

Eighty-four New Cricket Species (Orthoptera: Grylloidea) from La Selva, Costa Rica

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The following report is on a collection of crickets made by the Costa Rican ALAS Project (Arthropods of La Selva). Collections were made along two transects. The first is the La Selva Biological Station, located in Costa Rica, Heredia Province, 10° 26' N, 84° 01' West, 50-150m elevation. This is a lowland rainforest reserve of approximately 1500ha (McDade et al. 1993). The Station has about 73% of its area under primary tropical rain forest. The second is a montane rain forest: Heredia Province, 16 km SSE of La Virgen, 10°16'N 84°05'W, 1050 - 1150 m. The scope of the ALAS project is outlined in <http://www.ots.duke.edu/en/laselva/>

Virtually all crickets were captured with Malaise traps (Marris House, with black vertical panel and white roof). A program of quantitative sampling was initiated in March, 1993. Sixteen areas were selected on a La Selva station map, stratified by soil type (alluvial vs. residual) and forest type (primary vs. secondary). Malaise traps consisted of open-sided tents with a collecting head in which flying or crawling arthropods were trapped and accumulated. The collecting head was a plastic bottle containing 75% ethanol. Malaise traps were placed in light gaps and potential flyways and maintained from March 1993 to March 1994, for a total of 13 months. At the beginning and the middle of each month, the collecting bottle with accumulated arthropods was removed and replaced with a fresh bottle of ethanol.

LIST OF SPECIES

SUBFAMILY GRYLLOINAE

ANUROGRYLLUS Saussure

Anurogryllus matheticos new species

Anurogryllus ephylos new species

Anurogryllus muticus De Geer

MIOGRYLLUS Saussure

Miogryllus amatorius new species

Miogryllus scythros new species

Miogryllus pammelas new species

SUBFAMILY NEMOBIINAE

NEMOBIUS Serville

Nemobius elegans new species

PTERONEMOBIUS Jacobson and Bianchi

Pteronemobius eneplos new species

ABSONEMOBIUS Desutter-Grandcolas

Absonemobius alatus new species

SUBFAMILY TRIGONIDIINAE

ANAXIPHA Saussure

Anaxipha championi Saussure

Anaxipha cayennensis Saussure

Anaxipha hypaerios new species

Anaxipha peregrina new species

Anaxipha pteticos new species

Anaxipha dapsiles new species

Anaxipha epicydes new species

Anaxipha minuta Linne

Anaxipha prosenes new species

Anaxipha vera new species

Anaxipha hyalodes new species

Anaxipha praepostera new species

Anaxipha agaea new species

Anaxipha volucer new species

Anaxipha incompta Walker

Anaxipha adventicia new species

Anaxipha exagistos new species

Anaxipha hypergios new species

Anaxipha nava new species

Anaxipha laepseros new species

Anaxipha tychicos new species

Anaxipha othnia new species

Anaxipha allotria new species

Anaxipha nigrellus (Hebard)

