

A REVISION OF THE CHALCID-FLIES OF THE ENCYRTID GENUS CHRYSOPLATYCERUS.

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Chrysoplatycerus Ashmead, 1889 (first described as *Rileya* Howard, 1888, not Ashmead) appears to be an exclusively American genus which probably originated within the tropics and has spread northward through Mexico into California. Up to the present time only two species have been known, the original species *C. splendens* (Howard) from Southern California and *C. howardii* Ashmead described rather indefinitely and uncertainly from Mexico. Recently Mr. G. F. Ferris of Stanford University sent me specimens of a third species which he had collected in the vicinity of San Diego, California. His specimens were reared from a new species of mealybug which Mr. Ferris will describe under the name of *Pseudococcus adenostomae*. Under date of Jan. 2, 1921, Mr. Ferris writes that he wishes credit to be given to Mr. C. R. Gorton, County Commissioner of San Diego County, for the discovery of the material, especially as Mr. Gorton wanted to find out about the parasites.

In the working up of the material I am indebted to Mr. A. B. Gahan for comparing the female with the type of *howardii*, and desire to express my appreciation of this essential service.

The male of *Chrysoplatycerus* has never been described, although Ashmead included the genus in his generic table of the males, the characters given there being wholly suppositional and based on those of the female.¹ This practice pursued by Ashmead in case of several other genera such as *Anicetus*, *Eusemion*, *Coccophoctonus*, and *Zarhopalus* is quite misleading, as the males in these as well as many other Encyrtid genera show a strong sexual dimorphism.

Chrysoplatycerus was placed also in the wrong tribe by Ashmead, as it is unmistakably an Ectromatine and not a Mirine genus. The same may be said for *Zarhopalus*, *Blepyrus* (= *Coccophoctonus* Ashmead), *Chalcaspis*, and *Aenasius*, all of which except *Blepyrus* show

¹ Proc. U. S. Nat. Mus., vol. 22, p. 347, 1900, and Mem. Carnegie Mus., vol. 1, No. 4, p. 310, 1904.

close relationship to *Chrysoplatycerus* and *Taftia* in the long curved stigmal vein, while *Blepyrus* is closely allied through *Chalcasepis* by the general habitus. All of these genera except *Blepyrus*, *Chalcasepis*, and *Aenasius* have a deep semicircular scrobal impression, and there is a slight indication of the same structure in *Aenasius*. It is interesting to note that all of these genera except *Taftia* and *Blepyrus* probably originated in America, but other allied genera must occur elsewhere, and I have, in fact, seen a representative of a new genus from South Africa similar to *Chrysoplatycerus* except in lacking the fascicle of hairs at the apex of the scutellum.

Genus CHRYSOPLATYCERUS Ashmead.

Rileya HOWARD (J. B. Smith's abstract). Entom. Amer., vol. 4, p. 80, July, 1888, not *Rileya* Ashmead, 1888, which has a few days priority).

Chrysoplatycerus ASHMEAD. Canad. Entom., vol. 21, p. 37, 1889.

The female generic characters are well known, but the male, which has but few characters in common with the female, needs to be described.

Generic characters of male.—Head rather thin fronto-occipitally, the face abruptly inflexed; the dorsal surface strongly rounded from side to side, and more or less inclined obliquely forward; fronto-vertex broad, as wide as long or wider, the ocelli arranged nearly in a right-angled triangle, the posterior pair almost touching both the eye and occipital margins; eyes moderately large, very finely pubescent, strongly convex and rounded in outline, with the posterior margin strongly flattened off; in frontal view the head is well rounded above but somewhat triangular below the eyes, as the cheeks converge strongly toward the narrow mouth, or sometimes after shrinkage the head appears almost circular in outline; face distinctly wider than long, the angulation between it and the frons not carinated as in the female but similar in shape, forming a semicircle and running outward to the lateral margin of the head, not distinctly below or anterior to the eyes as in the female but touching their anterior margins; face below the angulation not so deeply impressed as in the female to form the scrobes; prominence between the antennae convex, its upper margin triangular; cheeks as long as the greatest diameter of the eyes.

