

RHYSSOCEPHALA, NEW GENUS, WITH THE DESCRIPTION OF THREE NEW SPECIES (HETEROPTERA: PENTATOMIDAE)¹

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Abstract.—The pentatomid genus *Arocera* Spinola *sensu lato* is divided into two genera, one of which, *Rhysocephala*, is described as new. *Arocera colombiana* McDonald, *A. immaculata* (Pirán), *A. principalis* (Stål), *A. rufolimbata* Stål, *A. rufonotata* Stål, *A. splendens* (Blanchard), and *A. verdana* McDonald are all transferred to *Rhysocephala*. Diagnoses are provided for all previously described species. Three new species are described: *R. ecuadoriensis* from Ecuador, *R. mcdonaldi* from Panama and northwestern South America, and *R. infuscata* from Mexico and Central America. *Arocera colombiana* McDonald, 1984, is placed as a junior synonym of *Pentatoma principalis* Stål, 1855. A lectotype designation is made for *A. rufonotata* Stål, 1861. A key to the genera that include species similar in color to *Arocera* and *Rhysocephala* is given, as well as a key to species of *Rhysocephala*.

In his revision of the genus *Arocera* Spinola, McDonald (1984) indicated that the species could be separated into two groups based on the shape of the male parameres. He further noted that females of the species would also form two distinct groups according to the shape of the eighth paratergites and the spermathecal bulb. He did not, however, emphasize that the groups defined by the male specimens were identical to the groups defined by the female specimens.

Several other characters (male pygophore, female spermatheca, dorsal coloration, texture of the dorsal surface of the head) also separate the known *Arocera* species into the same "species groups." I believe these two groups are so consistently and distinctly different that each should be recognized as a genus. Because the type species of all available junior synonyms of *Arocera* belong to just one of the groups, a new genus must be erected for the remaining group of species. *Rhysocephala*, new genus, is herein described.

Rhysocephala belongs in the nominate subfamily and tribe of the Pentatomidae, is restricted to the New World, and contains several of the most brightly colored species of western hemisphere Pentatomidae. It is characterized by the lack of a spine or tubercle at the base of the third (second visible) abdominal sternite and elongate ostiolar rugae, each extending more than two-thirds the distance from the mesial margin of the ostiole to the lateral metapleural margin. Rolston and McDonald (1984) provided a key to related western hemisphere genera occurring north of South America, and Rolston (1987) presented a key to those South American genera that have

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both elongate ostiolar rugae and an unarmed abdominal venter. *Rhysscephala* will key to *Arocera* in both of the above keys.

Due to misidentifications by recent workers and the discovery of several undescribed species, both *Arocera* and *Rhysscephala* need further study. The present work provides a study of the species of *Rhysscephala*; *Arocera* will be revised in a future paper. Keys are provided to the genera that include species similar in color to *Rhysscephala* and *Arocera*, and to all known species of *Rhysscephala*. Measurements are in millimeters; measurements in parentheses are of the holotype. Measurements of the body were taken with the anterior and posterior margins of the scutellum in approximately the same plane of focus. Total length was measured slightly differently in each sex. In females, total length was simply the distance from the apex of the head to the posterior apex of the body excluding hemelytral membranes. In males, the pygophore may be distended by varying amounts, and total length was measured from the apex of the head to the posterior-most part of the last connexival segment. Total width was measured across the humeral angles, although in some cases the width across the abdomen was greater. Head length was measured from the apex of the head to an imaginary line drawn through the posterior margins of the ocelli. Head width was measured across the eyes. When label data are presented in the text, each letter in parentheses represents a separate label with (a) being closest to the specimen. Label data for holotype and paratype specimens are quoted exactly as appears on the label. Determination labels and collection labels were sometimes omitted from the label data citations for brevity. Acronyms are defined in the acknowledgments.

The following key separates those genera which are similar in appearance to *Arocera* and *Rhysscephala*. These genera are not necessarily closely related, but all include some species that are brightly colored with orange, red, yellow, or metallic-green or blue. It should be noted that many asopine genera are also brightly colored; they will be separated as a group in the first couplet.

KEY TO BRIGHTLY-COLORED NEW WORLD PENTATOMINAE GENERA

1. Rostrum crassate; bucculae more or less converging and meeting posteriorly . . . Asopinae
- Rostrum incrassate; bucculae not meeting posteriorly 2
- 2(1). Scent gland orifices inconspicuous, ostiolar canals or rugae and attending evaporative areas absent *Murgantia* Stål
- Scent gland orifices distinct, usually attended by ostiolar canals or rugae and shagreened evaporative areas 3
- 3(2). Base of third (second visible) abdominal sternite armed with forward-projecting spine or tubercle 4
- Base of abdominal sternite three unarmed 7
- 4(3). Metasternum produced ventrad, at least posteriorly, with posterior margin in apposition to abdominal spine or tubercle 5
- Metasternum not produced ventrad, abdominal spine or tubercle free distally, not in apposition to posterior margin of metasternum 6
- 5(4). Rostrum not extending beyond mesocoxae *Brachystethus* Laporte
- Rostrum extending onto base of abdomen *Pharypia* Stål
- 6(4). Distal end of first antennal segment exceeding apex of head *Vulsirea* Spinola
- Distal end of first antennal segment not surpassing apex of head *Roferta* Rolston

- 7(3). Ostiolar rugae extending less than one-half distance from mesial margin of ostiole to lateral metapleural margin 8
- Ostiolar rugae extending at least three-fourths distance from mesial margin of ostiole to lateral metapleural margin 9
- 8(7). Anterolateral margins of pronotum distinctly reflexed; antennae four-segmented *Boea* Walker
- Anterolateral margins of pronotum not reflexed; antennae five-segmented *Runibeia* Stål
- 9(7). Dorsal surface usually yellow, orange, or red with brown or black markings; if dorsal surface mostly black then pronotum completely black; vertex of head nearly glabrous, impunctate; each paramere with basal process either obtuse or large and spatulate, not digitiform; caudal margin of proctiger entire, without posterior projections (Figs. 13, 14); ninth paratergites flat or only slightly concave (Figs. 19–21); spermathecal bulb globose, either constricted near base (Figs. 2, 4) or with digitiform process (Figs. 6, 12); dilation of spermatheca lacking sclerotized area near proximal end of sclerotized rod (Figs. 1, 3, 5, 11) *Arocera* Spinola
- Dorsal surface dark brown, black or metallic blue or green, with some yellow, orange, or red on anterior pronotal angles; vertex of head roughened, punctate, or rugulose; each paramere with basal process digitiform; caudal margin of proctiger with two projections, either projecting dorsad (Figs. 15, 16) or caudad (Figs. 17, 18); ninth paratergites distinctly bent near middle, inflated apically (Figs. 22–24); spermathecal bulb globose, lacking digitiform process (Figs. 8, 10); dilation of spermathecal duct with slightly sclerotized area near proximal end of sclerotized rod (Figs. 7, 9) *Rhysscephala*, new genus

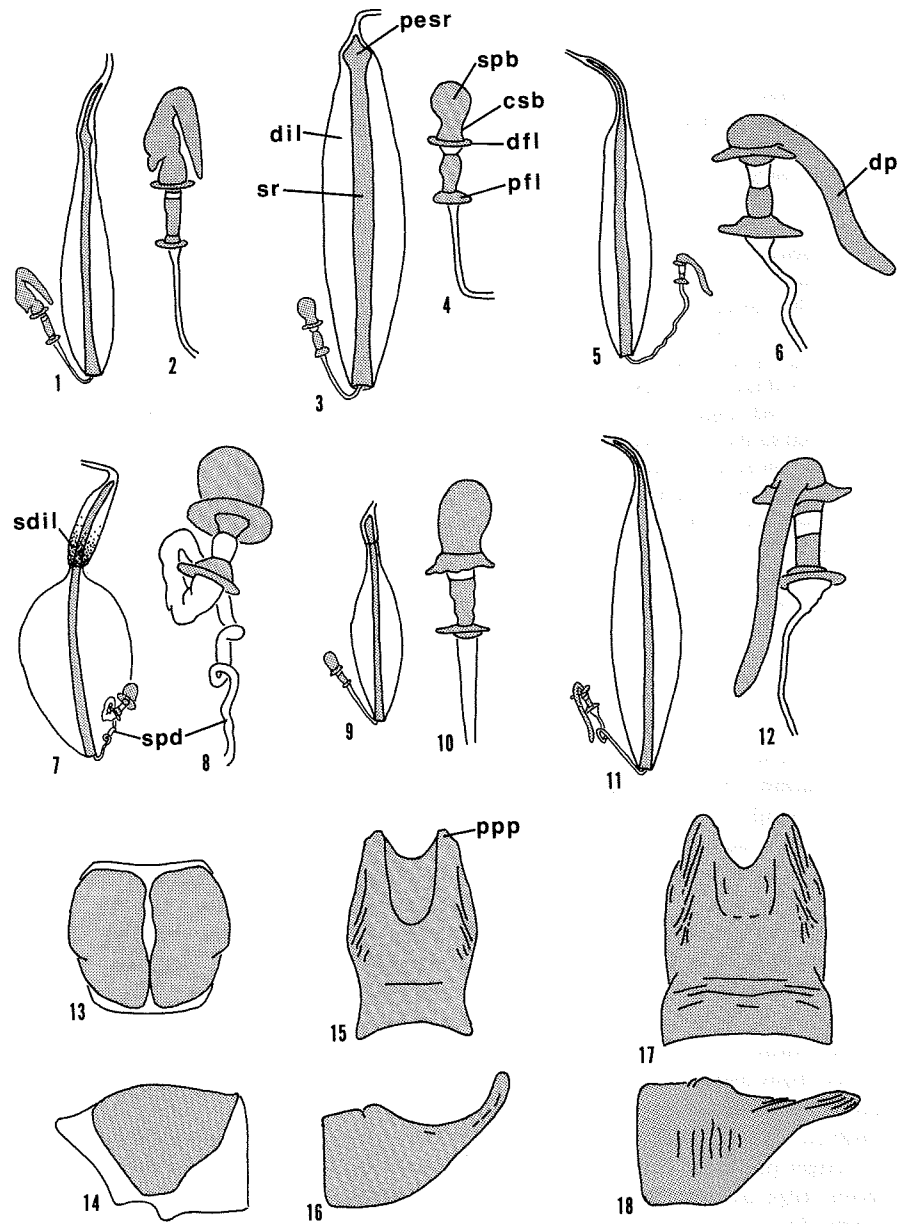
Rhysscephala, new genus

Type species. *Arocera rufonotata* Stål, 1861.

Description. Dorsal coloration black, dark brown, or metallic green or blue with yellow, orange, or red markings; dorsal punctation usually minute, dense, often forming rugulose lines on scutellum.

Vertex of head roughened, punctate, or rugulose; jugal surfaces distinctly, diagonally wrinkled; lateral jugal margins sinuous, usually at least slightly reflexed, apices often slightly inflated; juga and tylus subequal in length. First antennal segment not surpassing apex of head. First rostral segment reaching at most only slightly beyond posterior margins of bucculae; posterior margins of bucculae not lobed; rostrum reaching to or beyond metacoxae. Anterolateral margins of pronotum straight to convex, distinctly reflexed. Ostiolar rugae elongate, reaching at least two-thirds of distance from ostiole to lateral metapleural margin. Tarsi three-segmented. Base of abdomen unarmed ventrally.

Each paramere Γ -shaped with small digitiform process near base. Posterior margin of proctiger produced caudally into two narrowly rounded projections (Figs. 15, 17). Inferior ridge of pygophore forming vertical wall, usually with few to many black spicules; dorsolateral angles produced dorsad and cephalad into black spiculate horns; ventral margin produced caudad, sometimes with mesial emargination. Ninth paratergites distinctly bent near middle, apices inflated (Figs. 22–24). Spermatheca with sclerotized rod not swollen near proximal end, not acuminate as in *Arocera* (Figs. 7, 9); dilation of spermatheca with slightly sclerotized portion near proximal end of



Figs. 1-18. 1, 2. *Arocera (A.) acroleuca*. 1. Spermatheca. 2. Spermathecal pump. 3, 4. *A. (A.) aequinoxialis*. 3. Spermatheca. 4. Spermathecal pump. 5, 6. *A. (Euopta) sp.* 5. Spermatheca. 6. Spermathecal pump. 7, 8. *Rhysocephala splendens*. 7. Spermatheca. 8. Spermathecal pump. 9, 10. *R. infuscata*. 9. Spermatheca. 10. Spermathecal pump. 11-14. *A. (E.) spectabilis*. 11. Spermatheca. 12. Spermathecal pump. 13. Proctiger, dorsal view. 14. Proctiger, lateral view.

