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A REVISION OF *ECCRITOSIA* SCHINER, 1866 (DIPTERA, ASILIDAE)

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ABSTRACT

Examination of types and study of male genitalia revealed the existence of four species referrable to Eccritosia *Schiner.*

The arrangement of the genus, as proposed in the present paper, is as follows:

Genus Eccritosia *Schiner, 1866, with the following species:* zamon *(Townsend, 1895),* barbata *(Fabricius, 1787)* [= amphinome *Walker, 1849;* = tricolor *Walker, 1850*], rubriventris *(Macquart, 1850)* [= xanthopogon *Burmeister, 1861;* = speciosus *Philippi, 1865;* = barbiellinii *Curran, 1934;* = wirthi *Paramonov, 1964*], *and* plinthopyga *(Wiedemann, 1821)* [= vetustus *Walker, 1837*].

Asilus antidomus *Walker, 1849, considered by past authors as* Eccritosia, *is a* Proctacanthus *Macquart.*

A brief discussion of the geographical distribution and some notes on the biology and ecology of the Eccritosia *species are given, together with drawings of antennae and genitalia and a tentative key for identification.*

1. INTRODUCTION

1.1. Historical sketch

Eccritosia was established by Schiner in 1866, including *Asilus barbatus* Fabricius and *Asilus plinthopygus* Wiedemann. Burmeister (1861, *1*: 317, *2*: 171) described *Asilus* (*Proctacanthus*) *xanthopogon* from Mendoza and Tucumán, Argentina, and Philippi (1865: 693) *Erax speciosus* from Colchagua, Chile; both were synonymized by Lynch Arribálzaga (1880: 259) with *Proctacanthus rubriventris* Macquart and placed in *Eccritosia.* In 1887 Osten Sacken added *Asilus amphinome* Walker, and later Williston (1901) synonymized *Proctacanthus zamon* Townsend with *amphinome.* This arrangement was accepted by Aldrich (1905). In 1909 Kertész placed *Mallophora tricolor* Walker as a synonym of *amphinome,* with a query.

Curran (1934a) first revised the genus, considering *barbata, amphinome, plinthopyga* and *zamon* as valid species; he also placed *Asilus antidomus* Walker as a doubtful member of the genus, and added a new species, *barbiellinii,* from São Paulo, Brazil. In 1960a Carrera sank *barbiellinii* as a synonym of *rubriventris.*

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Bromley (1951), Hull (1962), Martin & Wilcox (1965) and Martin & Papavero (1970) considered *zamon* a valid species; Hull (*loc. cit.*) considered *barbiellinii* a valid species, while Martin & Papavero (*loc. cit.*) placed it as a doubtful synonym of *rubriventris*. Artigas (1970) apparently overlooked the description of *barbiellinii*. In 1964 Paramonov described a new *Eccritosia* from Australia, which he called *wirthi*, collected near Sydney, New South Wales, — the first report of *Eccritosia* outside America.

1.2. Structure of the genus

Eccritosia belongs to the subfamily Asilinae, tribe Asilini (*sensu* Hull, *loc. cit.*), and is related to *Proctacanthus* Macquart, as was stated by Hull (*op. cit.*: 488): "The robust short abdomen [of *Eccritosia* Schiner] in shorter than the wings; that is the principal character separating these flies from *Proctacanthus* Macquart." Artigas (1970: 279) gave as differences between *Eccritosia* and *Proctacanthus* the shape and density of the mystax and the shape of the aedeagi ("funda del pene" *sensu* Artigas) in both genera.

The differential character given by Hull is not applicable to female of *rubriventris* and *plinthopyga*, where the wings do not extend beyond the tip of the abdomen. The differences given by Artigas do not hold for all *Proctacanthus* species (many species show aedeagi very similar to those of *Eccritosia* species).

The only differences I have found between *Eccritosia* and the *Proctacanthus* group of species with *Eccritosia*-like proboscis (i.e., without ventral keel, the opposite being typical of the South-American *Proctacanthus*) are the following:

Eccritosia: facial gibbosity extending about half way from oral margin to base of antennae; dense, long hairs on abdominal tergites 1-2, 1-3 or 1-4; dense erect hairs on hind tibiae, and the short spines on the whole dorsum of tergite 10 in females.

Proctacanthus: facial gibbosity strong and extending three-fourths distance from oral margin to base of antennae; hairs on tergites 1-4 short; hairs on hind tibiae short and recumbent, and very strong spines disposed in apical rows on tergite 10 in females.

Eccritosia is considered as two species-groups, one including the superspecies *barbata* (with *barbata* and *zamon*), characterized by their smaller size and black scutellar hairs, the other with *rubriventris* and *plinthopyga*, of larger size and white to yellow scutellar hairs.

2. Acknowledgements

I want to express my gratitude to Drs. Nelson Papavero, Museu de Zoologia, Universidade de São Paulo, Harold Oldroyd, British Museum (Natural History), London, and Joseph Wilcox, Anaheim, California, for their useful assistance and suggestions, without which this work could not have been completed.

Loan of specimens for study from the following institutions and persons is acknowledged (the abbreviations preceded by an asterisk [*] correspond to material not seen by me, but examined by Dr. Papavero):

*	AMNH	American Museum of Natural History, New York, N.Y. (Dr. P. Wygodzinsky)
*	BMNH	British Museum (Natural History), London (Dr. H. Oldroyd)
	CSC	California State College, Long Beach, California (Dr. E. M. Fisher)
	CSIRO	Australian National Insect Collection, Canberra, Australia (Dr. D. H. Colless)
	FAG	Facultad de Agronomía, Universidad de la República, Montevideo, Uruguay (Dr. C. S. Carbonell)
	FHUM	Facultad de Ciencias y Humanidades, Universidad de la República, Montevideo, Uruguay (Dr. L. C. de Zolessi)
	FMNH	Field Museum of Natural History, Chicago, Ill. (Dr. R. L. Wenzel)
	IML	Instituto Miguel Lillo, Tucumán, Argentina (Dr. A. Willink)
	INCO	Instituto de Biología, Universidad de Concepción, Concepción, Chile (Dr. J. N. Artigas)
	JW	Dr. Joseph Wilcox, Anaheim, Calif.
	MBR	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina (Dr. M. J. Viana)
	MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Mass. (Dr. H. E. Evans)
	MGA	Museu do Ginásio Anchieta, Porto Alegre, Rio Grande do Sul, Brazil (P. P. Buck)
	MZUSP	Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Dr. N. Papavero)
	KANS	Snow Collection, University of Kansas, Lawrence, Kans. (Dr. G. W. Byers)
	PARIS	Muséum National d'Histoire Naturelle, Paris, France (Dr. L. Tsacas)
	RMNH	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (Dr. P. van Helsdingen)
	SANT	Museo Nacional de Historia Natural, Santiago, Chile (Dr. V. Pérez d'A.)
	ST	Naturhistoriska Riksmuseet, Stockholm, Sweden (Dr. P. I. Persson)
	UFP	Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brazil (P. J. Moure)
	USNM	United States National Museum, Washington, D. C. (Dr. L. V. Knutson)
	WIEN	Naturhistorisches Museum, Zoologische Abteilung, Vienna, Austria (Dr. A. Kaltenbach)

3. The geographical distribution, biology and ecology of Eccritosia species

3.1. Geographical distribution

Eccritosia is found only in America. The Australian species has without doubt been introduced, as we shall see later.

Eccritosia zamon (Townsend) is distributed in southern North America and Central America; it has been found in the states of Arizona and Texas in the United States, in Baja California, Colima, Chihuahua, Guerrero, Hidalgo, Nayarit, Oaxaca, Sinaloa and Veracruz in Mexico, and in Guatemala, Nicaragua, Honduras and Costa Rica. Its type-locality is San José del Cabo, Baja California, Mexico.

