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## NEOTROPICAL HEMEROBIIDAE IN THE UNITED STATES NATIONAL MUSEUM

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By WARO NAKAHARA <sup>1</sup>

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### Introduction

In this paper I present the results of my studies on the Central and South American Hemerobiidae in the collection of the U.S. National Museum. The greater part of this material, consisting of some 200 specimens, has not hitherto been studied although several of the specimens have been previously determined by Banks, Parfin, Townes, or Gurney.

Of the 27 species contained in the collection, 19 are documented here, including 5 that are new and 1 representing a new genus. Eight other species could not be determined specifically because of insufficient material or for other reasons. These, together with the overwhelming majority of some 70 species previously described from the Neotropical region, but not recognized in the material examined, are not included. Many of the older species are described so inadequately that their identification is practically impossible, and this situation is likely to prevail until someone locates the types and makes known the anatomy of the male genitalia.

I wish to thank Dr. Oliver S. Flint, Jr., of the U.S. National Museum, not only for his kindness in permitting me to examine the

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<sup>1</sup> 1141 Mejiro, Toshima-ku, Tokyo, Japan.

material upon which this paper is based, but also for making important suggestions about the identity of some of the species. The material credited to J. F. G. Clarke was collected with the aid of a National Science Foundation grant.

### Subfamily Natiobiellinae

#### Genus *Notiobiella* Banks

##### *Notiobiella rubrostigma* Navás

*Notiobiella rubrostigma* Navás, Broteria, Ser. Zool., vol. 12, p. 228, 1914.

One ♀, Almirante, Panama, Nov. 24, 1952 (F. S. Blanton), in alcohol. One specimen, pinned, without abdomen, San Salvador, El Salvador, without date (P. A. Berry).

These specimens are compatible with the description of *rubrostigma* Navás as well as with that of *callangana* Kimmins (Ann. Mag. Nat. Hist., ser. 11, vol. 6, p. 227, fig. 5, 1940), and I tentatively list them under the older name. It is impossible to tell whether or not this is the same as *callangana* Kimmins since the only difference given by Kimmins concerns the shape of the anal plate of the male.

Forewing nearly 6 mm. long; membrane tinged with brownish and with three perceptibly lighter zones across the wing. Costal crossveins partially fuscous, those near base and humeral recurrent vein totally fuscous; basal subcostal crossvein, crossvein between  $Cu_1$  and  $Cu_2$ , and crossvein connecting first and second radial sectors near base of latter distinctly marked with dark brown; forks of longitudinal veins marked with light brown. Pterostigmatic region containing a carmine red spot contiguous to subcosta. Length of hindwing 4 mm.; pterostigmatic area elongated and totally carmine red; a single discal crossvein between  $R_{4+5}$  and  $M_{1+2}$ , not between M (procubitus) and  $Cu_1$  as given in Navás' original description, probably erroneously.

### Subfamily Hemerobiinae

#### Genus *Symphorobius* Banks

##### *Symphorobius barberi* (Banks)

*Hemerobius barberi* Banks, Proc. Ent. Soc. Washington, vol. 3, p. 241, 1903.

*Symphorobius barberi* Banks, Trans. Amer. Ent. Soc., vol. 32, p. 42, 1905.—  
Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 235, fig. 35, pl. 1, fig. 9, 1940.

One ♂, Sonora, Mexico (P. H. Arnaud); 1 ♀, Cuernavaca, Mexico (N. L. H. Krauss); 1 ♀, Tejupilco, Mexico, June 20, 1933 (H. E. Hinton and R. L. Usinger); 7 specimens, Mexico, with no further datum; 1 ♂, Monterey, Mexico (E. A. Schwarz); 1 ♀ and another specimen without abdomen, Clarión Island, Mexico (H. H. Keifer);

1 ♂, 2 ♀, and 2 other specimens without abdomen, Socorro Island Mexico, (H. H. Keifer); 2 specimens, Piura, Peru (R. A. Berry); 2 specimens, Lima, Peru; 4 specimens, Arequipa, Peru.

This is the most common species of the genus in southern United States and its occurrence in territories farther south is only to be expected. The records from the small islands of Socorro and Clarión may be noteworthy.

#### *Sympherobius angustus* (Banks)

*Hemerobius angustus* Banks, Trans. Amer. Ent. Soc., vol. 30, p. 102, 1904.

*Sympherobius angustus* Banks, *ibid.*, vol. 32, p. 41, 1905.—Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 233, fig. 34, pl. 2, fig. 16, 1940.

*Sympherobius tristis* Navás, Bull. Brooklyn Ent. Soc., vol. 9, p. 15, fig. 2, 1914.

One ♀, Cuernavaca, Mexico, July 1906 (Wm. Schaus), bearing Banks' label ("*Sympherobius angustus* Bks."); 1 ♀, Real de Arriba, Temescaltepec, Mexico (H. E. Hinton and R. L. Usinger); 1 specimen without abdomen, 10 miles south of Jalapa, Mexico (G. E. Bohart).

I refer these specimens to *angustus*. Forewing 5 mm. in length, very slender with very narrow costal space. Color as well as venational characters are compatible with this determination.

#### *Sympherobius arizonicus* Banks

*Sympherobius arizonicus* Banks, Trans. Amer. Ent. Soc., vol. 37, p. 346, 1911.—Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 234, pl. 2, fig. 14, 1940.

One ♀, 18 miles southeast of Guaymas, Sonora, Mexico (R. Ryckman, C. Christianson, and R. Lee).

The very characteristic brown maculation of forewing strongly suggests that the specimen may be *arizonicus*, which has hitherto been known from the unique female type from Arizona.

#### *Sympherobius maculipennis* Kimmins

FIGURE 1; PLATE 1 (FIG. 1)

*Sympherobius maculipennis* Kimmins, Rev. Soc. Ent. Argentina, vol. 9, p. 189, text fig. 3, pl. fig. 1, 1929.

One ♂, Mendoza (Argentina?), Apr. 13–15, 1921, "feeding on coccus on *C. aethiops*"; 1 ♀, Pelotas, Rio Grande do Sul, Brazil, May 10, 1956 (C. Biezanko); 3 ♂ and 1 ♀, Uruguay near Montevideo, May 24, 1946 (P. A. Berry); 1 ♀, Verrugas, Lima, Peru, May 19, 1928 (R. C. Shannon); 1 ♂, in alcohol, Pelotas, Brazil, February 1955 (C. Biezanko), determined by S. Parfin as "near *Sympherobius maculipennis* Kimmins."

