On the Subfamily Astatinae, Part II. A Review of the Genus *Astata* from Mexico and Central America (Hymenoptera: Sphecidae)[1]

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ABSTRACT

Seventeen Mexican and Central American species of *Astata* are recognized and keyed; 6 of these are described and discussed, and their probable relationships are evaluated. *A. **stangei**, A. **evansi**, A. **centralis**,* and *A. **westcotti*** are new to science, while *A. tinctipennis* Cameron and *A. apicipennis* Cameron are synonymized under *A. occidentalis* Cresson.

Cameron (1890) described 5 new species of Mexican and Neotropical *Astata* and reviewed 4 others described by previous authors. Since his time, however, this group has received little attention. Of those species described by Cameron, I have synonymized *A. tinctipennis* and *A. apicipennis* under *A. occidentalis* Cresson. Also, I have transferred *A. kohli* (Cameron) and *A. picta* (Kohl) to the genus *Dryudella*.

In this paper 17 species from Mexico and Central America are considered, of which 4 are new to science. The previously unrecognized males of *A. alpestris* Cameron and *A. albovillosa* Cameron are described and figured.

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who furnished notes on types of Astatinae deposited in European museums.

FAUNAL RELATIONSHIPS

The Mexican fauna is composed of 2 elements, the Nearctic and the Neotropical. Nearctic forms generally extend to the Neo Volcanic Plateau in central Mexico, but are not found so far south along the coastal areas. Conversely, Neotropical elements reach farther northward along the coast than inland.

With the exception of 2 species which are found in both regions, members of the genus *Astata* generally conform to the boundaries of a region. The following table lists the number of species from areas in these 2 regions.

Area	No. of spp.
1. Continental U.S. only	2
2. Continental U.S. and Mexico (north of Neo Volcanic Plateau)	8
3. Mexico (south of Neo Volcanic Plateau) and Central America	3
4. Continental U.S. and Mexico	2
5. Mexico only	3
6. Central America only	1

From the above tabulation it appears that the majority of the species are Nearctic. As to the origin of the Mexican and Central American fauna there is insufficient material to draw any definite conclusions.

KEY TO THE MEXICAN AND CENTRAL AMERICAN *ASTATA*

Males

1. Abdomen marked with red 2
   Abdomen entirely black 10
2. Flagellomeres with tyloides 3
   Flagellomeres rounded beneath 7
3. Sternite II seen in profile with a median hump (Fig. 12) 4
   Sternite II flat (Fig. 11) 6
4. Median lobe of clypeus hardly produced (Fig. 16) 5
   Median lobe of clypeus enlarged laterally into small lobes (Fig. 13) ..... ***alpestris*** Cameron
5. Hind femora emarginate ventrally (Fig. 19); tangential line between compound eyes nearly as long as flagellomeres I and II taken together ..... ***femorata*** Parker
   Hind femora entire; tangential line between compound eyes as long as flagellomere I ..... ***centralis*** n. sp.
6. Basal part of abdomen black; dorsal propodeal enclosure closely reticulate ..... ***bakeri*** Parker
   Abdomen entirely red; propodeal enclosure openly reticulate ..... ***stangei*** n. sp.
7. Hind part of abdomen black; median clypeal lobe as in Fig. 16 8
   Abdomen entirely red; median clypeal lobe as in Fig. 15 9
8. Sternite IV emarginate medially (Fig. 17), with medial long brownish hairs; carina on anterior margin of hind femora interrupted near base ..... ***westcotti*** n. sp.
   Sternite IV entire, without long hairs; anterior margin of hind femora with complete, slight carina ..... ***bicolor*** Say
9. Hind coxae flanged near base; setae of abdominal sternites black ..... ***nevadica*** Cresson
   Hind coxae normal; abdominal setae entirely white ..... ***mexicana*** Cresson
10. Sternite II humped in profile (Fig. 12); mid coxae flattened posteriorly 11
    Sternite II flat in profile (Fig. 11); mid coxae rounded 12
11. Hind coxae depressed ventrally (Fig. 18); sternites IV–VI with V-shaped medial emargination; median clypeal lobe as in Fig. 14 ..... ***albovillosa*** Cameron
    Hind coxae normal; sternites entire; clypeal lobe hardly produced, flat ..... ***evansi*** n. sp.
12. Antennae rounded beneath, without tyloides; sternites IV–VI without appressed medial setae ..... ***unicolor*** Say
    Antennae with tyloides; sternites IV–VI with appressed medial setae 13
13. Tangential line between compound eyes equal to length of flagellomeres V–VII taken together 14
    Tangential line between compound eyes equal to length of flagellomeres V, VI, and ⅓ of VII taken together 15
14. Pubescence black; mid coxae flattened posteriorly, ridged anteriorly ..... ***nubecula bechteli*** Parker
    Pubescence white except some black setae interspersed on sternites; mid coxae normal ..... ***bigeloviae*** Cockerell and Fox
15. Mandible with medial yellowish band; clypeal lobe short, hardly produced (Fig. 16) ..... ***clypeata*** Parker
    Mandible entirely black; median clypeal lobe broad (Fig. 15) ..... ***occidentalis*** Cresson