E. barbata (Fabricius) is broadly distributed over a great part of South America, extending north into Costa Rica; this species has been collected in Costa Rica, Panama, Colombia, Peru, Bolivia, Argentina, Venezuela, Guyana, Surinam, French Guiana, Brazil and Paraguay, its type-locality being Cayenne, French Guiana.

E. rubriventris (Macquart) is known from Chile, Argentina, Uruguay, southeastern Brazil and Australia. Its type-locality is "Brazil".

E. plinthopyga (Wiedemann) has been obtained from a few localities of the state of Rio Grande do Sul coast, Brazil, and from Uruguay. Its type-locality is "Cuba", an evident error.

Paramonov (1964: 157) described *Eccritosia wirthi* from Australia, New South Wales, Dee Why, near Sydney, based on one male specimen collected by W. W. Wirth in 1957 Examination of the type led to the synonymization of that name with *rubriventris* (Macquart). It seems highly probable that this species was introduced accidentally into Australia, being carried as larvae or pupae across sea by a ship doing the journey between a Chilean port (Valparaíso?) and the Sydney port. Paramonov (*loc. cit.*) quotes the remarks given by the collector of the type-specimen, who noted that "... several others escaped..." Afterwards, four males were collected at the Narrabeen Lake, New South Wales (near Sydney), by P. Reavell in 1961 (specimens in the British Museum).

This means that some specimens were introduced into Australia, and that probably their colonization proved sucessful. It should prove interesting to know if this species is still surviving in that area and if it has extended its range substantially.

The type-specimen of *plinthopyga,* preserved in the Vienna Museum, bears a label with the locality "Cuba". The most probable explanation is that it is a mislabelled specimen; however, we cannot discard the probability that it was atually taken in Cuba. having been introduced by a ship travelling between Uruguay and Cuba.

On map 1 have been added the localities given in the literature. Only two species are known to occur simpatrically; these are *barbata* and *rubriventris*. *E. plinthopyga* and *rubriventris* may be sympatric on parts of their ranges. I have examined two specimens of *rubriventris* and two of *barbata* collected in February 1942 in Juquiá, State of São Paulo, Brazil, and one male of *rubriventris* and one of *plinthopyga* collected in Montevideo, Uruguay, but their distributions seem almost completely allopatric. As regards *zamon,*

probably it enters in contact with *barbata* in Costa Rica, but the data are too scanty to draw any conclusions. *E. barbata* is expected to occur on both western and eastern Ecuador and western Colombia.

3.2. Ecology and Biology

Very little is known about the ecology and biology of the *Eccritosia* species, as is the general rule with other asilids.

Some direct evidences are the following. Some specimens of *barbata* were collected by Drs. N. Papavero and F. C. do Val, of

Distribution of *Eccritosia* in the Americas.

the Museu de Zoologia, in the months of September, October and November in several localities of the State of Pará, near the city of Santarém, Brazil. Most individuals were caught in sandy river shores, generally during the hottest hours of the day (between 12 a.m. and 3 p.m.), never inside the forested or bushy areas surrounding those places. The specimens were collected flying or resting on the sand or on herbaceous plants or branches of small shrubs; apparently they were hunting on Diptera and Hymenoptera. Bromley (1951: 36, fig. 8) published a photograph of an individual of *zamon* resting on an herbaceous plant on a sandy area near the Río Papaloapán, Veracruz, Mexico. Bromley (1934: 106) quotes R. H. Painter's observations on *zamon*: "...occurs in arroyas [sic] in the southwestern part of the state [Texas] and to feed largely on Hymenoptera." Artigas (1971, pers. comm.) told me that he collected Chilean specimens of *rubriventris* on the shore of sandy sea beaches, *circa* 30 m of the sea edge. Paramonov (1964: 158) quoting Wirth's personal communication says: "...I have no reason to doubt the locality for the *Eccritosia* I collected... I distinctly remember the occasion because I had such difficulty in stalking the specimen and several others escaped. The area was low down on the slope of the landward side of the beach dune area at Dee Why, back of the public beach... As I recall the asilids were on or between sparsely scattered clumps of low shrubs (about 2-4 ft in height) with sand between". Mr C. Elias (1972, pers. comm.) told me that the specimens he captured in the state of Espírito Santo, Brazil (all *barbata*) were always found resting on sand beaches or on small shrubs near sandy shores, never inside the forest. Finally, during a trip to northeastern Brazil I was able to make some observations on two male specimens of *barbata*. The first one was spotted on 28 November 1971 at 08:50 a.m. on the Riacho Algodoais, 11 Km SW of Cabeceiras, Paraíba, when the air temperature was about 25°C. It was resting on the sandy banks of the small Algodoais rivulet (completely dry in that occasion). After waiting several minutes for any movement of the fly I netted it. When captured, made a sound very similar to the buzzing of a bumblebee. I saw my second specimen on 22 December 1971 at 09:15 a.m. at the edge of the road some 5 Km south of Alcobaça, Bahia, and some 300 m from the beach shore, when the air temperature was about 22°C (it was a rather cloudy morning). The ground there is covered mostly with mangrove, the soil being of white sand. The individual was resting on the sand and again remained motionless for several minutes until it was secured. Another individual was seeing flying swiftly and could not be collected.

Nearly all the collecting stations which have been checked correspond to sandy environments near sea, lakes, rivers or small streams. Other localities are too general to infer anything about the environment. All these data seem to indicate that species of *Eccritosia* are heat-loving species, dwelling strictly in a very special ecological niche, that of sandy areas at the edge of water bodies, being more active during the warmer parts of the year and the hottest hours of the day.

Lavigne & Holland (1969) present data on the ecology and behavior of eleven Asilidae species from Wyoming, U.S.A. The observations they made on the behavior of those flies in the early morning (*loc. cit.*: 55) closely match the behavior shown by the two male *barbata* observed in northeastern Brazil.

Their biology is still less known. Artigas (1971, pers. comm.) communicated me that the larvae of *rubriventris* live buried in sandy beaches, near the tide line in coastal Chile. He (1970: 387, fig. 252) illustrated a puparium of this species.

Bromley (1934: 106) mentions some unidentified Vespoidea (Hymenptera) as the prey of *zamon* (as *amphinome*), while Carrera & d'Andretta (1952: 258) and Carrera & Vulcano (1961: 74) give the following Hymenoptera as preys of *barbata*: one unidentified Trypoxylidae, one unidentified Bombycidae, and *Augochloropsis cleopatra* (Schrottky), an Apidae. I have found the following preys for *Eccritosia* species: one male of *rubriventris* with *Bombus kohli* Cockerell (Apidae), one female *rubriventris* with *Larra americana* Saussure (Vespoidea), one male *rubriventris* with a Vespidae (prob. *Philanthus* sp.), and one female *barbata* with an Anthophorine bee (prob. *Ancyloscelis* sp.). It seems that Hymenoptera are the main prey for *Eccritosia.*

4. Taxonomic treatment

Genus **Eccritosia** Schiner

Eccritosia Schiner, 1866: 667 (in key), 674. Type-species, *Asilus barbatus* Fabricius (orig. des.). Refs. — Osten Sacken, 1878: 81; Hansen, 1883: 137; Osten Sacken, 1887: 207; Williston, 1891: 88; Williston, 1901: 327; Aldrich, 1905: 275; Kertész, 1909: 249; Bromley, 1929: 293; Bromley, 1934: 85; Curran, 1934a: 13; Curran, 1934b: 181; Carrera 1950: 110; Hull, 1962: 488; Martin & Wilcox, 1965: 393; Martin & Papavero, 1970: 278; Artigas, 1970: 278.