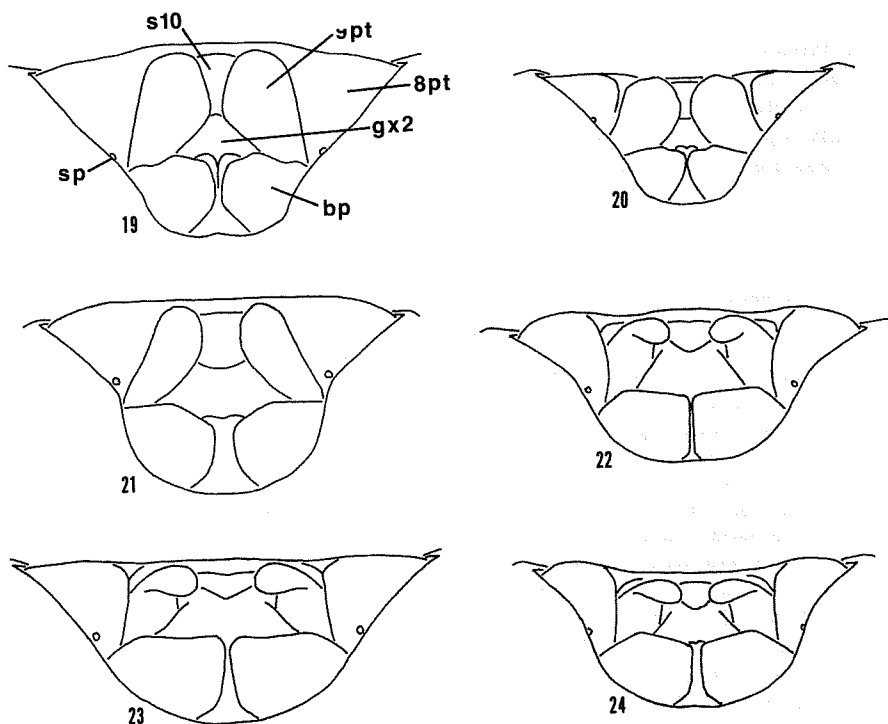
sclerotized rod (Figs. 7, 9); spermathecal bulb globose, lacking digitiform process, not constricted near base (Figs. 8, 10).

Comments. This genus contains nine species, all of which are black or metallic green or blue. The texture of the head and the density of the dorsal punctation will usually separate these species from *Arocera*. The structure of the male and female genitalia are also diagnostic.

KEY TO SPECIES OF *RHYSSOCEPHALA*, NEW GENUS

1. Dorsal surface brown with pronotum, scutellum, and coria contrastingly margined with black or metallic green (Fig. 25) (Colombia, Venezuela, Mexico?) *principalis* (Stål) (in part)
- Dorsal surface dark brown, black, or metallic green or blue, unicolorous except for some yellow or red markings 2
- 2(1). Dorsal surface metallic green with small, red spot on median of pronotum, usually with red spot in each basal angle of scutellum, and another triangular red spot on each corium near apex of scutellum (Fig. 32); anterolateral margins of pronotum black or metallic green except small red spot on each anterior angle and each humeral angle (Fig. 32) (Mexico) *rufonotata* Stål
- Dorsal surface dark brown, black, or metallic green or blue; disc of pronotum, apex of coria, and basal angles of scutellum lacking red markings; anterolateral margins of pronotum usually yellow or red, rarely interrupted with dark markings 3
- 3(2). Dorsal surface metallic green, with medial longitudinal band on scutellum brick-red (Fig. 39) (Costa Rica, Panama) *verdana* McDonald
- Dorsal surface dark brown, black, or metallic green or blue, scutellum unicolorous, lacking red markings 4
- 4(3). Dorsal surface of head bicolorous, metallic green basally becoming orange to red distally at least on apices of juga (Fig. 46) (southern Mexico to Colombia and Venezuela) *splendens* (Blanchard)
- Dorsal surface of head unicolorous, dark brown, black, or metallic green or blue, lacking orange or red markings 5
- 5(4). Dorsal surface bright metallic green or blue; punctures on disc of pronotum relatively sparse, distance between adjacent punctures 3-5 times diameter of puncture 6
- Dorsal surface dark brown or black, rarely with slight green color; punctures on disc of pronotum relatively dense, distance between adjacent punctures at most about diameter of puncture 7
- 6(5). Reddish band along each anterolateral margin of pronotum usually infuscated near middle (Fig. 53); basal plates usually completely fuscous or black; ventral margin of pygophore in ventral view with small, medial, circular emargination (Fig. 54); posterior wall of pygophore in caudal view completely lacking black spicules (Fig. 55) (Mexico to Costa Rica) *infuscata*, new species
- Reddish band along anterolateral pronotal margins usually lacking infuscated areas

←
15, 16. *R. macdonaldi*. 15. Proctiger, dorsal view. 16. Proctiger, lateral view. 17, 18. *R. ecuadoriensis*. 17. Proctiger, dorsal view. 18. Proctiger, lateral view. Symbols: csb, constriction of spermathecal bulb; dfl, distal flange; dil, dilation of spermatheca; dp, digitiform process; pesr, proximal end of sclerotized rod; pfl, proximal flange; ppp, posterior projection of proctiger; sdil, sclerotized portion of dilation of spermathecal duct; spd, spermathecal duct; sr, sclerotized rod; spb, spermathecal bulb.



Figs. 19-24. Genital plates. 19. *Arocera (Euopta)* sp. 20. *A. (E.)* sp. 21. *A. (A.) aequinoxialis*. 22. *Rhyssocephala macdonaldi*. 23. *R. ecuadoriensis*. 24. *R. infuscata*. Symbols: bp, basal plate; gx2, gonacoxae 2; sp, spiracle; s10, sternite 10; 8pt, eighth paratergite; 9pt, ninth paratergite.

- (Fig. 67); basal plates fuscous to black, becoming reddish basally; ventral margin of pygophore in ventral view with relatively large, subtriangular, medial emargination (Fig. 68); posterior wall of pygophore with small black spicules laterally (Fig. 69) (Panama and northwestern South America) *macdonaldi*, new species
- 7(5). Habitus relatively narrow, elongate, lateral margins of coria subparallel (Fig. 60); posterior wall of pygophore densely spiculate, with small spiculate horn on each side of middle produced dorsocaudad (Fig. 62); ventral margin of pygophore produced caudad, then curving dorsad apically, with shallow, medial, concave emargination in caudal view (Fig. 62) (Ecuador) *ecuadoriensis*, new species
- Habitus more broadly ovate, lateral margins of coria convex, not parallel (Figs. 25, 74, 81); posterior wall of pygophore spiculate, but lacking submedial spiculate horns (Figs. 76, 83), or lacking spicules completely (Fig. 27); ventral margin of pygophore produced caudad, but not curving dorsad apically and not medially emarginate in caudal view (Figs. 27, 76, 83) 8
- 8(7). Dorsal surface brown to dark brown, usually with a reddish cast; pronotal cicatrices usually darker, fuscous to black; lateral margins of pronotum and basal areas of coria usually dark orange to red; posteroventral surface of pygophore conically produced medially (Fig. 77) (southern Brazil) *rufolimbata* Stål
- Dorsal surface black, sometimes with a greenish cast; pronotal cicatrices usually

- concolorous with surrounding area; lateral margins of pronotum and basal areas of coria usually yellow to pale orange; posteroventral surface of pygophore not conically produced medially 9
- 9(8). Posterior wall of pygophore with numerous black spicules except for medial glabrous depressed area and submarginal band along posterior margin of pygophore (Fig. 83) (northwestern South America) *inmaculata* (Pirán)
- Posterior wall of pygophore lacking black spicules (Fig. 27) (northwestern South America) *principalis* (Stål) (in part)

Rhyssoccephala principalis (Stål, 1855), **New Combination**

Figs. 25–31, Map 3

Pentatoma principalis Stål, 1855:182; Stål, 1856:58.

Arocera principalis: Stål, 1861:140; Stål, 1862:107; Becker & Grazia-Vieira, 1971:12; Grazia, 1984:73; Grazia, 1987:46, figs. 9–11.

Strachia principalis: Walker, 1867:316.

Arocera colombiana McDonald, 1984:116–118, figs. 72–79. **NEW SYNONYMY.**

Arocera splendens (of authors, not Blanchard): McDonald, 1984:103 (part).

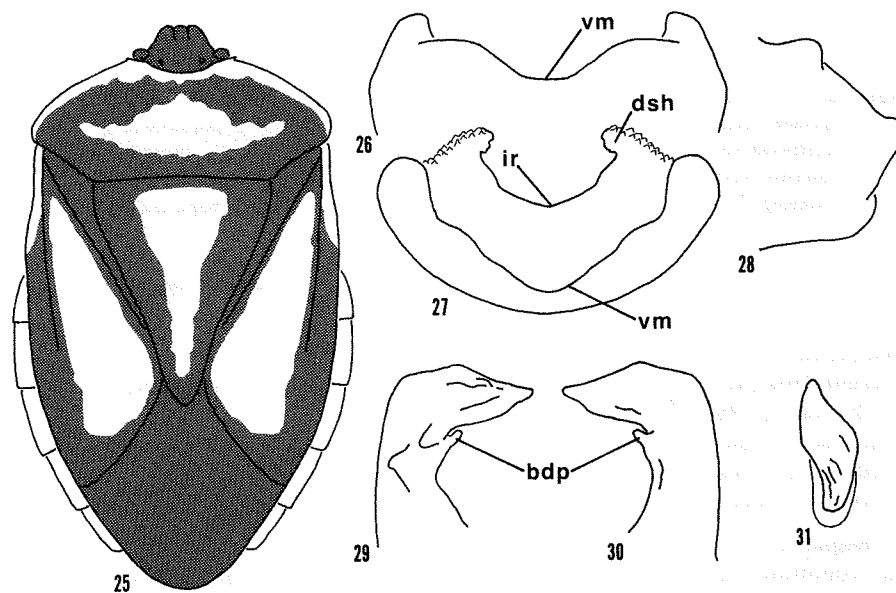
Diagnosis. Dorsal punctation minute, relatively dense, forming weak rugulose lines on pronotum and scutellum. Dorsal surface of color form I dark brown or black, sometimes with greenish cast; basal costal margin of each corium, anterior and often anterolateral margins of pronotum yellow to orange. Dorsal surface of color form II the same except discal areas of coria, scutellum, and pronotum brown, margined with black to metallic green (Fig. 25).

Dorsal surface of head black to dark metallic green; lateral jugal margins nearly straight, tapering to truncately rounded apex. Anterolateral margins of pronotum slightly convex. Connexiva usually concealed, usually with alternating areas of yellow or red and fuscous, sometimes entirely yellow or red (Fig. 25). Hemelytral membranes fumose.

Ventral surface black with yellow or orange spot near lateral margin of each abdominal segment, and another halfway between spiracle and middle of segment; some small yellow or orange areas present on thoracic pleura and head; pale areas sometimes more extensive, forming solid band along lateral margins of venter, or even venter mostly yellow with a few black areas around spiracles. Rostrum relatively short, at most reaching middle of hind coxae.

Ventral margin of pygophore produced caudad and slightly dorsad apically, in caudal view sinuously U-shaped (Fig. 27), in ventral view broadly and shallowly U-shaped (Fig. 26). Inferior ridge forming vertical wall, caudal surface tumescent medially, lacking black spicules (Fig. 27); dorsal margin of inferior ridge in caudal view broadly U-shaped (Fig. 27). Each paramere narrowly rounded apically in lateral and medial views (Figs. 29, 30); somewhat S-shaped in ectal view (Fig. 31). Basal plates fuscous to black. Spermathecal duct below proximal flange relatively thick.