Females

1. Abdomen marked with red 2
   Abdomen entirely black 9
2. Flagellomere II as long or nearly as long as I ... 3
   Flagellomere II no more than two thirds as long as I 7
3. Pubescence of sternites, sternum black; marginal cell not exceeding third submarginal cell ..... ***nevadica*** Cresson
   Pubescence all white; marginal cell exceeding third submarginal cell 5
4. Interocellar area with at least 35 pits, those medially merging (Fig. 2) ..... ***alpestris*** Cameron
   Interocellar area with at most 20 pits, no more than 2 or 3 merging medially ..... ***mexicana*** Cresson
5. Mid coxae bare ventrally (Fig. 20), bearing a tubercle on ventral surface; stigma yellowish brown 6
   Mid coxae hairy ventrally (Fig. 21), without a tubercle; stigma brownish-black 7
6. Vertex heavily pitted (Fig. 3); scutum entirely punctured ..... ***westcotti*** n. sp.
   Vertex sparsely pitted; scutum shiny, hardly punctured on summit ..... ***bicolor*** Say
7. Vertex heavily pitted; scutum entirely punctured; dorsal propodeal enclosure with distinct median carina 8
   Vertex sparsely punctured; scutum pitted anteriorly only; propodeal enclosure without median carina 9
8. Pubescence of sternites black; punctation of pleura hammered-like; sternite II sharply humped medially ..... ***centralis*** n. sp.
   Pubescence of sternites white; punctation of pleura obliquely striate; sternite II not humped ..... ***unicolor*** Say
9. Pits between ocelli small, 6 of their diameters equal to width of lateral ocellus (Fig. 1); mesopleura reticulate; dorsal propodeal enclosure openly reticulate; anal area of forewing violaceous ..... ***stangei*** n. sp.
   Pits between ocelli larger, 4 of their diameters equal to width of lateral ocellus (Fig. 4); mesopleura obliquely striate; dorsal propodeal enclosure closely reticulate; anal area of forewing light brown ..... ***bakeri*** Parker
10. Sternite II bare; mid coxae ventrally with few scattered setae (Fig. 20) 11

Sternite II pubescent medially; mid coxae hairy beneath (Fig. 21) 12

11. Clypeal margin incised on either side of median lobe; interocellar area with several large punctures ..... ***clypeata*** Parker
Clypeal margin entire on either side of median lobe; pits of interocellar area small, numerous ..... ***occidentalis*** Cresson

12. Pubescence of sternum black 13
Pubescence of sternum white 14

13. Vertex and posterior part of scutum heavily pitted; pubescence behind head, postscutellum, propodeum white ..... ***bigeloviae*** Cockerell and Fox
Vertex and posterior part of scutum sparsely punctured; pubescence entirely black ..... ***nubecula bechteli*** Parker

14. Dorsal propodeal enclosure with raised wavy striae radiating from postscutellum; striae with few reticules connecting laterally; vertex sparsely pitted; 11–12 mm long ..... ***strigosa*** Kohl
Dorsal propodeal enclosure reticulate, striae with many lateral connecting reticules; vertex heavily pitted; 15–16 mm long ..... ***albovillosa*** Cameron

Astata albovillosa Cameron

Astata albovillosa Cameron, 1890. Biol. Centr.-Amer. Hym. 2: 65.

Male.—Black; wings light brown, anal area sometimes hyaline. Pubescence off-white, long, scraggly; sternite V with lateral, short, brown, padlike setae along posterior margins of incised area, but medially bare; sternite VI with short, linear, medial erect patch of black bristles. Punctation close, coarse except on face, occipital area, summits of scutum, scutellum, sternites, all of tergites (except I and ½ of II which is fine, shiny); propodeal enclosure finely reticulate, numerous thin, close striae radiating from postscutellum; median posterior margin of propodeal enclosure slightly depressed. Flagellomeres I–X with a smooth line ventrally; tangential line between compound eyes equal to antenno-clypeal distance; apical margin of median clypeal lobe notched laterally (Fig. 14); coxae flattened, depressed ventrally; hind coxae deeply depressed (Fig. 18); femora with an oval shiny depression ventrally at base, depression longer on hind femora; basal tarsomere on all legs flattened ventrally, that on midleg grooved with stout spines along margins; sternite II sharply humped medially; sternites IV–VI with a V-shaped medial emargination; aedeagus figured (Fig. 8). Body length 16–18 mm.

Female.—About as in male except as follows: Wings violaceous; pubescence of last 2 abdominal segments black intermixed with white; interocellar area, vertex heavily punctured; scutum, scutellum pitted, their summits shiny; pleura shiny and reticulate; reticules of propodeal enclosure open, cross striae fading laterally, without median carina; propodeal sides spiculate; length 14–16 mm.