- SYMPHYLOXIPHUS** Rehn
Symphylloxiphus magnificus Rehn
Symphylloxiphus impigra new species
Symphylloxiphus abbreviatus Bruner
Symphylloxiphus riveti Chopard
Symphylloxiphus varians Hebard
Symphylloxiphus pictus Saussure
- HEBARDINELLA** Chopard
Hebardinella americana Chopard
- TRIGONIDIUM** Brunner v. W.
Trigonidium bifasciatum (Shiraki)
- MACROANAXIPHA** Hebard
Macroanaxipha macilenta Saussure
- PHYLLOSCYRTUS** Guerin-Meneville
Phylloscyrtus cincidelloides Gerstaecker
Phylloscyrtus viridicatus Saussure
Phylloscyrtus magdalenae
Phylloscyrtus amoenus Burmeister
- CYRTOXIPHA** Saussure
Cyrtoxipha confusa TJ Walker
Cyrtoxipha nola TJ Walker
- CRANISTUS** Stal
Cranistus canotus Saussure
- PHYLLOPALPUS** Uhler
Phyllopalpus brunnerianus Saussure
Phyllopalpus caeruleus Saussure
Phyllopalpus pulchellus Uhler
- Subfamily PENTACENTRINAE
NEMOBIOPSIS Bruner
Nemobiopsis eugethes new species
- Subfamily ENEOPTERINAE
ENEOPTERA Burmeister
Eneoptera spodios new species
Eneoptera panoplos new species
Eneoptera surinamensis De Geer
- Subfamily PHALANGOPSINAE
PARAGRYLLUS Guerin
Paragrillus eclogos new species
- ACLODES** Hebard
Aclodes scandens new species
Aclodes orchestes new species
Aclodes herpon new species
Aclodes turbidus new species
- SELVACLA** new genus
Selvacla troxalis new species
Selvacla choreutes new species
Selvacla saltator new species
Selvacla alsiosus new species
Selvacla sophos new species
- YOYUTERIS** Ruiz and Otte
Yoyuteris ballator new species
Yoyuteris epiroticos new species
- PARACLODES** Desutter-Grandcolas
Paracloides minor new species
- AMPHIACUSTA** Saussure
Amphiacusta rica new species
Amphiacusta diaphoros new species
Amphiacusta digrediens new species
Amphiacusta salticus new species
- LEPTOPEDETES** Desutter-Grandcolas
Leptopedetes idalimos new species
- LUZARA** Walker
Luzara phyxelis new species
Luzara catherpon new species
- Subfamily PODOSCIRTINAE
PAROECANTHUS Saussure
Paroecanthus exaetos new species
Paroecanthus versutus new species
Paroecanthus pipizon new species
Paroecanthus optivus new species
Paroecanthus desumptus new species
Paroecanthus eudoxos new species
- APHONOMORPHUS** Rehn
Aphonomorphus bicolor Hebard
Aphonomorphus ferox new species
Aphonomorphus halans new species
Aphonomorphus socors new species
Aphonomorphus beltistos new species
Aphonomorphus celeticos new species
- HAPITHUS** Uhler
Hapithus auditor new species
Hapithus libratus new species
Hapithus symphonos new species
Hapithus onesimos new species
- OROCHARIS** Uhler
Orocharis legnotos new species
Orocharis habros new species
Orocharis taciturnus new species
Orocharis eclectos new species
Orocharis aeschyntelos new species
Orocharis apogon new species
Orocharis curiosus new species
Orocharis epipolios new species
Orocharis tolmeros new species
- PHYLLOGRYLLUS** Saussure
Phyllogryllus dasos new species
Phyllogryllus eusemos new species
- TAFALISCA** Walker
Tafalisca furfurosa new species
- STENOGRYLLUS** Saussure
Stenogryllus pudens new species
- SELVAGRYLLUS** new genus
Selvagrillus spizon new species
- SUBFAMILY LANDREVINAE
LANDREVA Walker
Landreva rica new species
- SUBFAMILY EUSCYRTINAE
PATISCUS Stal
Patiscus elegans new species
- FAMILY MOGOPLISTIDAE
 SUBFAMILY MOGOPLISTINAE
ORNEBIUS Guerin-Meneville
Ornebius cydistos new species

METHODS

In this work we base the descriptions of species mainly on digital photographs taken with a Nikon CoolPix 995 camera, mounted on a Nikon SMZ800 dissecting scope. The figures were then put into photoshop for slight editing (sharpening and cleaning). The scales are not given. Sizes of species may be obtained from the descriptions which include a measurement section. Color illustrations of the species will be placed online after publication of this paper.

SYSTEMATICS

The extraordinary diversity of crickets at La Selva is further evidence that the Grylloidea will probably be shown to be the most diverse group among the Orthoptera. The diversity described here is based virtually completely on the crickets that were caught in malaise traps. A large number of species must also reside up in the canopy and on the ground and in tangles where they cannot be trapped in malaise traps.

We can expect in the future a vast number of new species to be discovered throughout Central America and the Neotropics. We have adopted a conservative approach in this work and have described very few new genera. In many cases the genitalia of males of what superficially appear to be members of the same genus are quite distinctive and could be used to justify erecting new genera. But it is better, we believe, to wait until a larger portion of the entire fauna is studied, at which time clusters of species will become evident. Basing new genera on single species at this juncture is more likely to lead to taxonomic confusion than if species are tentatively assigned to existing genera until such clusters become evident.

The genus *Anaxipha* is here used as a taxon which encompasses quite a variety of species. If every genitalic type is assigned to a new genus the taxonomy of Trigonidiinae is likely to lead to a confusing mass of genera. Less harm is done by lumping these various types into one genus for the time being. We have included figures of non-Costa Rican species of Trigonidiinae to show why we have placed various species into *Anaxipha*.

The status of cricket taxonomy in the Neotropics is much like the taxonomy of grasshoppers in the United States in the middle 1800's when members of many genera were being studied, but clusters of species were not yet available. Species now placed in a number of genera were put into a single genus because they appeared to be species most closely related to one another. In time the full complement of species became evident and a refinement of the classification was possible.