Kimmins figured the lateral view of the abdominal apex of the male without giving any description. The structures shown in solid

black in his figure are parts of anal plate and are very characteristic in this species.

Anal plate consisting of two pieces: the upper part, occupying usual position of the plate, narrowly but exceedingly highly sclerotized on the ventrodistal border and produced into a needle-like projection; lower part subquadrate in lateral view with a dorsal projection about equal in length to that of upper part. Lower part apparently corresponding to "internal flap" found in many species of this genus, however, occupying a position ventral to the main body of anal plate. Tenth sternite of the usual type. Paramere with a large spatulate head, which is ventrally bipartite and slightly upturned distally; the fused anterior part about twice as long as the spatulate head. Ninth sternite, forming a short subgenital plate, smaller than average for the genus, but not so small as represented in Kimmins' figure.

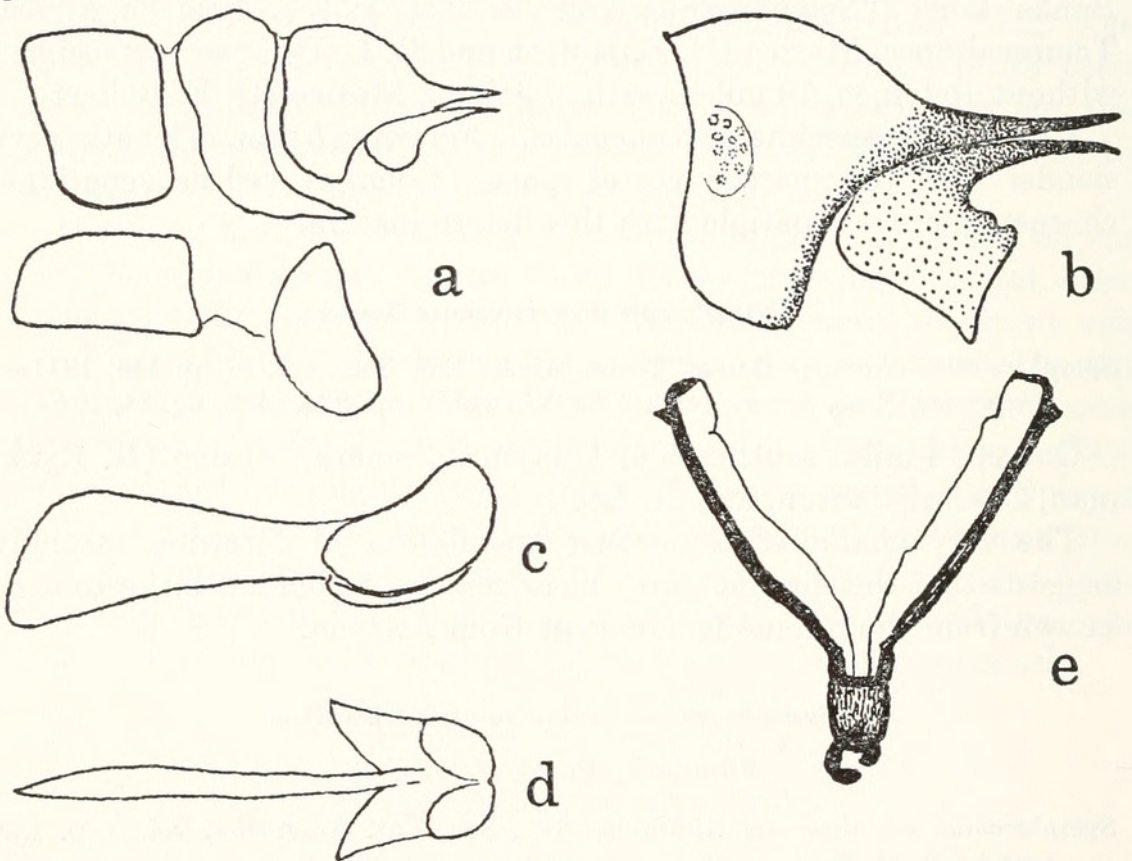


FIGURE 1.—*Sympherobius maculipennis* Kimmins (male genitalia): *a*, apex of abdomen, lateral view; *b*, anal plate, lateral view; *c*, parameres, lateral view; *d*, parameres, dorsal view; *e*, 10th sternite, dorsal view.

The unique structure of the anal plate strongly suggests that this species should be separated generically from *Sympherobius*, and this idea is supported by venational characters, which show essential agreement with those of *Sympheromima* Kimmins ("Eos," Rev. Espan. Ent., vol. 4, p. 363, 1928). Thus, the first branch of the radial sector and media are forked more than once before the outer

gradates, and there are five and six crossveins, respectively, to the outer and inner gradate series.  $Cu_1$  is more heavily branched than in the typical *Symphorobius*, and the first and second branches, with the sixth crossvein of the inner gradate series, form a closed cell, the like of which is not found in any species of true *Symphorobius*. In *maculipennis* the first radial sector is often split into two as in the case of the individual shown in plate 1 (fig. 1). Unfortunately *Symphoromima marginata* Kimmins, the sole species and the type of the genus, was described from a single specimen lacking an abdomen, and hence nothing is known of its genitalic characters. This circumstance makes it difficult to place *maculipennis* under *Symphoromima* with assurance, and I retain this species in *Symphorobius* for the present.

### Genus *Nomerobius* Navás

#### *Nomerobius psychodoides* (Blanchard)

*Megalomus psychodoides* Blanchard, in Gay, Hist. Chile, Zool., vol. 6, p. 127, 1861.

*Symphorobius modestus* Banks, Proc. Ent. Soc. Washington, vol. 12, p. 158, 1910.

*Nomerobius psychodoides* Navás, Mem. R. Acad. Cien. Art. Barcelona, vol. 12, p. 131, 1915.—Nakahara, Mushi, vol. 34, p. 22, figs. 31–34, pl. 8, fig. 16, 1960.

One ♂, Bariloche, Río Negro, Argentina, November 1926 (R. and E. Shannon), bearing Banks' label "*Nomerobius modestus* Bks."; 1 ♂, Valparaíso, Chile (Cockerell).

This species was fully described very recently (Nakahara, loc. cit.).

#### *Nomerobius marmoratus* (Navás), new combination

*Symphorobius marmoratus* Navás, Broteria, Ser. Zool., vol. 9, p. 70, 1910.—Kimmins, Rev. Soc. Ent. Argentina, vol. 9, p. 188, fig. 2, 1929.—Nakahara, Mushi, vol. 34, p. 20, pl. 7, fig. 14, 1960.

