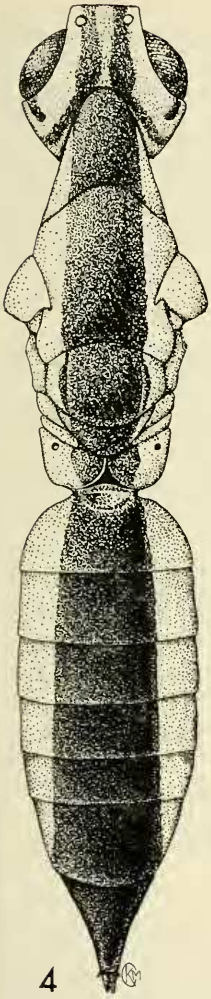
Type-locality.—Boulder Co., Colorado.

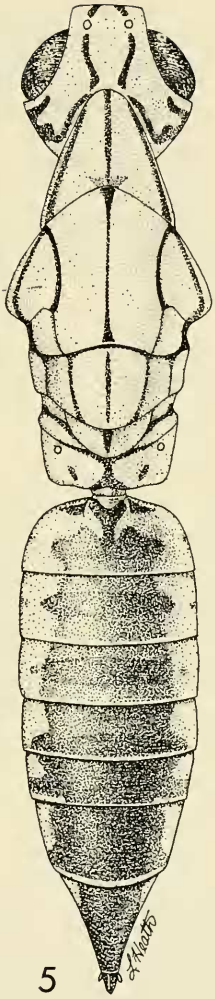
Crawford described this species from one female specimen, and the original description is accurate. For a discussion of this species see comments under *Z. mirum*.

Zagrammosoma intermedium Gordh, new species
Figs. 5, 11

Type-locality.—Palo Alto, California.

Female.—1.8 mm long. Body coloration as illustrated (Fig. 5); anterior aspect of head pale yellow except dark stripe extending from dorsomedial margin of compound eye to anterior ocellus; gonostylus dark brown; an-





Figs. 4–6. Dorsal view of *Zagrammosoma* species. 4. Z. *centrolineatum*; 5. Z. *intermedium*; 6. Z. *mirum*.

tennal pedicel with dusky spot on dorsal surface; funicular segments reddish brown, club dark brown. Forewing color pattern and setation as illustrated (Fig. 11). Legs pale yellow.

Head similar in shape and proportions to Z. *centrolineatum*.

Mesosoma with uniform alutaceous sculpture except on lateron of metanotum, pattern somewhat larger and not as deeply incised as in Z. *centrolineatum*. Pronotum with numerous scattered, short, dark setae and a row of larger setae along posterior margin; mesoscutum with 12 dark

setae which become progressively larger posteriorly; scutellum with 2 pairs of large, dark setae with the posterior pair larger than the anterior pair. Propodeum with weak but complete median carina; callus with long, pale setae; spiracle round, about 1 diameter from anterior margin of propodeum.

Metasomal tergum with alutaceous sculpture, but pattern not as strongly incised as on mesosoma. Terga 1–3 with short, pale setae along posterolateral margin; terga 4–6 more densely setose and pattern complete transversely; tergum 7 uniformly setose along apical ½. Gonostylus densely setose.

Male.—Unknown.

Described from one female taken at Stanford University, Palo Alto, California during 1947 from parasitized *Cameraria nemoris* (Walsingham) by J. W. Tilden. Holotype deposited in the U.S. National Museum of Natural History (USNM Type 75663).

This species is similar to *Z. centrolineatum* but can be distinguished from that species on the forewing characters given in the key and by the width of the mesosomal stripe.

After the description of this species the head was inadvertently lost. I have decided to describe the species on the basis of an imperfect specimen because the host is known and the species has a distinctive habitus.

This species is the same as that referred to by Tilden (1949) in his short note on leafminer parasites.