SPECIES ACCOUNTS

SUBFAMILY GRYLLINAE

This subfamily presently includes the genus *Anurogryllus* Saussure. Other related genera currently under Brachytrupinae (Eades, Otte, and Naskrecki, 2006. OSF2x.orthoptera.org) probably belong together with *Anurogryllus*. These are: *Apterogryllus* Saussure, 1877; *Cephalogryllus* Chopard, 1925; *Daintria* Otte, D., 1994; *Notosciobia* Chopard, 1915; *Neogryllopsis* Otte, D., 1983; *Podogryllus* Karsch, 1893; *Turanogryllus* Tarbinsky, 1940; *Apiotarsus* Saussure, 1877; and *Brachytrupes* Serville, 1838. Under such an arrangement the subfamily Brachytrupinae becomes a synonym of Gryllinae.

ANUROGRYLLUS Saussure

Reference.— Eades, Otte and Naskrecki 2006

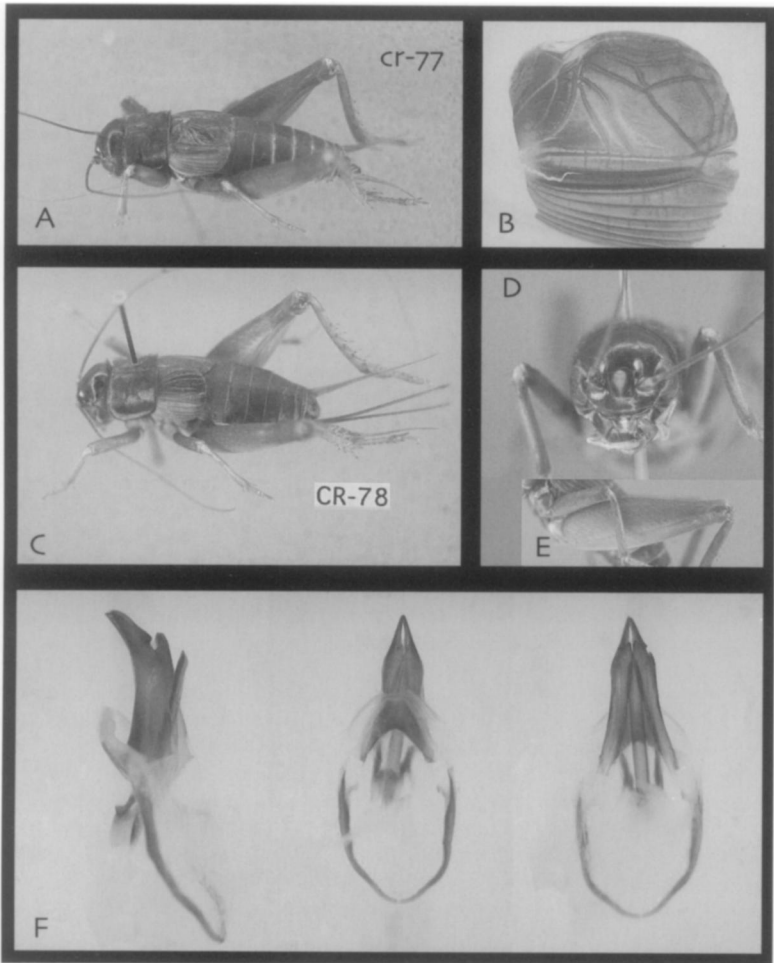


Figure 1. *Anurogryllus matheticos*. A, B, D, E, and F, holotype male. C, paratype female. A, portrait of male; B, male forewing. C, portrait of female. D, face of male. E, femur-3 of male. F, male genitalia (side, top, bottom views).

***Anurogryllus matheticos* new species (Fig. 1)**

Type.— Holotype male. CR-77. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, November 1995, INBio-OET. Paratype female (CR-78). Same data as holotype (INBio Collection).

Recognition.— Body color reddish brown; head nearly black; with no inner and large outer tympanum; tibia-1 and 2 with 3 and 4 apical spurs respectively; tibia-3 with 8 inner and 8 outer spurs.

Measurements (male).— CR-77: body length 26; forewing length 5.5; femur-3 length 16; cerci length 12; number of file teeth 69.

Measurements (female).— CR-78: body length 25; forewing length 5; femur-3 length 17; cerci length 13; ovipositor length 16.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male (CR-77) and paratype female (CR-78) (see type data).