Ecoritosia; Bromley, 1951: 25 [lapsus].

4.1. Characters of *Eccritosia*

Large, stout Asilini (*sensu* Hull, 1962), characterized by the upturned proboscis, without ventral keel, the robust abdomen, shorter than wings in males, with long hairs at least on sides of tergites 1-2, the bifid aedeagus in males, and the short spines on the whole dorsum of tergite 10 in females.

Head: Nearly as wide as high, not broader than thorax, face with prominent gibbosity on lower half of face, covered with a well developed mystax; upper half of face bare, heavily pollinose; lower sixth of eye recessive postero-ventrally, the pile upon this area dense, long and fine; antennae attached at upper third of head, first segment 1.5-2.0 times longer than second, tird segment pyriform, 2 times longer than second, with apical style, the latter almost as long or slightly longer than segments 1-3 together, bearing a small spine at apex; frons with stiff bristles, ocellar tubercle slightly prominent, with short, slender bristly hairs; occiput with bristles and bristly hairs gently curved forwards, stouter on upper margin; beard long, abundant; palpi one-segmented, slightly longer than antennal segments 1-3 (without style), with long, slender bristles; proboscis short, stout, curved upwards, nearly flat dorsally, without ventral

keel, a tuft of short, stiff hairs on apex, and long, slender hairs on ventral side, more abundant on basal half.

Thorax: pronotum with a collar of several slender bristles and long hairs; mesonotum usually pollinose, sometimes the pollinosity concealing the design on mesonotum, pile greatly reduced, bristles differentiated only on lateral margins of posterior half and over basal fifth of mesonotum; scutellum large, swollen, almost without trace of posterior rim, densely covered with long, erect hairs, without marginal bristles; postscutellum bare; pleurae usually strongly pilose, laterotergal bristly hairs numerous and appressed.

Abdomen: Dorsoventrally flattened, broad and robust, especially on segments 1-4, shorter than wings in males, longer than wings only in females of *rubriventris* and *plinthopyga,* a little thinner than thorax: at least tergites 1-2 with lateral tufts of long hairs, middle area of second to fourth tergites and almost the whole remainder of tergum nearly bare, with short, scattered pile; male genitalia non-rotated, aedeagus bifid; tergite 10 in females dorsally covered with short spines.

Legs: Densely covered with abundant, stout bristles; pile abundant, short or long; four anterior femora slightly swollen; hind tibae with a dense fringe of long pile, longer than on anterior and middle pairs; claws sharp, strongly curved on apical fourth; pulvilli rectangular, empodium long, stout, blade-like.

Wings: Long, basally broad; wing membrane hyaline, veins dark brown; marginal cell closed, stalk rather long; fourth posterior and anal cells closed, with long stalk; both branches of third vein ending distinctly above wing apex.

4.2. Key to species

1. Scutellum and pleura white or yellowish pilose 2
   Scutellum and pleura dark brown to black pilose 3

2. Bristles of antennae and frons mostly black; abdominal tergites 1-2 black, remainder of abdomen orange red to orange brown, sometimes with black spots or fascia on tergites 3-4; lateral tufts on second abdominal tergite black ..... *rubriventris* (Macquart)

   Bristles of antennae and frons mostly white; abdominal tergites 1-3 wholly black, tergite 4 with at least a large black spot, usually with the fourth tergite completely black and some black spots or fascia on remainder of tergum; lateral tufts on second abdominal tergite white ... *plinthopyga* (Wiedemann)

3. Mystax completely white or yellowish; 18-22 mm (♂), 21-31 mm (♀) (U.S.A., Mexico, Guatemala, Honduras, Nicaragua, Costa Rica) ..... *zamon* (Townsend)

   Mystax usually white or yellowish, with at least a few black hairs on upper border, a few specimens with wholly pure white or yellowish mystax; 16-22 mm (♂), 20-24 mm (♀) (Costa Rica, Panamá and South America) ..... *barbata* (Fabricius)

Eccritosia zamon (Townsend, 1895)

(Figs. 1, 5-7)

Asilus amphinome Walker, 1849: 387 (part).

Mallophora amphinome; Osten Sacken, 1878: 78.

Eccritosia amphinome; Osten Sacken, 1887: 207; Williston, 1901: 327; Aldrich, 1905: 275; Kertész, 1909: 249; Schaeffer, 1916: 66; Curran, 1934: 14; Bromley, 1934: 85, 106; Hull, 1962: 489, figs. 390 (antenna), 728 (wing), 1370, 1379 (head), 2285, 2334 (♂ genitalia), 2479, 2482 (♀ genitalia); Martin & Wilcox, 1965: 393; Martin & Papavero, 1970: 61.

Proctacanthus zamon Townsend, 1895: 600. Type-locality: Mexico, Baja California, San José del Cabo. Syntypes *vid.*, KU, USNM.

Eccritosia zamon; Curran, 1934a: 14; Wilcox, 1937: 45; Hull, 1962: 489; Martin & Wilcox, 1965: 393; Martin & Papavero, 1970: 62.

Ecoritosia [sic] *zamon;* Bromley, 1951: 25, figs. 2 (head), 8 (photo, whole insect).

Eccristosia [sic] *amphinome;* Martin, 1968: 93, fig. 91 (aedeagus).

Identical in external appearance to *barbata* (Fabricius), though somewhat larger. As far as I know, the only differences are the shape of the male genitalia and the mystax, which is always completely white or yellowish, without trace of short black hairs as those occurring on most individuals of *barbata.*

See discussion under *barbata* with regard to Walkers's type-material of *amphinome.*

Material examined: 184 specimens (149 ♂♂, 35 ♀♀)

UNITED STATES. *Arizona*: 1 ♀, Bill Wms. Fork (USNM); 1 ♂, Arroyo Santa Cruz, near San Xavier (USNM); 2 ♂♂, Burro Creek, 9.7 mi S Bagdad (Mohave Co.) (CSC); 1 ♀, Gila Valley (Graham Co.) (JW); 7 ♂♂, Granite Reef Dam (Maricopa Co.) (CSC, JW); 1 ♀, Hereford (USNM); 1 ♀, Huachuca Mts. (USNM); 1 ♀, Oracle Junction (JW); 1 ♂, Roosevelt Lake (JW); 2 ♂♂, 1 ♀, San Carlos Lake [Reservoir] (JW); 11♂♂, Tubac (JW, KANS, MZUSP, USNM); 1 ♂, 2 ♀♀, Tucson (JW, USNM). *Texas*: 1 ♂, Austin (AMNH); 3 ♂♂, 1 ♀, Del Rio, 955 ft (BM); 2 ♂♂, Pease River, 2mi E Vernon (Wilbarger Co.), 1000-1500 ft (AMNH).

MEXICO. *Baja California*: 3 ♂♂, 1 ♀, El Forte (MCZ, USNM); 1 ♂, "El Chorro", La Victoria, 1000 ft (CSC); 1 ♀, La Paz (USNM); 14 ♂♂, 6 ♀♀, San José del Cabo (AMNH, BM, KANS, MCZ, USNM). *Chihuahua*: 1 ♂, [Las] Delicias, 4150 ft (AMNH); 1 ♂, 10 mi S [Las] Delicias (AMNH). *Colima*: 2 ♂♂, Rio Tuxpan (= Rio del Naranjo) at highway 110, 20 mi E of Colima (CSC). *Guerrero*: 57 ♂♂, 12 ♀♀, Acapulco (CSC, JW, KANS, MZUSP, USNM). *Hidalgo*: 2 ♂♂, Jacala, 5000 ft (USNM). *Jalisco*: 1 ♂, Guadalajara (BM); 1 ♂, Lago de Chapala (AMNH). *Nayarit*: 1 ♂, E San Blas, O mt (CSC). *Oaxaca*: 4 ♂♂, [San Juan Bautista] Tuxtepec (AMNH). *Sinaloa*: 1 ♂, Presidio (BM); 1 ♂, 1 ♀, Rio Elota at highway 15 (CSC); 4 ♂♂, Río [del] Fuerte at highway 15, 11 mi N Los Mochis (CSC); 6 ♂♂, 2 ♀♀, Villa Unión, Río Presidio (USNM). *No station*: 1 ♂, 1 ♀ (BM, USNM).