Cameron described this from a female taken at San Geronimo, Guatemala. Recent material extends the distribution to Mexico, as far north as the Neo Volcanic Plateau.

The uniquely depressed coxae and large size of *albovillosa* (probably the largest species in the genus) readily distinguish it from any Neotropical *Astata*. Structurally it appears not to have any close relatives among the Mexican species. However, it probably belongs to the *unicolor-bicolor* group as the aedeagi of these 3 are very similar.

Material Examined: 4 ♂, 3 ♀ from the following states in Mexico: JALISCO: Guadalajara (Crawford); 25 Mi. W. Guadalajara, IX-29-57 (H. A. Scullen); Tequila, IX-29-57 (H. A. Scullen). Guerrero: Chilpancingo. PUEBLA: Atlixco, VII-23-56 (R., K. Dreisbach). OAXACA. 3 Mi. W. El Cameron, VIII-6-63 (F. D. Parker, L. A. Stange); 4 Mi. S. Tehuantepec, VII-18-52 (E. E. Gilbert, C. D. MacNeill).

Astata alpestris Cameron

Astata alpestris Cameron, 1890. Biol. Centr.-Amer. Hym. 2: 69.

Male.—Black; abdomen except basally on segment I, medial patch on sternite II red; wings light brown, slightly darker posteriorly. Pubescence silvery white; sternites III–VI with medial, short, brushlike setae projecting posteriorly. Punctation close, rather uniform; summit of scutellum shiny, sparsely pitted; propodeal enclosure reticulate, striate, striae close, radiating from postscutellum, obliquely from median area. Flagellomeres III–VII with anterior tylus larger; tangential line between compound eyes equal to length of flagellomere I; median clypeal lobe projecting from face at an angle of 45°, apical margin broadly, shallowly emarginate (Fig. 13); mandible with a median tooth on dorsal surface, notched ventrally; mid coxae flanged on inner ventral margin; sternite II broadly humped medially; sternite III–V slightly depressed medially, apical margins emarginate, IV, V deeper than III. Aedeagus figured (Fig. 10). Body length 6–9 mm.

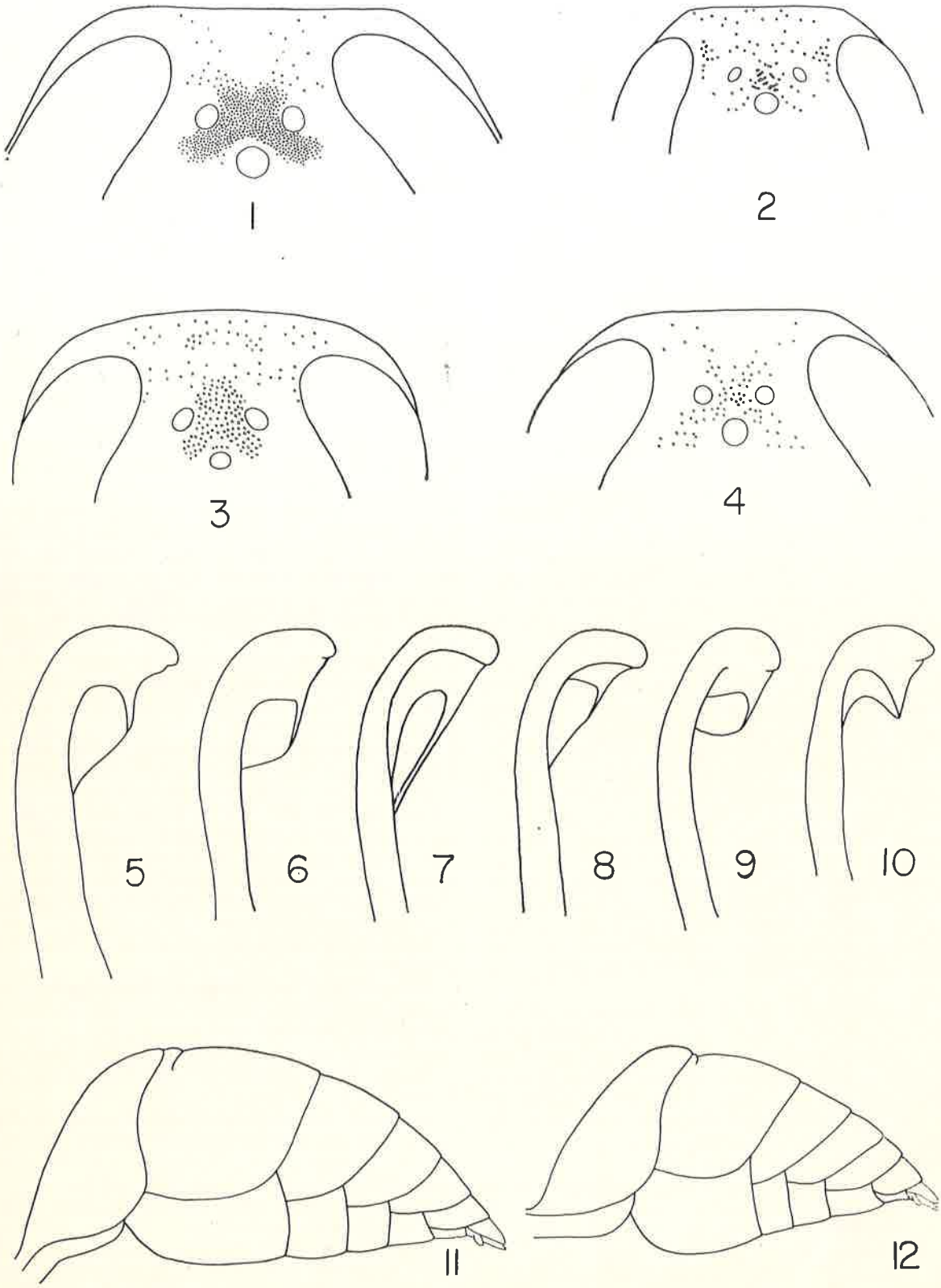
Female.—About as in male except for the following: Mid coxae bare with sharp tubercle medially on ventral surface; interocellar area slightly depressed with at least 35 pits (Fig. 2), those medially merging; vertex shiny sparsely pitted; scutum, scutellum shiny slightly punctured; pleura shiny with very fine oblique striae; dorsal propodeal surface closely reticulate, sides finely striate; flagellomere II as long as I; body length 6.5–9 mm.