Types. Stål (1855) described *Pentatoma principalis* from 1♀ specimen purportedly from Mexico. This specimen is identical to several ♀ specimens of color form I from Venezuela and Colombia. Although I have not examined any specimens of this species outside of South America except for the holotype specimen, I believe they are all conspecific. Either this specimen is mislabeled or this species is quite rare throughout



Figs. 25-31. *Rhysocephala principalis*. 25. Habitus. 26-28. Pygophore. 26. Ventral view. 27. Caudal view. 28. Lateral view. 29-31. Right paramere. 29. Lateral view. 30. Medial view. 31. Ectal view. Symbols: bdp, basal digitiform process; dsh, dorsal spiculate horn; ir, inferior ridge; vm, ventral margin.

Central America into Mexico. The holotype was examined and is now conserved in the Naturhistoriska Museum, Stockholm, Sweden.

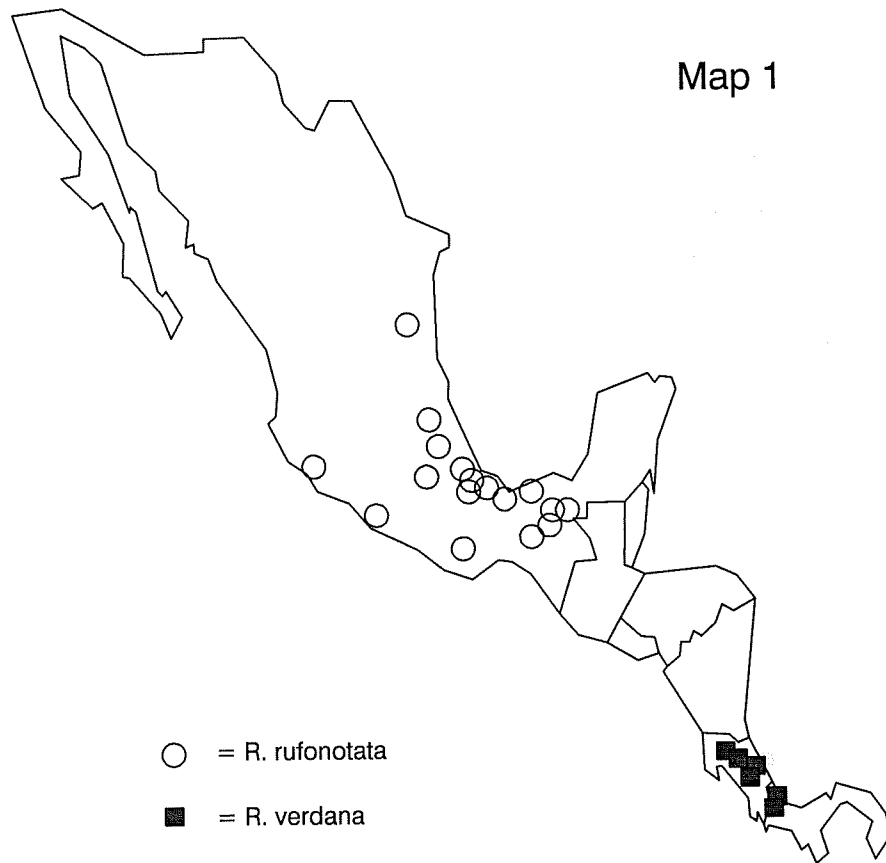
McDonald (1984) described *A. colombiana* from seven specimens from Venezuela and Colombia. The holotype and all six paratypes were examined. All seven specimens are of color form II, but I have compared δ specimens of both color forms and find no significant differences in the genitalia. The holotype is conserved in the United States National Museum of Natural History, Washington, D.C.

Specimens examined. 21 specimens; the one specimen with a date was collected in May; deposited in AMNH, BMNH, CAS, MACN, NHRS, USNM, ZMB. **MEXICO**[?]. **COLOMBIA:** *Boyacá:* Muzo. *Cundinamarca:* Fusagasugá; *Oriente,* Monterredondo. **VENEZUELA:** *Aragua:* Rancho Grande nr. Maracay. *Mérida:* Mérida.

Distribution. Known from Colombia and Venezuela (Map 3) and questionably Mexico.

Comments. McDonald (1984) considered this species to be a synonym of *R. splendens*. These two species can be separated by the distinctive genitalia.

Specimens of color form II are easily recognized by their distinctive coloration. No other species of *Rhysocephala* has extensive areas of brown bordered broadly or narrowly with black as in this species. Specimens of color form I are quite similar to specimens of *R. immaculata* but can be separated from that species by differences in the male genitalia and by the shorter rostrum.

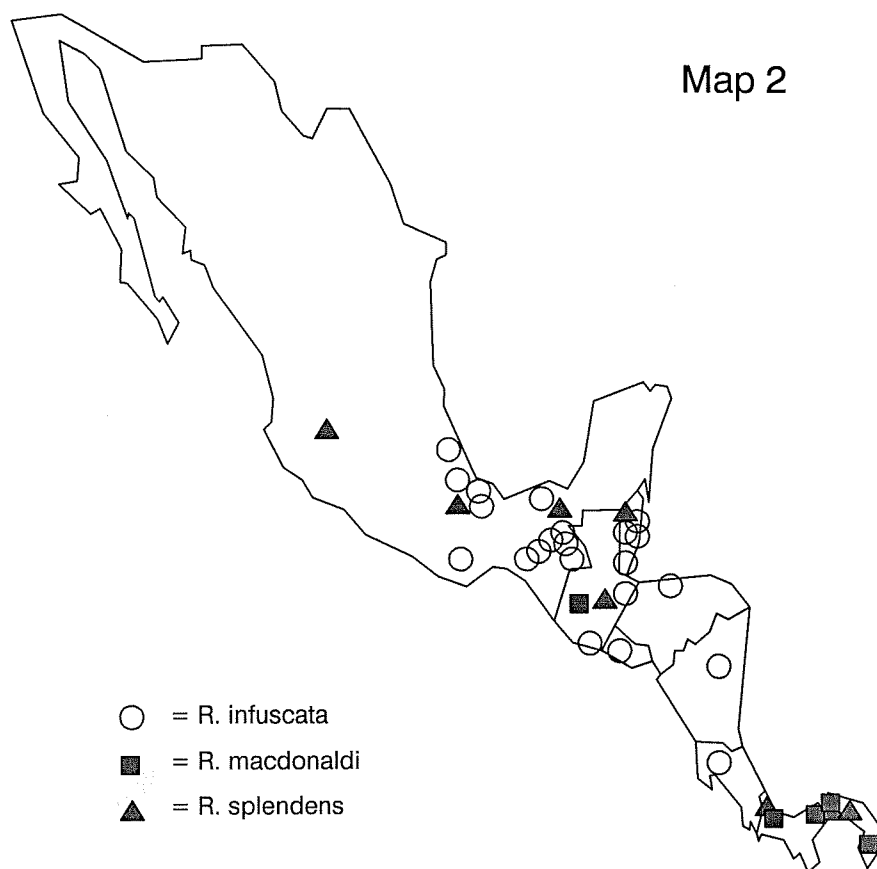


Map 1. *R. rufonotata* (○); *R. verdana* (■).

Rhyssoccephala rufonotata (Stål, 1861), New Combination
Figs. 32–38, Map 1

Arocera rufonotata Stål, 1861:140; Distant, 1880:75, pl. 7, fig. 15; Distant, 1893:338; Lethierry & Severin, 1893:159; Brailovsky & Barrera, 1982:237–238; McDonald, 1984:110–111, figs. 44–50.
Arocera (Euopta) rufonotata: Stål, 1872:38; Kirkaldy, 1909:110.
Strachia rufonotata: Walker, 1867:316.

Diagnosis. Dorsal coloration metallic green with some or all of the following red markings: small spot on each anterior and each humeral angle of pronotum; small spot on middle of pronotum; reniform spot on each basal angle of scutellum; triangular spot on each corium near apex of scutellum, and narrow marginal band along base of each corium (Fig. 32). Dorsal surface of head completely dark. Anterolateral

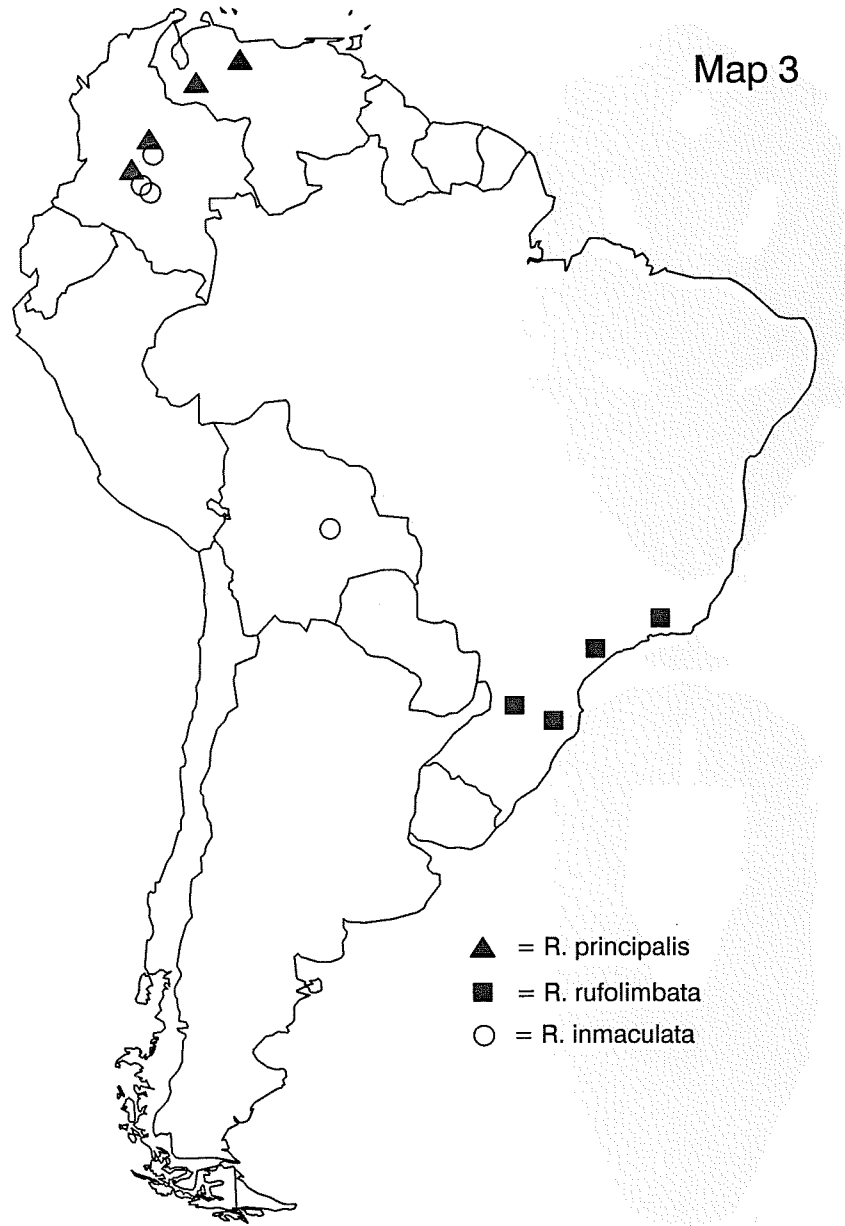


Map 2. *R. infuscata* (○); *R. macdonaldi* (■); *R. splendens* (▲).

