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A REVIEW OF MALES OF THE GENUS *PHILOGENIA*, WITH DESCRIPTIONS OF FIVE NEW SPECIES FROM SOUTH AMERICA (ZYGOPTERA: MEGAPODAGRIONIDAE)

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Males of the Neotropical genus *Philogenia*, occurring from Costa Rica to Bolivia, were studied. To the 22 known valid spp. are added descriptions and figs of 5 previously undescribed ones. Type localities and deposition of holotypes of these are: *boliviana* sp. n. (Bolivia: La Paz Dep., Yungas de la Paz; no date; Foerster Coll., UMAA), *buenavista* sp. n. (Bolivia: Santa Cruz Dep., Buena Vista; no date; FSCA), *mangosisa* sp. n. (Ecuador: Morona-Santiago Prov., Mangosisa; 30-XI-1945; UMAA), *peruviana* sp. n. (Peru: San Martin Dep., Tarapoto; 16-III-1947; UMAA), and *tinalandia* sp. n. (Ecuador: Pichincha Prov., Tinalandia; 13-V-1985; FSCA). Each of these 27 spp. was assigned to 1 of 6 species-groups, based primarily on the superior abdominal appendages. The groups are characterized, a key to all known males is presented, and a diagram is given to show assignment of spp. to groups and to postulate relationships. The occurrence of spp. per country is tabulated; most occur in but one, *cassandra* Hag. being exceptional.

INTRODUCTION

While studying specimens of *Philogenia* in the Florida State Collection of Arthropods, 2 undescribed species were encountered. Then, 3 additional ones from the University of Michigan Museum of Zoology came to our attention. While writing diagnoses for these species, it was realized that a more detailed study, than the description of the 5 was needed. Therefore, we set out to examine a broad array of specimens, including critical types, to treat males of all species in

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the genus, to prepare a key that would make determinations practical, and to consider relationships among species.

CALVERT (1924) monographed the genus including 17 species, 2 known only from females. WESTFALL & CUMMING (1956) described *leonora* and *zeteki*, and RACENIS (1959a) added *ferox*. DAVIES & TOBIN (1984) listed these 20 species and gave their distributions by country, but MAY (1979) had already synonymized *leonora* with *championi* Calvert. DUNKLE (1986) described *minteri, macuma, sucra* and *ebona*. C. Cook has a description of species A in preparation, and herein are added 5 previously undescribed species.

Because so few females were available and because so few have been described, no consideration is given to that sex, including the 2 species (*expansa* Calvert, *lankesteri* Calvert) known only from females. Also, the larval stage of no species has been described. So, this paper considers only males, including the 22 species already known from males and 5 new ones described herein. These 27 species are as follows:

augusti Calvert
berenice Higgins
boliviana sp. n.
buenavista sp. n.
carrillica Calvert
cassandra Hagen *in* Selys
championi Calvert
cristalina Calvert
ebona Dunkle
elizabeta Calvert
ferox Racenis
helena Hagen
macuma Dunkle
mangosisa sp. n.
margarita Selys
minteri Dunkle
peruviana sp. n.
polyxena Calvert
raphaella Selys
schmidti Ris
silvarum Ris
sucra Dunkle
terraba Calvert
tinalandia sp. n.
umbrosa Ris
zeteki Westfall & Cumming
species A Cook

In material examined, countries are in caps, departments, provinces, or states are in italics, followed by a specific locality, all listed alphabetically. Elevations are from the literature, checked against those which were recorded on the collection envelopes.

The names of institutions where specimens are lodged or from which information was obtained are abbreviated as follows:

ANSP Academy of Natural Sciences Philadelphia
BMNH British Museum (Natural History)
FSCA Florida State Collection of Arthropods
IRNB Institute Royal des Sciences Naturelles de Belgique
MCZ Museum Comparative Zoology Harvard University
UMAA University of Michigan Museum of Zoology
USNM United States National Museum

DISTRIBUTION

The strictly Neotropical genus *Philogenia* occurs from northern Costa Rica (about 10N) in Central America to northern Bolivia (about 17S) in South

America. In South America, the westernmost record is Santo Domingo de los Colorados (79W) in the Pacific drainage of northern Ecuador, and the easternmost is Tefe (65W) in the Amazon drainage of northwestern Brazil. The occurrence of the 27 species by country is summarized in Table I.

Table I
The occurrence of 27 species of *Philogenia* by country

	Costa Rica	Panama	Venezuela	Colombia	Ecuador	Peru	Brazil	Bolivia
carrillica	x	x						
terraba	x							
championi	x	x						
augusti		x						
zeteki		x						
cassandra			x	x	x	x	?	
cristalina				x				
ebona				x				
helena				x		?		
raphaella				x				
sucra				x				
ferox			x					
polyxena			x					
margarita							x	
macuma					x			
minteri					x			
mangosisa					x			
species A					x			
tinalandia					x			
berenice						x		
elisabeta						x		
silvarum						x		
umbrosa						x		
peruviana						x		
schmidti								x
boliviana								x
buenavista								x

CALVERT (1924) stated that the record of *helena* from Peru may be in error, a seemingly justifiable assumption in the absence of subsequent records from Peru. If so, *helena* and 23 other species are each reported from only 1 country. Since *carrillica* and *championi* occur in adjacent small countries, Costa Rica and Panama, only *cassandra* is widespread, having been recorded from Colombia, Venezuela, Ecuador, Peru, Brazil (?). CALVERT's (1924) judgment that each species of the genus has a restricted distribution seems essentially correct, even

though it is now clear that *cassandra* is an exception. RACENIS (1953b, 1959a) pointed out this error in Calvert's interpretation.

Except for *cassandra,* which is present in 4 countries (Tab. I), and except for Costa Rica and Panama which share 2 species, each country has a group of species occurring there and nowhere else. The number of species is greater at the center of the range of the genus (6 each in Colombia, Ecuador, Peru) than at its northern (3 in Costa Rica), southern (3 in Bolivia) or eastern (1 in Brazil) range limits.

SPECIES GROUPS

Each of the 27 species was assigned to one of 6 groups (Fig. 1), each named after its earliest described species. The groups and the species therein are arranged to show increasing complexity and hopefully to indicate relationships. This is

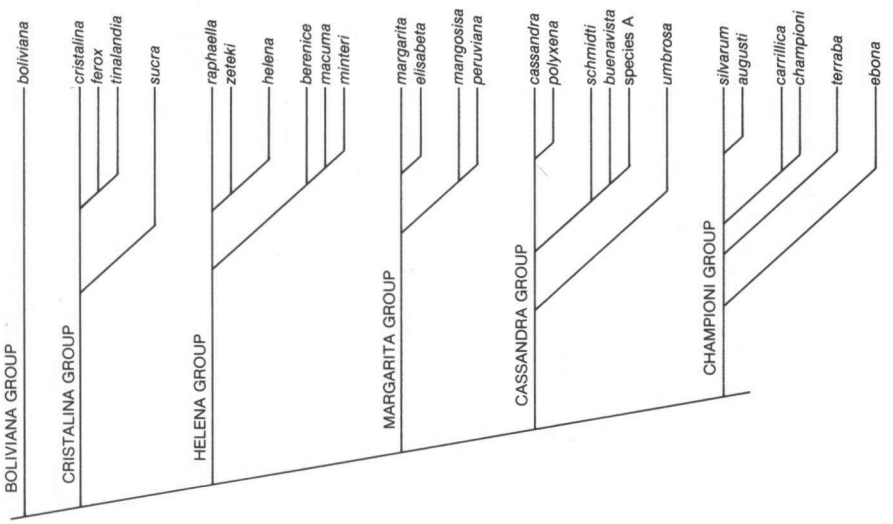


Fig. 1. Assignment of 27 species of *Philogenia* to 6 groups, the groups and the species therein l arranged in a sequence from basic to derived condition.

based mainly on the superior appendage, secondarily on the inferior. The primary basis for judgment was the absence, initial appearance, and increasing complexity of the meso-ventral process of the superior, judged to culminate in the occurrence of an extension of the process in the *championi* group.