Two ♀, Argentina (without further locality data), May 25, 1927.

This species should be placed under *Nomerobius* because of the long, interrupted series of outer gradate crossveins, the apical series consisting of three or four and the posterior series of two or three crossveins, with an interruption between the two series. The inner gradate series consists of four crossveins.

### Genus *Pseudomicromus* Krüger

#### *Pseudomicromus subanticus* (Walker)

*Hemerobius subanticus* Walker, List Neuroptera Brit. Mus., vol. 2, p. 282, 1853.

*Micromus angustus* Hagen, Proc. Boston Soc. Nat. Hist., vol. 23, p. 287, 1886.

*Micromus subanticus*.—Banks, Trans. Amer. Ent. Soc., vol. 32, p. 46, 1906.—Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 250, fig. 53, pl. 2, fig. 22, 1940.

*Micromus nesoticus* Navás, Brooklyn Ent. Soc., vol. 9, p. 16, fig. 3, 1914.

*Pseudomicromus subanticus*.—Nakahara, Mushi, vol. 34, p. 32, figs. 62–64, 1960.

One ♀, Mexico at Brownsville, Tex., Gateway Bridge, Mar. 9, 1937, in alcohol. This specimen was determined by A. B. Gurney as "*Micromus subanticus* (Walker)."

***Pseudomicromus variolosus* (Hagen)**

*Micromus variolosus* Hagen, Proc. Boston Soc. Nat. Hist., vol. 23, p. 284, 1886.—Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 251, fig. 54, pl. 2, fig. 21, 1940.

*Pseudomicromus variolosus*.—Nakahara, Mushi, vol. 34, p. 32, 1960.

One ♀, Mexico, May 12, 1943, on parsley, determined as "*Micromus variolosus*" by H. Townes.

***Pseudomicromus fuscatus*, new species**

PLATE 1 (FIG. 2)

Holotype ♀, Real de Arriba, Temescaltepec, Mexico, May 23, 1933 (H. E. Hinton and R. L. Usinger). Right wings mounted dry on a slide, USNM type 66866.

Length of body 6.5 mm.; length of forewing 8.5 mm.; width 2.5 mm.; length of hindwing 7 mm.

Head, thorax, and abdomen nearly uniformly very dark grayish brown, almost blackish; antennae nearly black; legs slightly paler.

Forewing very slender, produced into subacute apex; membrane unspotted, almost uniformly tinged with light brown, slightly more intensely toward apical and hindmarginal areas and in the narrow mediocubital cell; pterostigmatic area more brownish; venation wholly dark brown. Four or five branches to radius;  $M_{3+4}$  and  $Cu_1$  connected by a very short crossvein; five or six crossveins to inner and seven to outer gradate series, these crossveins being separate from each other by more than their length; radius, two gradates, and outer margin of the wing nearly parallel and about the same distance apart. Hindwing hyaline, slightly brownish toward apex, with brownish pterostigmatic area; veins, including gradate crossveins, all brownish;  $M_{3+4}$  not running into  $Cu_1$ .

The large size, narrow forewing with subacute apex, and almost uniformly brownish membrane form a combination of characters that readily distinguishes this species. I tentatively place it in the genus *Pseudomicromus* on the assumption that it may be related to *subanticus* and *variolosus*, but examination of male genitalia is required to confirm this generic designation.

**Genus *Ameromicromus* Nakahara*****Ameromicromus posticus* (Walker)**

*Hemerobius posticus* Walker, List Neuroptera Brit. Mus., pt. 2, p. 283, 1853.

*Micromus insipidus* Hagen, Smithsonian Misc. Coll., vol. 4, art. 1, p. 199, 1861.

*Micromus sobrinus* Hagen, loc. cit.

*Micromus posticus*.—Banks, Trans. Amer. Ent. Soc., vol. 32, p. 45, 1905.—Carpenter, Proc. Amer. Acad. Arts Sci., vol. 74, p. 248, fig. 51, 1940.

*Ameromicromus posticus*.—Nakahara, Mushi, vol. 34, p. 33, figs. 68–70, 1960.

One ♂ and 1 ♀, Tamazunchale, San Luis Potosí, Mexico (G. E. Bohart); 1 ♂, 26 miles east of Ciudad del Maiz, San Luis Potosí, Mexico (H. B. Leech).

I am not aware of any previous record from Mexico of this common Nearctic species.

**Genus *Nusalala* Navás*****Nusalala colombiensis* (Banks)**

*Boriomyia colombiensis* Banks, Proc. Ent. Soc. Washington, vol. 12, p. 157, 1910.

*Nusalala colombiensis*.—Kimmins, Ann. Mag. Nat. Hist., ser. 10, vol. 17, p. 576, 1936.

One ♀ (syntype), San Antonio, 2000 m., western Colombia (Fassl), determined by Sophy Parfin as *Nusalala colombiensis* (Banks).

The forewing is distinctively marked but the specimen before me is discolored by adherent extraneous matter.

***Nusalala krügeri*, new species****FIGURE 2; PLATE 1 (FIG. 3)**

Holotype ♂, Córdoba, Mexico, Jan. 1, 1941 (G. E. Bohart). Right wings (dry) and dissected parts of genitalia (in balsam) mounted on two slides, USNM type 66867.

Face fulvous, with a large black spot in middle of frons; brownish around antennal socket and continued to vertex; palpi and antennae fulvous. Thorax fulvous, variegated with fuscous above. Legs pale fulvous, front femur with a brownish band distally, front and middle tibia marked with brownish band proximally as well as distally, and hindtibia marked with brown only distally. Abdomen fulvous.

Forewing 10 mm. in length; membrane very slightly tinged with pale brownish, covered with numerous fine and short brownish striae. Venation mostly brownish; outer gradates fuscous black and narrowly margined with brown; middle gradates, first branch of radius beyond middle and first branch of  $Cu_1$  also fuscous black and margined with brown; tiny round or oblong spots on these gradate crossveins; inner gradate crossveins wholly very pale. Costal area very narrow at base, but humeral crossvein recurrent with distinct branches; many

costal crossveins connected with each other transversely by small veinlets at level of their forks. Radius with four branches, apical branch forking twice before outer gradate; media forking at about the level of origin of first branch of radius;  $M_{3+4}$  coalescing with  $Cu_1$  for a short distance; three series of gradate crossveins, 4 crossveins to inner, 5 to middle, and 10 to outer gradate series.