Antennae inserted moderately far apart, a little above the oral margin, their sockets being situated a little closer together than the distance from either to the nearest point of the eyes, and nearly twice as far apart as the distance from either to the nearest point of the oral margin; scape short, cylindrical, reaching only to the angulation between the face and frons, together with the radicle joint about as long as the pedicel and first two funicle joints combined; pedicel

short, somewhat wider than long and as thick as the scape; flagellum much thicker than the pedicel or scape, slightly tapering toward the apex, compressed so that the funicle joints are narrowly oval in cross section; funicle six-jointed, each joint in broadside view about one-half wider than long and each deeply cupped at both ends with a long stout connecting stalk as seen in transparent slide mounts; club solid, narrowly oval, truncate at base and pointed at apex, as long as the fifth plus sixth and one-half of the fourth funicle joints combined and slightly narrower than the preceding joint; scape and pedicel with coarsely reticulate surface and provided with a few very short inconspicuous bristly hairs; flagellum clothed with similar somewhat finer hairs at the base, but these gradually decrease in size and prominence towards the apex where they are visible only under high magnification; flagellum also provided with very numerous linear projecting sensoria, producing a fringe of short spiny points around the tips of the joints and imparting a peculiar rough appearance to the surface of the joints.

Mandibles about as in the female, small, slender, bidentate at apex with the inner or upper tooth much longer than the other. Maxillary palpi four-jointed, the third joint shortest, the fourth somewhat longer than the preceding joints combined; labial palpi short and two-jointed.

Thorax robust and strongly convex above from side to side; the pronotum short and strongly arcuate; mesoscutum about twice as wide as long or a little less; axillae short, transverse meeting medially and either almost perfectly depressed or somewhat elevated with a slight indication of a transverse median carina; scutellum more or less distinctly shorter than the mesoscutum, convex, well elevated and strongly declivous at the sides, the apex well rounded and without a fascicle of hairs; propodeum very short and transverse. Abdomen small, strongly depressed, triangular in shape with the corners rounded off, and a little longer than half the thorax; vibrissal plates situated on the lateral margins a little before the middle, the vibrissae inconspicuous but reaching nearly to the apex.

Legs moderately long and slender, showing no marked peculiarities, the middle tarsi only slightly thicker than the hind pair. Wings shorter and proportionally wider than in the female, entirely hyaline, the discal and marginal ciliation about normal for the family; marginal vein about two or three times as long as thick, the stigmal very much shorter than in the female, straight, forming an acute angle with the postmarginal and reaching to the middle of the wing-length; postmarginal indistinct distad but at least a little longer than the stigmal.

Face smooth and polished especially in the scrobes, cheeks finely reticulate, frontovertex finely rugosely wrinkled and with numerous

minute shallow punctures; mesonotum finely reticulate and somewhat shiny, becoming smoother and brighter towards the sides especially of the scutellum; pleura and abdomen smooth and shining, with delicately impressed reticulations on the basal tergite. Pubescence throughout inconspicuous, but fine short hairs are present around the oral margin and on the frontovertex; the eyes have very fine short erect hairs; the pubescence of the mesonotum and scutellum is rather abundant and seriatly arranged, becoming gradually a little longer towards the apex of the scutellum, where there is a pair of much longer suberect bristle-like hairs directed forward; abdomen nearly bare, although a few short hairs are present besides the vibrissae and mainly located on the sides towards the apex.

Coloration black and slightly metallic on the mesonotum and much more strongly metallic bluish or green on the smoother and more polished parts of the body.

KEY TO THE SPECIES CHRYSOPLATYCERUS.