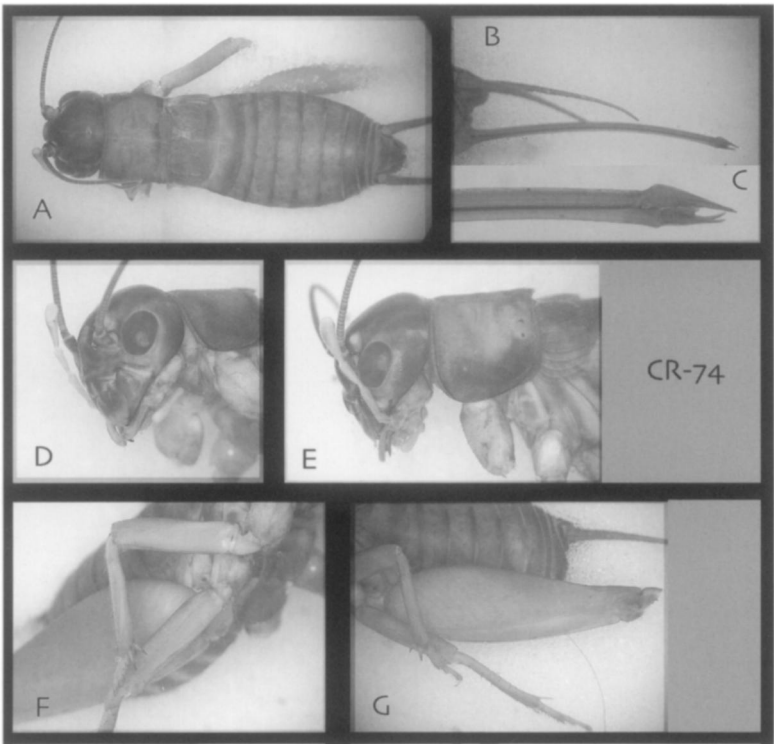


Figure 2. *Anurogryllus ecphylos* holotype female. A, portrait. B, C, ovipositor. D, face. E, head and pronotum. F, leg-1. G, femur-1.

***Anurogryllus ecphylos* new species (Fig. 2)**

Type.— Holotype female. CR-74. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10-16 N 84-05 W, 1050-1150 m, INBio-OET ALAS transect, February 2001. (INBio Collection).

Recognition.— Body reddish brown; head not black as in *matheticos*; forewings not overlapping (unlike *matheticos*).

Measurements (female).— CR-74: body length 21; forewing length 2; femur-3 length 14; cerci length 10+; ovipositor length 13.5.

Habitat.— Tropical rain forest.

Specimens.— Holotype male.

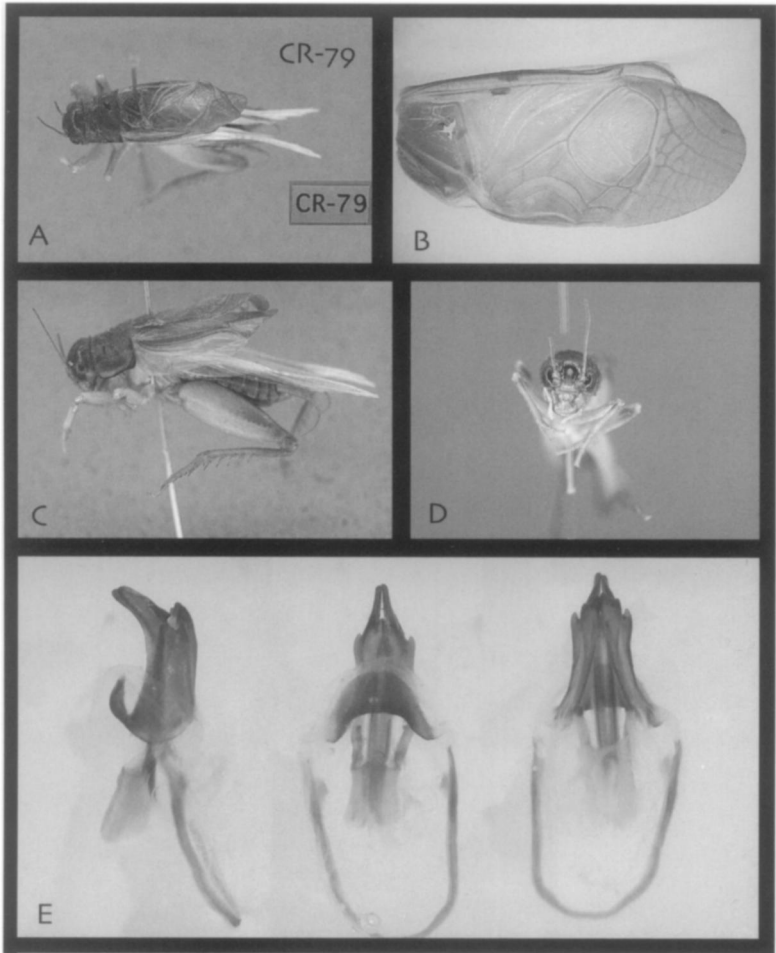


Figure 3. *Anurogryllus muticus* exemplar male. A, C, portraits. B, forewing. D, face. E, genitalia (side, top, bottom).