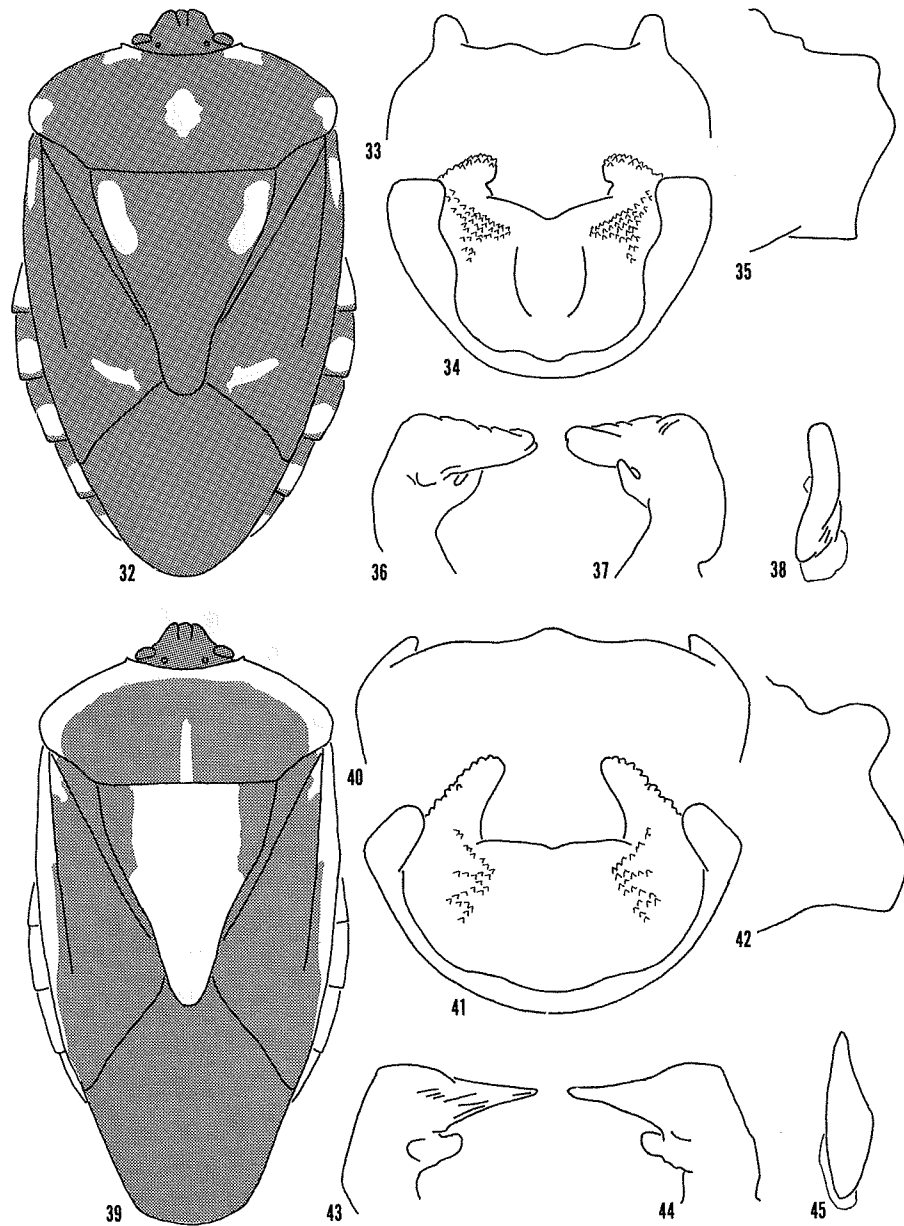
margins of pronotum convex. Connexiva alternating black or metallic green with red (Fig. 32).

Ventral margin of pygophore in ventral view slightly sinuous, not emarginate at middle, lateral angles prominent (Fig. 33); in caudal view broadly U-shaped becoming sinuous laterally (Fig. 34). Inferior ridge broadly V-shaped in caudal view (Fig. 34). Surface of pygophore between ventral margin and inferior ridge with broad, vertical, tumescent band medially; each side depressed, a triangular area of small, black, spicules on each side dorsolaterally (Fig. 34); pygophore in lateral view sinuous (Fig. 35). Proctiger with posterior projections curving dorsad in lateral view. Each paramere with apex rounded in lateral and medial views (Figs. 36, 37); paramere-head in ectal view of uniform width, slightly arcuate (Fig. 38). Female genitalia typical for the genus.

Types. Stål (1861) described *A. rufonotata* from at least two specimens without designating a holotype or paratypes. Only one ♂ syntype was examined and is des-



Map 3. *R. immaculata* (○); *R. principalis* (▲); *R. rufolimbata* (■).



Figs. 32-45. 32-38. *Rhysocephala rufonotata*. 32. Habitus. 33-35. Pygophore. 33. Ventral view. 34. Caudal view. 35. Lateral view. 36-38. Right paramere. 36. Lateral view. 37. Medial view. 38. Ectal view. 39-45. *R. verdana*. 39. Habitus. 40-42. Pygophore. 40. Ventral view. 41. Caudal view. 42. Lateral view. 43-45. Right paramere. 43. Lateral view. 44. Medial view. 45. Ectal view.

ignated the lectotype. It is labeled (a) "Mexico" (b) "Sallé." (c) "Type." (d) "Typus" (e) "432 89" (f) "Riksmuseum Stockholm." The lectotype is conserved in the Naturhistoriska Riksmuseet, Stockholm, Sweden.

Specimens examined. 66 specimens collected from every month except January and March; deposited in AMNH, BMNH, CAS, CNC, DAR, DBT, EGER, HDEC, LHR, NHRS, TAMU, UNAM, USNM. **MEXICO:** *Chiapas:* Aguacero, 40 km W Tuxtla Gutierrez; Chorreodero Cyn, 5 mi E Chiapa de Corzo; 22 m S La Trinitaria; Municipio Angel Albino Corzo, along Río Custepec, below Finca Gadow; Palenque Hotel Tulija; Simojovel; Sumidero Cyn; Tapacuchula. *Colima:* Colima. *Distrito Federal.* Guerrero: Dos Arroyos; Tecpan. *Hidalgo:* nr. Jacala. *Oaxaca:* Municipio Candelaria Loxicha La Soledad. *San Luis Potosi:* 2 mi S Tamazunchale. *Tabasco:* Jalapa. *Tamaulipas:* Ciudad Victoria. *Veracruz:* Córdoba; Dos Amatas; El Vigía; Huatusco; Istmo de Tehantepec; Lake Catemaco; Los Tuxtlas Range; San Andres Tuxtla; Santa Martha Los Tuxtlas; Teocelo; Xalapa. **GUATEMALA:** Barcenos; Chicacao.

Distribution. Guatemala and eastern and southern Mexico (Map 1).

Comments. This species is easily recognized by the characteristic pattern of reddish spots on the dorsal surface.

Rhysscephala verdana (McDonald, 1984), **New Combination**

Figs. 39–45, Map 1

Arocera verdana McDonald, 1984:114–116, figs. 67–71.

Arocera splendens (of authors, not Blanchard): Distant, 1880:74–75, pl. 7, figs. 13–14 (part).

Diagnosis. Dorsal surface metallic green with red markings along margins of pronotum and coria, and on median of scutellum (Fig. 39); punctures small, relatively dense.

Dorsal surface of head uniformly metallic green. Anterior and anterolateral margins of pronotum broadly bordered with red-brown; pronotal cicatrices and surrounding surface nearly impunctate. Scutellum dark red-brown, except marginal band along frena metallic green (Fig. 39); punctures obscure medially. Coria metallic green except basal to entire costal margins narrowly red-brown; connexiva uniformly red-brown (Fig. 39). Ventral surfaces dark metallic green to iridescent black except outer margins broadly bordered with red-brown.

Pygophore in ventral view slightly convex, somewhat produced medially (Fig. 40); in caudal view ventral margin broadly and sinuously U-shaped, produced caudad; inferior ridge forming vertical wall, medioventral surface concave, moderate amount of black spicules in middle of each side (Fig. 41); in lateral view dorsolateral angle obtusely produced (Fig. 42). Proctiger with posterior projections straight in lateral view, not curving dorsad. Each paramere with apex sharply acuminate in lateral and medial views (Figs. 43, 44), in ectal view paramere-head narrowly rounded apically (Fig. 45). Female genitalia typical for the genus.

Types. McDonald (1984) described *A. verdana* from 17 specimens from Panama and Costa Rica. The holotype is deposited in the United States National Museum of Natural History, Washington, D.C. The holotype and six paratypes of this distinctive species were examined.

Specimens examined. 23 specimens collected from April to August, and 31 January;

deposited in BMNH, CAS, DAR, DBT, HDEC, LHR, USNM. **COSTA RICA:** Cartago, 5 mi SE Moravia; Irazú; Juan Vinas. *Guanacaste*. *Puntarenas*: Monteverde. **PANAMA:** Boquete. *Chiriquí*: Barriles; 3 km W Cerro Punta; Renacimiento Sta. Clara; Volcan de Chiriquí.

Distribution. Known only from Costa Rica and Panama (Map 1).

Comments. This species is easily recognized by the broad red-brown medial band on the scutellum.

Rhysocephala splendens (Blanchard, 1840), **New Combination**

Figs. 7, 8, 46–52, Maps 2, 4

Pentatoma splendens Blanchard, 1840:148.

Pentatoma splendida: Dallas, 1851:256.

Strachia splendida: Walker, 1867:316.

Arocera splendens: Stål, 1862:107; Distant, 1880:74–75, pl. 7, figs. 13–14 (part); Distant, 1893:337; Lethierry & Severin, 1893:159; Becker & Grazia-Vieira, 1971: 12; Froeschner, 1981:68; Brailovsky & Barrera, 1982:238; McDonald, 1984:103–105, figs. 17–25 (part); Grazia, 1984:73; Grazia, 1987:45–46, figs. 6–8.

Arocera (Euopta) splendens: Stål, 1872:38; Kirkaldy, 1909:110.

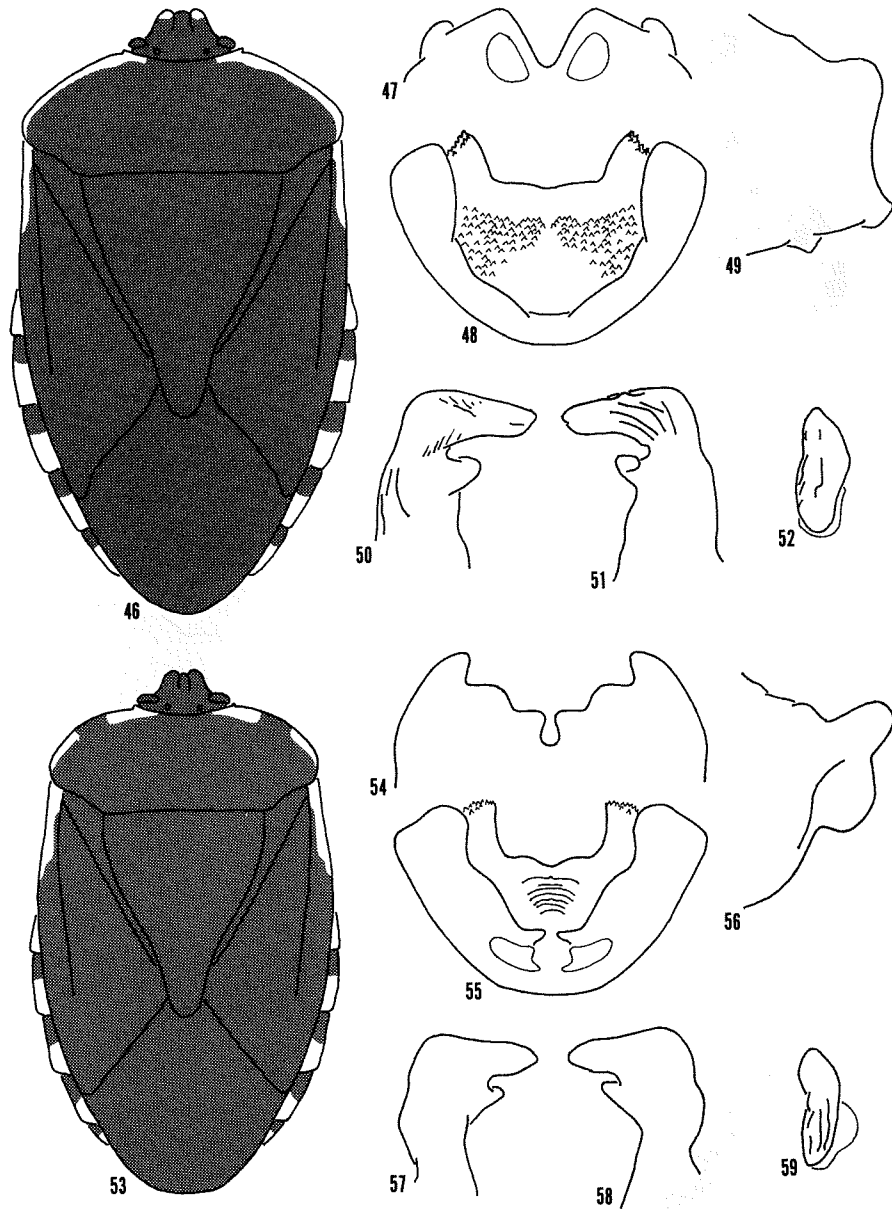
Diagnosis. Broadly oval, metallic green with yellow to red anterior and lateral markings (Fig. 46); punctation, at least on disc of pronotum, relatively sparse, minute.