(1) *BOLIVIANA* GROUP: *boliviana* (Fig. 1)

DUNKLE (1986) considered the appendages of *berenice* the least complex of the genus, but the discovery of *boliviana* revealed a more basic organization. This species is judged the least complex because of its elongate, flat superior appendage without a meso-ventral process,

indeed with scarcely any ventral groove, and because of its pointed, straight, not bifid inferior without teeth of any kind.

(2) *CRISTALINA* GROUP: *cristalina, ferox, tinalandia, sucra* (Fig. 1)

In a strict lateral view, the meso-ventral process of the superior appendage appears to be absent.

P. cristalina, ferox and *tinalandia* share rather generalized superior appendages, but *ferox* and *tinalandia* differ from *cristalina* by distinctive features of their inferiors. *P. sucra,* resembling the above 3 only in the apparent absence of the meso-ventral process, is placed here with misgivings. Its appendages may be sufficiently distinctive (DUNKLE, 1986, fig. 9) to assign the species to a monotypic group.

RACENIS (1959a) grouped *ferox* with *augusti-silvarum,* an unlikely relationship because *ferox* seems to lack the anterior extension of the meso-ventral process present in the other 2. DUNKLE (1986) grouped *sucra, polyxena* and *cassandra* because all lacked mes- and metepimeral black. Regardless of color, the *sucra* appendages differ too greatly to justify this grouping.

(3) *HELENA* GROUP: *helena, raphaella, zeteki, berenice, macuma, minteri* (Fig. 1)

In lateral view, the meso-ventral process of the superior extends ventrad less than the width of the appendage.

P. helena, raphaella and *zeteki* are similar with relatively simple superior appendages somewhat like those of the *cristalina* group and with apically banded wings. However, the inferiors of these 3 differ greatly among themselves, especially those of *helena* which are unique in the genus. The truncated superiors of *macuma* and *minteri* are similar, and DUNKLE (1986) derived them from *berenice* by progressive bending of the superiors. The wings of these 3 are entirely hyaline.

(4) *MARGARITA* GROUP: *margarita, elisabeta, peruviana, mangosisa* (Fig. 1)

The superior appendages are apically unguiculate, seen best in dorsal view.

CALVERT (1924) considered *elisabeta* and *margarita* allied, and we agree. The meso-ventral processes of the superiors of both project less than the appendage width, and both have well-defined brown-black wing tips, features suggesting affinity with at least 3 members of the *helena* group. In contrast, the meso-ventral process in *peruviana* and in *mangosisa* projects ventrad a distance at least equal to the appendage width, and the wings are entirely hyaline, suggesting possible affinity with the *cassandra* group.

(5) *CASSANDRA* GROUP: *cassandra, polyxena, schmidti, buenavista,* species A, *umbrosa* (Fig. 1)

The meso-ventral process of the superior appendage projects ventrad or extends antero-posteriorly a distance greater than the appendage width.

Species of this group share with *mangosisa* and *peruviana* of the *margarita* group a large meso-ventral process but lack the terminal unguiculation of the superior. A bilobed meso-ventral process sets *umbrosa* apart from all other species in the group and from all others in the genus. *P. cassandra* and *polyxena* share very similar inferior appendages. *P. buenavista* and *schmidti* have more or less triangular meso-ventral processes which contrast with the somewhat rectangular one in species A.

(6) *CHAMPIONI* GROUP: *silvarum, augusti, carrillica, championi, terraba, ebona* (Fig. 1)

This is the only group wherein the meso-ventral process of the superior has an extension at its proximal end directed toward the base of the appendage.

It is difficult to associate this group with any other because the anterior extension of the meso-ventral process is without antecedent in other groups. Even though the process is large in both *cassandra* and *championi* groups, the absence of its extension in the former suggests only a distant relationship.

Within the *championi* group, *ebona* stands apart by the general appearance of the appendages, particularly in the large dorsal, basal tooth on each inferior. The other 5 species are

superficially similar but *terraba* differs in its distally convergent inferiors, each with a distal tooth. The distinctive eleventh abdominal segment unites *silvarum* and *augusti*, and the truncated, upturned inferiors unite *carrillica* and *championi*.

DIFFERENTIATION OF SPECIES

CALVERT (1924) detailed generic characteristics including wing venation, male abdominal appendages, body color. Neither he nor any subsequent describer utilized the penes or wing venation to differentiate species. The wings of most species are entirely hyaline or slightly flavescent without definite color markings. Only *elisabeta, margarita, helena, zeteki, raphaella* have clearly defined brown black wing tips. The 2 males of *helena* examined suggest caution; the immature one lacked wing color which was evident in the mature. Also, in some individuals of species having colored wing tips, the apical band may be quite narrow, rarely entirely absent, and some species without definite wing bands may have the wing apex bordered by faint brown. Reliance solely on color could cause misidentifications. A rather uniform body color pattern occurs in most species, the differences among them being minor.

Differentiation of species rests primarily on the complex male abdominal appendages. These often appear different with changes in orientation and even with slight variation in tilt. Moreover, because the appendages are readily injured by bending and twisting, even in mature individuals, they are seldom preserved in a completely normal orientation. When using the following key, it is important to view the specimen in the indicated orientation, to tilt it variously, and to consider the indicated figures.

In the key, species are arranged according to their placement in the 6 groups. The sequence of the species discussions attempts to indicate relationships.

SPECIES KEY TO ADULT MALES OF *PHILOGENIA*
(B = present authors, C = CALVERT (1924), D = DUNKLE (1986))

1 In lateral view, superior appendage elongate, terminally acute, bending strongly ventrad at mid length, the distal portion forming an almost 90° angle with the proximal; meso-ventral process of superior absent (B, fig. 2) ..... ***BOLIVIANA*** GROUP ***boliviana*** sp. n. (only)

1′ Without the above combination of characters 2

2 In dorso-mesal view, the meso-ventral process of superior appendage with an extension at its proximal end directed toward base of appendage ..... ***CHAMPIONI*** GROUP — 3

2′ Without such an extension 8

3 In ventral view, distal halves of inferior appendages convergent; in lateral view, inferior with a small subapical tooth (C, figs 75, 79) ..... ***terraba***

3′ Without the above combination of characters 4

4 In lateral view, base of inferior appendage dorsoventrally large and bearing a dorsal, basal

tooth (D, fig. 11)..... ***ebona***
4′ Inferior not so large dorso-ventrally and without a dorsal basal tooth 5

5 In lateral view, inferior appendages taper to apex 6
5′ In lateral view, inferiors truncate at apex 7

6 In dorsal view, abdominal segment XI well developed, with a mid dorsal longitudinal groove and apically bilobed; inferiors sharp-pointed (C, figs 61-62) ..... ***silvarum***
6′ Segment XI feebly developed, without a mid dorsal groove and not apically bilobed; inferiors obtuse (C, fig. 67)..... ***augusti***

7 In lateral view, lateral border of superior appendage with a broad prominence at 1/3 appendage length from apex (C, fig. 72) ..... ***carrillica***
7′ Lateral border of superior without such a prominence (C, fig. 56)..... ***championi***

8 In dorsal view, superior appendage apically very narrow and unguiculate, much wider anterior to the unguiculation ..... *MARGARITA* GROUP — 9
8′ Superior appendage not unguiculate 12

9 Meso-ventral process of superior projects ventrad a distance equal to or greater than the appendage witdth; wings entirely hyaline.....10
9′ Meso-ventral process projects ventrad a distance less than appendage width; wings tipped with a definite apical brown-black band.....11