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|---|-------------------------------|
| 1. Males | 4 |
| Females | 2 |
| 2. Frontovertex narrow, the part included between the eyes somewhat over three times as long as wide; scape about twice as long as wide; smooth polished area on each side of the mesoscutum nearly as wide as the shagreened median part; axillae moderately elevated and with an oblique declivity behind the weakly carinate middle; scutellum strongly depressed above, being perfectly flat and highly polished in front of the fascicle; row of bristles bounding the proximal margin of the speculum of the fore wings comparatively thick, long, and prominent..... | 3 |
| Frontovertex much wider, the part included between the eyes not over 2.5 times as long as its posterior width; scape about a half longer again than wide; smooth polished area on each side of the mesoscutum small and longitudinally furrowed, separated from the shagreened median part by a carina; this median part considerably depressed, about three times as wide as the polished areas and extending laterad as far as the outer ends of the axillae; axillae strongly elevated, somewhat depressed anteriorly, then abruptly angled and carinated with a nearly perpendicular posterior face; scutellum strongly convex from side to side and towards the rounded apex, becoming somewhat tectiform towards the base, the disk being finely shagreened in front of the fascicle of hairs; row of bristles on the proximal border of the speculum comparatively short and less prominent; head and thorax ferruginous, the abdomen black with an aeneous and greenish luster..... | <i>ferrisi</i> , new species. |
| 3. General coloration somewhat metallic bluish and purple, the frontovertex nearly black; polished parts including face, occiput, sides of mesoscutum and the scutellum brilliant metallic green; narrow collar of the pronotum dull orange ferruginous; pleura somewhat ferruginous beneath a strong metallic purple luster; abdomen and dorsal surface of scape and pedicel strongly purple; legs except the ferruginous tarsi mostly blackish, with a greenish luster on the upper surface of the middle and hind tibiae, the middle femora somewhat ferruginous..... | <i>splendens</i> (Howard). |

Head and thorax ferruginous, the abdomen bluish black with an aeneous luster; antennae brownish black without a metallic luster on the scape; legs brown with the tibiae fuscous and the tarsi mostly whitish.——*howardii* Ashmead.

4. Frontovortex a little wider than long, finely rugosely wrinkled and with scattered shallow pin-punctures; mesoscutum and scutellum strongly convex, the axillae somewhat elevated with a declivous posterior face; general coloration black, somewhat shiny but hardly metallic; face, axillae, and metapleura more or less distinctly metallic green, the mesopleura and abdomen more bluish; antennae and legs black with a slight bluish luster on the hind femora, the spur of middle tibiae and the tarsi except apical joint brownish yellow.——*ferrisi*, new species.

Frontovortex no wider than long, more finely wrinkled and with fewer, shallower pin-punctures; mesoscutum and scutellum slightly depressed medially, especially in the longitudinal axis, the axillae not at all prominent or scarcely elevated above the scutellum; general coloration black with a slight bluish and aeneous luster, the face, cheeks, pleura, sides of the scutellum and the abdomen with a strong bluish luster; antennae opaque black; legs usually dull blackish, but the femora in one specimen with a distinct bluish luster, the apex of middle tibiae, the spur, and the middle and hind tarsi except apical joint pale yellowish, the trochanters and front tarsi dusky yellowish.——*splendens* (Howard).

1. CHRYSOPLATYCERUS SPLENDENS (Howard).

Rileyia splendens HOWARD, Entom. Amer., vol. 4, p. 80, July, 1888; and Canad. Entom., vol. 20, p. 194, Oct., 1888.

My specimens of this species were reared as follows: Two females from *Pseudococcus ryani* (Coquillett) on cypress, Pasadena, California, August 13, 1911, and August 19, 1912 (P. H. Timberlake); two females from a species of *Pseudococcus* on *Ceratonia siliqua*, Colorado, California, September 27 and October 8, 1912 (P. H. Timberlake); one male from *Pseudococcus citri* (Risso) bred experimentally November 24, 1912, from a female captured at Whittier, California (P. H. Timberlake); one female, one male from *Pseudococcus maritimus* (Ehrhorn), Riverside, California, October, 1914 (C. P. Clausen); and one male from a species of *Pseudococcus* on *Ceratonia siliqua*, Pasadena, California, July 29, 1915 (E. J. Branigan).

The original host was an undetermined mealy-bug on passion-flower vines at Los Angeles, California (Albert Koebele), and Essig² records this parasite from *Pseudococcus citri* at Santa Paula, California. According to my own observations on the parasites of *citri* in California, *splendens* is infrequently met with and is imperfectly adapted to this host. In the experiment mentioned above the female was supplied with a large colony of *citri* on potatoes and although she was observed to oviposit frequently only a single male was reared.

The original figures given by Howard³ and those by Essig² are characteristic of this interesting parasite and show many of the structural peculiarities of the genus.

² Pomona Journ. Entom., vol. 3, p. 521-522, 1911; also Inj. and Benef. Ins. Calif., Monthly Bulletin, vol. 2, p. 271-272 (Ed. 2, pp. 371-372).