Dorsal surface of head metallic green becoming yellow to orange laterally and apically (Fig. 46). Anterolateral margins of pronotum straight to slightly convex; reflexed portion nearly uniform in width becoming narrower near humeral angles; pronotal surface not depressed near anterolateral margins. Scutellum with a weak but distinct longitudinal carina from near apex to basal one-third.

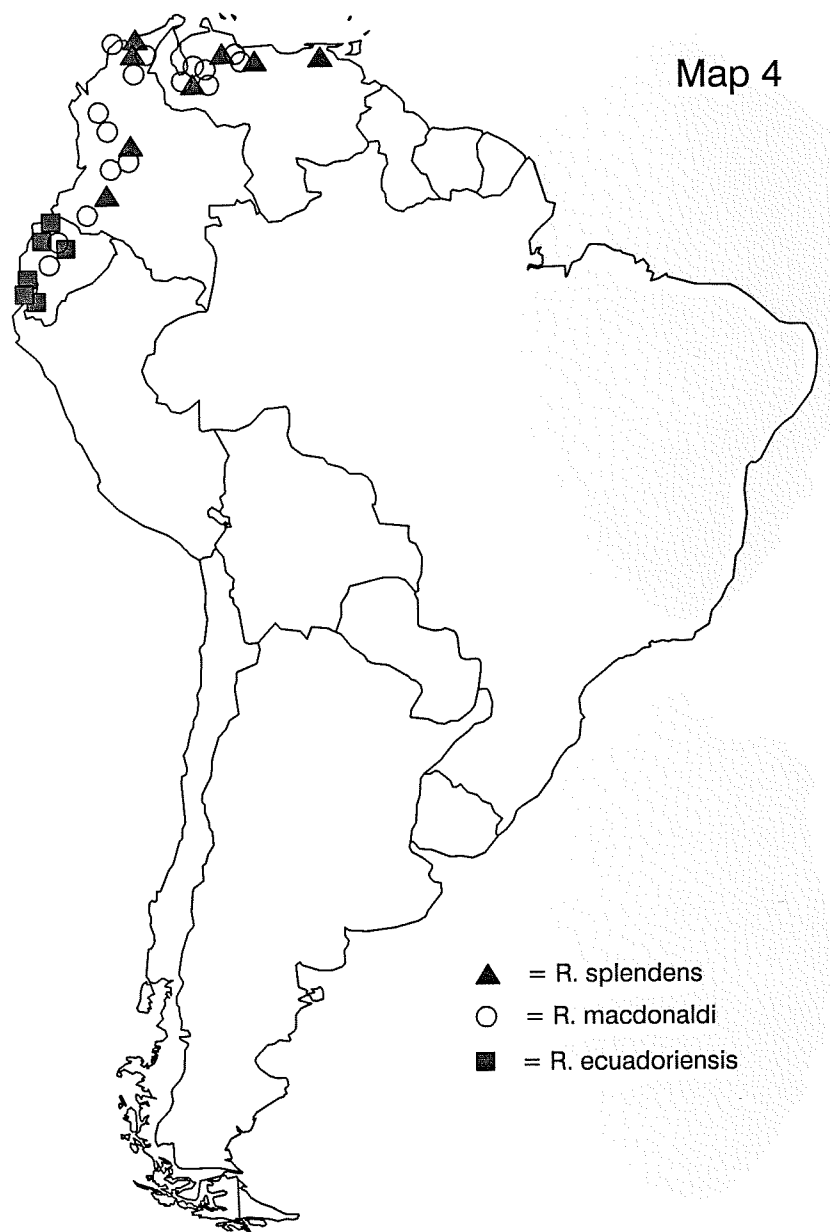
Ventral margin of pygophore in ventral view with V-shaped emargination; distinct, circular depressed areas in surface on each side of V (Fig. 47); in caudal view ventral margin U-shaped, incised medially; inferior ridge forming vertical wall with triangular spiculate area on each side, ventromedial surface of wall distinctly concave, sometimes with small medial tumescence (Fig. 48). Posterior projections of proctiger relatively small, straight in lateral view. Each paramere with apex rounded in lateral and medial views (Figs. 50, 51); in ectal view paramere-head somewhat robust, rounded apically (Fig. 52). Spermathecal duct moderately coiled below proximal flange (Fig. 8).

Types. Blanchard (1840) described *Pentatoma splendens* from 1♂ and 1♀ specimen. Grazia (1987) designated the ♂ specimen lectotype and the ♀ specimen paralectotype. Both specimens were examined and the two specimens are not conspecific. The ♀ paralectotype is actually a specimen of the closely related species *R. macdonaldi*, as it lacks the pale coloration on the apex of the head. Both specimens are conserved in the Muséum National d'Histoire Naturelle, Paris, France.

Specimens examined. 49 specimens collected from 1 July to April; deposited in AMNH, BMNH, CAS, DBT, HDEC, MNHN, UNAM, USNM, ZMB. **MEXICO:** *Jalisco*: Tepatitlán. *Oaxaca*: San Mateo Yetla; Tuxtepec. *Tabasco*: Teapa. **BELIZE:** *Cayo*: El Cayo; Santa Familia. **GUATEMALA:** Panzós, Vera Paz. *Izabal*: Morales. **PANAMA:** Bugaba; Taboga Island. *Bocas del Toro*. *Canal Zone*: Madden Dam; Paraiso; Pedro Miguel. *Chepo*: Altos de Maje. **JAMAICA:** Montego Bay.



Figs. 46-59. 46-52. *Rhysscephala splendens*. 46. Habitus. 47-49. Pygophore. 47. Ventral view. 48. Caudal view. 49. Lateral view. 50-52. Right paramere. 50. Lateral view. 51. Medial view. 52. Ectal view. 53-59. *R. infuscata*. 53. Habitus. 54-56. Pygophore. 54. Ventral view. 55. Caudal view. 56. Lateral view. 57-59. Right paramere. 57. Lateral view. 58. Medial view. 59. Ectal view.



Map 4. *R. ecuadoriensis* (■); *R. macdonaldi* (○); *R. splendens* (▲).

COLOMBIA: Felipe Ovalle. *Boyacá:* Muzo. *Huila:* Gigante. *Magdalena:* Aracataca; Santa Marta. **VENEZUELA:** Cumaragua. *Aragua:* El Limon; Rancho Grande. *Mérida:* Mérida. *Monagas:* Caripito. *San Felipe:* Aroa.

Distribution. Southern Mexico to northwestern South America (Maps 2, 4), with one record from Jamaica.

Comments. Males of this species are easily recognized by the distinctive genitalia; the V-shaped emargination in the ventral margin of the pygophore is diagnostic. Males and females can be identified by the pale areas on the apex of the head.

***Rhyssoccephala infuscata*, new species**

Figs. 9, 10, 24, 53–59, Map 2

Description. Dorsal surface metallic green with red markings along anterior and lateral margins (Fig. 53); punctation, at least on disc of pronotum, relatively sparse, minute; distance between adjacent punctures 2–5 times diameter of punctures.

Dorsal surface of head usually unicolorous, metallic green, extreme apex of each juga sometimes brownish. Dorsal surface of head distinctly wrinkled, rugose; vertex rugulose; apex of head truncately rounded; lateral jugal margins sinuous, reflexed, becoming slightly inflated apically. Antennae black.

Anterolateral margins of pronotum convex, reflexed, red except usually infuscated at middle (Fig. 53). Red marginal band continues onto basal one-fourth of each corium (Fig. 53). Scutellum usually with vague, longitudinal carina from near apex to basal one-third. Coria minutely punctured, posterior margins nearly straight, posterolateral angles narrowly rounded; hemelytral membranes metallic green. Connexiva usually alternating fuscous and red (Fig. 53).

Ventral surface reddish-brown to black with yellow to orange-red markings along lateral margins and on coxae, those on abdominal segments forming large macula in posterolateral angle of each sternite; some reddish markings on genital plates of female. Rostrum black, reaching onto base of abdomen, segment III longer than segment II. Ostiolar rugae elongate, curving slightly cephalad, reaching about two-thirds distance to lateral metapleural margin. Legs fuscous to black.

Ventral margin of pygophore in ventral view bisinuously U-shaped with small circular emargination medially (Fig. 54); in caudal view sinuously U-shaped, incised medially, posteroventral surface continuing ventrad below ventral margin with slightly depressed areas on each side of middle; inferior ridge forming vertical wall which lacks black spicules but has 5–8 weak transverse wrinkles medially (Fig. 55); inferior ridge in caudal view sinuously U-shaped (Fig. 55); pygophore in lateral view with posterolateral angles obtusely prominent (Fig. 56). Proctiger with posterior projections curving dorsad in lateral view. Each paramere with apex rounded in lateral, medial and ectal views (Figs. 57–59). Spermathecal duct nearly straight below proximal flange (Fig. 10).

Measurements. Total length 14.35–18.37 (14.98); total width 8.12–10.25 (8.52); medial length of pronotum 2.84–3.63 (3.12). Medial length of scutellum 6.15–7.49 (6.62); basal width 5.36–6.47 (5.52); width at distal end of frena 1.73–1.89 (1.88). Length of head 2.04–2.36 (2.15); width 3.03–3.53 (3.15); intraocular width 1.62–1.90 (1.62); intraocellar width 0.85–1.18 (0.88); ocellar diameter 0.22–0.29 (0.26); distance from ocellus to adjacent eye 0.28–0.29 (0.28). Length of segments I–V of antennae 0.63–0.96 (0.74), 1.29–1.47 (1.47), 1.99–2.37 (1.99), 3.02–3.39 (3.16), and

3.16–3.39 (3.24), respectively. Length of segments II–IV of rostrum 1.94–2.21 (2.13), 2.08–2.58 (2.43), and 1.41–1.66 (1.47), respectively.

Holotype. ♂ labeled “MEXICO: Chiapas Chorreodero Cnyn 5 mi E. Chiapa de Corzo IX-18-1985 B. Ratcliffe & C. Messenger.” Deposited in the National Museum of Natural History, Washington, D.C.