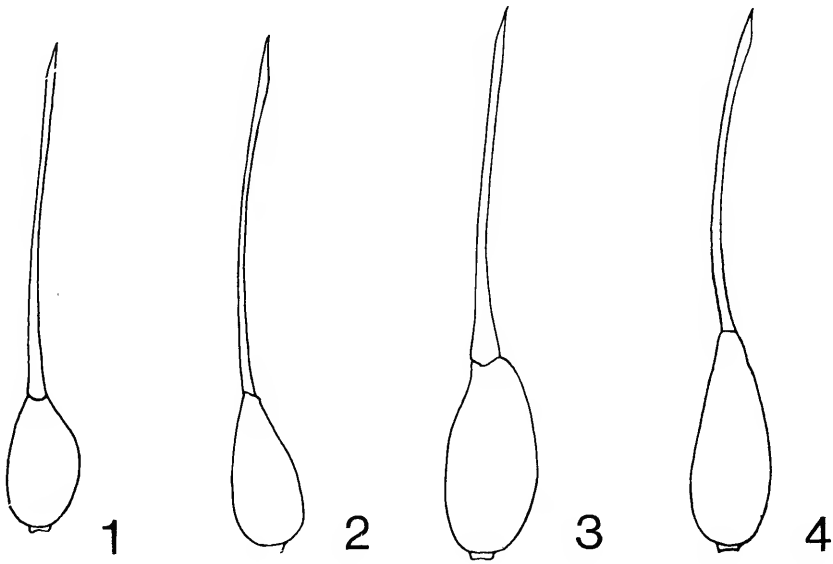
GUATEMALA. *Izabal*: 1 ♂, Los Amates (MCZ). *Retalhuleu*: 1 ♀, San Sebastián (USNM). *Zacapa*: 1 ♂, Gualá (USNM). *Vague*: 1 ♂, Río Naranjo, 450 ft (BM); 3 ♂♂, El Rancho, 900 ft (USNM).

HONDURAS. *Colón*: 9 ♂♂, Puerto Castilla (MCZ, MZUSP, USNM).

NICARAGUA. *Rivas*: 1 ♂, San Jorge, Lago Nicaragua (AMNH).

COSTA RICA. *No station*: 1 ♂ (AMNH).

NO DATA: 1 ♀ (AMNH).



Third antennal segment and style: 1, *zamon;* 2, *barbata;* 3, *rubriventris;* 4, *plinthopyga.*

Eccritosia barbata (Fabricius, 1787)

(Figs. 2, 8-10)

Asilus barbatus Fabricius, 1787: 358. Type-locality: [French Guiana], Cayenne. Type: Copenhagen.

Asilus barbatus; Olivier, 1789: 264; Gmelin, 1792: 2896; Fabricius, 1794: 379; Fabricius, 1805: 155; Wiedemann, 1821: 187; Wiedemann, 1828: 439; Walker, 1855: 703; Schiner, 1866: 684.

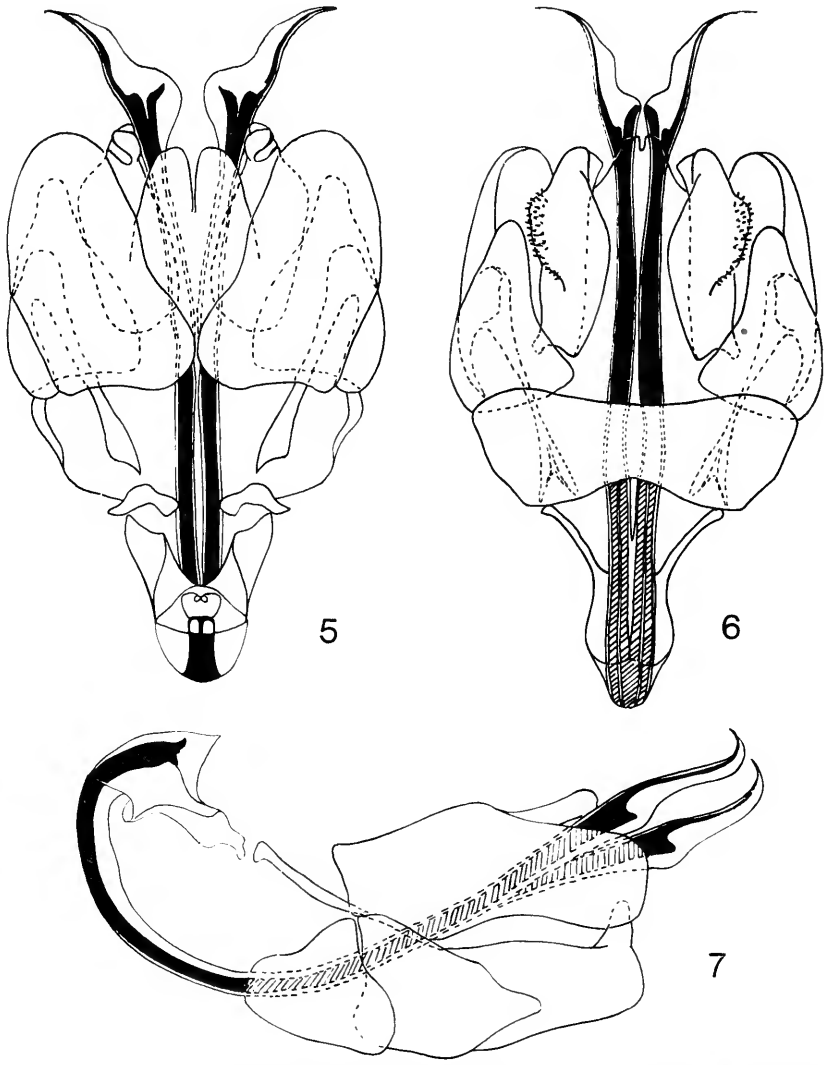
Proctacanthus barbatus; Macquart, 1838: 122 (1839: 238); Walker, 1855: 652.

Asilus amphinome Walker, 1849: 387 (part). Type-locality: "Honduras'. Lectotype (*des.* N. Papavero, 1972): BM. *N. Syn.*

Mallophora tricolor Walker, 1850: xcviii. Type-locality: Brazil, Pará (= Belém, state of Pará). Type *vid.* (N. Papavero, 1972), BM.

Mallophora tricolor; Schiner, 1866: 711; Williston, 1891: 83.

Eccritosia barbata; Schiner, 1866: 715; Wulp, 1882: 112; Hansen, 1883: pl. 4, figs. 1-3 (proboscis); Kertész, 1909: 249; Curran, 1934a: 14; Carrera, 1947: 48; Carrera & d'Andretta, 1953: 68; Bromley, 1946: 116; Carrera, 1960b: 164; Carrera & Vulcano, 1961: 74; Hull, 1962: 489; Carrera & Machado-Allison, 1963: 253; Martin & Papavero, 1970: 61.



Eccritosia zamon (Townsend), male genitalia: 5, dorsal view; 6, ventral view; 7, lateral view.