Type-locality Omilteme (Omiltan?), Guerrero, Mexico.

The previously undescribed male of *alpestris* can be readily distinguished from other Mexican *Astata* by its uniquely produced clypeal lobe (Fig. 13). The females are very difficult to separate from females of *mexicana*, but the interocellar punctation of *alpestris* is characteristic (Fig. 2).

It appears that *alpestris* is limited in its distribution to the mountainous areas of central and western Mexico, extending south from Jalisco to Oaxaca. In this area it is one of the commonest species.

Material Examined: 78 ♂, 20 ♀ from the following states in Mexico: JALISCO: La Primavera; Guadalajara. MICHOACAN: Carapan. HIDALGO: Ixmiguilpan. GUERRERO: Zumpango; Chilpancingo. MEXICO: Teotihuacań; Valle de Bravo; Temascaltepec. MORELOS: Cuernavaca; Yautepec; Temixco. PUEBLA: Izúcar de Matamoros; Petlalcingo. OAXACA: Oaxaca.



FIGS. 1–4.—Interocellar areas of *Astata* females. 1, *stangei;* 2, *alpestris;* 3, *westcotti;* 4, *bakeri.* FIGS. 5–10.—Distal part of male aedeagus. 5, *A. evansi;* 6, *centralis;* 7, *westcotti;* 8, *albovillosa;* 9, *stangei;* 10, *alpestris.* FIGS. 11–12.—Abdominal profile of male. 11, *stangei;* 12, *mexicana.*

Astata stangei Parker, n. sp.

Male.—Black; abdomen red except basally on segment I, spot on sternite II; cellular area of forewing light brown, hyaline posteriorly; hindwing clear anteriorly, light brown posteriorly. Head, thorax, abdomen clothed with silvery pubescence; sternites IV–VI with short, sparse, recumbent, medial hairs. Punctation moderate, close, evenly spaced on head, thorax, except scattered on summit of scutum; scutellum hardly punctured; postscutellum shagreened; propodeal enclosure evenly reticulate, reticules open medially, striate laterally; propodeal sides spiculate. Flagellomeres III–VIII with double tyloides; tangential line between compound eyes equal to length of flagellomere I; mid coxae slightly produced on inner ventral margin; second tergite seen in profile flat (Fig. 11). Aedeagus figured (Fig. 9). Body length 10.1 mm.

Female.—About as in male except as follows: Black spot on sternite I; anal area of forewing violaceous; punctation close, moderate on frons; interocellar area heavily pitted (60–70 pits) (Fig. 1); vertex shiny, sparsely pitted; scutum, scutellum, postscutellum sparsely pitted; pleura with a dull sheen, faintly striate; propodeal enclosure more closely reticulate, sides obliquely striate; length 8.5–10 mm.

Types.—Holotype male and 9 paratypes, 9 Mi. E. Chupaderos, Sinaloa, Mexico, V-15-62 (F. D. Parker, L. A. Stange). Type deposited in the University of California, Davis type collection. Paratypes deposited in the collections at UCD, CIS, MCZ, Chapingo, Paris, BMNH.