***Anurogryllus muticus* De Geer (Fig. 3)**

Type.— Exemplar male. CR-79. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, March 1993, INBio-OET (INBio Collection).

Measurements (male).— CR-79: body length 22; forewing length 13; femur-3 length 11; cerci length 7; number of file teeth: 40 — CR-80: body length 21; forewing length 11.5; femur-3 length 11; cerci length —; number of file teeth: 50.

Habitat.— Lowland, tropical rain forest.

Specimens.— Exemplar male CR-79 (see data above); exemplar male CR-80. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

MIOGRYLLUS Saussure

Reference.— Eades, Otte and Naskrecki 2006

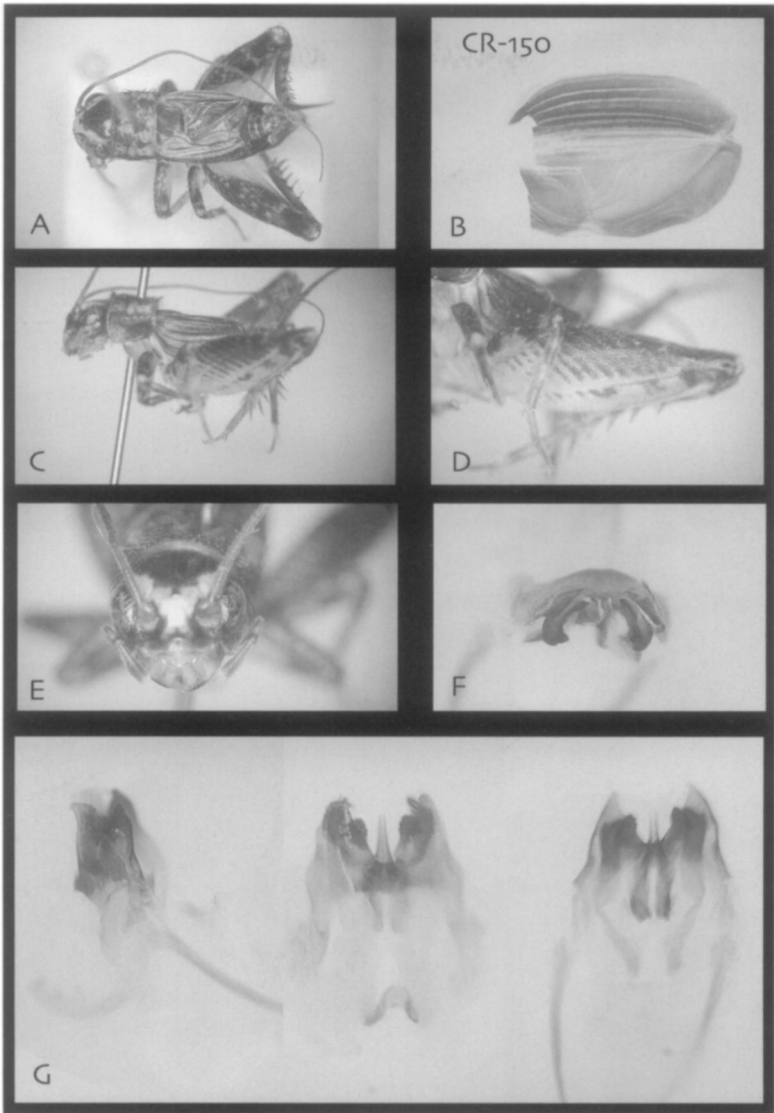


Figure 4. *Miogryllus amatorius* holotype. A, C, portraits. B, forewing. D, femur-3. E, face. F, genitalia (rear). G, genitalia (side, top, bottom).

***Miogryllus amatorius* new species (Fig. 4)**

Type.— Holotype male. CR-150. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/152 October 1995, INBio-OET (INBio Collection).

Recognition.— Black and ivory colored; head black and with a broad V-shaped white band on occiput which converges to form a single broad band on the frons; pronotum variegated on dorsum, mostly dark on lateral lobes; legs all strongly marked with black; femur-3 mostly black on dorsum but with small pale spots; forewing with two harp veins and a very narrow mirror.