Paratypes. 43♂♂ 68♀♀. (a) “Mexico” (b) “c” [ventral surface] (c) “*Strachia splendida* Walker’s catal.” (♀ BMNH); (a) “Mexico” (b) U.S.N.M. Acc. 18478” (♀ USNM); “R. Perez Acayucan Veracruz 10-VIII-75” (♀ UNAM); “Puente Nacional, Veracruz, Mexico August 24, 1967 H. R. Burke and J. Hafernik” (♂ LHR); “MEXICO, Ver. Cordoba X-22-1963 A. B. Lau” (♀ USNM); “Mex. Vera Cruz Cordoba, BL lite VIII-20-26-64 T. Taylor, Coll.” (♀ CAS); (a) “Cordoba VC May 16, 05 Mex” (b) “FredkKnab Collector” (♂ USNM); (a) “Lake Catemaco Ver., Mex. 1000’ ” (b) “VII-3-6-59 P.&C. Vaurie” (♂ AMNH); “MEXICO: Vera Cruz Lake Catemaco Area D. C. Robinson” (♂ EGER 2♀♀ LHR, TAMU); (a) “MEX. Lake Catemaco Ver. 9.VI.1969” (b) “H. F. Howden Collector” (♀ CNC); (a) “MEX. Santecomapan Ver. 10.VI.1969” (b) “H. F. Howden Collector” (♂ CNC); “MEXICO: Jalapa, Ver. VI-22-1947 Wegenre” (♂ AMNH); “MEXICO, Ver. Presidio X-28-1963 A. B. Lau” (♂ USNM); “San Andres Tuxtla Veracruz H. Brailovsky 22-VII-72” (♀ UNAM); (a) “EBSAT 28-C Los Tuxtlas Range Veracruz, Mexico VII-22-1963 D. C. Robinson” (b) “San Andreas Tuxtla” (2♀♀ EGER, TAMU); “México, Ver. Est. Biol. de Los Tuxtlas. Alt. 15-X-85 A. Ibarra.” (♂ ♀ UNAM); “México, Ver. Est. Biol. de Los Tuxtlas. Alt. 15-XI-85” (2♀♀ UNAM); “México, Ver. Est. Biol. de Los Tuxtlas. Alt. 11a 17-XI-85 E. Ramírez” (♀ UNAM); “Los Tuxtlas Veracruz México 19-XII-76 S. Z. C.” (♀ UNAM); “Los Tuxtlas Veracruz México 1-15/0/81 G. Ortega L.” (2♀♀ UNAM); “C. El Vigia S. Tuxtla Veracruz 18-II-67” (♀ UNAM); “H. Perez Tuxtlas. Veracruz 30-X-75” (♀ USNM); “H. Perez Est. Los. Tuxtlas Veracruz 7-8.VIII.75 Noct” (♀ AMNH); (a) “Laguna Encautada Municipio de San Andrés Tuxtla Veracruz. MX” (b) “Alt. 350 m. viii 10, 1984 A. Chapp Foliage” (♀ EGER); “Est. Biol. Los Tuxtlas Veracruz Mexico 27-V-71 H. Gonzalez” (♂ UNAM); “San Andres Tuxtla Veracruz H. Brailovsky 11-I-72” (2♀♀ AMNH, USNM); “MEXICO, Veracruz: San Andres Tuxtla, Oct. 3 1947” (♀ AMNH); “Vera Cruz, Mex. Jaltipan X.23.70 R. Hancock, Coll.” (♂ DAR); “J. J. Zertuche Campto. Cd. Alemán, Ver. 23-IX-1957” (♂ UNAM); “Villa Hermosa Tobasco, Mex. X-21-70 R. Hancock” (♂ CAS); “Mex. Oaxaca Temescal IX.19.71” (♀ CAS); “Palomares, Oaxaca Mex. IX/5-21/61 R&K Dreisbach” (♀ LHR); “Chiapas Mexico” (♀ CAS); “MEXICO: Chiapas Aguacero IX 1985 D. B. Thomas” (2♂♂ 3♀♀ DBT); “MEXICO: Chiapas Aguacero 10-VI-1986 D. B. Thomas” (♀ DBT); “Aqua Cera, 40 km west, Tuxtla Gutierrez, Chiapas, Mex. VI-21-87” (♂ ♀ DBT); “MEXICO, Chiapas 10 Km. S. Palenque 14-I-88 (D. B. Thomas Coll.” (2♂♂ DBT); “MEXICO, Chiapas 10 Km. S. Palenque 24-VI-87 D. B. Thomas Coll.” (♂ DBT); “MEXICO, Chiapas 10 Km. S. Palenque 11-X-86 D. B. Thomas Coll.” (♀ DBT); “MEXICO, Chiapas 10 Km. S. Palenque 7-IX D. B. Thomas Coll.” (♀ DBT); “MEXICO: CHIAPAS PALENQUE AUGUST 1988 D. B. THOMAS” (♂ DBT); “MEXICO: Chiapas Ruinas Palenque 20 August 1987 J. A. Shuey Colr.” (♀ EGER); “MEXICO: Estado de Chiapas, Palenque Hotel “Tulija” 9.VI.1987 Stella E. Tatro” (♂ CAS); “La Esperanza Chiapas, Mex. IV.2.45 T. C. Schneirla” (♀ AMNH); (a) “Finca’ La Isle’ Chiapas, Mex.” (b) “Presented by L. C. Reynolds” (2♀♀ CAS); “MEXICO: Chiapas Chicoasen IX-19-1985 B. Ratcliffe & C. Messenger” (2♂♂ ♀ DBT); “MEXICO: Chiapas Ocozocoautla Altitude 2700 ft 26–28.IX.1971 D. E. Breedlove”

(♀ CAS); "MEXICO, Chiapas Parque Laguna Belgica 10-VI-87 D. B. Thomas Coll." (♀ DBT); "3 km west, Cinco Cerros, Chiapas, Mexico VI-26-87" (♀ DBT); "MEXICO: CHIAPAS SIMOJOVEL MAY 1989 A.M. THOMAS" (♀ DBT); "R Nettel Col. Huixtla, Chis. 9.V.43" (♀ UNAM); "Mario Garcia Col. MEXICO: Chiapas Boca Lacantun. 24-V-84" (♀ UNAM); "MEXICO: Chiapas Boca Lacantun 24-V-84 M. Garcia" (♀ UNAM); "Ernesto Barrera Col. MEXICO: Chiapas Bonampak 20-22-V-84" (♀ UNAM); and "Mario Garcia Col. MEXICO: Chiapas Bonampak 20-22-V-84" (♂ UNAM).

"BELIZE: Stann Creek District, Middlesex 28-II-1982 E. C. Welling, coll." (2♂♂ 2♀♀ EGER); "BELIZE: Stann Creek District, Middlesex 1-VI-1983 E. C. Welling, coll." (♀ EGER); "BELIZE, STANN CREEK VALLEY, MELINDA March 1, 1976 M. W. HETZ" (3♂♂ 2♀♀ DBT); "BELIZE, STANN CREEK VALLEY, MELINDA Feb. 16-March 16, 1976 M. W. HETZ" (♂ DBT); "BELIZE: STANN CREEK DIST. DANRIGRA 20 AUG 1988 D. B. THOMAS COLL." (♂ DBT); "British Honduras Middlesex Stann Creek dist. 29.IV.1965" (♀ CNC); "BELIZE: Belize 5-VI-1983 E. C. Welling, Coll." (♂ EGER); "Punta Gorda, British Hon Feb. 1931 J. J. White" (♂ USNM); "BRIT. HONDURAS. Cayo District Belmopan 26. VIII. 71 Coll. R. O'Shea" (♀ BMNH); "Guatemala Dr. Ohaus G." (♂ ZMB); "GUATEMALA, Izabal, Ruinas de Quiriguá 24/25 August, 1974 E. M. Fisher, collr." (♂ DBT); "GUATEMALA: Quixal Alta Verapaz VII-1979 E. C. Welling, coll." (♂ ♀ EGER); "GUATEMALA: Quixal Alta Verapaz 600 m. 26-27-VII-1981. E. C. Welling, coll." (♀ EGER); (a) "GUATEMALA: San Jose IV-11-1951" (b) "Ross and Michelbacher Collectors" (♀ CAS); "Yepocapa Guatemala III-VI.45 H. Elishewitz" (♀ AMNH); (a) "Cayuga Guat. VI-'15" (b) "WmSchaus coll" (2♂♂ USNM); (a) "Cayuga Guat. IX-'15" (b) "Wm-Schaus coll" (♂ ♀ USNM); (a) "Cayuga Guat." (b) "Schaus and Barnes coll" (♂ USNM); "Morales, Guatemala Sep. 1929 J. J. White" (5♀♀ USNM); (a) "Morales Guatemala" (b) "J. J. White Sep 1928" (♂ USNM); (a) "San Salvador Salv. 1920 S. Calderon" (b) "no. 53" (♂ ♀ USNM); "HONDURAS: La Ceiba, July 1982 John Stamatov" (♂ AMNH); "NICARAGUA: Los Jinotepes V-1953 R.&C. Swain" (♂ AMNH); "C. R., Guan., La Pacifica nr. Cañas 22-26-V-84; E. Riley D. Rider & D. LeDoux" (♂ DAR); and "COSTA RICA, Guan. Prv. LaPacifica Nr Canas June 8, 1983 J. E. Wappes" (♀ LHR).

Distribution. Mexico to Costa Rica (Map 2).

Comments. This species is similar in coloration to *R. splendens* and *R. macdonaldi*. It can be separated from *R. splendens* by the lack of red or orange color on the apex of the head. In *R. macdonaldi*, the anterolateral margins of the pronotum are usually unicolorously red or yellow, whereas in *R. infuscata*, they are usually infuscated medially. The male genitalia are diagnostic in all three species.

Etymology. Most specimens of this species have the red submarginal band along the anterolateral margins of the pronotum infuscated medially. The species is named for that character.

***Rhysscephala ecuadoriensis*, new species**

Figs. 17, 18, 23, 60-66, Map 4

Description. Dorsal surface black with orange-red markings along anterolateral pronotal margins and on basal costal margins of coria (Fig. 60); dorsal punctation minute, dense.

Vertex of head somewhat tumid, roughened, with several transverse rugulose lines. Jugal surfaces diagonally rugulose; lateral jugal margins sinuous, not parallel, obtusely reflexed near apices; juga and tylus subequal in length. Tylus obscurely rugulose near base, tumid medially, declivant apically. Antennae black.

Pronotal surface with very small, obscure, rugulose lines between punctures; anterolateral margins distinctly reflexed. Anterolateral pronotal margins nearly weakly convex, humeral angles obtusely rounded, small obtuse tooth present in each anterior angle; anterior angle and anterolateral margins orange-red, becoming red-brown near each humeral angle. Posterolateral pronotal margin weakly sinuous; posterior pronotal margin weakly concave, nearly straight. Scutellum minutely punctured, a few obscure rugulose lines near base. Corium minutely and densely punctate; basal costal margin orange-red; posterior margin nearly straight; hemelytral membrane lightly fumose, veins subparallel. Connexiva narrowly exposed, anterior and posterior margins of each segment black with middle of each segment orange-red (Fig. 60).

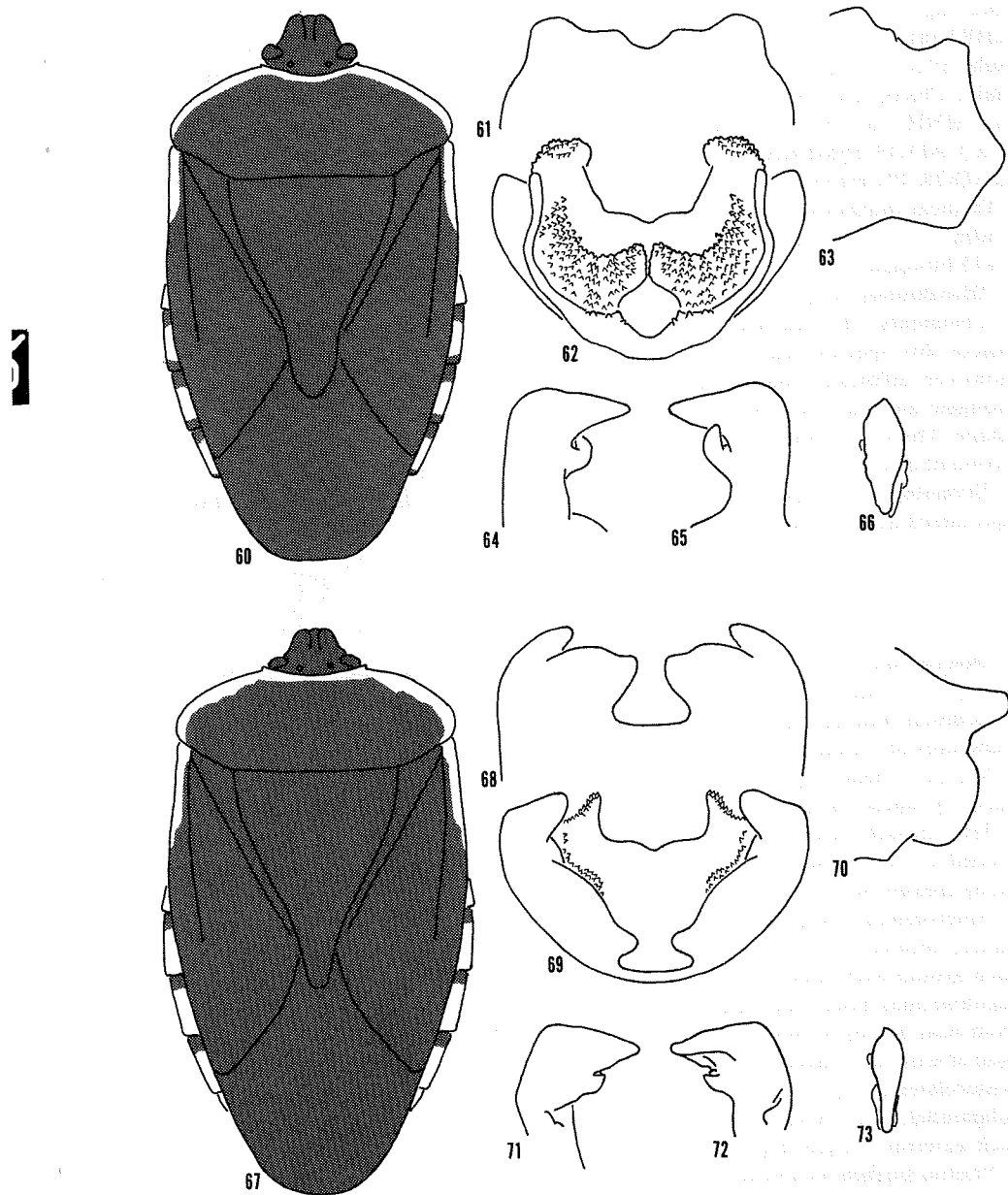
Ventral surface of head glabrous, orange-brown with fuscous to black markings around each antennifer and along lateral jugal margins. Rostrum black, reaching onto base of abdomen, segment II longer than segment III. Thoracic pleura fuscous to black with orange-red markings laterally, posteriorly and around coxae. Ostiolar rugae elevated, glossy, curving slightly cephalad, acuminate apically, reaching about two-thirds distance from ostioles to lateral metapleural margins. Legs black. Abdominal surface fuscous to black with obscure red markings submedially, more distinct orange-red spot just posterolateral to each spiracle, and U-shaped orange-red marking medially on last abdominal segment.