A. stangei is very similar to *A. bakeri,* the 2 species differing by relatively few characters. However, they can be separated from one another by the larger size and all red abdomen of *stangei* as compared to the smaller size and bicolored abdomen of *bakeri.*

This species appears to be generally distributed in the mountainous regions of central and western Mexico, penetrating as far north as Sinaloa and reaching as far south as Chiapas.

Material Examined: In addition to the types I have seen 4 ♂ and 5 ♀ from the following states in Mexico: JALISCO: 8 Mi. S. Guadalajara, late Sept. (F. X. Williams). MORELOS: 3 Mi. N. W. Cuernavaca, IV-12-59 (H. E. Evans); 3 Mi. N. Alpuyeca, III-9-59 (H. E. Evans). CHIAPAS: Ixtapa, IV-11-62 (F. D. Parker, L. A. Stange); 4 Mi. S.E. Soyala, III-1-53 (R. C. Bechtel, E. I. Schlinger). MEXICO: 33 Kl. N. Acambay, VIII-8-62 (H. E. Evans). GUERRERO: La Venta.

This species is named after Mr. L. A. Stange, who collected many of the specimens used in this study.

Astata evansi Parker, n. sp.

Male.—Black; mandible reddish medially; wings lightly brown stained. Pubescence silvery white, that on sternites III–V medial, light tan, brushlike, recumbent, projecting posteriorly. Punctation of head, thorax close, coarse; summit of scutellum smooth, shiny; dorsal propodeal surface evenly, openly reticulate, reticules radiating from postscutellum; faint median carina present; sides of propodeum spiculate; tergites I–III densely micropunctate. Flagellomeres III–IX with double tyloides, anterior one larger; tangential line between compound eyes equal to length of flagellomeres IX–XI taken together; median clypeal lobe truncate, slightly produced, apically as wide as length of flagellomere V; femora slightly thickened, hind one slightly elbowed anteriorly; ventral surface of midcoxae flattened, ridged anteriorly; sternite II humped medially; sternites III–VI slightly depressed, emarginate medially; aedeagus figured (Fig. 5). Body length 10 mm.

Female.—Unknown.

Types.—Holotype male and 1 paratype: 3 Mi. N.W. Petlalcingo, Puebla, Mexico, VIII-3-63 (F. D. Parker, L. A. Stange). Other paratypes, 6 ♂, 5 Mi. S. Izúcar de Matamoros, Puebla, Mexico, VIII-1-63 (F. D. Parker, L. A. Stange); 10 Mi. N. Zumpango, Guerrero, Mexico, VII-22-63 (F. D. Parker, L. A. Stange). Holotype deposited in the type collection at the University of California, Davis. Paratypes deposited in the collections at UCD, MCZ, Chapingo.

A. evansi is structurally very similar to *femorata* Parker, but they can be distinguished from one another by several characters, some of which are: the entire hind femora, flattened mid coxae and emarginate sternites in *evansi* as compared to the notched hind femora, rounded mid coxae and entire sternites in *femorata.*

From the material at hand the distribution of this species appears to be confined to the Sierra Madre de Sur System.

This species is named for Dr. H. E. Evans, who has made important contributions to biological studies of this group.

Astata centralis Parker, n. sp.

Male.—Black; abdomen red except basally on segment I, most of sternite II; wings stained brown in cellular area, hyaline posteriorly. Pubescence silvery white, sternites III–VI with long, dark brown bristles set in a row; sternites V–VI with brushlike hairs medially. Punctation of body close, coarse, except for sparsely punctured summits of scutum, scutellum; dorsal propodeal surface finely reticulate, striae radiating laterally from postscutellum. Flagellomere IV with single tylus; V–VIII with double orange tyloides; tangential line between compound eyes equal to length of flagellomere I; median truncation of clypeus short, not longer than diameter of lateral ocellus; mid coxae slightly ridged on inner ventral margin; sternite II sharply humped medially; sternite V slightly emarginate medially; aedeagus figured (Fig. 6). Body length 10.1 mm.

Female.—About as in male except for the following: Mandibles red medially; wings brown with light violaceous reflection, darker posteriorly; pubescence black, bristly on legs, abdomen; interocellar area, especially vertex heavily pitted; scutellum, postscutellum heavily punctured, summit of scutellum shiny with few scattered pits; flagellomere I longer than II; mid