³ Canad. Entom., vol. 20, p. 193, 1888.

2. CHRYSOPLATYCERUS HOWARDII Ashmead.

Chrysoplaticerus howardii ASHMEAD, Proc. U. S. Nat. Mus., vol. 22, p. 405, 1900.

This species was described from two females which were supposed to have been collected in Mexico. Mr. Gahan examined the types for me in the United States National Museum and reported that in regard to all structural characters they were practically identical with *splendens*. The male of this species remains unknown.

3. CHRYSOPLATYCERUS FERRISI, new species.

Female.—Head proportionately a little larger and wider than in *splendens*, being somewhat wider than the thorax, the dorsal surface well rounded, the anterior area between the eyes and the transverse carina without the strongly developed impression found in *splendens*; frontovertex about two and a half times longer than the width in the ocellar region, distinctly but not greatly widening anteriorly; ocellar angle considerably less acute than in *splendens*, the distance between the posterior ocelli being only slightly less than the length of the

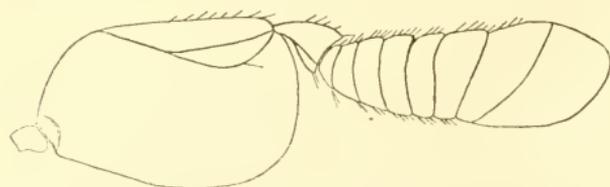


FIG. 1.—ANTENNA OF FEMALE CHRYSOPLATYCERUS FERRISI
TIMBERLAKE.

other sides of the triangle, the posterior pair almost touching the eyes and removed a little more than their own diameter from the occipital margin; eyes somewhat

larger than in *splendens*, less protuberant, becoming a little wider anteriorly, their surface glabrous; face nearly as in *splendens* but the transverse carina more deeply curved, thus forming almost a semi-circle, the prominence between the antennae slightly and uniformly convex, as long as wide, not abruptly and obliquely inclined forward anteriorly as in *splendens*, and its upper or posterior margin well rounded.

Antennae (fig. 1) inserted far apart and not distant from the oral margin; scape laminately expanded and about a half longer again than wide, its base (excluding the radicle joint) slightly obliquely truncate, the apical end rounded, the dorsal part abruptly folded over at more than a right angle with the ventral expansion, thus forming a narrow flattened surface above, widest at the apex and gradually narrowing toward the base, and also forming a groove on the outer surface above to receive the pedicel and part of the flagellum; pedicel in the form of a three-sided pyramid, like that of *splendens* in shape, but proportionately not more than one-half as large, its apex truncate, whereas this part is deeply concave in *splendens*; flagellum

comparatively narrow at base and widening perceptibly towards the apex, while in *splendens* it is nearly of the same width throughout; funicle joints all transverse, increasing in length and width distad, being much less cupped and narrowed ventral than in *splendens*; club considerably longer than wide, more rounded and a little longer on the ventral margin than on the dorsal, in length about equal to the last four funicle joints combined and a little wider, while in *splendens* the club equals the funicle in length and width.

Mandibles small, slender, bidentate, the inner or dorsal tooth much longer than the other one; maxillary palpi four-jointed, the first two joints short and about equal, the third still shorter, the fourth rather long and slender or somewhat longer than the preceding joints combined.

Collar of pronotum short and arcuate; mesoscutum with a transverse median part nearly twice wider than long, only slightly convex and abruptly limited from the deeply furrowed sides of the scutum by a sharp carina just even with the outer ends of the axillae; the latter strongly elevated above the scutellum, carinated at the middle, at which point they become abruptly declivous, the posterior surface being perpendicular and meeting the dorsal surface in a right angle; scutellum in the form of a short, bluntly rounded cone, being well elevated and convex at the sides and apex, and convex on the disk although becoming somewhat tectiform at the base, the apical fascicle of hairs rather thicker and slightly shorter than in *splendens*; propodeum large and inclined obliquely backward, moderately long at the middle and about twice as long at the sides, a transverse, broadly arcuate carina present anteriorly and just tangent to the basal margin, a shorter curved carina present on each side running from near the spiracle to the outer end of the transverse carina, the spiracles rather large and almost round; legs and wings (pl. 1, fig. 1) as in *splendens* except in minute details, of which the most important seems to be the much smaller size of the enlarged and flattened hairs guarding the proximal border of the speculum of the forewings.