Inferior ridge of pygophore angularly bisinuate in caudal view (Fig. 62); ventral margin produced caudad then dorsad, forming excavated area between inferior ridge and ventral margin; surface of excavated area covered with small, black, setae-bearing tubercles except medially and along margin of inferior ridge; black spicules forming small horn on each side dorsomesially (Fig. 62). Ventral margin in caudal view bisinuate with U-shaped incision medially (Fig. 62); in ventral view bisinuate (Fig. 61); pygophore in lateral view sinuous, protruding caudad just below middle (Fig. 63). Proctiger with posterior projections straight in lateral view (Fig. 18). Each paramere with apex narrowly rounded in lateral and medial views (Figs. 64, 65), in ectal view paramere-head broader on apical than basal half, apex rounded (Fig. 66). Female genitalia typical for the genus.

Measurements. Total length 14.19–18.14 (15.14); total width 8.36–10.25 (8.75); medial length of pronotum 2.30–3.47 (3.00). Medial length of scutellum 6.15–7.81 (6.94); basal width 5.20–6.15 (5.52); width at distal end of frena 1.73–2.21 (1.89). Length of head 2.13–2.37 (2.15); width 3.09–3.48 (3.26); intraocular width 1.66–1.88 (1.71); intraocellar width 0.92–1.07 (1.03); ocellar diameter 0.23–0.29 (0.26); distance from ocellus to adjacent eye 0.28–0.31 (0.29). Length of segments I–V of antennae 0.77–0.83 (0.77), 1.25–1.64 (1.47), 2.12–2.51 (2.17), 2.36–2.87 (2.54), and 2.43–2.65 (2.47), respectively. Length of segments II–IV of rostrum 1.94–2.50 (2.04), 1.88–2.28 (1.93), and 1.24–1.55 (1.32), respectively.

Holotype. ♂ labeled (a) "ECUADOR, El Oro: W. of Santa Rosa just S. Machala II-18-1965" (b) "L. E. Pena Collector" (c) "*Arocera splendens* (Blanch.) Det. F. J. D. McDonald." Deposited in the American Museum of Natural History, New York.

Paratypes. 7♂♂, 7♀♀. Labeled as holotype (2♂♂ 2♀♀ AMNH); "ECUADOR Santo



Figs. 60-73. 60-66. *Rhysscephala ecuadoriensis*. 60. Habitus. 61-63. Pygophore. 61. Ventral view. 62. Caudal view. 63. Lateral view. 64-66. Right paramere. 64. Lateral view. 65. Medial view. 66. Ectal view. 67-73. *R. macdonaldi*. 67. Habitus. 68-70. Pygophore. 68. Ventral view. 69. Caudal view. 70. Lateral view. 71-73. Right paramere. 71. Lateral view. 72. Medial view. 73. Ectal view.

Domingo de los Colorados, Pichincha 7 February 1958 R. W. Hodges, 2000" (δ LHR); (a) "Light" (b) "Guayaquil ECUAD 17 April 1920 Cornell U. Exped Lot 607 Sub 25" (c) "Cornell Univ. Expedition Lot 607 Sub 25" (δ AMNH); (a) "ECUADOR: Balao Chico, 60km S. Guayaquil Guayas Prov., Jan.-1964" (b) "L. E. Pena Collector" (δ AMNH); (a) "ECUADOR Puna Is. XI-9-1950" (b) "A E Michelbacher" (δ CAS); "ECUADOR ESMERALDAS CUPA 30-I-1982 Lg. D. POVEDA" (δ BMNH); "ECUADOR PICHINCHA PTO QUITO 3-XII-83 LEG: E. FIALLO" (δ BMNH); (a) "Tropical rainforest general collecting" (b) "ECUADOR, Pichincha, Puerto Quito, 750m. x-xi. 1982 G. Onore" (δ & δ BMNH); "S. Domingo de los Colorados 29-Nov-1975 Floreano Merino" (δ BMNH); and (a) "7207" (b) "Guayaquil. Reisj." (δ ZMB).

Distribution. Known only from Ecuador (Map 4).

Comments. The fuscous to black dorsal coloration and dense pronotal punctation places this species near *R. immaculata*, *R. principalis*, and *R. rufolimbata*. It is, however, differently shaped than those species. *Rhysocephala ecuadoriensis* is more elongate and narrow, resembling *R. splendens*, *R. macdonaldi*, and *R. infuscata* in shape. These last three species are all distinctly metallic-green or blue and have the pronotal disc sparsely punctate; the male genitalia are also diagnostic.

Etymology. This species is named for Ecuador, the country from which all of the specimens in the type series were collected.

***Rhysocephala macdonaldi*, new species**

Figs. 15, 16, 22, 67-73, Maps 2, 4

Description. Dorsal surface metallic green or blue with yellow to red markings along anterolateral pronotal margins and on basal costal margins (Fig. 67); dorsal punctation minute, dense, except pronotal disc sparsely punctate; distance between punctures on pronotal disc 3-5 times diameter of puncture.

Vertex of head slightly tumid, distinctly wrinkled or rugulose. Jugal surfaces diagonally rugose; lateral jugal margins sinuous, not parallel, slightly reflexed, becoming inflated distally; apex of head truncately rounded, juga and tylus subequal in length. Dorsal surface of head usually unicolorous, sometimes slight red-brown coloration along creases between juga and tylus. Antennae black.

Anterolateral margins of pronotum slightly convex, reflexed; submarginal red band entire, uninterrupted medially by fuscous; humeral angles rounded; anterior angles each armed with small tooth (Fig. 67). Scutellum minutely punctured, a few weak rugulose lines basally and laterally; sometimes with vague, medial, longitudinal carina from near apices of frena to basal third, sometimes with circular depressed area on base of scutellar tongue. Coria minutely punctured, posterior margins nearly straight, posterolateral angles narrowly rounded; hemelytral membranes metallic green, veins subparallel. Connexiva narrowly exposed, usually red alternating with fuscous along each anterior margin (Fig. 67).

Ventral surface red-brown to fuscous with red-orange markings near bucculae, on coxae, and along lateral margins. Rostrum fuscous to black, reaching onto base of abdomen, segment III longer than segment II. Ostiolar rugae elongate, curving slightly cephalad, reaching about two-thirds of distance from ostioles to lateral metapleural margins. Legs fuscous to black.

Ventral margin of pygophore in ventral view sinuous with large flask-shaped emar-

gination medially (Fig. 68); in caudal view ventral margin sinuously U-shaped, incised medially; inferior ridge forming vertical wall with moderate amount of black spicules laterally, broadly U-shaped with medial part weakly concave (Fig. 69); in lateral view posterolateral angles of pygophore truncate, prominent (Fig. 70). Proctiger with posterior projections curving dorsad in lateral view (Fig. 16). Each paramere narrowly rounded in lateral and medial views (Figs. 71, 72), in ectal view paramere-head broader on apical half than basal half, nearly acute apically (Fig. 73).

Measurements. Total length 14.35–17.66 (14.74); total width 7.73–9.54 (7.96); medial length of pronotum 2.68–3.08 (2.76). Medial length of scutellum 5.99–7.25 (6.15); basal width 4.81–6.15 (5.13); width at distal end of frena 1.58–1.89 (1.73). Length of head 1.99–2.37 (2.04); width 2.95–3.20 (3.04); intraocular width 1.47–1.67 (1.55); intraocular width 0.85–0.88 (0.85); ocellar diameter 0.29–0.33 (0.29); distance from ocellus to adjacent eye 0.18–0.29 (0.29). Length of segments I–V of antennae 0.66–0.85 (0.74), 1.21–1.44 (1.21), 1.74–2.21 (1.86), 2.65–3.16 (2.91), and 2.70–3.13 (2.83), respectively. Length of segments II–IV of rostrum 1.93–2.32 (1.99), 2.06–2.72 (2.06), and 1.38–1.91 (1.44), respectively.

Holotype. ♂ labeled "VENEZUELA RanchoGrande 17-I-66." Deposited in the National Museum of Natural History, Washington, D.C.

Paratypes. 29♂♂, 34♀♀. Labeled as holotype except "18-I-66" (2♂♂ USNM); labeled as holotype except "24-I-66" (♂ USNM); labeled as holotype except "I-66" (♂ USNM); (a) "VENEZUELA: Guanare, estado Portuguesa IX-10 to 13-1957" (b) "Borys Malkin Collector" (♂ ♀ CAS); (a) "1982" (b) "Agua Santa, Trujillo, Venezuela" (c) "HPittier Coll" (♀ USNM); "Valera, Venez. 1800 ft EPdeBellard" (♀ USNM); "Merida Venezuela" (♂ ♀ CAS); (a) "46701" (b) "VENEZUELA: Rancho Grande nr. Maracay VI-29-1946" (♂ AMNH); "Venezuela Kummerow" (3♂♂ 6♀♀ ZMB); "Venezuela F. Kummerow S." (2♂♂ 2♀♀ ZMB); Venezuela Valencia F. Kummerow S. V." (3♀♀ ZMB); "LA GUAYRA leg OTTO Nr. 505" (♂ ♀ ZMB); "Barinitas. 500m. Edo. Barinas Venezuela 15-V-66 Gadon" (♂ UNAM); (a) "Espinal Colombia So. Amer." (♀ USNM); (a) "Medellin Colombia" (b) "FIGallegoM Col No 86, Let. Jan. 44" (♂ USNM); "Magdalena Colombia, S A June 1936" (♂ LHR); (a) "COLOMBIA: Rio Leon Chigorodo. Ant. 11–17 Apr 1965" (b) "H. Marin Collector" (♂ USNM); "Aracataca, Mgd. Colombia V-13 Darlington 28" (4♀♀ AMNH); "Aracataca, Mgd. Colombia V-12 Darlington 28" (♀ AMNH); "Muzo SA Colombia" (♀ CAS); "S. Columbian Mocoa 5-6-22 am Putumaya W. Hopp S. G." (♀ ZMB); "Santa Marta Colombia Apr. 28, 1925" (♀ USNM); "Rio Palenque, Ecuador Los Rios Prov.-J. Longino 18-VI-74" (♂ EGER); "ECUADOR: Pichincha Prov. Tinalandia; 12 km. E. Sto. Domingo de los Colorados. ca. 2500 ft., 11–17-V-1986. J. E. Eger, coll." (♀ EGER); "Ecuador Pichingha, 15km E Sn. Domingo 31-X-74 at lights" (♀ HDEC); (a) "Ecuador Pichingha, 15km E Sta. Domingo" (b) "Collection of H. D. Engleman Jeff Balev Collector 23-IV-75" (♀ HDEC); "ECUADOR PICHINCHA-X TOACHI 1983 Legit: G. Onore" (♀ BMNH); "ECUADOR, Pichincha, Puerto Quito, 750m. x-xi. 1982 G. Onore" (♂ BMNH); (a) "Amazonian rain forest" (b) "ECUADOR: Pichincha Puerto Quito. vi. 1982. G. Onore" (♀ BMNH); (a) "GatunCZ Pan 7-V-11" (b) "A H Jennings Collector" (♀ USNM); "Gatun Spillway Pan. Canal Zone 11.IV.76 Col: D. Engleman" (♂ LHR); "Gatun Spillway Pan. Canal Zone 25 VI 74 Col: D. Engleman" (♂ HDEC); "Gatun Spillway Pan. Canal Zone 30-VII-74 Col: D. Engelman" (2♂♂ HDEC, ♂ ♀ LHR); "PANAMA: ZONA DEL CANAL; Barro Colorado Island. July 1980. R.