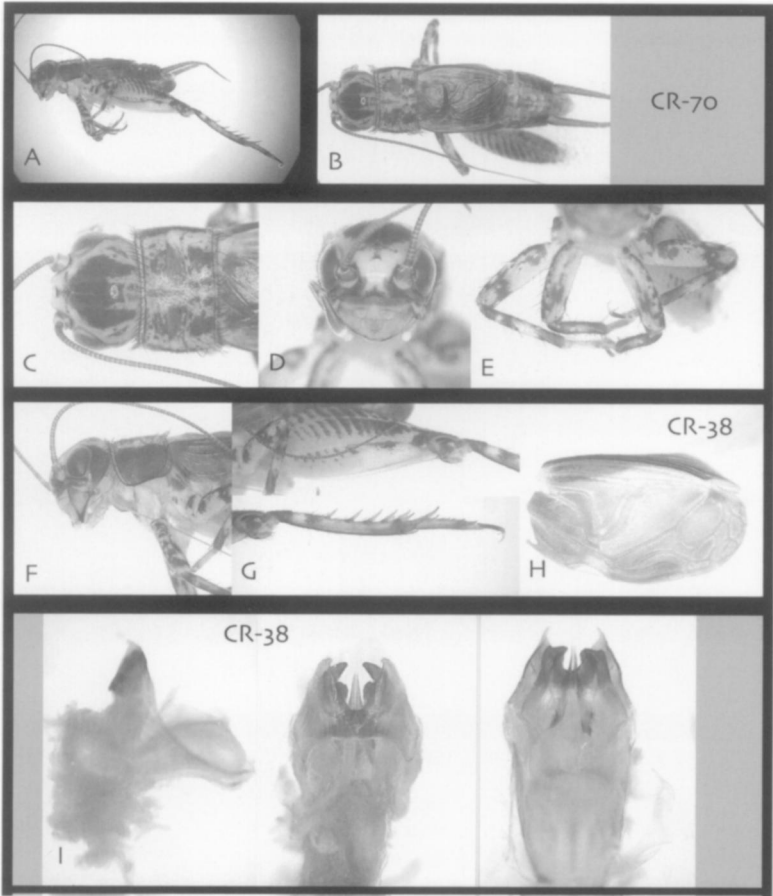


Figure 5. *Miogryllus scythros* holotype. A, B, portraits. C, F head and pronotum. D, face. E, legs-1 and -2. G, leg-3. H, forewing. I, genitalia (side, top, bottom views).

Measurements (male).— CR-150: body length 9; forewing length 3.5; femur-3 length 6; cerci length 5+; number of file teeth: 107.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

***Miogryllus scythros* new species (Fig. 5)**

Type.— Holotype male. CR-38. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/152 1993, INBio-OET (INBio Collection).

Recognition.— Black and ivory colored; top of head with characteristic banding pattern involving broad and narrow black and white bands; frons entirely ivory; pronotum variegated on dorsum and entirely black on lateral lobes; legs strongly banded.

Measurements (male).— CR-38: body length 11; forewing length 4.5; femur-3 length 6.3; cerci length —; number of file teeth: 110 — CR-70: body length 10; forewing length 3.5; femur-3 length 6.5; cerci length 5.5; number of file teeth 107.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype male: same data but Oct 1993.

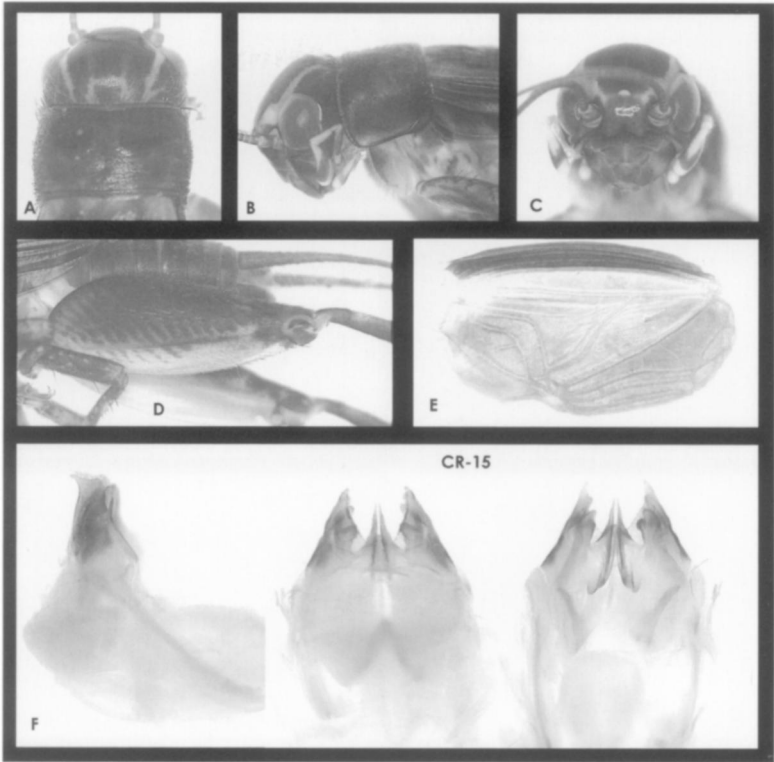


Figure 6. *Miogryllus pammelas* holotype. A, B, head and pronotum. C, face. D, femur-3. E, forewing. F, genitalia (side, top, bottom views).