10 In lateral view, inferior appendages apically clubbed (B, Fig. 8)..... ***peruviana***
10′ In lateral view, inferiors apically acute (B, Fig. 11) ..... ***mangosisa***

11 In lateral view, each inferior appendage with a dorsal tooth (C, fig. 40) ..... ***elisabeta***
11′ Each inferior without a dorsal tooth (C, fig. 37)..... ***margarita***

12 In lateral view, meso-ventral process of superior appendage large, projecting ventrad or antero-posteriorly a distance equal to or greater than the width of the appendage .... *CASSANDRA* GROUP — 13
12′ Meso-ventral process projects less than width of appendage or is absent 18

13 In lateral view, meso-ventral process spreads anteroposteriorly along 1/2 to 2/3 length of superior appendage and bears a dorso-ventral ridge on its medial surface .....species A
13′ Meso-ventral process extends ventrad, not anteroposteriorly 14

14 In lateral view, apex of each superior appendage conspicuously bilobed (C, fig. 45) ***umbrosa***
14′ Apex of each superior not bilobed 15

15 In lateral view, each inferior appendage with 2 dorsal spines 16
15′ Each inferior without 2 dorsal spines 17

16 In lateral view, dorsal spines on inferior appendage appear to be connected because they extend straight dorsad (C, fig. 26)..... ***cassandra***
16′ In lateral view, these spines appear separate because they lean dorso-mesad (C, fig 30) .... ***polyxena***

17 In lateral view, inferior appendages bifid, the medial branch the longer (B, fig 14) ..... ***buenavista***
17′ Inferior appendage not bifid (C, fig 32) ..... ***schmidti***

18 In lateral view, meso-ventral process of superior appendage projects ventrad less than width of appendage ..... *HELENA* GROUP — 19
18′ Meso-ventral process of superior seems to be absent ..... *CRISTALINA* GROUP — 24

19 Inferior appendage produced at apex on the lateral margin into a slender process which describes an arc and is expanded at its apex (C, figs 21, 24)..... ***helena***
19′ Without such a slender process.....20

20 In lateral view, superior appendages short, apically truncate, and bent sharply downward at about mid length 21
20′ Superiors without the above set of characteristics 22

21 In dorsal view, inferior appendages broad and "deformed looking" at apex (D, fig. 2)..... ***minteri***
21′ Inferiors tapering to apex and not deformed looking (D, fig 8) ..... ***macuma***

22 In ventral view, inferior appendages strongly divergent (WESTFALL & CUMMING, 1956, fig. 3) ..... ***zeteki***
22′ Inferiors not strongly divergent.....23

23 In dorsal view, inferior appendage apically acute (C, fig 50); each wing tipped with a brown-black band ..... ***raphaella***
23′ Inferiors apically obtuse (C, fig. 46); each wing not tipped with a brown-black band ..... ***berenice***

24 In lateral view, each apically long-tapering inferior appendage with a prominent dorsal tooth at mid length (C, fig.59) ..... ***cristalina***
24′ Inferiors without such a tooth.....25

25 Each inferior distinctly bifid, the lateral branch stouter and more elongate (RACENIS, 1959a, fig. 3b) ..... ***ferox***
25′ Each inferior not bifid 26

26 Each inferior appendage with a short, stout, ventro-lateral tooth at mid length (B, fig. 5) .. .. ***tinalandia***
26′ Each inferior without such a tooth at mid length (D, fig 9) ..... ***sucra***

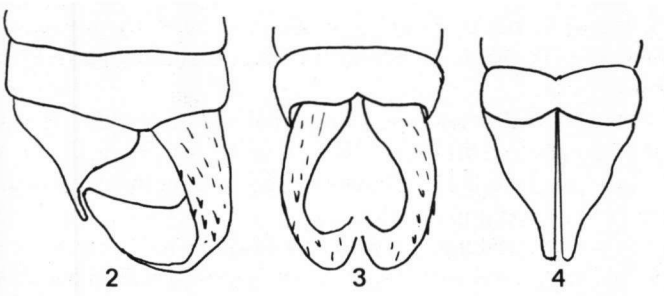
PHILOGENIA BOLIVIANA SPEC. NOV.

Figures 2-4

Material examined — **Holotype** ♂: BOLIVIA, La Paz Department, Yungas de La Paz, collector?, date?, Foerster Coll., deposited in UMAA. — **Paratype** ♂ same date as holotype, deposited UMAA. — Female and larva unknown.

The species is named for the country where the holotype and paratype were collected.

Unlike other species of the genus, the apically acute half of the elongate



Figs 2-4. Abdominal appendages holotype of *Philogenia boliviana* sp. n.: (2) left lateral view superior and inferior, — (3) dorsal view superiors, — (4) ventral view inferiors.

superior appendage bends ventrad at mid length to form an almost 90° angle with the basal half.

HOLOTYPE ♂ — Rather small, total length 49 mm, abdomen 39, hind wing 31. Colors very poorly preserved but apparently much darker than most species of the genus.

Head — Labium basally yellow, the rest brown; labrum and bases of mandibles mostly yellow; dorsum black with light brown bands on either side of the posterior border; rear of head yellow streaked with black.

Prothorax — Anterior lobe black; middle lobe black with dull yellow at the postero-lateral border; posterior lobe black.

Pterothorax — Badly damaged; almost entirely black, pale markings scarcely discernible; pruinose dorsally on the metepisternum and metepimeron; venter yellow with a large brown spot anteriorly and another at mid length, laterally pruinose.

Wings — Entirely hyaline; cells under pterostigma 3, 5 in fore wings, 4, 5 in hind; postnodals 24, 25 in fore wings, 22 in each hind; R3 arises at the 7th postnodal in both fore wings, at the 7th, 8th in hind.

Legs — Mostly dusky brown.

Abdomen — Heavily pruinose dorsally on IX, the merest trace on X, and none on VIII; a very obscure pale spot on each side of IV and V, the rest of the abdomen uniformly very dark brown.

Superior appendage— Meso-ventral process absent. In lateral view (Fig. 2), bends sharply ventrad at mid length so that the apical half (1.0 mm), ending in a sharp point, forms an almost right angle with the basal half (1.1 mm). The horizontal extent of the appendage greatly exceeds the length of segment X (0.4 mm). In dorsal view (Fig. 3), the forcipate appendages narrow slightly distally, but because of the ventral bend, cannot be followed to their apices. Ventrally, the basal half with a very shallow groove which the apical half lacks.

Inferior appendage — In lateral view (0.8 mm), extending about 3/4 the

horizontal length of the superior to an acute and slightly upturned apex. In ventral view (Fig. 4), the inferiors are straight and apically more blunt than in lateral view (Fig. 2).

PARATYPE ♂ — Like holotype except that there are dull yellow spots at bases of abdominal segments IV, V, VI. Cells under pterostigma 5, 4 in both fore and hind wings; postnodals 27 in both fore wings, 24 in both hind wings; R3 arises nearest the 8th postnodal in all wings.

Remarks — The abdominal appendages of *boliviana* are regarded as the simplest in the genus. To reach the complexity of most species, the superior would have to shorten, the ventral groove deepen and lengthen, and its medial border extend ventrad to a greater or lesser degree.

PHILOGENIA CRISTALINA CALVERT

Philogenia cristalina CALVERT, 1924: 35 (Colombia: Cristalina, 320 m, Cisneros, 1060 m, 46 ♂, 3 ♀); — PAULSON, 1983 (Colombia).

Type data — The Cristalina ♂ 12-II-1917, in UMAA, designated as the type by CALVERT (1924) and the basis of his figs 58-60, 64, was not seen.

Material examined — COLOMBIA, *Antioquia*, Cristalina, J.H. & E.B. Williamson, 12, 17--II-1917, 3 ♂, FSCA, paratypes.