Eccritosia barbatus; Williston, 1891: 88.
Eccrictosia [sic] *amphinome;* Engel, 1930: 460 [a misidentification].
Ecritosia tricolor; Curran, 1934a: 14; Bromley, 1946: 116; Carrera & d'Andretta, 1952: 258; Martin & Papavero, 1970: 61 (*ex. syn.*).

A stout species, characterized by the short abdomen, the two basal segments black with black hairs, and the remainder orange red with yellowish hairs; mystax rarely completely white or yellowish, usually with some black hairs on upper portion; scutellum with dense tuft of dark reddish brown to black hairs.

Male — Length: 16-22 mm; wing length: 14-19 mm

Head black; face, frons and vertex slightly reddish pollinose, occiput golden reddish pollinose with outer border white pollinose; antennae dark reddish brown, first segment darker, almost black; first segment almost twice the second, third pyriform, as long as the first, style 2.5 times longer than third segment; bristles of antennae, frons, ocellar tubercle and occiput black; mystax completely white or yellowish (a few specimens) or with some short black hairs on upper portion, covering the strong gibbosity on lower half of face; palpi black with black bristles; beard pure white or yellowish; proboscis shining black.

Thorax dark reddish brown to black, with black bristles and pile; three longitudinal reddish brown bands on mesonotum; scutellar tuft dark reddish brown to black; pleurae reddish pollinose, laterotergal bristles black; halteres light brown.

Abdomen much shorter than wings, slightly longer than thorax; tergites 1-2 black, with black lateral tufts, some yellowish to white hair on posterior border of second tergite; remainder of tergites, including genitalia, reddish brown to bright orange, pile yellowish to white, very abundant on tergites 3-4 and almost absent on 5-8; sternites blackish basally and reddish apically; genitalia strongly yellowish or white pilose.

Legs dark reddish brown to black, pile and bristles black, except on hind tibiae and tarsi, which are yellowish with black bristles and white to yellowish pile; claws black, pulvilli yellowish.

Wings slightly tinged with brown, interior of cells lighter; veins dark brown; fourth posterior and anal cells closed and stalked.

Female — Length: 20-24 mm; wing length 16-20 mm.

Similar to male, abdomen slightly shorter than wings, longer than thorax.

Remarks: The type-specimen of *barbata* was collected by J. B. P. von Rohr in 1783 in Cayenne or its neighborhood (*cf.* Papavero. 1971: 20). The type-material of *amphinome* and *tricolor* was examined by Dr. Papavero at the British Museum (Natural History), both specimens, the lectotype of *amphinome* (a female) and the holotype of *tricolor* (a male) being stored in drawer B. 3.208.

On his original description of *amphinome,* Walker (1849: 387) stated that he was describing this new species based on one male and one female, the former from "Honduras" (from Mr. Miller's collection), the latter from an unknown locality. Neither Oldroyd (1971, pers. comm.) nor Papavero (1972, pers. comm.) were able to

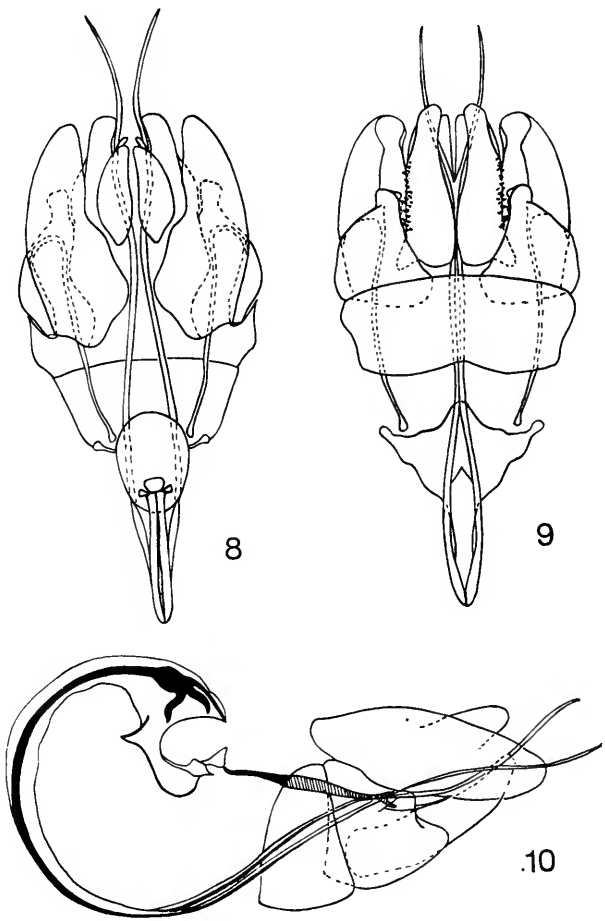
find the male of *amphinome* and it is assumed that it has been lost. The female is clearly a specimen of *barbata* (it has the black hairs present on top of the mystax) and as it was selected as the lectotype of *amphinome* by Papavero, that name falls as a junior subjective synonym of *barbata* (Fabricius).

The holotype of *tricolor* is an absolute synonym of *barbata* too.

The three specimens examined from Costa Rica are the smallest I have seen of *Eccritosia* (male, 16 mm; female, 20 mm).

Material examined: 200 specimens (155 ♂♂, 45 ♀♀)

COSTA RICA. *Limón*: 1 ♂, 1 ♀, Puerto Limón (MCZ). *Puntarenas*: 1 ♀, Palmar (MCZ).



Eccritosia barbata (Fabricius), male genitalia: 8, dorsal view; 9, ventral view; 10, lateral view.

PANAMA. *Canal Zone*: 1 ♀, Ft. Sherman (USNM).

COLOMBIA. *Magdalena*: 2 ♂♂, 1 ♀, El Banco (BM). *Vague*: 2 ♂♂, "Bogotá" (PARIS); 1 ♀, "Honda" (PARIS). *No stations*: 2 ♂♂ (BM, PARIS).

PERU. *Ancash*: 6 ♂♂, 1 ♀, San Rafael, Casma (MZUSP, USNM). *Huánuco*: 1 ♀, San [to] Domingo (USNM). *La Libertad*: 1 ♂, 2 ♀♀, Trujillo (USNM). *Lambayeque*: 5 ♂♂, 1 ♀, 5 mi S Chiclayo, 20 m (MZUSP, USNM). *Lima*: 1 ♀, Cañete (USNM); 1 ♂, 2 ♀♀, Lima (MZUSP, USNM). *Loreto*: 1 ♂, Iquitos (AMNH); 2 ♂♂, San Alejandro, 300 m (IML, MZUSP). *Piura*: 1 ♂, 1 ♀, Hacienda Mallares, Sulana (MZUSP).

BOLIVIA. *La Paz*: 1 ♀, Yungas de Coroico (WIEN). *Santa Cruz*: 2 ♂♂, Provincia del Sara (= Provincia Gutiérrez) (MBR, MCZ).

ARGENTINA. *Jujuy*: 1 ♀, Ledesma (IML). *Tucumán*: 1 ♂, San Ramón (IML).

VENEZUELA. *Bolívar*: 1 ♂, Caura Valley (MCZ); 1 ♀, Ciudad Bolívar (MCZ). *Carabobo*: 7 ♂♂, 2 ♀♀, San Esteban (MZUSP, USNM; 6 ♂♂, 1 ♀, Valle Seco (MZUSP, USNM). *No station*: 1 ♀ (PARIS).

GUYANA. 1 ♂, Cattle Trail Survey, Ituni Savanna (BM); 1 ♂, Waranama (AMNH); 1 ♀, Wismar (AMNH).

SURINAM. 1 ♂, Carolina Kr. (RMNH); 3 ♂♂, Kabel station, Sportaan (AMNH, RMNH); 1 ♂, Paramaribo (USNM); 1 ♀, Pawakka (RMNH); 1 ♂, Savanne, Hannover (RMNH); 3 ♂♂, 1 ♀, Zanderij I, Para Dist. (RMNH, USNM); 3 ♂♂, 1 ♀, "Surinam" (MZUSP, WIEN).