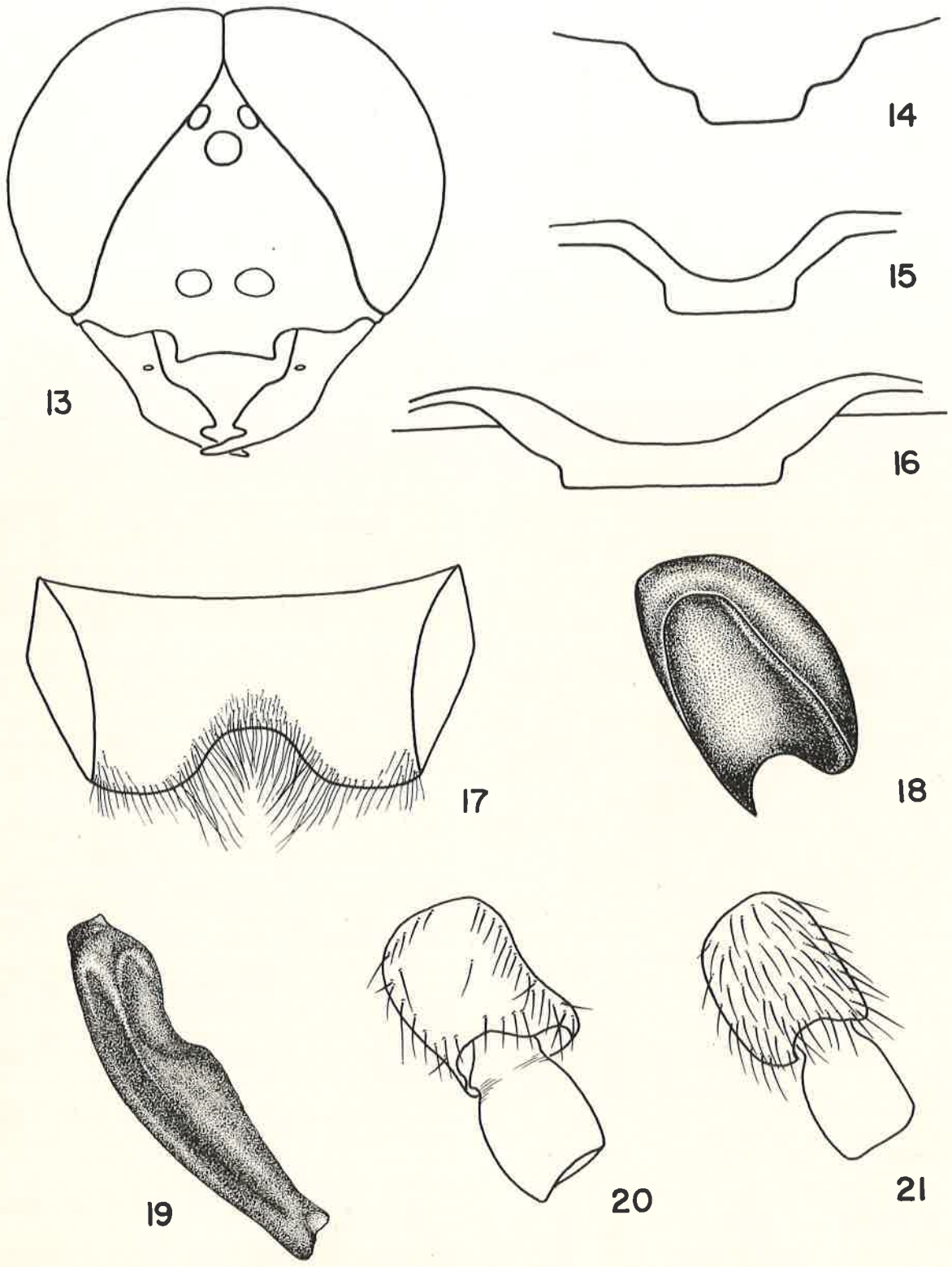


FIG. 13.—Head of *Astata alpestris*, male. FIG. 14.—Outline of median clypeal lobe of *A. albovillosa* male. FIG. 15.—Posterior view of median clypeal lobe of male *A. mexicana*. FIG. 16.—Same, *A. westcotti*. FIG. 17.—Fourth abdominal sternite of *A. westcotti* male. FIG. 18.—Ventral view of hind coxa of male *A. albovillosa*. FIG. 19.—Hind femur of male *A. femorata*. FIG. 20.—Ventral view of mid coxa of female *A. occidentalis*. FIG. 21.—Same, of female *A. bakeri*.

coxae bristly ventrally; sternite II sharply humped medially; body length 12 mm.

Type.—Holotype male: Zamorano, 20 miles from Tegucigalpa, Republic of Honduras (T. D. A. Cockerell). Type deposited in the collection of the Museum of Comparative Zoology, Harvard University. Paratype ♀ San Jose, Costa Rica, #87 (M. Valerio).

The heavily punctured vertex, hammeredlike pleura, and humped second sternite readily distinguish females of *centralis*. Structurally this species is similar to the Nearctic species *A. boharti*.

Astata westcotti Parker, n. sp.