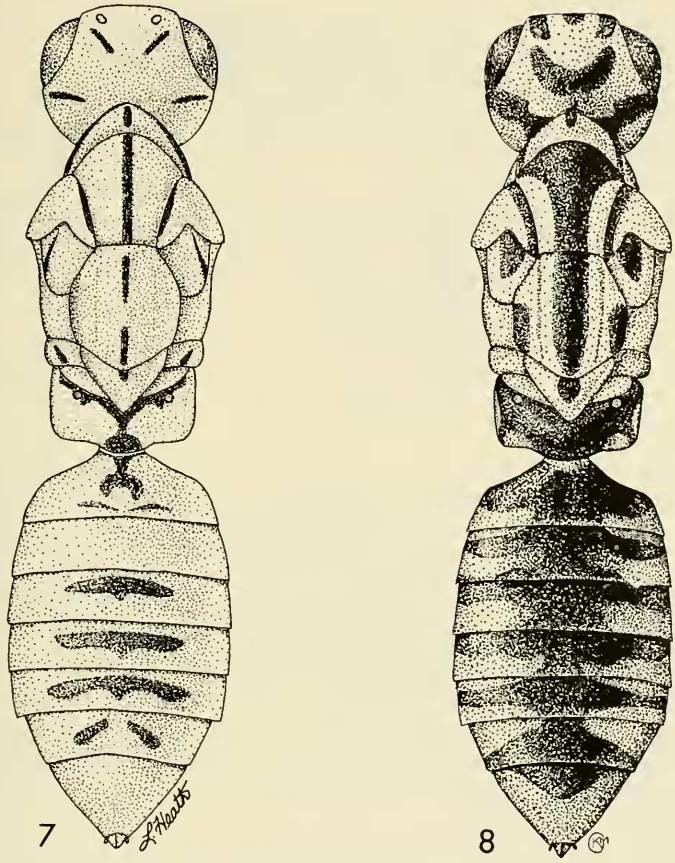
Etymology.—The specific name is a Latin adjective (*intermedius*) and means intermediate.

Zagrammosoma melinum Gordh, new species
Figs. 2, 9, 14

Type-locality.—Coalinga, California.

Female.—2.3 mm long. Body pale yellow except the following (Fig. 2); dark stripes under compound eye extending from medial margin to posterior ocellus; pronotum with 2 parallel, longitudinal, narrow stripes, 1 lateral and 1 dorsomesal; mesoscutum with lateral, longitudinal mesal stripe and a short, dark line on notaulices; scutellum with 2 short stripes halfway between median carina and spiracles; posteriomesal margin dark; basal gastral tergum with lateral spot; pygostylus brown; distal ½ of gonostylus dark brown. Antennal scape and pedicel with dark dorsal stripes (Fig. 9). Forewing hyaline except faint dusky cloud beneath stigma and junction of submarginal vein and marginal vein (Fig. 14). Legs pale yellow; pretarsi brown apically.

Head in frontal aspect 1.2× wider than high; compound eyes protuberant, asetose, 1.4× taller than length of malar space. Head surface alutaceous; vertex, medial margin of compound eye, face, and clypeal margin with



Figs. 7–8. Dorsal view of *Zagrammosoma nigrolineatum*.

sparse vestiture of pale, fine setae; clypeal margin straight. Torulus situated halfway between imaginary transverse line connecting ventral margins of compound eyes and eye midline.

Antenna (Fig. 9) 9-segmented (1, 1, 2, 2, 3); scape setose, alutaceous, 5.0× longer than wide; pedicel 1.6× longer than wide, setae more robust than setae on scape; alutaceous; anelli transverse, setose, smooth; funiculars subequal in length, setose and bearing rhinaria; club compact, 1.7× longer than wide, wider than funiculars, setose, each subsegment with rhinaria. Mandible 6-toothed. Maxillary palpus 1-segmented; labial palpus 1-segmented.

Mesosoma except metanotum alutaceous; meson of metanotum smooth, lateron striate. Posterior margin of pronotum with a line of fine, pale setae; scapula laterally with pale, fine setae; mesoscutum with 5 pairs of

fine setae; scutellum with 2 pairs of fine, pale, long setae; metanotum asetose; propodeal callus with long, fine, pale setae, medial carina weakly developed but complete.

Metasoma oblong-ovate from above, 1.16× longer than mesosoma, alutaceous; posterior margin of terga with lateral line of setae incomplete on terga 1–3 but progressively increasing in number mesally such that line is complete on segments 4–7; apical ½ of tergum 1 uniformly setose; sterna mesally setose; ovipositor extending from base to apex of metasoma, 1.96× longer than hind tibia, 2.1× longer than middle tibia, 5.19× longer than gonostylus. Pygostylus well developed, apparently with 4 long and 1 short setae.

Forewing moderately setose distal to junction of submarginal vein and marginal vein; admarginal area asetose on dorsal surface of wing; costal cell with a line of setae; marginal fringe short.

Male.—Unknown.

Described from eight females taken at Coalinga, California during August 1939 from parasitized *Bucculatrix* sp. on cottonwood by F. P. Roullard. Holotype and female paratypes deposited in the U.S. National Museum of Natural History (USNM Type 75665).