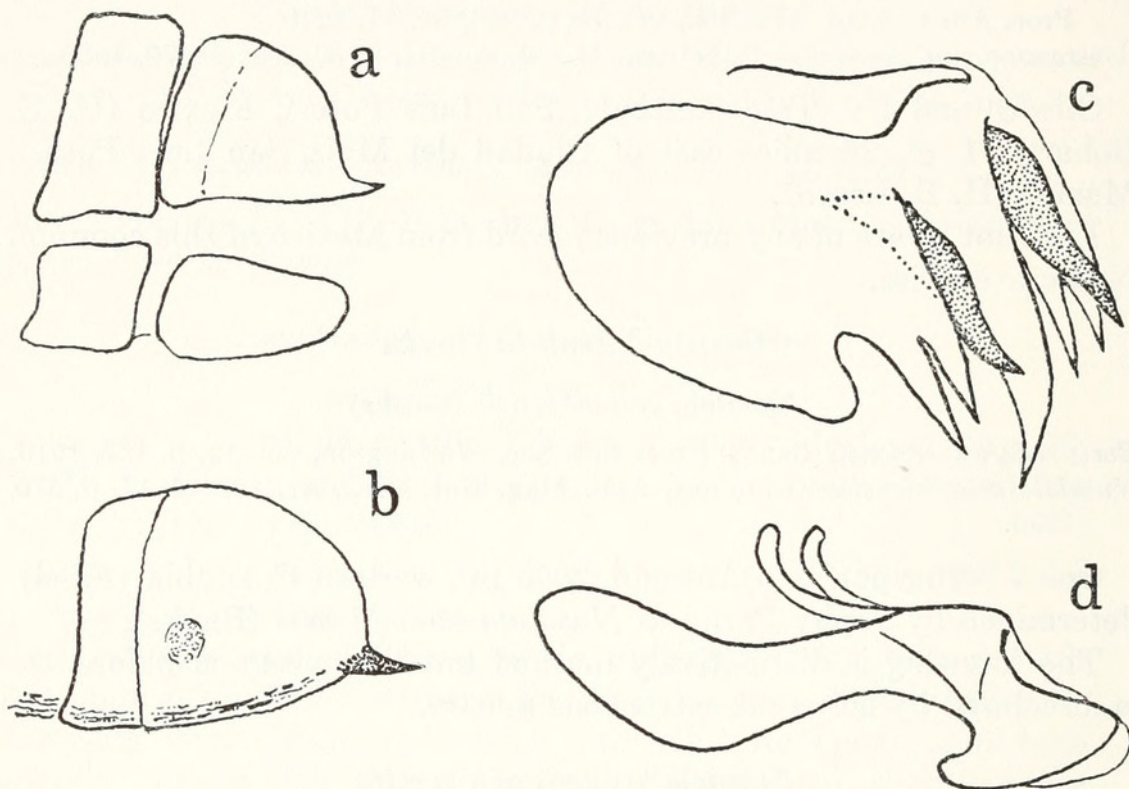
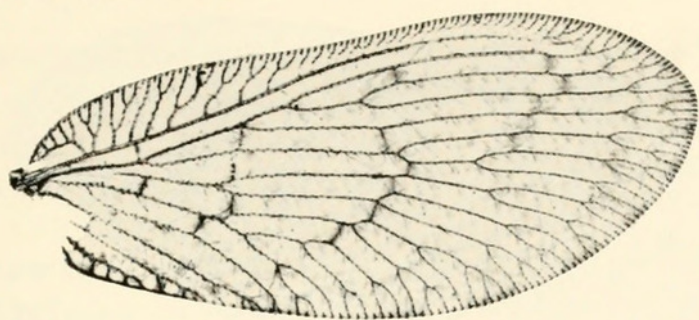


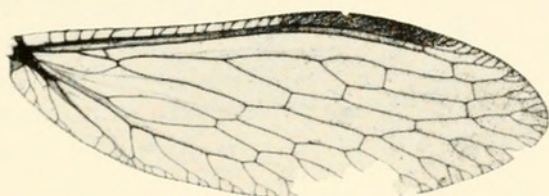
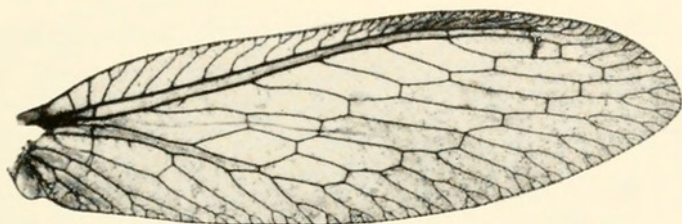
FIGURE 2.—*Nusalala krügeri*, new species (male genitalia): *a*, apex of abodmen, lateral view; *b*, anal plate, lateral view; *c*, 10th sternite, lateral and slightly dorsal view; *d*, parameres, lateral view.

Hindwing 8 mm. in length; membrane hyaline, narrowly tinged with fulvous in costal area, and narrowly grayish along outer and hindmargins; outer gradates almost black; inner gradates and adjacent portions of longitudinal veins fuscous; first branch of  $Cu_1$  most conspicuously fuscous. Five branches to radial sector, six crossveins to inner, and nine to outer gradate series.

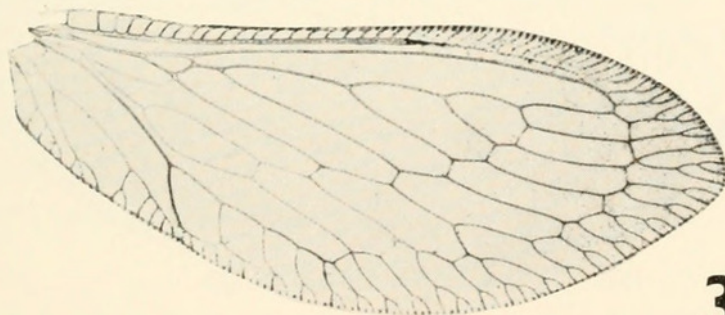
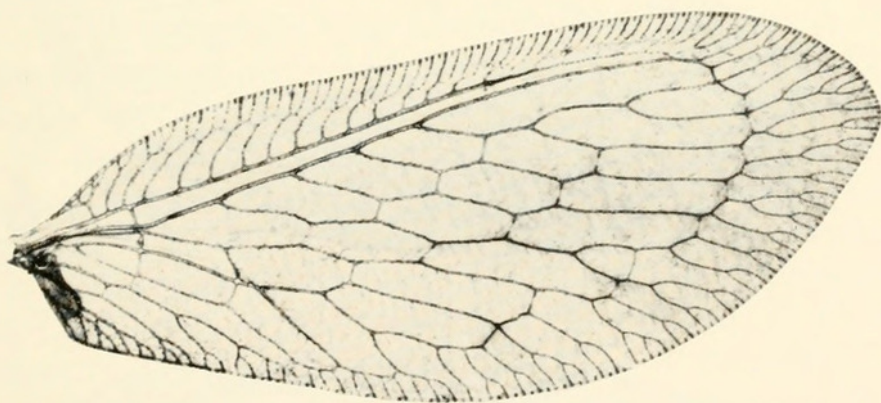
Male genitalia: Anal plate subtriangular in lateral view with ventrodistal angle produced into an acute spinous projection; projection arising from apodeme along the lower margins of anal plate and ninth tergite and extending basally into eighth segment. Ninth sternite, forming subgenital plate below anal plate, with rounded distal margin. Tenth sternite with large, oblong lateral "wings," each produced into a short roundish lobe at ventrodistal angle; mid-dorsal part of bridge between "wings" raised into a prominence, and from below this dorsal prominence arises single long, tapering aedeagus with an acute apex; three pointed processes of about equal length on