FRENCH GUIANA. 2 ♀♀, Gourdonville (PARIS); 1 ♂, Kourou (PARIS); 1 ♂, 1 ♀, Pariacabo (PARIS); 10 ♂♂, 2 ♀♀, St. Laurent du Maroni (BM, PARIS).

BRAZIL. *Amazonas*: 1 ♂, Manaus (UFP); 1 ♂, Rio Negro (BM); 1 ♂, Vila Martins, Rio Tarauacá, Eirunepé (MZUSP). *Bahia*: 1 ♂, 5 Km S Alcobaça (MZUSP); 1 ♂, "Bahia" (= Salvador) (WIEN); 1 ♂, Ilhéus (MZUSP). *Ceará*: 1 ♂, 1 ♀, Cariú (MZUSP); 2 ♂♂, Cascavel (MZUSP); 1 ♀, Icó (MZUSP); 1 ♂, Quixeramobim (MZUSP); 1 ♂, 1 ♀, Rio Jaguaribe (MZUSP); 1 ♂, Russas (MZUSP); 1 ♂, São João Pirangi, Morada Nova (MZUSP); 2 ♂♂, Senador Pompéu (MZUSP, USNM). *Espírito Santo*: 2 ♂♂, Conceição da Barra (MZUSP); 1 ♀, Linhares (MZUSP); 1 ♂, 1 ♀, São Mateus (MZUSP). *Goiás*: 1 ♂, Praia Fusil, Rio Araguaia (MZUSP); 1 ♀, Santa Isabel do Morro, Ilha Bananal (MZUSP). *Mato Grosso*: 3 ♂♂, Porto Velho, Rio Tapirapé (MZUSP); 1 ♂, Posto Jacaré, Rio Culuene (MZUSP). *Minas Gerais*: 1 ♂, Pirapora (AMNH). *Pará*: 1 ♂, Alter do Chão (MZUSP); 1 ♂, Belterra (MZUSP); 1 ♀, Aveiro (MZUSP); 5 ♂♂, 1 ♀, Fazenda Taperinha, Santarém (MZUSP); 3 ♂♂, 1 ♀, Ilha Tapaiúna, Rio Tapajós (MZUSP); 2 ♂♂, 2 ♀♀, Mosqueiro (BM); 27 ♂♂, 2 ♀♀, Óbidos (MZUSP, UFP); 1 ♂, Pedras, Mun. Óbidos, Rio Cuminá-Miri (MZUSP); 2 ♂♂, "Pará" (= Belém) (BM); 2 ♂♂, Rio Tapajós (BM); 4 ♂♂, Santarém (BM, MZUSP); 1 ♂, Urucurituba (USNM). *Paraíba*: 1 ♂, Coremas (MZUSP); 1 ♂, Riacho Algodoais, 11 Km SW Cabeceiras (MZUSP); 2 ♂♂, Souza (MZUSP, USNM). *Rio de Janeiro*: 1 ♂, Angra dos Reis (BM). *Rio Grande do Norte*: 2 ♂♂, Macaíba (MZUSP); 1 ♂, Natal (UFP). *Roraima*: 1 ♂, Surumu (MZUSP). *São Paulo*: 1 ♂, Aparecida do Norte (MZUSP); 2 ♂♂,

Juquiá (MZUSP); 1 ♂, Vera Cruz (MZUSP). *Vague*: 1 ♀, "Amazon" (BM); 1 ♂, "Magh." (USNM).

PARAGUAY. 1 ♂, Puerto Pablo [Rio Paraguay?] (USNM). NO DATA: 1 ♀ (PARIS).

Eccritosia rubriventris (Macquart, 1850)

(Figs. 3, 11-13)

Proctacanthus rubriventris Macquart, 1850: 391 (1850: 87), pl. 8, fig. 3 (whole insect). Type-locality: "Brazil". Type *vid.* (N. Papavero, 1972), PARIS.

Asilus (*Proctacanthus*) *xanthopogon* Burmeister, 1861: (1): 317, (2): 171. Type-locality: Argentina, Mendoza. Lectotype, MBR.

Erax speciosus Philippi, 1865: 693, pl. 26, fig. 28 (whole insect). Type-locality: Chile, Colchagua, near Llico. Type: lost.

Eccritosia barbiellinii Curran, 1934a: 13. Type-locality: Brazil, São Paulo. Type *vid.*, AMNH.

Eccritosia wirthi Paramonov, 1964: 157. Type-locality: Australia, New South Wales, Dee Why, near Sydney. Type *vid.*, CSIRO. *N. Syn.*

Proctacanthus rubriventris; Schiner, 1866: 714; Rondani, 1868: 33; Lynch Arribálzaga, 1880: 259; Wulp, 1882: 108; Lynch Arribálzaga, 1883a: 147; Lynch Arribálzaga, 1883b: 12; Williston, 1891: 88; Brèthes, 1907: 288; Kertész, 1909: 248; Bromley, 1946: 116; Hull, 1962: 488.

Proctacanthus speciosus; Wulp, 1879: xxii.

Erax speciosus; Schiner, 1866: 713.

Eccritosia barbiellinii; Bromley, 1946: 116; Hull, 1962: 489.

Eccritosia speciosa; Stuardo, 1946: 84.

Eccritosia rubriventris; Carrera, 1960a: 50; Martin & Papavero, 1970: 61; Artigas, 1970: 279, figs. 252 (puparium), 410 (geographical distribution), 371 (♂ genitalia), 372 (head), 373-376 (genitalia), 377 (wing).

A large species, readily distinguished by the whitish to bright yellowish mystax, scutellar tuft and pleural hairs, and the slender and dorsoventrally flattened abdomen with the two basal segments black and the remainder dark reddish to bright orange; distinguished from *plinthopyga* (Wiedemann) by the black bristles on antennae and frons and the black lateral tufts on second abdominal tergite.

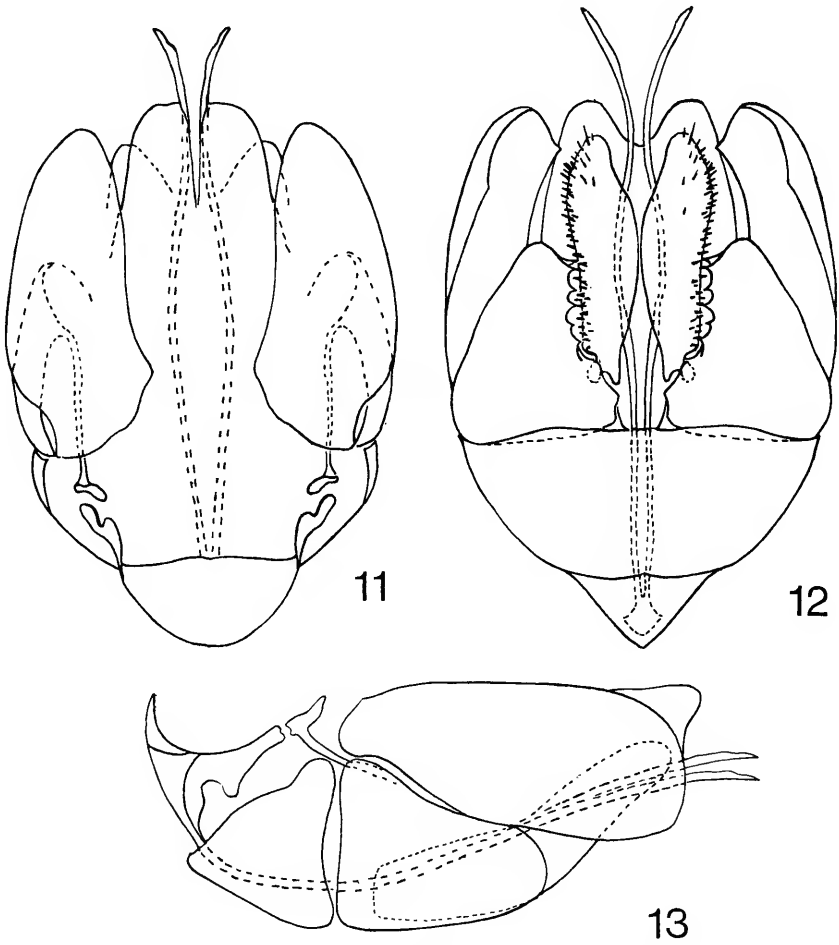
Male — Length: 19-26 mm; wing length: 17-23 mm.