This species is similar to Z. *multilineatum* but can be distinguished from that species based on the following characters: Z. *melinum* lacks a medial longitudinal stripe on the scutellum and apical hind tibial spot, and the intensiveness of setation on the forewing is considerably less.

Variation.—Although the type-series is not extensive, there does appear to be some color variation. The propodeum may be pigmented, the mesoscutal stripe may be complete and the mesal portion of the metasomal tergum may be pigmented.

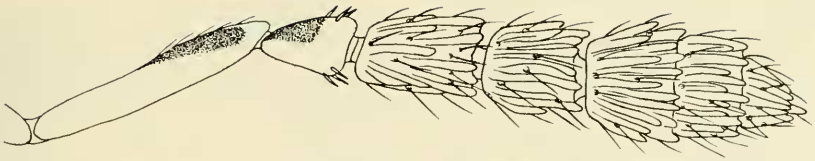
Etymology.—The specific name is from Latin (*melinus*) and means yellow-colored.

Zagrammosoma mirum Girault
Figs. 6, 10

Zagrammosoma mirum Girault, 1916:119–120.

Type-locality.—Claremont, California.

This species was described from a single specimen. It is similar to Z. *flavolineatum*, and topotypical material of both species should be collected to determine whether they are conspecific. Only the type-specimen of Z. *flavolineatum* exists, but several specimens of Z. *mirum* have been accumulated in the U.S. National Museum, Natural History, collection. The characters that distinguish these species are the pale propodeal callus and pale basal ½ of the hind femur on Z. *flavolineatum*, and the uniformly dark



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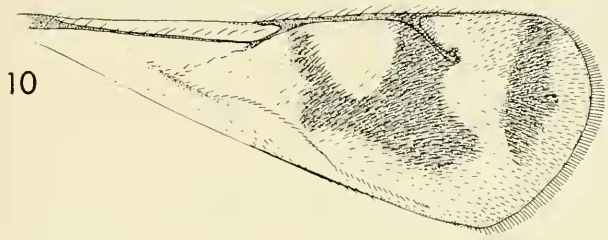

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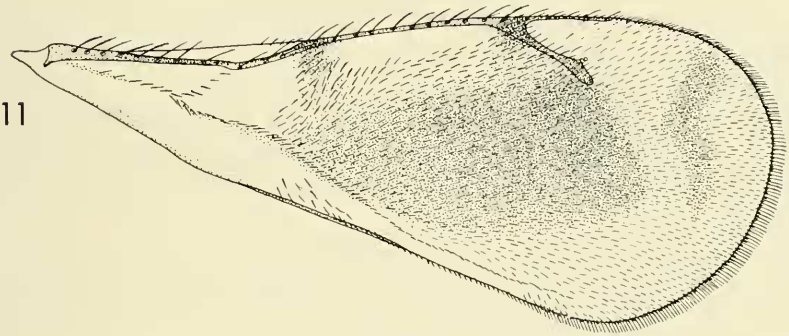

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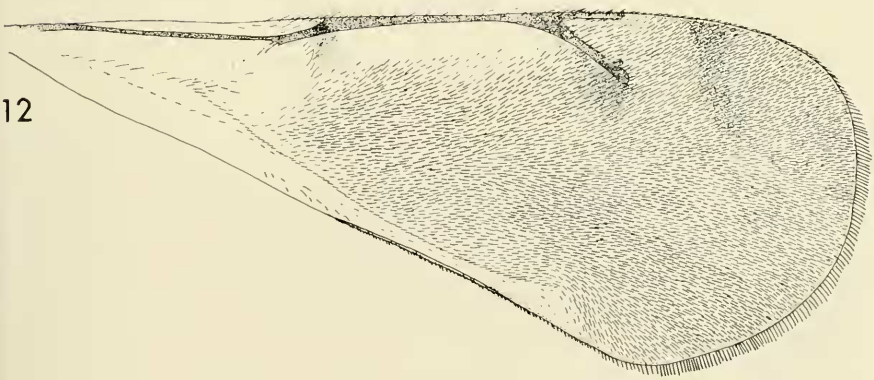

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Fig. 9. Antenna of *Zagrammosoma melinum*. Figs. 10–12. Forewings of *Zagrammosoma* species. 10. *Z. mirum*; 11. *Z. intermedium*; 12. *Z. multilineatum*.

coloration of the propodeum and dark hind femur with pale apex on *Z. mirum*.