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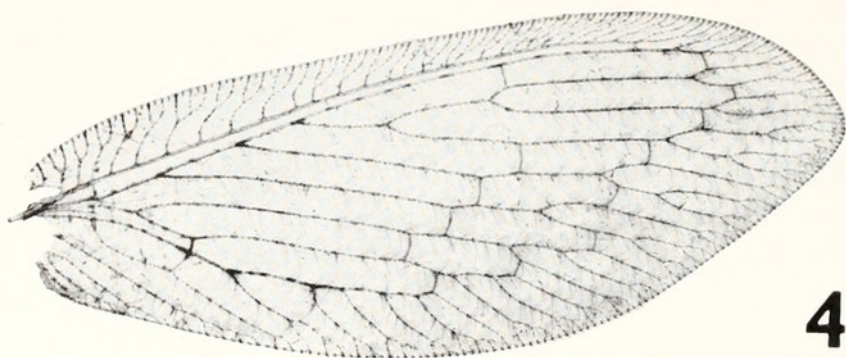


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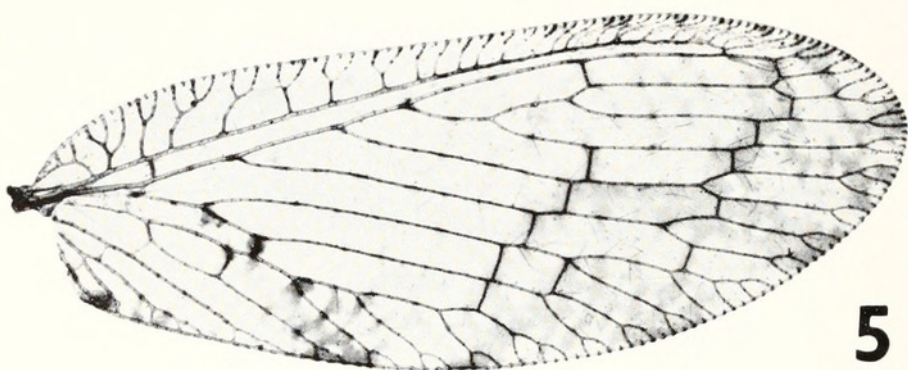


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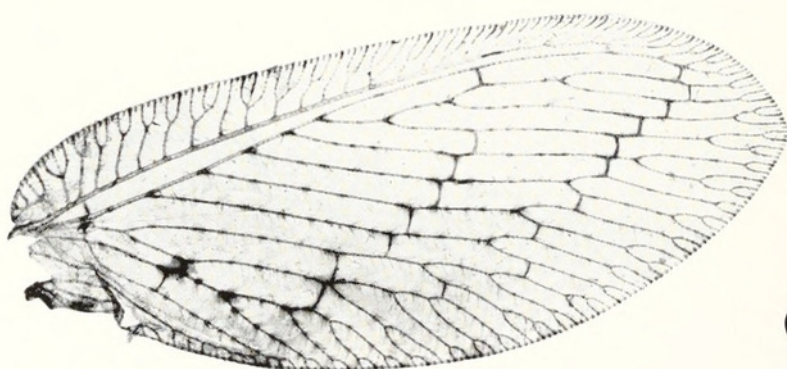
FIGURES 1-3.—1, *Sympherobius maculipennis* Kimmins, forewing; 2, *Pseudomicromus fuscatus*, new species, fore- and hindwings; 3, *Nusalala krügeri*, new species, fore- and hindwings.



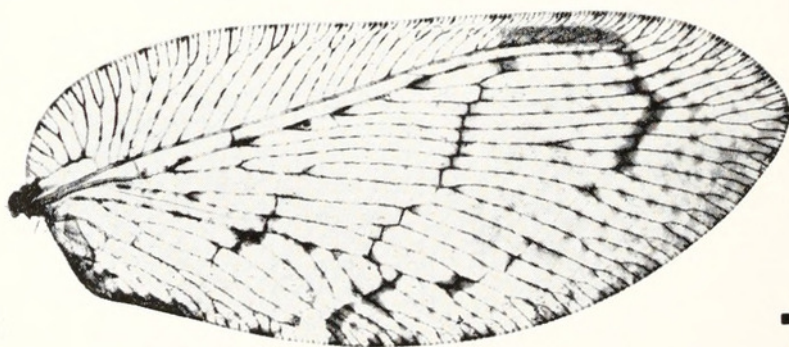
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FIGURES 4-7.—4, Forewings: *Hemerobius tolimensis* Banks; 5, *Hemerobius chilensis*, new species; 6, *Hemerobius exceptatus*, new species; 7, *Spinomegalomus flinti*, new genus and new species.

each side of aedeagus, all slightly shorter than aedeagus, parameres fused, bladelike for their basal two-thirds, apically forming a pair of oblong lobes; a pair of long, slender processes arises from about point of separation of parameres on dorsal side, directed proximally and then dorsally.

This new species can be recognized at once by the costal crossveins in forewing being very regularly crossed transversally by small veinlets. It represents, in all probability, Krüger's genus *Palaeomicromus* (Stettin Ent. Zeit., vol. 83, p. 170, 1922) based on "H (!) *schmidtii* n. sp." from South America, which has never been described. The genitalic characters, however, are absolutely those of the genus *Nusalala*.