Male.—Black; red posteriorly on tergite I, entirely on II, III, basally on IV, posteriorly on sternite II and basally on III; wings light brown in cellular area, hyaline posteriorly; stigma reddish-brown. Pubescence silvery white except for tan recumbent setae intermixed with long, brownish, scraggly hairs medially on sternites IV–VI. Punctation close, coarse except on summit of scutellum which is smooth, hardly punctate; propodeal enclosure reticulate, reticules large, forming striae which radiate from postscutellum; median carina raised, complete. Flagellomeres III–VIII rounded beneath, tangential line between compound eyes equal to length of flagellomeres VI and VII taken together; inner ventral margin of mid coxae ridged beneath; hind coxae flattened ventrally, depressed near base; sternite II humped medially; sternites IV–V with broad U-shaped medial emargination, V much deeper than IV; sternite VI shallowly emarginate. Body length 9.5 mm.

Female.—About as in male except as follows: Abdomen entirely red, occasionally bicolored; hind wings stained posteriorly; frons with many small pits; interocellar area with about 150 pits (Fig. 3); vertex heavily punctured; scutum entirely pitted; pleura shiny with distinct punctures; mid coxae with nipplelike tubercle on inner ventral surface. Body length 7.5–9.5 mm.

Types.—Holotype male and 9 paratypes, 10 Mi. N. Zumpango, Guerrero, Mexico, VII-22-63 (F. D. Parker, L. A. Stange). Holotype deposited in the type collection at the University of California at Davis. Paratypes deposited in the collections at UCD, CIS, MCZ, Chapingo, Paris, BMNH.

The broadly emarginate fourth sternite (Fig. 17) of *westcotti* males differentiate them from males of *bicolor*. The females can be separated by punctation characters stated in the key.

From the specimens so far collected *westcotti* appears to range from central Mexico to El Salvador, occurring in both the coastal and mountainous situations. The bicolored females are from the Pacific coastal areas only.

Material Examined: In addition to the type I have studied 12 ♂ and 13 ♀ from the following states in Mexico and Central America: *Mexico:* GUERRERO: Iguala, VII-21-61 (R., K. Dreisbach). PUEBLA: 5 Mi. S. Izúcar de Matamoros, VIII-1-63 (F. D. Parker, L. A. Stange). VERACRUZ: 30 Mi. W. Acayucan, IV-22-62 (F. D. Parker, L. A. Stange); Veracruz, VII-28, VIII-11-56 (R., K. Dreisbach); Minatitlán, VIII-26, IX-1-61 (R., K. Dreisbach); 5 Mi. N.E. La Tinaja, VIII-18-63 (F. D. Parker, L. A. Stange). COLIMA: Armeria, VII-27-63 (R. L. Westcott). MORELOS: Huajintlán, VIII-28-56 (R., K. Dreisbach); 10 Mi. S. Cuernavaca, VII-23-63 (F. D. Parker, L. A. Stange). SAN LUIS POTOSÍ: El Salto, VIII-6-54 (U. K. Exped.). OAXACA: 3 Mi. W. El Cameron, VIII-6-63 (F. D. Parker, L. A. Stange); 23 Mi. S. Matías Romero, VIII-7-63 (F. D. Parker, L. A. Stange). *El Salvador:* LA LIBERTAD: Quezaltepeque, VII-3-63 (M. E. Irwin, D. Cavagnaro). CUSCATLAN: El Rosario.

This species is named for Mr. R. L. Westcott.

Astata bicolor Say

Astata bicolor Say, 1823. Western Quarterly Reporter 2: 78.
Astata terminata Cresson, 1872. Trans. Amer. Entomol. Soc. 4: 218.
Astata pygidialis Fox, 1892. Canadian Entomol. 24: 234.

This species is primarily northern in its distribution, but does, however, extend southward in Mexico to the Neo Volcanic Plateau. In my recent paper on this group (Parker 1962) I stated that the distribution of *bicolor* was over a wide area in Mexico. Further study has shown that what was thought to be *bicolor* actually comprised 2 entities, namely *bicolor* and *westcotti*. The distribution of the latter appears to be from southern Mexico to Central America.

Material Examined: 3 ♂, 5 ♀ collected during July–September from the following states in Mexico: SONORA: Arroyo Guacharay; Peon. DURANGO: San Juan del Rio. JALISCO: Villa Guadalupe. CHIHUAHUA: Jiménez. GUANAJUATO: Leon. SAN LUIS POTOSÍ: Ciudad del Maiz. MEXICO: Acambay.

Astata strigosa Kohl

Astata strigosus Kohl, 1888. Verhandl. zool.-bot. Gesell. Wien. 38: 147.

I have examined 3 ♀ of this species, but have not seen any males. As the males have more grouping characters than the females, the affinities of *strigosa* are uncertain.

The females of *strigosa,* as the name implies, can be distinguished by the raised wavy striae on the dorsal propodeal enclosure.

The type-locality of *strigosa* is Orizaba, Mexico, and the range appears to be from southern Mexico to Panama.

Material Examined: GUATEMALA: Suchitepequez, Moca. EL SALVADOR: La Libertad, Quezaltepeque. PANAMA: Barro Colorado Island, Panama Canal Zone.