No collections seem to have been recorded subsequent to the extensive type series of 1917. Wings of 1 of the 2 males collected on 17-II-1917 are deeply flavescent, those of the other males entirely hyaline.

PHILOGENIA FEROX RACENIS

Philogenia ferox RACENIS, 1959a: 353 (Cumbre de Choroni, Venezuela, 1300 m, 1 ♂); — PAULSON, 1983 (Venezuela).

Type data — The holotype ♂ in Mus. de Biol., Univ. Central de Venez. was not seen.

Material examined — none.

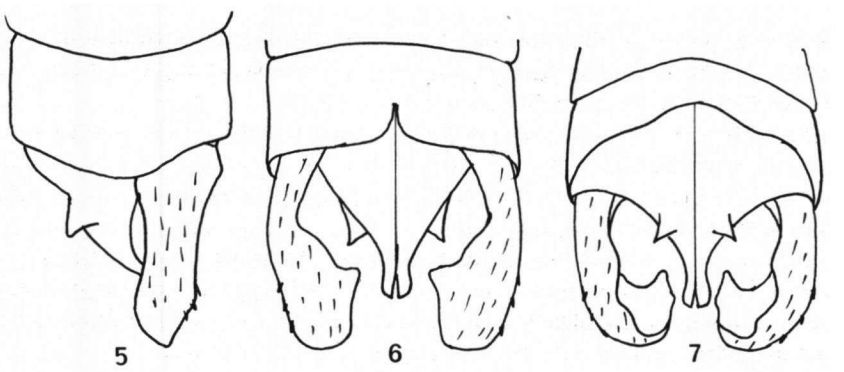
PHILOGENIA TINALANDIA SPEC. NOV.

Figures 5-7

Material examined — **Holotype** ♂: ECUADOR, Pichincha Province, Tinalandia, 12 km east of Santo Domingo de los Colorados, 0.20S, 79.3W, 762 m, on the western slope of the Andes, J. Nation leg. ex T.C. Emmel, 13-V-1985, deposited in FSCA, Gainesville, Florida. — **Paratype** ♂ same data as holotype, in FSCA. — Female and larva unknown.

The species is named for the collection locality of the holotype and paratype.

Readily distinguished by the short, stout, ventro-lateral tooth on each inferior appendage, a feature present in no other *Philogenia* species.



Figs 5-7. Abdominal appendages holotype of *Philogenia tinalandia* sp. n.: (5) left lateral view superior and inferior, — (6) dorsal view superiors and inferiors, — (7) ventral view superiors and inferiors.

HOLOTYPE ♂ — Total length 59 mm, abdomen 47, hind wing 41.

Head — Labrum, bases of mandibles, labium and rear of head dull yellow; dorsally black with pale brown band across the ocelli posterior to antennae; white ring at apex of antennal segment I.

Prothorax — Anterior lobe mostly pale; middle lobe narrowly brown on either side of the mid-line, bordered by an extensive pale yellow area margined by black, which is continuous with the mesepimeral band. Posterior lobe medially black, margined by yellow.

Pterothorax — Most of mesepisternum dull brown, most of mesepimeron and metepisternum black, metepimeron half black. With the following straw-colored markings: a narrow, almost uniformly wide humeral stripe; a stripe on 1st lateral suture, very narrow just dorsad of spiracle, widening anterior to mesocoxa and posteriorly at the alar ridge; a stripe on second lateral suture widening anteriorly and extending posteriorly to surround a black triangular area on the metepimeron. Venter dull yellow.

Wings — Hyaline with the merest suggestion of brown at wing tips; 5 cells under the dark brown pterostigma of each wing; postnodals 31, 33 in fore wings, 28, 29 in hind; R3 arises at 7th and 8th postnodal in fore wings, 7th and 8th in hind.

Legs — Mostly straw-colored; each femur with 2 thin dark stripes; prothoracic tibia darker than other legs; black spot at each femoral-tibial joint.

Abdomen — Mostly black with the following dull yellow markings: a lateral spot on I, a short lateral stripe on II, a basal spot on either side of the mid-dorsal line of III-VII. Segments VIII and IX conspicuously pruinose, X less so.

Superior appendage — About 1.5X length of segment X. In lateral view (Fig. 5), meso-ventral process absent, the appendage decreasing very slightly in

thickness from base to blunt-tipped apex; dorsal margin slightly concave at middle 1/3, then inclined ventrad near apex. In dorsal view (Fig. 6), moderately curved inward, sides subparallel at basal 1/3, then broadening conspicuously at the apical 1/3. In ventral view (Fig. 7), the groove is wide and deep for the distal 1/2 of the appendage.

Inferior appendage — Each 0.6 length of superior. In lateral view (Fig. 5), curving dorsad and decreasing rapidly in thickness from base to apex which is hidden by the superiors. Latero-ventral margin with a short, stout tooth at mid length, clearly visible in lateral, ventral and dorsal views. In dorsal and ventral views, inferiors not at all divergent, apices laterally rounded but each with a minute medial point.

PARATYPE ♂ — Like holotype but lacking pruinosity on abdominal segments VIII-X. Total length 59 mm, abdomen 46, hind wing 39; pterostigma surmounting 6, 5 cells in fore wing, 6, 6 in hind; postnodals 32, 35 in fore wings, 29 in each hind; R3 arises near 10th postnodal in both fore wings, near 8th in both hind.

Remarks — *P. ebona* and *tinalandia* are the only species from the Pacific slope of the Andes.

PHILOGENIA SUCRA DUNKLE

Philogenia sucra DUNKLE, 1986: 47 (near Sucre, 1.47N, 75.39W, Colombia, 2♂).

Type data — The holotype ♂ 24-I-1969, USNM, was not seen.
Material examined — none.

PHILOGENIA RAPHAELLA SELYS

Philogenia raphaella SELYS, 1886: 37 (Bogota, Colombia, 1 ♂); — KIRBY, 1890: 122 (Bogota); — CALVERT, 1924: 31 (Bogota, figs of type); — PAULSON, 1983 (Colombia).

Type data — The holotype ♂ in BMNH (KIMMINS, 1970) was not seen, but Stephen Brooks kindly sent camera lucida sketches of the wing apices of the type.

Material examined — The ♂, Bogota, 1896, ANSP, with the last 8 abdominal segments missing, referred to by CALVERT (1924). The wing tips are dark brown from the distal third of the pterostigma to the apex just as Calvert stated. This is a slightly greater extent than in the holotype wherein the apical brown of all wings begins at the distal-most edge of the pterostigma.

Specimens of this species have been collected only from Bogota, Colombia, and new specimens apparently have not been reported since 1896.

PHILOGENIA ZETEKI WESTFALL & CUMMING

Philogenia zeteki WESTFALL & CUMMING, 1956: 241 (Barro Colorado Is., Panama, 1 ♂); — MAY, 1979: 4 (Barro Colorado, habits); — PAULSON, 1982: 251 (Panama).

Type data — The holotype ♂, FSCA, was examined.

Other material examined — PANAMA, Barro Colorado Is., R.B. Cumming, 17/19-V-1960, 18 ♂, FSCA.

In fully mature specimens, the pterothorax is sometimes almost completely black. WESTFALL & CUMMING (1956), with only 1 male available, stated that the dark brown wing tip is only 1 mm wide. The larger series examined here shows that the band is often wider: 1.0-2.9 mm, $\overline{X} = 2.2$, $N = 18$.

PHILOGENIA HELENA HAGEN

Philogenia helena HAGEN, 1869: 261 (Bogota, Colombia, 2 ♂, 1 immature); — SELYS, 1886: 35 (Bogota, ♂, ♀ descr.); — KIRBY, 1890: 122 (Bogota); — RIS, 1918: 78 (Colombia: Gramal bei Muzo, 700 m, Pacho, 1500 m; Chanchamayo, Peru, key); — CALVERT, 1924: 13, 20 (Peru record questioned, types, descr., Figs.); — SOUKUP, 1954: 13 (Chanchamayo); — RACENIS, 1959b: 484 (Chanchamayo); — PAULSON, 1983 (Colombia, Peru).