### Genus *Hemerobius* Linnaeus

#### *Hemerobius blanchardi* Nakahara

*Megalomus pallidus* Blanchard, in Gay, Hist. Chile, Zool., vol 6, p. 126, 1851.

*Schneiderobius pallidus*.—Krüger, Stettin Ent. Zeit., vol. 83, p. 171, 1922.

*Hemerobius pallidus*.—Navás, Mem. R. Soc. Espan. Hist. Nat., vol. 16, p. 319, 1929. [Preoccupied by *Hemerobius pallidus* Stephens (1836).]

*Hemerobius blanchardi* Nakahara, Mushi, vol 34, p. 48, fig. 102, pl. 12 (fig. 24), 1960.

There are over 70 specimens, some in alcohol, from various localities in Peru, Brazil, Uruguay, Chile, and Argentina as follows: 47 specimens, Cañete, Peru, May and June 1941, "from cage with cotton buds," and 6 specimens from the same locality, Mar. 2, 1943, "predaceous on corn Aphis" (E. J. Hambleton); 1 specimen, Piura, Peru, September 1941 (P. A. Berry); 1 specimen, Pelotas, Brazil, November 1955 (C. Biezanko); 2 ♂, Montevideo, Uruguay, Nov. 23, 1954 (C. Biezanko); 2 specimens, Concepción, Chile, October 1927 (Jaffuel and Pirion) and Oct. 28, 1958 (Crampas); 4 specimens, Santiago, Chile, Dec. 2, 1940, "with mealy bugs" (G. O. Faure); 7 specimens, Puerto Varas, Llanquihue Prov., Chile, Mar. 5, 1959 (J. F. G. Clarke); 1 specimen, Salta, Argentina, May 12, 1927 (M. Kislink); 1 specimen, Catamarca, Argentina, June 2, 1927 (M. Kislink); 1 specimen, Correntoso, Río Negro, Argentina, November 1926 (R. and E. Shannon).

This is by far the most common Neotropical hemerobiid and the most widely distributed. The genitalic characters were fully described by Nakahara (loc. cit.).

#### *Hemerobius tolimensis* Banks

FIGURES 3a-c; PLATE 2 (FIG. 4)

*Hemerobius tolimensis* Banks, Proc. Ent. Soc. Washington, vol. 12, p. 158, 1910.

One ♂ and 2 ♀, Real del Monte, Hidalgo, Mexico (W. B. Kearfott); 1 ♂ and ♀, pine forest 7 miles south of Manzanitla, Mexico (H.

B. Leach); 1 ♀, Mexico City (R. Muller); 1 ♀, 10 miles south of Jalapa, Mexico (G. E. Bohart); 1 ♀, Real de Arriba, Temascaltepec, Mexico (H. E. Hinton and R. L. Ussinger); 1 ♀, Irazú, Costa Rica, 2300–2500 m., May 21–28, 1930 (Reimoser); 3 ♀, one bearing Banks' label "*Hemerobius tolimensis*," Irazú, Costa Rica (Schild-Burgdolf collection); 1 ♀, Chicó, Cundinamarca, Colombia, 2800 m., Jan. 24, 1959 (J. F. G. Clarke); 1 ♀, Barranquilla, Colombia, Mar. 20, 1952, labeled by Parfin as near *Hemerobius tibialis* Navás or *H. tolimensis* Banks (J. H. Hughes); 1 ♀, Valle Medellín, Colombia, September 1945 (F. Gallego); 1 ♀, Volcan, Sta. Maria, Guatemala (Schaus and Barnes).

This species is close to *Hemerobius pacificus* Banks, from which it can be distinguished by the somewhat narrower forewing with an "almost acute" apex. The male genitalia are also very much like those of *pacificus*, differing conspicuously by the presence of a rather large spiny process slightly anterior to apex of the upper arm of the bifurcate anal plate. This process is directed inward and only slightly upward so that often it is not seen in a lateral view of the anal plate. The shape of the anal plate is otherwise like that in *pacificus*. The processes of the aedeagus are also of the same type. The dilated part of each paramere is produced into a long, curved projection.

*Hemerobius chilensis*, new species

FIGURES 3d–f; PLATE 2 (FIG. 5)

Holotype ♂ and allotopotype ♀, in alcohol, 5 km. NW. of Punta Arenas, Chile, 200 m., Feb. 26, 1959 (J. F. G. Clarke); paratopotypes, 2 ♀, in alcohol, Mar. 3, 1959 (J. F. G. Clarke); paratypes, 1 ♀ in alcohol, Magallanes, Rio Tres Pasos, Chile, Dec. 11, 1961 (T. Cekalovic), 1 ♀, pinned, Magallanes, Rio Chabunco, Chile, Feb. 18, 1956 (T. Cekalovic), labeled "*Hemerobius* sp. nr. *pallidulus* Kimmins" by S. Parfin, USNM type 66868.

Head fulvous yellow; cheek brownish; palpi fulvous yellow; antennae paler yellow. Pronotum with yellow median band, broadly brown on sides; meso- and metanotum more broadly yellowish in middle, variegated with dark brown on sides. Legs pale. Abdomen brownish.

Forewing 6.5 mm. in length, elongate oval, apex rounded; membrane hyaline with very distinct markings: two brown fasciae over gradates, one over outer gradates intersected by a broad brown zone occupying space between first and second branches of radial sector external to inner gradates and extending to wing margin. Some distinct maculations in apical and hindmarginal areas; a very dark spot over each of following: crossvein m-cu, first fork of M, first fork of Cu<sub>1</sub>, and over the cubital crossvein. Venation sparsely spotted with brown. Three branches to radius; basal crossvein between R and M at very origin

of latter and exceedingly short; crossvein m-cu not very short; second cubital cell not closed; five crossveins to inner and seven to outer gradate series. Hindwing hyaline, unmarked except for a pale brownish shading at marginal cubitoanal area and in pterostigmatic region. First branch of radial sector arising directly from  $R_1$ , separate from the remaining two branches, giving the appearance of two radial sectors.