Silberglied/A. Aiello." (♀ USNM); PANAMA BOCAS DEL TORO 10KM NE FORTUNA DAM 3400' MAY 23-26 1984 E. GIESBERT, COLL." (♀ HDEC); "Cerro Campana 800 M; Dist. Chame, PANAMA 3.VI.81 Col. H. D. Engleman" (♂ HDEC); "PANAMA, DARIEN PR. 23KM. E CAÑANZAS MAY 16 1982 E. GIESBERT, COLL." (2♂♂ HDEC); (a) "Olas de Moka Dept. Sosola Guatemala IX-08" (♂ USNM); (a) "JAMAICA? dead in airplane at Miami, Fla." (b) "L. A. McLain 64-20306" (♂ USNM).

Distribution. Guatemala to northwestern South America, with one questionable record from Jamaica (Maps 2, 4).

Comments. This species is similar in appearance to *R. splendens* and *R. infuscata*. It can be separated from both species by the distinctive male genitalia. In *R. splendens*, the medial emargination of the ventral margin of the pygophore is V-shaped, and in *R. infuscata*, the medial emargination is small and circular. In *R. macdonaldi*, the medial emargination is larger and flask-shaped. It can also be separated from *R. splendens* by the lack of orange or red coloration on the apex and lateral margins of the head. It can usually be separated from *R. infuscata* by the lack of infuscation of the red submarginal band along the anterolateral pronotal margins.

Etymology. This species is named in honor of F. J. D. McDonald, who has contributed much to the knowledge of this genus and many other pentatomoid genera.

Rhysocephala rufolimbata (Stål, 1872), **New Combination**

Figs. 74-80, Map 3

Arocera (Euopta) rufolimbata Stål, 1872:38; Kirkaldy, 1909:110.

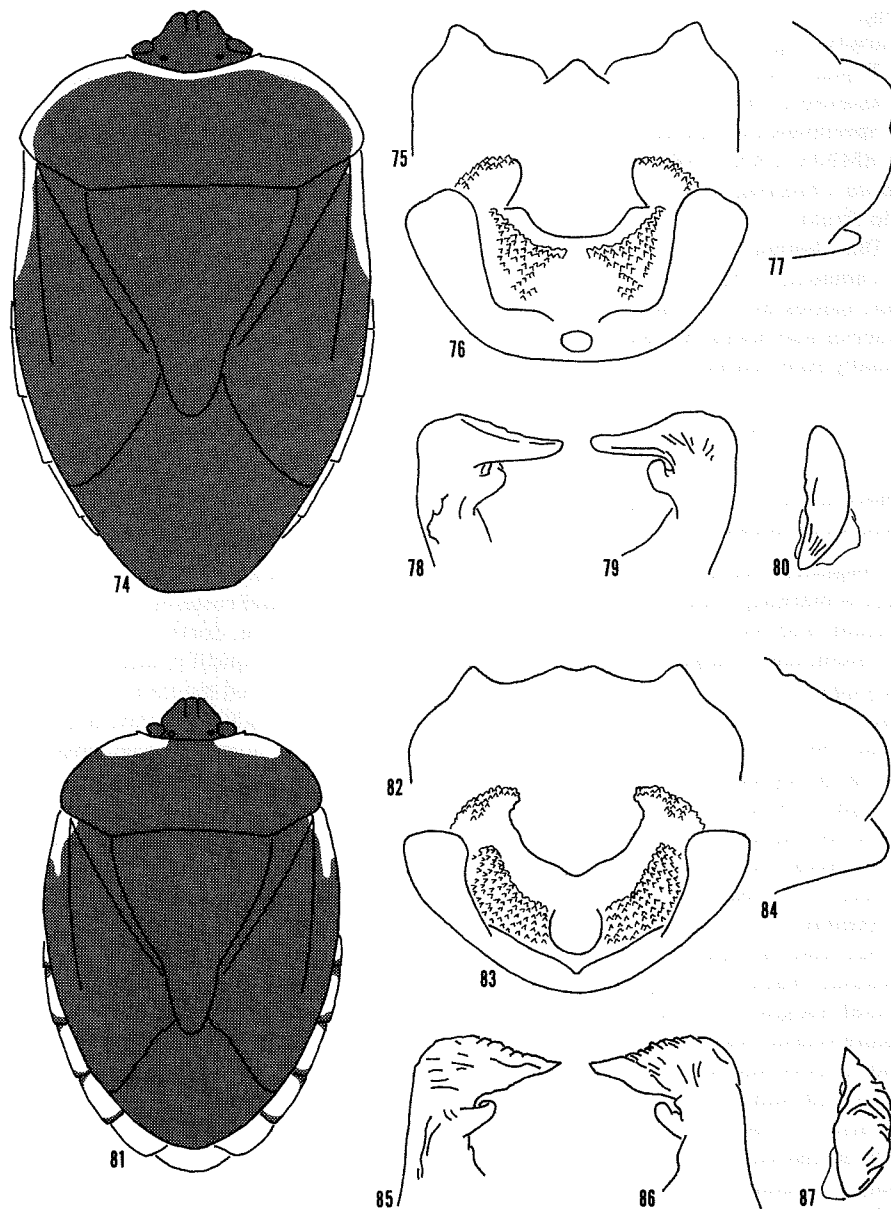
Arocera rufolimbata: Lethierry & Severin, 1893:159; Monte, 1945:269; Grazia, 1977:163; McDonald, 1984:111-112, figs. 51-55.

Diagnosis. Broadly ovate. Dorsal surface castaneous to fuscous, becoming black around pronotal cicatrices, anterior and anterolateral pronotal margins usually pale orange-red, continuing for short distance along lateral costal margin of each corium (Fig. 74); dorsal punctation minute, relatively dense.

Dorsal surface of head dark red-brown to black; lateral jugal margins slightly sinuous; apex truncately rounded. Antennae black. Anterolateral margins of pronotum distinctly convex. Connexiva narrowly exposed, usually entirely red (Fig. 74), rarely with small amount of black along intersegmental sutures. Hemelytral membranes fumose.

Ventral surface of head red except narrow margin fuscous. Rostrum completely black, reaching onto base of abdomen. Thoracic pleura fuscous to black except lateral margins and surface surrounding each coxa red. Ventral surface of abdomen with alternating bands or rows of spots of red and black. Legs entirely fuscous.

Inferior ridge of pygophore forming vertical wall with spiculate triangular area on each side of meson, dorsally ending abruptly in slightly elevated denticulate ridge paralleling pygophoral opening (Fig. 76). Posterior surface of pygophore produced caudad into U-shaped ridge becoming obsolete ventrally near middle; posteroventral surface with distinct cone-shaped protuberance medially (Fig. 76); pygophore in lateral view sinuous, posteroventral protuberance clearly visible (Fig. 77). Proctiger with posterior projections straight, not curving dorsad in lateral view. Each paramere somewhat acuminate apically, apex narrowly rounded in lateral and medial views



Figs. 74-87. 74-80. *Rhysscephala rufolimbata*. 74. Habitus. 75-77. Pygophore. 75. Ventral view. 76. Caudal view. 77. Lateral view. 78-80. Right paramere. 78. Lateral view. 79. Medial view. 80. Ectal view. 81-87. *R. immaculata*. 81. Habitus. 82-84. Pygophore. 82. Ventral view. 83. Caudal view. 84. Lateral view. 85-87. Right paramere. 85. Lateral view. 86. Medial view. 87. Ectal view.

(Figs. 78, 79); in ectal view paramere-head nearly uniform in width, broadly rounded apically (Fig. 80).

Types. The holotype ♀, which was examined, is deposited in the Naturhistoriska Riksmuseet, Stockholm, Sweden.

Specimens examined. 15 specimens collected from 1 October to March; deposited in BMNH, CAS, LHR, NHRS, USNM, ZMB. **BRAZIL:** *Rio de Janeiro:* Petrópolis. *Santa Catarina:* Corupá; Nova Teutônia; Rio Vermelho; Theresopolis. *São Paulo:* São Paulo.

Distribution. Known only from southern Brazil (Map 3).

Comments. This species is very similar to *A. immaculata* but can be separated from that species by differences in the male genitalia and usually by the coloration of the anterior and lateral borders of the dorsum which is usually red in *A. rufolimbata* and usually pale yellow in *A. immaculata*.

Rhysocephala immaculata (Pirán, 1963), **New Combination**

Figs. 81–87, Map 3

Pharypia immaculata Pirán, 1963:109–111, figs. 5–6.

Arocera immaculata: Grazia, 1986:52.

Diagnosis. Broadly oval. Dorsal surface black to very dark metallic green with pale yellow markings along anterolateral pronotal margins, on basal costal margin of each corium, and on connexiva (Fig. 81); dorsal punctation minute, dense.

Lateral jugal margins sinuous, not parallel, slightly inflated apically; juga and tylus subequal in length. Tylus transversely rugulose on base, elevated medially, declivant apically. Antennae black. Anterolateral pronotal margins slightly convex; humeral angles broadly rounded; small obtuse tooth in each anterior pronotal angle; posterolateral pronotal margins nearly straight, slightly concave; posterior margin nearly straight. Coria minutely and densely punctate; basal costal margins pale yellow; posterior margins nearly straight; hemelytral membranes fumose, veins subparallel. Connexiva completely pale yellow, or incisures bordered both anteriorly and posteriorly with fuscous (Fig. 81).

Ventral surface of head nearly glabrous, fuscous with pale yellow area along base of bucculae in male, pale yellow with fuscous markings near jugal margins in females. Rostrum black, reaching onto base of abdomen. Thoracic pleura black with anterolateral margin of propleura and ventral corial surfaces pale yellow in male; thoracic pleura yellow-orange with medial fuscous areas in females. Legs black, except inferior and superior surfaces of femora sometimes streaked with yellow. Abdominal surface black with submedial and lateral pale yellow spot on each segment, becoming more extensive on last segment in male; entire abdominal surface pale yellow in females.

In caudal view inferior ridge well-developed, sinuously V-shaped (Fig. 83); ventral margin sinuously U-shaped, thickened medially, produced caudad; surface between inferior ridge and ventral margin with numerous, small, black, seta-bearing tubercles, especially on transverse ridge paralleling inferior ridge; field of setose tubercles interrupted medially by sunken, glabrous area (Fig. 83). Ventral margin in ventral view bisinuous, somewhat produced, but not excised medially (Fig. 82); pygophore in lateral view emarginate below middle (Fig. 84). Posterior projections of proctiger nearly straight in lateral view. Each paramere with apex acutely pointed in lateral, medial, and ectal views (Figs. 85–87).

Types. Pirán (1963) described *Pharypia immaculata* from 5♂ and 11♀ specimens. The holotype specimen was not located, but 2♂ and 9♀ paratype specimens were examined. Nine of the 11 specimens are conserved in the Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina. The other two paratypes are conserved in the Universidad Nacional de La Plata, Argentina.

Specimens examined. 26 specimens collected from 25 July [only one specimen had a collection date]; deposited in BMNH, CAS, DAR, MACN, MLPA, NCSU, USNM, ZMB. **COLOMBIA:** Boyacá: Muzo. *Cundinamarca:* Fusagasugá. *Meta:* Villavicencio. **PERU:** Agualani; Carabaya; La Merced, Valle Chancha mayo; Mont. Phillippi; Tozuzo. **BOLIVIA:** *Santa Cruz:* Río Espejo, Prov. Ibañez.

Distribution. Colombia, Peru, and Bolivia (Map 3).

Comments. This species is most closely related to *A. rufolimbata*. Specimens of *A. rufolimbata* usually have the body narrowly margined with red, while in specimens of *A. immaculata* this narrow margin is usually pale yellow. The male genitalia are also distinctive.

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 CAS—California Academy of Sciences, San Francisco, P. H. Arnaud
 CNC—Canadian National Collections, Ottawa, Canada, M. D. Schwartz
 DBT—D. B. Thomas personal collection, Tuxtla Gutierrez, Mexico
 EGER—J. E. Eger personal collection, Tampa, Florida
 HDEC—H. D. Engleman personal collection, Coco Solo, Panama
 LHR—L. H. Rolston personal collection, Baton Rouge, Louisiana
 MACN—Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires, A. O. Bachman
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 MNHN—Muséum National D'Histoire Naturelle, Paris, France, D. Pluot-Sigwalt
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 ZMB—Zoologisches Museum, Berlin, J. Deckert

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