Head black, face white pollinose; antennae black, first segment 2 times longer than second, third pyriform, slightly longer than first, style 2 times longer than third segment; bristles of antennae, frons and ocellar tubercle black; mystax, beard and occiput bristles white to bright yellowish; palpi black with black and yellowish bristles; proboscis shining black.

Thorax dark reddish brown, mesonotum with a black longitudinal medial band and two lateral black fasciae over transverse suture; commonly these fasciae hidden under dirty yellowish brown pollinosity; scutellar and pleural tufts white to bright yellowish; halteres reddish brown.

Abdomen long, slender, dorsoventrally flattened, segments 1-2 black, the first with a tuft of white to bright yellowish hairs on each side, the second with a black tuft on each side; remainder of abdomen, including genitalia, reddish to bright orange, with short white and some black hairs (some specimens have small dark reddish brown to black spots or fasciae on tergites 3-4, but most specimens have these segments immaculate); sternites 1-2 black, remainder reddish to bright orange, pile whitish.

Legs black, bristles of coxae black and white; bristles and pile black, some whitish pile, more abundant on lower side of hind tibiae; claws black, pulvilli reddish brown.



Eccritosia rubriventris (Macquart), male genitalia: 11, dorsal view; 12, ventral view; 13, lateral view.

Wings hyaline, veins dark brown; fourth posterior and anal cells closed and stalked, the stalk long.

Female — Length: 29-33 mm; wing length: 22-25 mm. Similar to male.

Remarks: The names *xanthopogon* Burmeister, *speciosus* Philippi, *barbiellinii* Curran and *wirthi* Paramonov are all absolute synonyms of *rubriventris* (Macquart). The type ♂ of *rubriventris* is at the Paris Museum. The lectotype ♀ of *xanthopogon*, from Mendoza, Argentina, is preserved at the Museo Bernardino Rivadavia, Buenos Aires. The type of *speciosus* is lost (Artigas, 1970: 279). The types of *barbiellinii* and *wirthi* are respectively at the American Museum of Natural History and the Australian National Insect Collection (CSIRO). See comments on *wirthi* under "Distribution".

Material examined: 211 specimens (140 ♂♂, 71 ♀♀)

BRAZIL. *Santa Catarina*: 1 ♂, Canavieiras (MZUSP); 2 ♂♂, Morro das Pedras, Lajes (MGA). *São Paulo*: 1 ♀, Alto da Serra (MZUSP); 1 ♂, 2 ♀♀, Itanhaém (USNM); 1 ♂, 1 ♀, Juquiá (IML, USNM); 2 ♂♂, 3 ♀♀, Praia Grande, Fazenda Rondonia (BM, MZUSP, USNM); 1♂, Santos (USNM); 9♂♂, 4 ♀♀, São Paulo (USNM). *Rio Grande do Sul*: 1 ♀, Osorio, Capão da Canoa (MZUSP); 2 ♂♂, Pareci Novo (MGA); 2♂♂, Pelotas (MZUSP); 1 ♂, Porto Alegre (MGA); 2 ♀♀, São Leopoldo (ST).

No station: 1 ♂ (PARIS).

URUGUAY. *Canelones*: 2 ♂♂, 1 ♀, La Floresta (FHUM, MZUSP). *Maldonado*: 1 ♂, [El] Portezuelo (USNM). *Montevideo*: 1♂, Montevideo (BM); 1 ♀, Playa Pascual (FHUM). *Rocha*: 1 ♂, La Paloma (USNM). *San José*: 1♂, Puerto Arazatí, Larroza (FAG). *No station*: 1 ♂, 1 ♀ (BM, FAG).

ARGENTINA. *Buenos Aires*: 13♂♂, 1 ♀, Boulogne (MZUSP); 1 ♂, 1 ♀, Buenos Aires (MBR, MZUSP); 1♂, Cabo San Antonio (MBR); 1♂, 1 ♀, Madariaga (BM); 30 ♂♂, 3 ♀♀, Mar del Plata (IML); 4 ♀♀, Miramar (= Gral. Alvarado) (MBR); 2 ♂♂, Monte Grande (MZUSP); 1 ♂, [Balneario] Monte Hermoso (MBR); 3 ♂♂, 1 ♀, San Clemente del Tuyú (IML); 1 ♀, San Isidro (MBR). *Catamarca*: 1 ♂, Catamarca (MBR); 1 ♀, 5 Km N Santa María, Médano Consolidado (IML). *Chaco*: 1 ♀, Resistencia (MBR). *Entre Rios*: 1 ♂, 1 ♀, Sociedad Anónima Mazaruca, Holt (MBR). *La Pampa*: 7 ♂♂, 5 ♀♀, La Pampa (MBR). *Mendoza*: 1 ♀, Mendoza (MBR). *La Rioja*: 2 ♀♀, General Roca, Km 672 (MBR); 4 ♂♂, La Rioja (MBR). *Salta*: 6 ♂♂, 10 ♀♀, Cafayate, 1650 m (BM, IML, MZUSP); 1 ♀, Pocitos (INCO); 1 ♀, San Rafael (San Carlos) (IML). *Santa Fe*: 1 ♂, Carcarañá (MBR). *Tucumán*: 1 ♂, 1 ♀, Siambón (IML); 1 ♂, Tafí Viejo, Quebrada Cainzo (IML); 2 ♂♂, Tucumán (IML, MZUSP). *Vague*: 1 ♂, "Banda oriental" (MBR); 1 ♂, 1 ♀, "Pampa central" (MBR). *No station*: 2 ♂♂, 2 ♀♀ (BM).

CHILE. *Arauco*: 3 ♂♂, 2 ♀♀, Arauco (INCO). *Concepción*: 3 ♂♂, 1 ♀, Concepción (AMNH, USNM). *Curicó*: 4 ♂♂, Iloca (SANT). *Malleco*: 4 ♂♂, Angol (RMNH, USNM). *Santiago*: 3 ♂♂, 1 ♀, Cartagena (AMNH, MBR, USNM). *Tarapacá*: 1 ♂, Punta de Lobos (USNM). *Temuco*: 2 ♂♂, Puerto Saavedra (INCO). *Valdivia*:

1 ♂, Valdivia (INCO). *Valparaíso*: 1 ♀, Valparaíso (MBR). *Vague*: 2 ♀♀, "Southern Chile" (USNM). *No station*: 3 ♂♂, 2 ♀♀ (BM, INCO, MBR, USNM).

AUSTRALIA. *New South Wales*: 1♂, Dee Why, near Sydney, 28.I.57 (W. W. Wirth) (CSIRO); 4♂♂, Narrabeen Lake, II.61 (P. Reavell) (BM).