Abdomen small in dry material, shorter than the thorax by about one-fourth, the dorsum more or less deeply concave, the ventral surface compressed, the ovipositor enclosed and concealed by the ventrites; vibrissal plates situated on each side at or near the middle of the length, the vibrissae reaching nearly to the apex.

Sculpture.—Face, cheeks, and postorbital area of head smoothish and very finely delicately reticulate, the scrobes of the face polished; frontovertex finely malleate-reticulate and with numerous scattered very shallow pin punctures, many of these being in a crowded row at the inner orbits of the eyes; collar of pronotum and disk of mesoscutum very minutely, densely, and roughly granular, the scutum becoming smoother and minutely reticulate on the posterior

margin; disk of the axillae and scutellum rather roughly but very finely reticulate; furrowed sides of mesoscutum, the mesopleura, metapleura, and propodeum smooth and polished; declivous parts of axillae smooth but with delicate reticulations, the declivous sides of scutellum similar but more lineolate, especially towards the apex; propleura, prepectal plates, tegulae and abdomen finely reticulate, rougher on the tegulae and coarser on the basal tergite of abdomen; metanotum with several fine oblique carinae on each side.

Vestiture.—Face with very fine whitish pubescence on the prominence between the antennal sockets, the occipital margin of the sides of head with a conspicuous fringe of rather short white hairs; collar of pronotum and disk of mesoscutum rather conspicuously, but not densely, pubescent with short white recumbent hairs; a few similar hairs on the disk of the scutellum, the apical fascicle dense and black; apex of the abdomen with a few black bristly hairs beneath and on the lateral margins, most of these arising from the apical ventrites.

Coloration.—General color of the head and thorax ochraceous orange to tawny (Ridgway) or even darker in one specimen, the frontovertex about Prout's brown or darker, the scutellum still darker and with a dark greenish luster; facial prominence (in some specimens) and the mesopleura with a purple luster; posterior wall of the scrobes and the ventral orbits of the eyes with a pale-green luster; polished sides of the mesoscutum and the metapleura metallic green; declivous part of the axillae brilliant gold, purple-red or greenish in different lights; disk of mesoscutum and axillae with a rather weak, dark bronzy luster; abdomen bluish black, the luster mostly greenish and not especially strong. Scape somewhat tawny in ground color but with a strong metallic green luster which produces a bronzy effect, its ventral margin narrowly blackish; pedicel metallic greenish; the flagellum bluish black, with a distinct but not brilliant metallic luster. Front and middle legs, except the tibiae and middle coxae, as well as the hind coxae concolorous with the pleura or somewhat browner; front and middle tibiae, middle coxae, and most of the hind legs fuscous to blackish, the hind femorra usually browner; dorsal margin of the front tibiae with a bluish luster, the same parts of the middle and hind legs with a greenish luster; apical joint of the tarsi fuscous to blackish, the tarsi otherwise being brownish yellow, although the front pair in one specimen are almost all infuscated and the hind pair have only the second and third joints pale; spur of middle tibiae dark. Wings hyaline on the basal third and then abruptly fuscous on the rest of the disk although becoming slightly paler toward the apex, and with a narrow curved subhyaline line parallel to the posterior margin present as in *splendens*; the veins blackish.

Measurements.—Length of body: (1.51 to) 1.87; length of head: 0.726; width of head: 0.754; width of vertex at posterior ocelli:

0.217; length of scape, exclusive of the radicle joint: 0.485; width of scape: 0.318; length of flagellum: 0.535; total width of mesoscutum: 0.667; width of the disk of mesoscutum: 0.478; length of forewing: 1.46; width of forewing: 0.57 mm.