Graf (1917) discussed a species he called *Z. flavolineatum* which attacked potato tuber moth, *Phthorimaea operculella* (Zeller), in Southern California. The illustrations of Graf's parasite lead me to conclude that he was dealing with *Z. mirum* because the coloration of the hind femur and propodeal callus is identical with that species.

Hosts of *Z. mirum* include *Lithocolletis* sp., *Tischeria* sp. and *Liriomyza pictella* (Thomson).

Zagrammosoma multilineatum (Ashmead)
Figs. 3, 12

Hippocephalus multilineatum Ashmead, 1888:VII.

Type-locality.—Riley Co., Kansas.

Zagrammosoma multilineata var. *punicea* Girault, 1911:123.

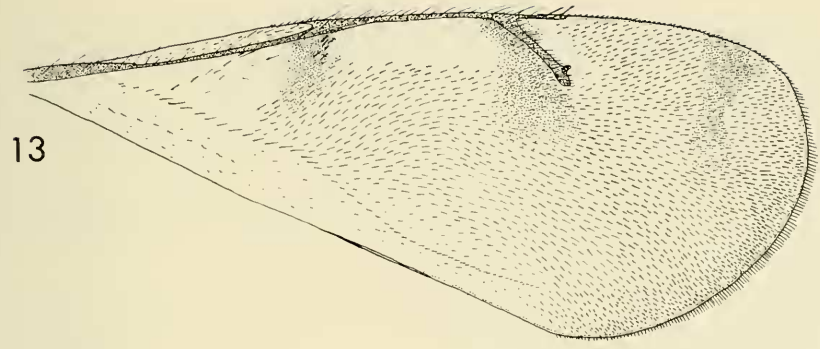
Zagrammosoma interlineatum Girault, 1916:125–126. NEW SYNONYMY.

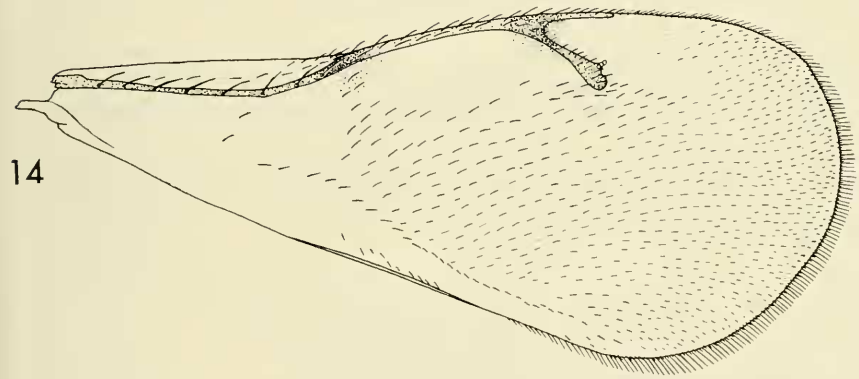
Type-locality.—District of Columbia.

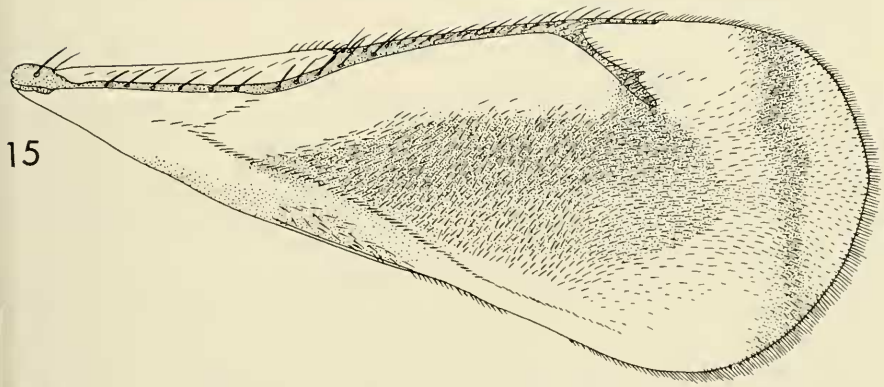
In Girault's original description of *Z. interlineatum* he compared the species to *Z. multilineatum*. I find no structural characters to differentiate the two, and the color pattern of *interlineatum* is within the range of variation exhibited by *Z. multilineatum*. Therefore, the synonymy is proposed.