Eccritosia plinthopyga (Wiedemann, 1821)

(Figs. 4, 14-16)

Asilus plinthopygus Wiedemann, 1821: 184. Type-locality: "Cuba" [error?]. Type *vid.* (N. Papavero, 1972), WIEN.

Asilus plinthopygus; Wiedemann, 1828: 432; Walker, 1855: 695; Schiner, 1866: 683; Schiner, 1867: 399; Bigot, 1857: 33.

Asilus vetustus Walker, 1837: 340. Type-locality: Uruguay, [Isla] Gorriti. Lectotype (des. N. Papavero, 1972), BM. *N. Syn.*

Asilus vetustus; Walker, 1849: 420.

Proctacanthus vetustus; Walker, 1855: 653; Schiner, 1866: 714; Lynch Arribálzaga, 1880: 260; Lynch Arribálzaga, 1883a: 148; Lynch Arribálzaga, 1883b: 12; Williston, 1891: 88; Brèthes, 1907: 288; Kertész, 1909:248; Hull, 1962: 488.

Eccritosia plinthopyga; Schiner, 1866: 715; Osten Sacken, 1878: 81; Aldrich, 1905: 275; Kertész, 1909: 250; Bromley, 1929: 293; Curran, 1934a: 15; Hull, 1962: 489; Martin & Papavero, 1970: 61.

Very similar to *rubriventris* (Macquart), but easily differentiated by the male genitalia. Bristles of antennae and frons yellowish; males with tergites 1-3 black and a large dark spot on fourth tergite; females with tergites 1-4 completely black; tergites 1-2 with white lateral tufts.

Male — Length: 24 mm; wing length: 21 mm

Head dark reddish brown; face, frons, vertex and occiput dirty white pollinose; antennae black, first segment 2 times longer than second, third pyriform, twice the length of the second, style 1.5 times longer than third segment; bristles of antennae, frons, ocellar tubercle and occiput white or yellowish; beard and mystax pure white, mystax convering slightly more than lower half of face; palpi reddish brown, bristles white and some black; proboscis shining black.

Thorax: mesonotum with the same pattern of *rubriventris*, bristles and pile mostly black, some white lateral bristles, and white pile on hind border; scutellar and pleural tufts white; halteres yellowish brown.

Abdomen long, slender, dorsoventrally flattened; tergites 1-3 black, the first and second with lateral tufts of white hair, the third with short mixed black and white pile; fourth tergite with a large dark spot; remainder of tergum, including genitalia, orange; sternites 1-4 dark brown, remainder orange.

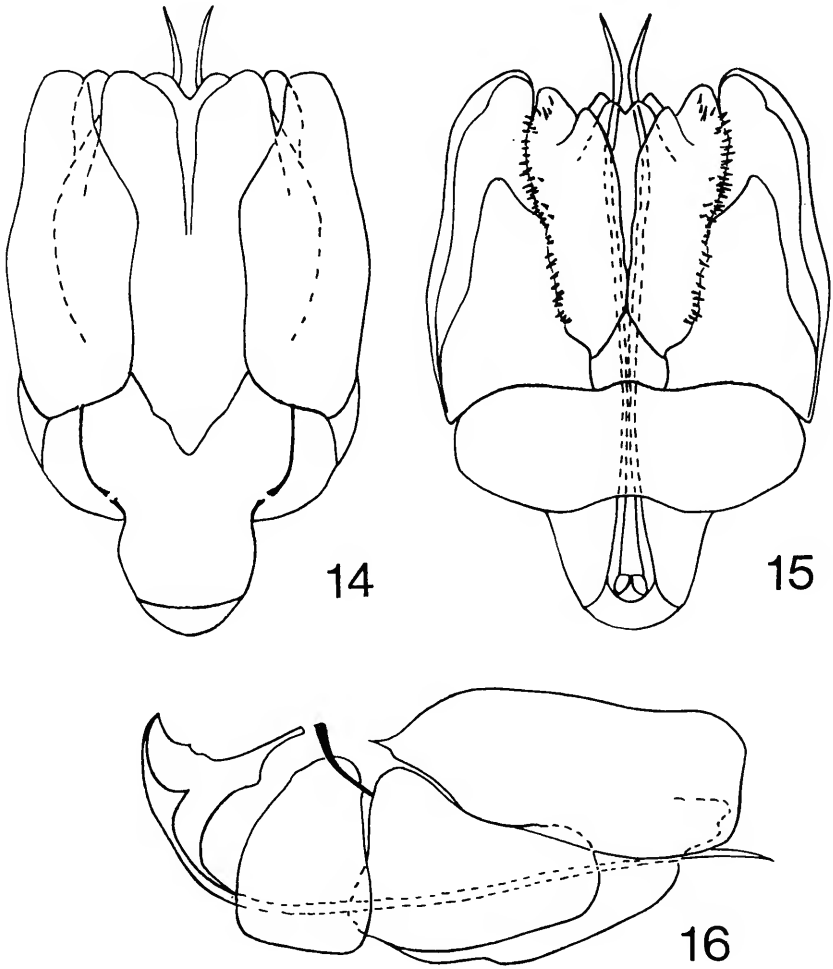
Legs dark reddish brown, almost black, coxal bristles pure white; bristles and pile black, some white pile on femora, especially on hind pair; claws black, pulvilli reddish yellow.

Wings hyaline, veins light brown; fourth posterior and anal cells closed and stalked.

Female — Length: 30 mm; wing length: 26 mm

Similar to male, tergites 4-7 usually more darkened, eighth tergite usually black.

Remarks: The name *vetustus* Walker is an absolute synonym of *plinthopyga* (Wiedemann). The type of *plinthopyga* is deposited



Eccritosia plinthopyga (Wiedemann), male genitalia: 14, dorsal view; 15, ventral view; 16, lateral view.

at the Vienna Museum, in cabinet 9, drawer 317 (examined by Papavero in 1972). Its type-locality ("Cuba", collection Winthem), is probably an error (see comments under "Distribution"). The lectotype ♀ of *vetustus,* from the island of Gorriti, Uruguay, is preserved at the British Museum (Natural History) (drawer B. 3.208).

Material examined: 10 specimens (4 ♂♂, 6 ♀♀)

BRAZIL. *Rio Grande do Sul*: 1 ♂, 2 ♀♀, Torres (MGA, MZUSP); 2 ♀♀, Tramandaí (MGA).

URUGUAY. *Montevideo*: 1♂, Montevideo (USNM); 1 ♀, Isla Gorriti (BM). *San José*: 1 ♀, San José (PAG). Soriano: 1 ♂, Mercedes (FAG).

? ERROR: 1♂, "Cuba" (WIEN).

5. Taxonomic position of *Asilus antidomus* Walker

Proctacanthus antidomus (Walker, 1849)

Asilus antidomus Walker, 1849: 408. Type-locality: "Brazil". Type, BM.

Proctacanthus antidomus; Walker, 1855: 652; Schiner, 1866: 714; Williston, 1891: 87; Kertész, 1909: 245; Bromley, 1946: 115.

Eccritosia antidomus; Curran, 1934a: 14; Martin & Papavero, 1970: 61.

Curran (1934a) placed *antidomus* doubtfully in *Eccritosia,* this view being followed by Martin & Papavero (1970). Dr. H. Oldroyd, from the British Museum, kindly sent me information and figures of the type of *antidomus,* represented by one male of "Brazil". The figures clearly show that *antidomus* is a *Proctacanthus* of the group with "T-like" proboscis (straight, with a ventral keel, not upturned and without keel as in *Eccritosia*).

One female at the British Museum labelled *antidomus,* from "Santarém", does not appear to be the female of *antidomus,* but rather *Proctacanthus guianica* Curran (Walker described *antidomus* apparently based on two male specimens, one from "Brazil", the other ["Var. β. ?"] from an unknown locality).

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