Type data — CALVERT (1924) stated that of 2 males in MCZ, "the older one is to be regarded as the type". Examination of these showed that the wings of the immature lack apical brown, the abdomen is badly shriveled, and the appendages are missing. The wings of the mature are brown from the middle of the pterostigma to the wing tip, and the appendages agree with CALVERT's (1924) figs 21-24.

Other material examined — none.

This is the largest species of the genus (HAGEN, 1869); the hind wing length of the type is 45.0 mm and RIS (1918) recorded 46.0 mm.

PHILOGENIA BERENICE HIGGINS

Philogenia berenice HIGGINS, 1901: 136 ("Equitos", Peru, ♂, gizzard only descr.). *Philogenia berenice* Hag. [MS], Higgins; CALVERT, 1924: 33 (Iquitos, descr., figs). *Philogenia berenice* Calvert; SOUKUP, 1954: 13 (Iquitos). *Philogenia berenice* Higgins; RACENIS, 1959b: 483 (Iquitos); DAVIES & TOBIN, 1984: 43 (Peru). *Philogenia berenice:* PAULSON, 1983 (Peru). *Philogenia berenice* Hagen; DUNKLE, 1986: 49 (ancestral to *macuma* and *minteri*).

Type data — CALVERT (1924) stated that of 2 males from Iquitos, Peru, in MCZ, the smaller with gizzard removed is the type. We examined these; in dorsal view, the inferiors of both are apically truncate as Calvert illustrated in fig. 48. They are not nearly as acute as in his fig. 47.

Other material examined — none.

Specimens of this species have been collected only from Iquitos, and there seems to be no collection subsequent to the original one.

PHILOGENIA MACUMA DUNKLE

Philogenia macuma DUNKLE, 1986: 45 (Macuma, Ecuador, 867 m, 1 ♂).

Type data — The holotype ♂, 2-II-1972, FSCA, was examined.

Other material examined — ECUADOR, *Morona-Santiago*, Mangosisa, 850 m, L.G. Alonzo, 30-XI-1945, 2 ♂; — *Napo*, Churiyacu, 900 m, W.C.-Macintyre, 16-IV-1941, 1 ♂; — Jatunyacu, W.C.-M., III-1937, 1 ♂; — Rio Napo Watershed, W.C.-M., XI-1935, 2 ♂; — Rio Napo, Collector ?, 10-I-1936, 1 ♂; — *Pastaza*, Puyo, 1000 m, W.C.-M., III-1950, 1 ♂. All 8 ♂ in UMAA.

PHILOGENIA MINTERI DUNKLE

Philogenia minteri DUNKLE, 1986: 43 (Limoncocha, Ecuador, 4 ♂, 3 ♀, biology).

Type data — The holotype ♂ 19-II-1972, FSCA, was examined.

Other material examined — ECUADOR, *Napo*, Cotopino, W.C.-Macintyre, 12-III-1950, 1 ♂, UMAA; — Limoncocha, 300 m, S.W. Dunkle, 23, 28-VIII-1980, 2 ♂, Dunkle Collection (paratypes); M.J. Westfall, 18-XI-1980, 1 ♂, FSCA (paratype).

PHILOGENIA MARGARITA SELYS

Philogenia margarita SELYS, 1862: 9 (L'Amazone, descr., ♀ only); — SELYS, 1886: 37, 38 ("Teffe", Brazil, ♂ descr.); — KIRBY, 1890: 122 ("Teffe"); — CALVERT, 1924: 31 (species not seen, figs 36, 37 by Severin from specimen in IRNB); — PAULSON, 1983 (Brazil).

Type — The type series in IRNB was examined. Calvert's fig. 36 well illustrates the male.

Additional material examined — none.

This species, known from the above Tefe specimens alone, is the only one whose presence in Brazil has been unquestioned. The apical wing brown of the type ♂ begins anteriorly at the level of the middle of the pterostigma then curves proximally leaving a hyaline area just posterior to the proximal part of the pterostigma.

PHILOGENIA ELISABETA CALVERT

Philogenia elisabeta CALVERT, 1924: 29 (Campamiento, Peru, 680 m, 4 ♂, 1 ♀); — SOUKUP, 1954: 13 (Peru: Campamiento, LaMerced, Moyobamba); — RACENIS, 1959b: 484 (Peru: Campamiento, LaMerced, Moyobamba); — PAULSON, 1983 (Peru).

Type data — The male, Campamiento, 19-VI-1920, in UMAA, which CALVERT (1924) designated as the type and the basis for figs 39-43, was not seen.

Material examined — PERU, *Huanuco*, Afilador, 507 m, F. Woytkowski, 29-V-1937, 1 ♂, 1, 5-VI-1937, 2 ♂, UMAA; — Tingo Maria, 671 m, E.I. Schlinger & E.S. Ross, 18-IX-1954, 2 ♂, 2-XI-1954, 1 ♂, FSCA; C. Farrell, 24-IX-1981, 5 ♂, 22-X-1981, 1 ♂, 13-XII-1981, 2 ♂, Cook Collection; — *Junin*, LaMerced, E.I. Schlinger & E.S. Ross, 3-I-1955, 1 ♂, FSCA; — Satipo, 1067 m, P. Paprzycki, 25-X-1940, 1 ♂, 7, 9-XI-1940, 2 ♂, VI-1941, 2 ♂, UMAA; collector ?, IV-1980, 1 ♂, Cook Collection; — *San Martin*, Hera, collector ?, VII-1947, 1 ♂, FSCA; — Rioja, 900 m, F. Woytkowski, 28-IX-1936, 2 ♂, 15-X-1936, 1 ♂, 5-XI-1936, 1 ♂, UMAA; — Tarapoto, collector ?, date ?, 1 ♂, FSCA..

Of the 2 males from Tingo Maria, 18-IX-1954, the wings of 1 are almost entirely smoky flavescent, the other entirely hyaline. Among 16 males, the hind wing brown begins near the middle of the pterostigma in 9, near the distal end in 4, near the proximal end in 2, and is absent in 1.

PHILOGENIA PERUVIANA SPEC. NOV.

Figures 8-10

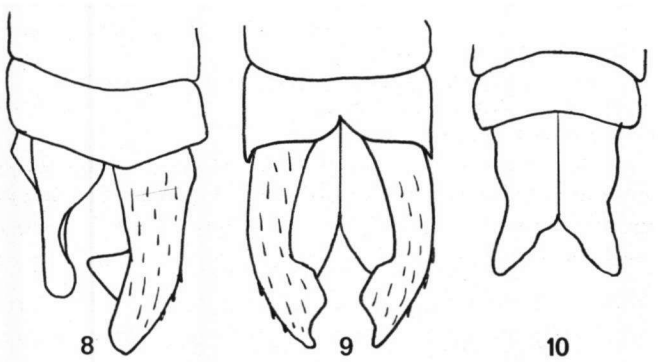
Material examined — **Holotype** ♂: PERU, San Martin Department, Tarapoto, 950 m, F. Woytkowski, 16-III-1947, deposited UMAA. -- Female and larva unknown.

The species is named for the country where the holotype was collected.

Distinguished by an apically unguiculate superior appendage with a large meso-ventral process and by apically clubbed inferiors.

HOLOTYPE ♂ — Total length 47 mm, abdomen 37, hind wing 30.

Head — Labium tan; labrum, bases of mandibles blue-gray; dorsum mostly black, and extensive dark brown area covering ocelli, apex of antennal segment I ringed with white; rear of head dorsally black, ventrally white.