Ashmead (1888) described *multilineatum* from two specimens and wrote that the species was characterized by a longitudinal stripe extending from the base of the torulus to the clypeal margin and two lines extended beneath the compound eye. The type-specimens also have a longitudinal stripe along the central third of the hind femur and a dark apical spot on the outer surface only. Since Ashmead's description this species has been recovered from Florida west to Idaho, Puerto Rico, and South America. Kerrich (1969) has provided supplementary descriptive notes on this species based on two specimens.

Not all of the material identified as *Z. multilineatum* in the U.S. National Museum, Natural History, collection conforms to the type-specimens. I have noted four phenotypes: (1) presence of a "nose" stripe, two stripes beneath the compound eye, and a stripe on the hind femur; (2) absence of a "nose" stripe, spotless and stripeless hind femur and convergent stripes beneath the compound eye; (3) absence of the "nose" stripe, stripes beneath the compound eye and spotless and stripeless hind femur; and (4) absence of the "nose" stripe, presence of two convergent stripes beneath the compound eye and a stripe and spot on the hind femur. There is geographical overlap among the phenotypes. Careful biological study of this species is necessary to determine whether sibling species are involved.







Figs. 13–15. Forewings of *Zagrammosoma* species. 13. Z. *americanum*; 14. Z. *melinum*; 15. Z. *centrolineatum*.

Girault (1911) named a "variety" of Z. *multilineatum* called *puniceum* from four specimens parasitizing *Tischeria malifoliella* Clemens taken by Quaintance at Washington, D.C. Girault reported that the distinguishing character was coloration, Z. *multilineatum* "variety" *puniceum* was pink and Z. *m. multilineatum* was yellow. When comparing Girault's type-material with other specimens of Z. *multilineatum*, I noted that the stripes beneath the compound eye converge, there is no "nose" stripe and the hind femur has a dorsal stripe and an apical stripe. Although Girault emphasized the difference in color, it is probably a cyanide induced reaction and I do not consider *puniceum* a subspecies.

The problem is complicated further because the specimens are labeled "Zagrammosoma multilineatum var amoverta MS, Girault," but apparently not in Girault's handwriting. The specimens are card-point mounted, and the type number is 9641. The U.S. National Museum, Natural History, type-catalog holds this name, but apparently Girault changed the name after it was entered in the catalog and before the manuscript was published.

This species is the most abundantly collected *Zagrammosoma* in North America and has been recovered from many hosts including Diptera and Lepidoptera. The most common hosts include: *Bucculatrix canadensisella* Chambers, *Coleotechnites milleri* (Busck), *Lithocolletis ostensackenella* (Fitch), *Antispila nyssaefoliella* Clemens, *Phyllonorycter craetaegella* (Clemens), *Agromyza pusilla* (auct., nec Meigen) and *Liriomyza sativae* Blanchard.

Zagrammosoma nigrolineatum Crawford
Figs. 7, 16

Zagrammosoma nigrolineatum Crawford, 1913:257.
Type-locality.—Compton, California.
Zagrammosoma sanguineum Girault, 1916:133. NEW SYNONYMY.
Type-locality.—Colorado.

Crawford's original description indicates that this species was based on two females, but examination of the type-series shows that they are both males. Several females have been acquired over the past 60 years; consequently, the following description can be provided.

Female 1.8 mm long. Head yellow except for 2 dark brown longitudinal stripes on frons, 3 spots surrounding ocelli, 2 occipital stripes, 2 large spots originating near oral fossa extending dorsally on either side of hypostomal bridge toward occipital foramen then diverging toward posterolateral margin of compound eyes; prementum dark; dark spot between toruli. Thorax yellow except metallic green lateral longitudinal and medial longitudinal stripes on pronotum, most of mesoscutum, scapulae along notauli; mesal ⅓ of scutellum and meson of metanotum. Entire propodeum except supracoxal flange metallic green. Posterior margin of proepisternum, ventral

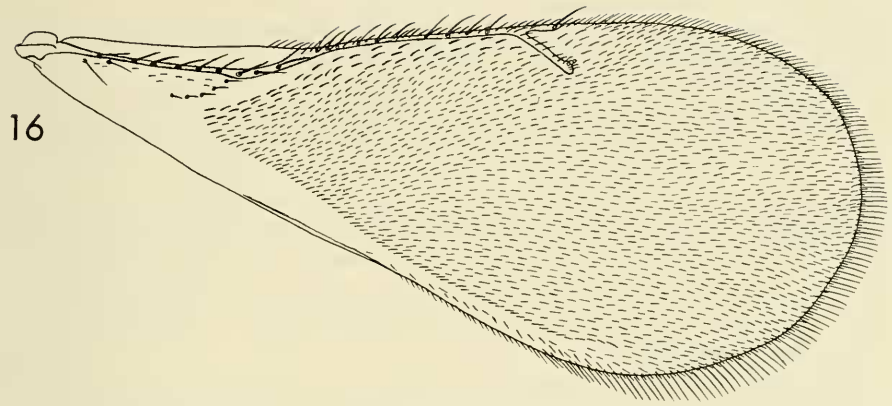


Fig. 16. Forewing of *Zagrammosoma nigrolineatum*.