Male.—Structural characters agreeing with the generic description above and only those distinguishing it from the male of *splendens* need be mentioned here: Head slightly thicker fronto-occipitally, the frontovertex a little wider than long, distinctly more rugose and with more numerous and evident pin-punctures; mesoscutum as finely reticulate as in *splendens*, but slightly more roughly and with the fine seriatly arranged hairs more numerous; axillae more elevated and slightly angulated at the middle with an obliquely declivious posterior face; scutellum more convex (being somewhat flattened on the disk in *splendens*), a little more densely and roughly reticulate and with the fine hairs much more numerous; both mesoscutum and scutellum are much less smooth and shining on the sides. Antennae (fig. 2) essentially similar in the grosser characters, although the scape is slightly longer than in *splendens*, but under high magnification the linear sensoria are found to be much more numerous, there being about four transverse rows on each funicle joint and only two or three partial rows in *splendens*. Wings (pl. 1, fig. 2) a little longer and not so broad, especially the hind pair, which are unusually short and wide in *splendens*; the discal ciliation much finer, shorter, and very hyaline in a large quadrate area just beneath the venation beginning at the distal border of the speculum as seen in slide mounts, whereas in *splendens* the whole disk beyond the speculum is uniformly ciliated; discal ciliation of the hind wings is extremely short and hyaline and evident throughout in the case of *splendens*; marginal vein longer and slenderer, nearly three times as long as wide (nearly as wide as long in *splendens*), stigmal vein somewhat shorter, the postmarginal considerably longer and more distinct being about twice as long as the stigmal (only slightly longer than the stigmal in *splendens*).

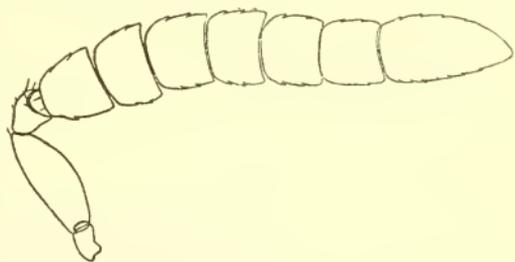


FIG. 2.—ANTENNA OF MALE CHRYSOPLATYCERUS FERRISI TIMBERLAKE.

Coloration rather dull and very slightly bluish black, the mesopleura and abdomen much more shiny and bluish, the scrobes, declivious part of the axillae and the metapleura with an evident metallic greenish luster; mouth parts largely yellowish, the antennae dull

blackish; legs black with a bluish luster on the hind femora, the knee joint and tip of the tibiae of the front and middle legs, middle tibial spur and all the tarsi except apical joint brownish yellow, although the tarsi of the front and hind legs may be somewhat dusky; wings hyaline, the veins dusky yellowish.

Measurements.—Length of body: (0.84 to) 1.18; length of head: 0.450; width of head: 0.474; width of vertex at posterior ocelli: 0.223; width of mesoscutum: 0.523; length of forewing: 1.07; width of forewing: 0.518 mm.

Described from five females, five males (type, allotype, and paratypes) reared September 10, 1920, from *Pseudococcus adenostomae* Ferris, collected in the vicinity of San Diego, California (G. F. Ferris).

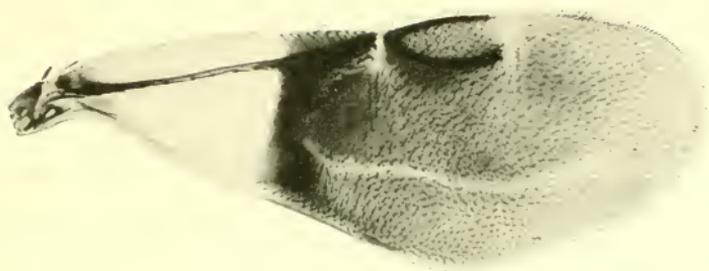
This fine species is named after Mr. Ferris in recognition of his excellent and much needed work on the Coccidae.

Type, allotype, and paratypes.—Cat. No. 25087 U. S. N. M. Paratypes in author's collection.

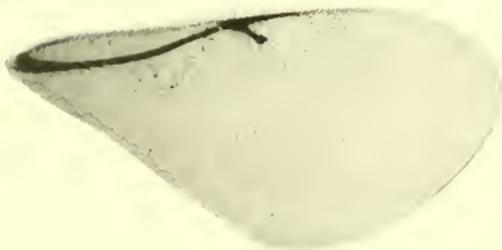
EXPLANATION OF PLATE.

Chrysoplatycerus ferrisi Timberlake.

- FIG. 1. Forewing of female.
2. Forewing of male.



1



2

FOREWINGS OF *CHRYSOPLATYCERUS FERRISI* TIMBERLAKE

FOR DESCRIPTION OF PLATE SEE PAGE 10.