Figs 8-10. Abdominal appendages holotype of *Philogenia peruviana* sp. n.: (8) left lateral view superior and inferior, — (9) dorsal view superiors and inferiors, — (10) ventral view inferiors.

Prothorax — Dusky brown with the following light brown markings: small spot on either side of anterior lobe, larger one on either side of middle lobe at posterior border, a mere line laterally on posterior lobe.

Pterothorax — Mesepisternum and mętepisternum dark brown, mesepimeron and metepimeron light brown; humeral stripe white, stripes on 1st and 2nd lateral sutures very obscure. Venter entirely white.

Wings — hyaline with the merest trace of apical brown; 4 cells under the dark brown pterostigma of each wing; postnodals 26, 28 in fore wings, 26, 24 in hind; R3 arises at 7th and 8th postnodals in fore wing, at 7th in both hind wings.

Legs — Mostly dusky yellow; brown at femoral-tibial joints.

Abdomen — Dark brown with the following light brown markings: dorsum of I, most of the dorsum of II, III-VII with a basal ring, III-V with a lateral patch not reaching the posterior borders; VIII, IX, X pruinose.

Superior appendage — In lateral view (Fig. 8) (length 1.35 mm), almost 3 times as long as segment X (0.50 mm); the appendage slopes ventrad, more strongly so in the distal third, and narrows gradually to an obtuse tip; the meso-ventral process extends ventrad approximately the width of the appendage. In dorsal view (Fig. 9), apically narrow and unguiculate, suddenly broadening into the meso-ventral process immediately anterior to the unguiculation.

Inferior appendage — In lateral view, slightly upturned and apically club-shaped. In dorso-mesal view, apically concave. In ventral view (Fig. 10), the distal half divergent and apically obtuse.

Remarks — *P. peruviana* closely resembles *mangosisa* because of unguiculate superiors, a meso-ventral process extending ventrad almost the width of the superior, and the absence of apical wing color. However, the apically clubbed inferiors (lateral view) set *peruviana* apart from *mangosisa* with its apically acute ones.

PHILOGENIA MANGOSISA SPEC. NOV.

Figures 11-13

Material examined — **Holotype** ♂: ECUADOR, Morona-Santiago Province, Mangosisa, 850 m, L.G. Alonzo, 30-XI-1945, UMAA. — 3 **paratypes:** same data as holotype; paratype No. 4: Morona-Santiago Province, Salado, 1550 m, date ?, L.G. Alonzo, UMAA. — Female and larva unknown.

The species is named for the collection locality of the holotype.

Recognized by the apically unguiculate superior appendage with a large meso-ventral process, by the apically acute inferior, and by the absence of apical dark wing bands.

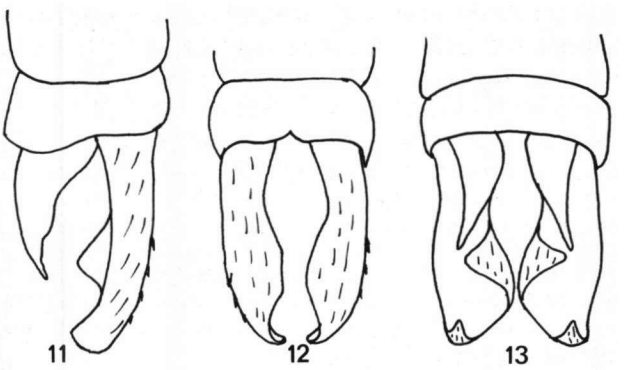
HOLOTYPE ♂ — Total length 57 mm, abdomen 45, hind wing 38.

Head — Labium dark brown; labrum, bases of mandibles light brown; dorsally black with a transverse brown band across posterior ocelli to compound eyes; rear of head tan.

Prothorax — Anterior lobe light brown; middle lobe dorsally brown, laterally black; posterior lobe anteriorly and laterally light brown, mid posterior border broadly black.

Pterothorax — Mesepisternum brown; mesepimeron, metepisternum, metepimeron mostly black; a posteriorly divided brown stripe on humeral, and tan stripes on the 1st and 2nd lateral sutures, the stripe on the 1st widening at both ends, the stripe on the 2nd widening anteriorly and extending posteriorly to surround the black of the metepimeron; venter pale yellow.

Wings — Entirely hyaline; cells under pterostigma 5, 6 in fore wings, 6, 5 in



Figs. 11-13. Abdominal appendages holotype *Philogenia mangosisa* sp. n.: (11) left lateral view superior and inferior, — (12) dorsal view superiors, — (13) ventral view superiors and inferiors.

hind; postnodals 32, 31 in fore wings, 30, 31 in hind; R3 arises at 8th and 7th postnodal in fore wings, at 7th in both hind ones.

Legs — Pro♂ and mesothoracic legs tan, femoral-tibial joints black; metathoracic legs missing.

Abdomen — Mostly dark brown with the following tan marks: an ill-defined lateral stripe on I and II, a short, basal, lateral streak on III, a small, basal ring on III-VII; IX and X pruinose.

Superior appendage — In lateral view (Fig. 11), twice as long (1.6 mm) as abdominal segment X (0.8 mm), slopes ventrad and gradually narrows apically; meso-ventral process extends ventrad about the width of the appendage; in dorsal view (Fig. 12), lateral margin straight to the unguiculate apex, mesal margin slightly concave at the basal half then widening for about 1/3 the appendage length, and then sloping laterad to the distal unguiculation; in ventral view (Fig. 13), the unguiculation terminally apparent.

Inferior appendage — In lateral view, very slightly upturned and apically acute, 0.8 mm long; in ventral view, extending to about mid length of the superior and apically acute.

PARATYPES — Color pattern better defined than in holotype; all 4 with divided humeral as in holotype; lateral stripe on abdominal segment III in all paratypes longer than in holotype, extending 2/3 segment length. Unlike the holotype, 1 paratype has an elongate mark laterad of the mid dorsal carina on the left but not the right mesepisternum. Wings of 2 paratypes entirely hyaline, 1 with a touch of brown at apex, and wings of another faintly smoky throughout. Metathoracic legs tan, tarsi slightly darker.

Hind wing length of 4 paratypes: 37, 39, 39, 41.

Remarks — Resembles *peruviana* but differs from that species most definitely by the apically acute rather than clubbed inferiors. Also, *mangosisa*, with a

total length of 57 mm and a hind wing length of 38, is much larger than *peruviana* with a total length of 47 and a hind wing length of 30.

PHILOGENIA CASSANDRA HAGEN

Philogenia cassandra HAGEN in SELYS, 1862: 10 (Porto-Cabello, Venezuela, 2 ♂, 1 ♀); — SELYS, 1886: 38 (Venez.: Puerto Cabello, erroneously placed in Colombia, St. Esteban; Colombia: Bogota; Brazil?: "Teffe"; Ecuador: Bobonaza; Peru: Iquitos, Pebas); — CALVERT, 1901: 61 (related to *championi*); — CALVERT, 1924: 22 (Venez. localities, 0-915 m, 158 ♂, 21 ♀, descr., figs); — RACENIS, 1953a: 13; 1953b: 180; 1958: 199 (Venez. localities, 120-1300 m); 1959a: 352 (Colombia, Venezuela, Ecuador, Peru, Brazil — not verified); 1959b: 483 (Peru: Iquitos, Pebas); — PAULSON, 1983 (dist).

Type data — The type series (2 ♂, 1 ♀) in MCZ was examined. One male labelled: "type 12150, penis drawn", has the posterior abdominal segments missing; the other male is the basis of CALVERT's drawings (1901, fig. 10; 1924, figs 25, 28).