0.33 of prepectus, ventral 0.50 of mesepisternum, mesepimeron dark. Metasomal terga predominantly dark reddish brown; sterna mesally dusky, laterally yellow; gonostyli dusky. Coxae yellow (except base of hind coxa), trochanters yellow; femora yellow except dorsolongitudinal stripe on front femur, base of hind femur; tibiae and tarsi dusky. Antennal scape with dorsal stripe; pedicel, anelli dark brown, funiculars and club slightly lighter.

Head in frontal aspect 1.33× wider than tall; compound eyes not strongly protuberant. Vertex and frons alutaceous; face, malar space smooth; compound eye 1.13× taller than malar space length. Head surface setose, compound eye setose, setae moderately long, pale; clypeal margin straight; toruli beneath imaginary transverse line extending between compound eyes, separated by 1.5 torular diameters. Antenna 9-segmented (1, 1, 2, 2, 3); scape reaching vertex, with reticulate striae, 5.70× longer than wide, with a few pale, thin setae; pedicel 2.0× longer than wide, moderately setose, usually about 1.5× longer than 1st funicular segment; anelli transverse with small, pale setae; funicular segments subequal in size, bearing setae and rhinaria; club 2.23× longer than wide with setae, rhinaria. Mandible 5-toothed. Maxillary palpus 2-segmented; labial palpus 1-segmented.

Mesosoma with alutaceous sculpture; pronotum with a row of moderately large setae on posterior margin; mesoscutum with 2 or 3 pairs and scutellum with 2 pairs of large setae; scapula with 5 setae; axilla and metanotum asetose; metanotal apex mesally pointed, displacing anterior portion of propodeum; propodeal median carina not reaching posterior margin; callus with moderate vestiture of pale, long, thin setae.

Metasoma smooth, 1.16× as long mesosoma; terga 1–3 setose laterally, 4–5 with transverse line of setae, 6–7 with uniform vestiture of pale, thin setae; sterna sparsely setose mesally. Ovipositor 1.11× as long as hind

tibia, 1.19× as long as middle tibia, 4.0× as long as gonostylus; ovipositor extending from basal ⅓ of metasoma to apex. Pygostylus as long as wide, with 2 long and 3 short setae.

Forewing submarginal vein 1.17× longer than marginal vein; stigmal vein 1.3× longer than postmarginal vein; costal cell with a line of setae and a few setae along anterior apical margin; marginal fringe 0.07× maximal wing width.

Described from numerous specimens collected in Canada and the western United States. Hosts include *Coleotechnites milleri* (Busck) on *Pinus contorta* and *Jacaranda acutifolia* infested with *Phytoliriomyza jacarandae* Steyskal and Spencer M.S., *Argyresthia pilatella* Braun, and *Ocnerostoma strobivorum* Freeman.

Variation.—The color pattern of this species varies considerably. A long series of specimens taken at Targhee, Idaho by J. H. McLeod from cotton leafminer shows that the body coloration varies from pale yellow to a metallic blue-green mesosoma and reddish-brown metasoma. Ratio of pedicel length to first funicular segment length sometimes has been used as a taxonomic character. However, in this species the ratio is variable; the pedicel may be longer or shorter than the first funicular segment. Occasionally there are supernumerary setae on the scutellum. The ocelli always have dark spots surrounding them. Pale specimens have small spots; extensively metallic specimens have the entire interocellar area pigmented. This species has been recovered from *Apanteles* spp. attacking leafminers in Canada.

Girault (1916) described Z. *sanguineum* based on one female taken in Colorado. The type-specimen has the head crushed on a slide and mounted in Canada balsam and the body point-mounted. The body is red, but again I suspect that this is a cyanide-induced reaction. Although the antennae are broken, the pedicel is definitely longer than the first funicular segment. Morphologically this specimen falls within the range of variation exhibited by Z. *nigrolineatum* and thus the synonymy is proposed.

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