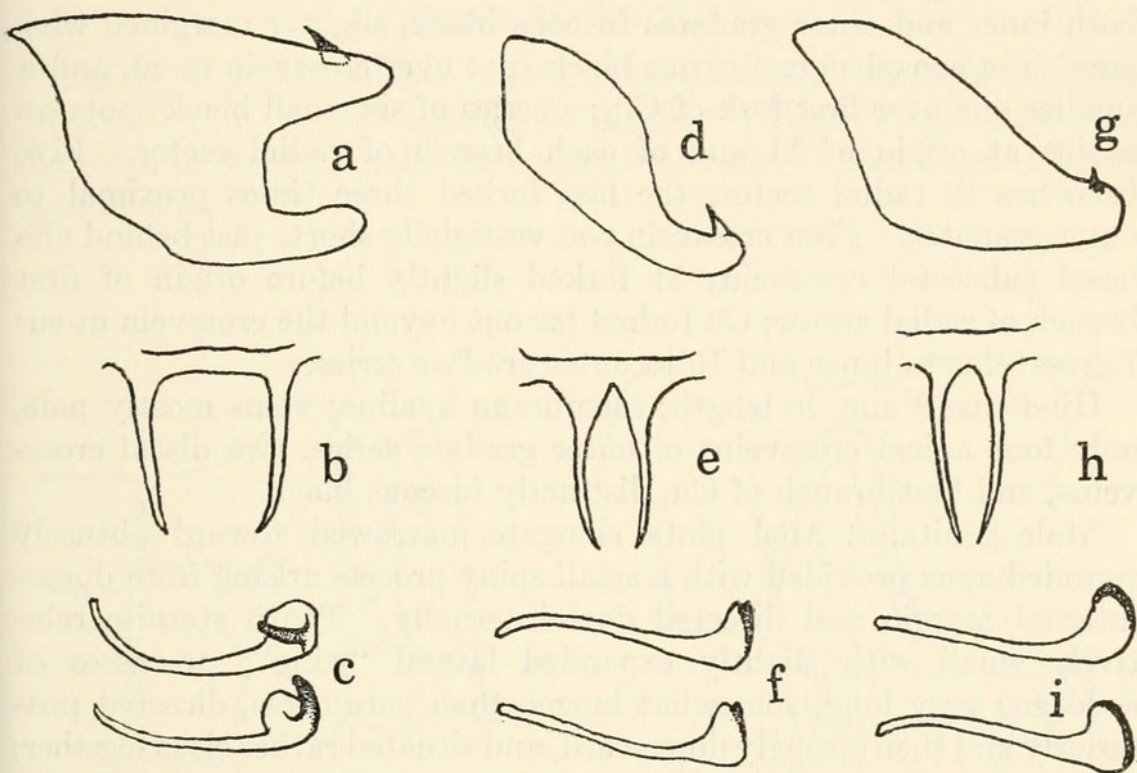


FIGURE 3.—Male genitalia: *Hemerobius tolimensis* Banks (a-c); *Hemerobius chilensis*, new species (d-f); *Hemerobius exceptatus*, new species (g-i). Anal plate, lateral view (a, d, g); processes of aedeagus, dorsal view (b, e, h); parameres (c, f, i).

Male genitalia: Anal plate narrow, especially so in its distal one-third; apex obtusely rounded and provided with an acute spiny process directed inward and upward. Tenth sternite of the usual form; processes of aedeagus long, slender, and very close together at their broadened bases. Apical dilatations of parameres roundish in outline, with narrow, raised ridge along the external margin.

***Hemerobius exceptatus*, new species**

FIGURES 3g-i; PLATE 2 (FIG. 6)

Holotype ♂, Cundinamarca near Guasca, Colombia, 3500 m., Jan. 3, 1959 (J. F. G. Clarke); right wings (dry) and dissected parts of genitalia (in balsam) mounted on two slides, USNM type 66869.

Head fulvous yellow with fuscous brown gena; palpi brownish; basal joint of antennae yellowish (the rest of antennae missing).

Pronotum fulvous yellow, narrowly reddish brown on sides; reddish-brown bands broader on mesonotum, and extending onto metanotum, leaving a narrow yellowish line in middle; legs testaceous yellow, distal end of hindtibia and femur slightly marked with brownish. Abdomen brownish.

Forewing 9.5 mm. in length, 4 mm. in width; membrane faintly tinged with gray; venation largely testaceous and dotted with brown; both inner and outer gradates fuscous black, slightly margined with grayish; a conspicuous fuscous black spot over crossvein m-cu, and a smaller one over first fork of Cu<sub>1</sub>; a series of six small black spots on radius at origin of M and of each branch of radial sector. Five branches to radial sector, the last forked three times proximal to outer gradates. First crossvein r-m vestigially short, just behind the basal subcostal crossvein; M forked slightly before origin of first branch of radial sector; Cu forked far out beyond the crossvein m-cu; 7 crossveins to inner and 10 to outer gradate series.

Hindwing 9 mm. in length; membrane hyaline; veins mostly pale, only four apical crossveins of outer gradate series, two discal crossveins, and first branch of Cu<sub>1</sub> distinctly fuscous black.

Male genitalia: Anal plate elongate, narrowed toward obtusely rounded apex provided with a small spiny process arising from dorso-internal margin and directed dorsointernally. Tenth sternite relatively small with slightly expanded lateral "wing"; processes of aedeagus very long, somewhat longer than parameres, directed posteriorly and then strongly downward, and situated rather close together; each aedeagal process very fine and almost uniformly slender for the whole length. Parameres roundly dilated distally, each with a heavily sclerotized apical border.

This is an exceptional species on account of the great development of the radial sector: not only are there five, instead of the usual three, branches arising from radius, but the last branch is forked three times before the outer gradates. This indicates that the increased number of branches is real, not due to mere proximal displacement of the branches usually present.

### *Spinomegalomus*, new genus

A peculiarity of this genus consists in the prolongation of the seventh abdominal tergite in the male into a long dorsal process. Genitally, the anal plate is very long and narrow, contrasted to the subtriangular form in *Megalomus*. In finer morphology of the male genitalia, this genus differs from *Megalomus* by the epimeres being fused onto the dorsolateral margin of the wings of the tenth sternite, absence of phallobase, presence of hypomeres, and completely fused parameres of peculiar structure.

Type species: *Spinomegalomus flinti*, new species.

This genus cannot be clearly separated from *Megalomus* in venational characters. There are a few crossveins connecting the branches of the radial sectors in the forewing near their bases. These basal-radial crossveins may be of phylogenetic significance.

*Spinomegalomus flinti*, new species

FIGURE 4; PLATE 2 (FIG. 7)

Holotype ♂, Magallanes, Punta Arenas, Chile, ex *Berberis buxifolia*, Nov. 21, 1961 (T. Cekalovic) in alcohol. Right wings (dry) and dissected parts of genitalia (in balsam) mounted on two slides, USNM type 66870.