Other material examined: VENEZUELA, *Aragua*, Rancho Grande, M.J. Westfall, 8, 10-IX-1980, 7 ♂, FSCA; Santa Rita, T. Donnelly, 1, 5-VIII-1986, 4 ♂, FSCA; — *Carabobo*, San Esteban, J.H. Williamson, et al., 4, 5-II-1920, 5 ♂, FSCA; II-1920, 9 ♂, ANSP; II-1920, 2 ♂, MCZ; — *Lara*, Guayamure, M.J. Westfall, 16-IX-1980, 5 ♂, FSCA; — *Miranda*, Rio Chacaito, collector ?, 16--VII-1939, 1 ♂, FSCA.

This is the most widespread species in the genus and the only one whose presence in more than one South American country (Tab. I) has been verified, but its presence in Brazil remains doubtful.

KENNEDY (1941) erected the new genus and species, *Agnophilogenia monotis*, based on 1 female considered to be very similar to *Philogenia cassandra* except that the former has 3 antenodals, the latter, 2. We examined 20 males and 6 females of *cassandra* from Venezuela. Only 1 of each sex had 3 antenodals in 1 wing.

PHILOGENIA POLYXENA CALVERT

Philogenia polyxena CALVERT, 1924: 27 (Aroa, Venezuela, 213 m, 1 pr., 3 ♂, 1 ♀); — RACENIS, 1953a: 13; 1959a: 33 (Aroa); — PAULSON, 1983 (Venezuela).

Type data — The Aroa ♂, 14-III-1920 in UMAA which CALVERT (1924) designated as the type and the basis for his figs 30, 31, was not seen.

Material examined —VENEZUELA, *Yaracuy*, Aroa, M.J. Westfall, 24-IX-1980, 2 ♂, FSCA.

This is the only locality for the species and the first recorded collection since the original in 1920.

PHILOGENIA SCHMIDTI RIS

Philogenia sp.: SCHMIDT, 1915: 5, 61 (Rio Songo, Bolivia; penis).
Philogenia schmidti RIS, 1918: 77-79 (Bolivia: Rio Songo, 750-1000 m, 11 ♂, 4 ♀; Coroico, 1-1400 m, 4 ♂, 4 ♀; fig. 34, appendages; fig. 35, wings); — CALVERT, 1924: 28 (Coroico, notes, figs); — PAULSON, 1983 (Bolivia).

Type data — RIS's types apparently have been lost. However, we examined the Coroico male, 26-V-1899 in ANSP, from which CALVERT's (1924) figs 32-35 were made. These figures, particularly 33, well portray this specimen.

Other material examined — BOLIVIA, Las Yungas, 1600 m, P. Vecher, 14-I-1976, 1 ♂, Cook Coll.

The Coroico male, with a hind wing length of only 28 mm, seems to be the smallest of the genus.

PHILOGENIA BUENAVISTA SPEC. NOV.

Figures 14-16

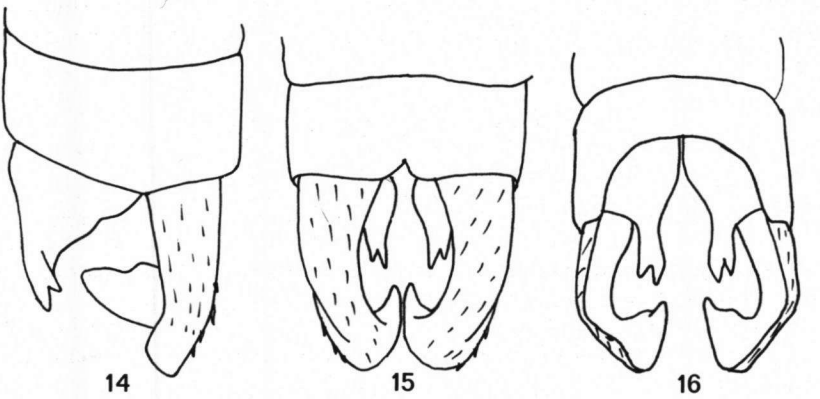
Material examined — **Holotype** ♂: BOLIVIA, Santa Cruz Department, Buena Vista, 400 m, R. Steinbach Coll. via R. Cumming, date unknown, deposited in FSCA, Gainesville, Florida. — **Paratype** ♂ same data as holotype, in FSCA. — Female and larva unknown.

The species is named for the collection locality of the holotype and paratype.

Male abdominal appendages distinctive in that the inferiors are bifid with the medial branch the longer.

HOLOTYPE ♂ — Total length 62 mm, abdomen 50, hind wing length 39. Colors poorly preserved.

Head — Labrum, bases of labium and mandibles, rear of head yellow;



Figs 14-16. Abdominal appendages holotype *Philogenia buenavista* sp. n.: (14) left lateral view superior and inferior, — (15) dorsal view superiors and inferiors, — (16) ventral view superiors and inferiors.

dorsum black with a small yellow spot laterad of the base of each antenna and a brown one laterad of each lateral ocellus.

Prothorax — Anterior lobe black, yellow laterally; middle lobe mostly black with a light yellow area on either side of the mid line at the posterior border; hind lobe black.

Pterothorax — Black with the following markings on the right side: wide brown band just ventrad of mid-dorsal carina, a yellow stripe on humeral suture, 3 cream-colored spots on metepisternum, a very narrow almost white stripe on the second lateral suture, a wide, light-brown area anteriorly on metepimeron. Venter brown. The band ventrad of the mid-dorsal carina absent on the left side.

Wings — Hyaline with the merest suggestion of apical brown; 6 cells under the dark brown pterostigma in the fore wings, 5 in the hind; postnodals 28, 29 in the fore wings, 25, 26 in the hind; R3 arises at 8th and 9th postnodal in the fore wings, at 7th and 8th in hind.

Legs — Mostly pale; femoral-tibial joints and prothoracic tibiae brown-black.

Abdomen — Dull brown-black, light areas poorly preserved but with the merest suggestion of a lateral stripe on II, with pale basal rings on IV-VIII, IX heavily pruinose, VIII & X slightly so.

Superior abdominal appendage — Twice the length of segment X; in lateral view (Fig. 14), bends slightly ventrad at the distal 1/3; with an almost triangular meso-ventral process which extends ventrad (0.7 mm), a distance greater than the width of the appendage (0.5 mm).

Inferior abdominal appendage — Each about 3/4 length of superior, basally broadly triangular, not divergent from the other, terminally bifid, medial branch the longer (Figs 15-16).

PARATYPE ♂ — Pale areas of pterothorax differ from holotype as follows: on right side a much narrower and abbreviated yellow stripe ventrad of mid dorsal carina; humeral stripe broader; 1 rather than 3 spots on metepisternum; metepimeron almost entirely dark. Abdominal pruinosity limited to segments IX, X. Hind wing length 38 mm; pterostigma surmounts 4, 5 cells in both wings; postnodals 23, 25 in fore wings, 25, 24 in hind; R3 arises at 7th and 8th postnodals in the fore wings, the 6th and 7th in the hind.

Remarks — *P. buenavista* may be confused with *schmidti* because of similarity in the superior appendages, but the bifid inferiors of *buenavista* readily identify it. Moreover, *buenavista* is much larger: *buenavista* hind wing length = 38, 39 mm, *schmidti* = 28, 31.