***Miogryllus pammelas* new species (Fig. 6)**

Type.— Holotype male. CR-15. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— Mostly dark reddish brown, almost black; back of head banded with ivory stripes; pronotum entirely dark brown; forewings dark in central region, pale along margins; legs-1 and -2 black; abdomen black but with narrow orange cross bands; femur-3 blackish in upper half, orange in lower half; forewings not reaching beyond middle of abdomen.

Measurements (male).— CR-15: body length 10; forewing length 3; femur-3 length 6; cerci length 4+ (broken); number of file teeth 72 — CR-44: body length 10.5; forewing length 3.5; femur-3 length 5/5; cerci length 5; number of file teeth: 86.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype male (CR-44), same data as holotype but, October 1993.

SUBFAMILY NEMOBIINAE

Reference.— Eades, Otte and Naskrecki 2006.

***NEMOBIUS* Serville**

Reference.— Eades, Otte and Naskrecki 2006

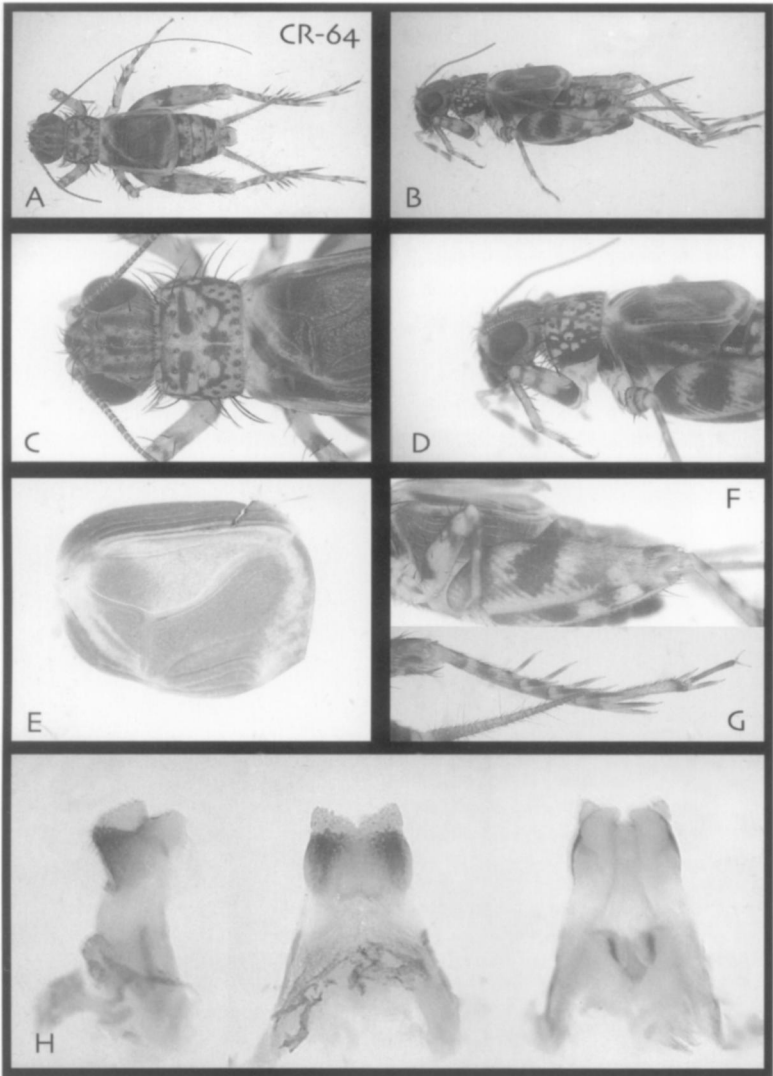


Figure 7. *Nemobius elegans* holotype male. A, B, portraits. C, D, head and pronotum. E, forewing. F, femur-3. G, tibia-3. H, genitalia (side, top, bottom views).