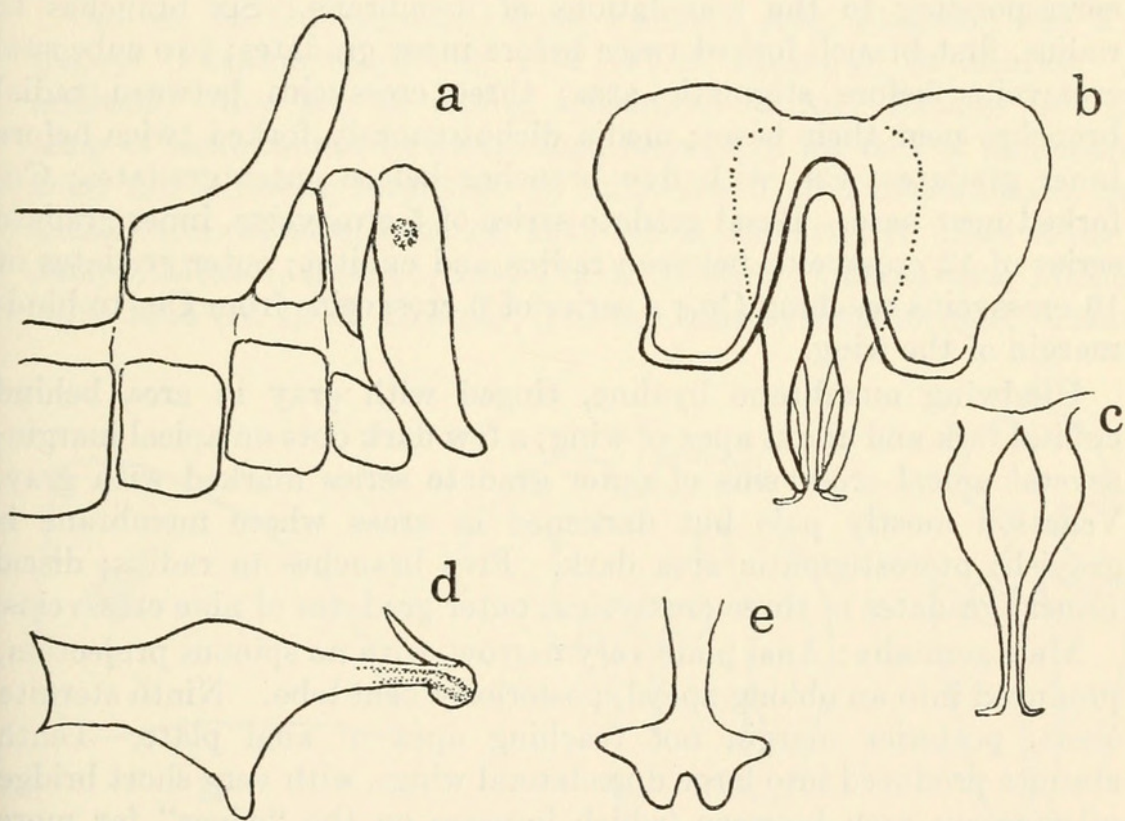


FIGURE 4.—*Spinomegalomus flinti*, new genus and species (male genitalia): *a*, apex of abdomen, lateral view; *b*, 10th sternite, dorsal view; *c*, inferior processes (hypomeres) of 10th sternite, ventral view; *d*, parameres, lateral view; *e*, apex of parameres, dorsal view.

Face fuscous, almost black, paler on sides below the eyes; vertex fuscous black in middle; palpi and antennae fuscous. Pro- and mesonotum fuscous black with three irregular and broken longitudinal pale stripes, median one very narrow and two lateral ones broader; mesoscutellum pale; metanotum fuscous, paler in middle, with two black spots on metascutum. Legs pale, except tibia of foreleg, which is marked with fuscous in front along basal one-third and near distal end. Abdomen marmorated with fuscous brown dorsally; middorsal part of seventh

tergite produced into a long process with obtuse end, directed dorsally, almost at right angles to the axis of the body.

Forewing 8.5 mm. in length; costal area very broad, most abruptly broadened at base; apex narrowly rounded. Membrane hyaline with partially confluent pale gray maculations and alternate blackish and whitish short streaks along margin; blackish streak over several apical crossveins of outer gradate series; lighter colored streaks over anterior half of inner gradate series; bases of radial branches marked with blackish spots; a black spot over outermost crossvein m-cu; another black mark over first fork of  $Cu_1$  and the crossvein just behind it. A narrow hyaline-white area from hindmargin inward at cubitoanal junction, bordered with a blackish streak on outer side. Venation pale, whitish, spotted and streaked with blackish at sites corresponding to the maculations of membrane. Six branches to radius, first branch forked twice before inner gradates; two subcostal crossveins before stigmatic area; three crossveins between radial branches near their bases; media dichotomously forked twice before inner gradates;  $Cu_1$  with five branches before outer gradates;  $Cu_2$  forked near base. Basal gradate series of 5 crossveins, inner gradate series of 12 crossveins between radius and cubitus; outer gradates of 16 crossveins reaching  $Cu_1$ ; a series of 6 crossveins from  $Cu_1$  to hindmargin of the wing.

Hindwing membrane hyaline, tinged with gray in area behind cubital fork and about apex of wing; a few dark dots on apical margin; several apical crossveins of outer gradate series marked with gray. Venation mostly pale but darkened in areas where membrane is grayish; pterostigmatic area dark. Five branches to radius; discal (inner) gradates of three crossveins; outer gradates of nine crossveins.

Male genitalia: Anal plate very narrow, with no spinous projection, produced into an oblong apical, posteriorly bent lobe. Ninth sternite short, posterior margin not reaching apex of anal plate. Tenth sternite produced into large dorsolateral wings, with very short bridge of gonarcus arch between (which imposes on the "wings" far more dorsal positions than usual for the family); epimeres fused into dorsal border of "wings"; aedeagus paired, each lobe very slender, fused at base without showing recognizable phallobase; a pair of long and slender processes below aedeagus, superposed by processes of the latter. (These hypoaedeagal processes may be termed hypomeres.) Parameres fused, presenting a long subquadrate shape in dorsal view, produced sharply at corners and with distal prolongation ending in an apically bipartite head with lateral lobes. In lateral view, the lateroanterior angle appears as an obtuse ventral prolongation, and the distal "head" presents the shape of a large pointed process which is recurved over the narrow neck.



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