PHILOGENIA SPECIES A

Material examined — ECUADOR, *Morona-Santiago*, Mangosisa, 850 m, L.G. Alonzo, date?, 2 ♂, UMAA; — Salado, 1550 m, L.G. Alanzo, date ?, 2 ♂, UMAA; — *Napo*, Rio Cotopino,

W.C.-MacIntyre, III-1950, 1 ♂, UMAA; — Yanamanaca, W.C.-MacIntyre, 6-X-1935, 1 ♂, UMAA; — San Raphael, S.W. Dunkle, 21-VIII-1980, 1 ♂, Dunkle Coll.; — *Pastaza*, Abitagua, 1000-1200 m, W.C.-MacIntyre, IV-1937, 7 ♂, 21-V-1937, 1 ♂, 4-VI-1937, 1 ♂, 26-V-1939, 1 ♂, IV-1940, 3 ♂, 25-II-1941, 2 ♂, 1-III-1941, 1 ♂, 4-VI-1941, 1 ♂, UMAA; — Pastaza Watershed, W.C.-MacIntyre, XII-1935, 1 ♂, I-1940, 1 ♂, UMAA; — *Tungurahua*, Rio Margajitos, W.C.-MacIntyre, 20-IX-1937, 1 ♂, UMAA; — Rio Topo, 1400 m, R. de Lafebre, VI-1977, 3 ♂, Cook Coll.; — San Francisco, 1200 m, W.C.-MacIntyre, VIII-1937, 1 ♂, 16-X-1937, 1 ♂, UMAA.

Species A, a rather distinctive member of the *cassandra* group, is related to *schmidti* and *buenavista* but stands apart from these 2 by its blunt, rectangular, meso-ventral process which, in *schmidti* and *buenavista*, is longer, triangular, and more pointed. The description by C. Cook is in preparation.

PHILOGENIA UMBROSA RIS

Philogenia umbrosa RIS, 1918: 78 (Pozuzo, Peru, 1 ♂); — CALVERT, 1924: 22 (Pozuzo, no specimens seen, figs 44-45 after Ris); — SOUKUP, 1954: 13 (Pozuzo); — RACENIS, 1959b: 484 (Pozuzo); — PAULSON, 1983 (Peru).

Type data — The Ris type seems to be lost.

Material examined — PERU, *Huanuco*, Afilador, 670 m, F. Woytkowski, 7-V-1937, 1 ♂, UMAA; — Tingo Maria, 671 m, E.I. Schlinger & E.S. Ross, 23-IX-1954, 1 ♂, FSCA; — *Junin*, Satipo, P. Paprzycki, VI-1941, 1 ♂, UMAA.

PHILOGENIA SILVARUM RIS

Philogenia silvarum RIS, 1918: 78, 80 (Pozuzo, Peru, 1 ♂, 2 ♀; — CALVERT, 1924: 38 (Peru: Campamiento, 680 m, Pozuzo, figs, pruinosity in immatures); — SOUKUP, 1954: 13 (Satipo added); — RACENIS, 1959b: 484 (Peru localities); — PAULSON, 1983 (Peru).

Type data — Ris' types apparently have been lost.

Material examined — PERU, *Junin*, Campamiento, J.H. Williamson, 14-VI-1920, 1 ♂, FSCA, 2 ♂, ANSP, 1 ♂, UMAA; — Sani Beni, 840 m, F. Woytkowski, 13-X-1935, 1 ♂, UMAA.

PHILOGENIA AUGUSTI CALVERT

Philogenia augusti CALVERT, 1924: 42 (Porto Bello, Panama, 6 ♂, 1 ♀); — PAULSON, 1982: 251 (Panama).

Type data — We did not see the type male (Porto Bello, 18-IV-1912, USNM) which is the basis for Calvert's figs 66-69.

Material examined — none.

The only recorded collections seem to be those of the type series taken in 1911-12.

PHILOGENIA CARRILLICA CALVERT

Philogenia carrillica CALVERT, 1907: 356 (Costa Rica: Carillo, 2 ♂, 2 ♀; Juan Vinas, 1♂); — RIS, 1918: 81 (Costa Rica: Infernillo = Juan Vinas, 1000 m; Orosi, 1500 m; measurements); — CALVERT, 1924: 45 (Costa Rica localities, 30-1030 m, figs, living colors, biology); — CALVERT, 1931: 38, 86 (associated species); — WESTFALL & CUMMING, 1956: 249, figs 10-11 (Peralta, Costa Rica; appendages compared with *leonora*); — PAULSON, 1982: 251 (Costa Rica).

Type data — Holotype ♂, BMNH, KIMMINS (1970). Not seen.

Material examined — COSTA RICA, *Alajuela*, Varablanca, 854 m, M.J. Westfall, 24-VI-1967, 1 ♂, FSCA; — *Cartago*, Juan Vinas, 793 m, P.P. Calvert, 28-IV-1910, 1 ♂, FSCA; — Turrialba, P. Schild, 22-IX-1921, 1 ♂, ANSP; — C.H. Lankester, IV-1934, 1 ♂, ANSP; — *Limon*, Banana River, P.P. Calvert, 9-XI-1909, 1 ♂, ANSP; — Peralta, Chiriqui River, P.P. Calvert, 10-VIII-1909, 1 ♂, ANSP; C.H. Lankester, 2-V-1928, 1 ♂, ANSP; Department?, Locality?, C.H. Lankester, date?, 1 ♂, ANSP. — PANAMA, Toro, F. Swift, 25-V-1924, 1 ♂, FSCA.

In 1975, M.J. Westfall determined the 2 Costa Rica males in FSCA to be conspecific with the holotype in BMNH. The above record from Panama is the first for that country.

PHILOGENIA CHAMPIONI CALVERT

Philogenia cassandra: HIGGINS, 1901: 136 (Panama, gizzard only).

Philogenia championi CALVERT, 1901: 61 (Volcan de Chiriqui, below 1219 m, Panama, 1 ♂; related to *cassandra*); — CALVERT, 1924: 44 (Panama, Higgins' reference = *championi*); — MAY, 1979: 4 (Panama); — PAULSON, 1982: 251 (Costa Rica, Panama).

Philogenia leonora WESTFALL & CUMMING, 1956: 244; MAY, 1979: 4 (Syn.).

Type data — The holotype male in BMNH (KIMMINS, 1970), the basis of CALVERT's (1924) figs 55-57, was not seen.

Material examined — COSTA RICA, *Puntarenas*, San Vito, M.L. May, 28-VII-1970, 1 ♂, FSCA. — PANAMA, Barro Colorado, R.B. Cumming, 27-XII-1950, 1 ♂ (holotype of *P. leonora*), 20-XII-1950, 1 ♂ (paratype of *P. leonora*), 17, 19-V-1960, 14 ♂, FSCA; — On the holotype ♂ and on one paratype ♂ of *leonora* in FSCA is a 1971 note by M.J. Westfall, "= *championi* Calvert".

In 1975, M.J. Westfall determined the San Vito, Costa Rica male in FSCA to be conspecific with the holotype. The male from San Vito is the first record from Costa Rica. Among the 14 males in FSCA, half had flavescent wings, half, completely hyaline ones.

PHILOGENIA TERRABA CALVERT

Philogenia terraba CALVERT, 1907: 356 (Pacuare del Sur, Costa Rica, 600 m, 1 ♂); — MUNZ, 1919: fig 59 (wings); — KENNEDY, 1920: figs 113-114 (apex of penis); — CALVERT, 1924: 52 (Costa Rica, 210-600 m, descr., figs, habitat); — CALVERT, 1931: 92 (habitat); — PAULSON, 1982 (Costa Rica).

Type data — The type ♂ in ANSP (CALVERT, 1924) was not examined.

Material examined — COSTA RICA, *Alajuela*, Bonnefil Farm, P.P. Calvert, 20-X-1909, 1 ♂, ANSP; — *Puntarenas*, Esparta, O.S. Flint, 23-VI-1967, 1 ♂, FSCA; — Department ?, Haciendo el Rodeo, 900 m, H.H. & F.M. Brown, 10-VI-1946, 1 ♂, UMAA.

PHILOGENIA EBONA DUNKLE

Philogenia ebona DUNKLE, 1986: 48 (Quibido, 5.4N, 76.4W, Colombia, 1 ♂).

Type data — The holotype ♂ in FSCA was examined.

Other material examined — none.

P. ebona and *tinalandia* are the only species of the genus from the Pacific slope of the Andes.

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