Astata unicolor Say

Astata unicolor Say, 1824. *In* Keating, Narrative of Long's 2nd Exped. 2: 337.
Astata rufiventris Cresson, 1872. Trans. Amer. Entomol. Soc. 4: 218.
Astata unicolor, var. *rufiventris* Cresson, Townes, 1951. U. S. Dept. Agric. Monog. No. 2: 940.

A. unicolor is one of the most widely distributed species of *Astata,* extending from Canada to El Salva-

dor. In Mexico it is present in both coastal and mountainous areas.

Material Examined: 6 ♂, 9 ♀ collected from July–October in the following states in Mexico and Central America. *Mexico:* MICHOACAN: Morelia. NUEVO LEON: Valle de Santiago. COAHUILA: Hermanas. MEXICO: Acambay. MORELOS: Xochicalco. PUEBLA: Izúcar de Matamoros. OAXACA: Oaxaca. VERACRUZ: Orizaba; La Tinaja. GUANAJUATO: Ceyala. CHIAPAS: Tuxtla Gutiérrez. *El Salvador:* LA LIBERTAD: Quezaltepeque.

Astata occidentalis Cresson

Astata occidentalis Cresson, 1881. Trans. Amer. Entomol. Soc. 9: Proc. p. iii.
Astata apicipennis Cameron, 1890. Biol. Centr.-Amer. Hym. 2: 66. N. syn.
Astata tinctipennis Cameron, 1890. Biol. Centr.-Amer. Hym. 2: 67. N. syn.
Astatus sayi Fox, 1894. Proc. Acad. Nat. Sci. Philadelphia 1893: 542.

The distribution of this species in Mexico includes the central plateau as far south as the State of Puebla. This is the only species that I have seen from southern Baja California.

Notes taken by R. M. Bohart at the British Museum have revealed that Cameron's species are clearly synonyms of *occidentalis*.

Material Examined: 2 ♂, 2 ♀ collected from May–August in the following states of Mexico: BAJA CALIFORNIA DE SUR: La Paz. MORELOS: Alpuyeca; Huajintlán. PUEBLA: Petlalcingo. CHIHUAHUA: Presidio. GUANAJUATO: Jaral.

Astata nubecula bechteli Parker

Astata nubecula bechteli Parker, 1962. Ann. Entomol. Soc. Amer. 55: 649.

I have seen a single specimen from Valle del Yaqui, Sonora.

Astata clypeata Parker

Astata clypeata Parker, 1962. Ann. Entomol. Soc. Amer. 55: 651.

I have seen no additional Mexican material since this species was described.

Astata mexicana Cresson

Astata mexicana Cresson, 1881. Trans. Amer. Entomol. Soc. 9: Proc. p. v.

The distribution in Mexico includes the west coast and central plateau, as far south as the State of Puebla.

Material Examined: 26 ♂, 3 ♀, collected from March–August from the following states in Mexico and Central America. *Mexico:* MORELOS: Yautepec, Alpuyeca, Cuernavaca. MEXICO: Teotihuacán; Valle de Bravo. SAN LUIS POTOSÍ: San Luis Potosí. PUEBLA: Tehuacan; Petlalcingo. SINALOA: Chupaderos. DURANGO: Durango. *Guatemala:* GUATEMALA: Guatemala City. *El Salvador:* CUSCATLAN: El Rosario.

Astata bigeloviae Cockerell and Fox

Astata bigeloviae Cockerell and Fox, 1897. Proc. Acad. Nat.. Sci. Philadelphia, p. 138.

A single specimen of this was taken near Plan de Barrancas, Jalisco, Mexico.

Astata nevadica Cresson

Astata nevadica Cresson, 1881. Trans. Amer. Ent. Soc. 9: Proc. p. v.

From Mexico I have examined material taken along the central plateau and west coast. The distribution is rather similar to that of *occidentalis*.

Material Examined: 8 ♂ collected from May–August from the following localities in Mexico. MEXICO: Teotihuacán. GUANAJUATO: Ceyala. ZACATECAS: Fresnillo. DURANGO: Durango. CHIHUAHUA: La Parrita. SONORA: Corcorit.

Astata bakeri Parker

Astata bakeri Parker, 1962. Ann. Entomol. Soc. Amer. 55: 647.

Although *bakeri* ranges the entire length of Mexico, its east-west distribution is along the Pacific coast, extending eastward to the central plateau.

Material Examined: 15 ♂, 4 ♀ from the following states in Mexico: CHIAPAS: Revolution (Buena Vista). JALISCO: Guadalajara. PUEBLA: Izúcar der Matamoros; Petlalcingo. MORELOS: Cuernavaca. GUANAJUATO: Ceyala. CHIHUAHUA: Jiménez.

Astata femorata Parker

Astata femorata Parker, 1963. Pan-Pacific Entomol. 39: 185.

I have no records of this from Mexico, but as it was collected only a few miles from the Mexican border, it undoubtedly occurs in Mexico.

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