***Nemobius elegans* new species (Figs 7, 8)**

Type.— Holotype male. CR-64. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

Recognition.— Strongly speckled and banded with black, brown and pale brown markings; top of head with horizontal bands; top of pronotum variegated with black markings; forewings mostly dark, but pearly white at posterior margin; top of abdomen with black and

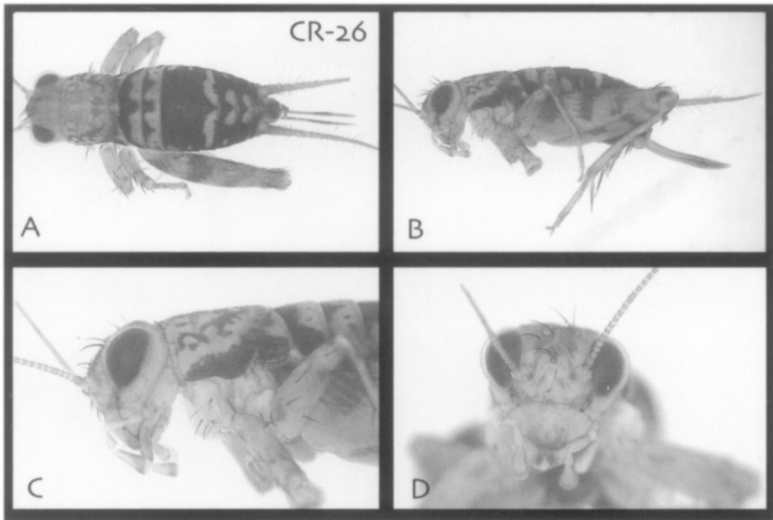


Figure 8. *Nemobius elegans* paratype female. A, B, portraits. C, head and pronotum. D, face.

pale markings; venter of abdomen black; all legs distinctly banded.

Measurements (male).— CR-64: body length 7; forewing length 2.5; femur-3 length 4; cerci length 2.6; number of file teeth: 52.

Measurements (female).— CR-26: body length 6.5; forewing length (none); femur-3 length 4; cerci length 3; ovipositor length 2.3.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (CR-26) Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, June 1993, INBio-OET (INBio Collection).

PTERONEMOBIUS Jacobson and Bianchi

Reference.— Eades, Otte and Naskrecki 2006

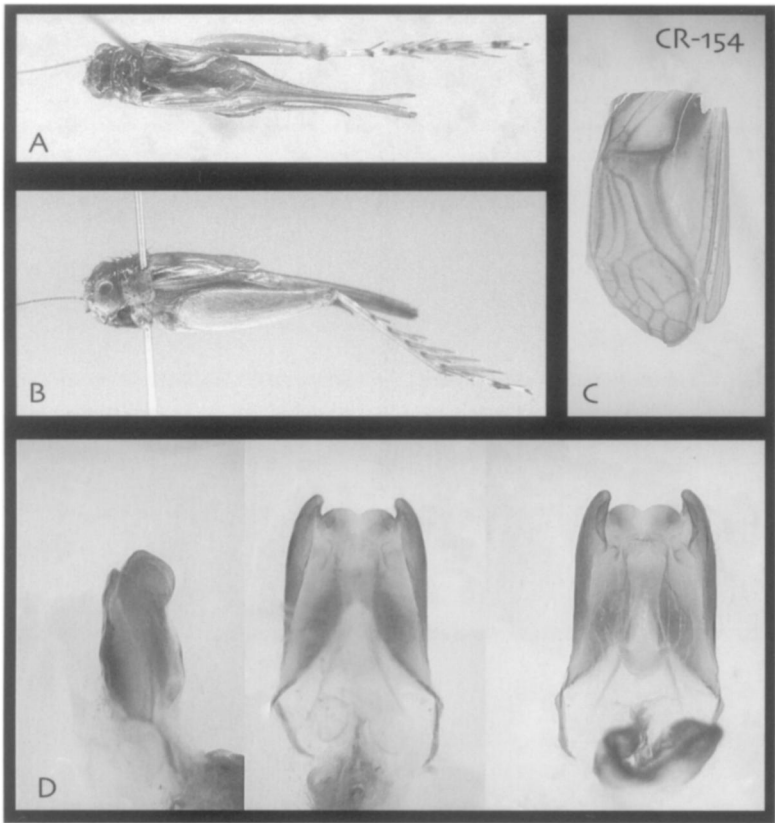


Figure 9. *Pteronemobius eneplos* holotype. A, B, portraits. C, forewing. D, genitalia (side, top, bottom views).

***Pteronemobius eneplos* new species (Fig. 9)**

Type.— Holotype male. CR-154. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Small blackish cricket, mostly uniform in color but hind tibiae black at bases of spurs; tarsus-3 pale, but dark in second segment at end of third segment; harp with one vein; mirror with three cells; legs-1 and -2 lost.

Measurements (male).— CR-154: body length 9.5; forewing length 5; femur-3 length 7.5; cerci length 6; number of file teeth: 173.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

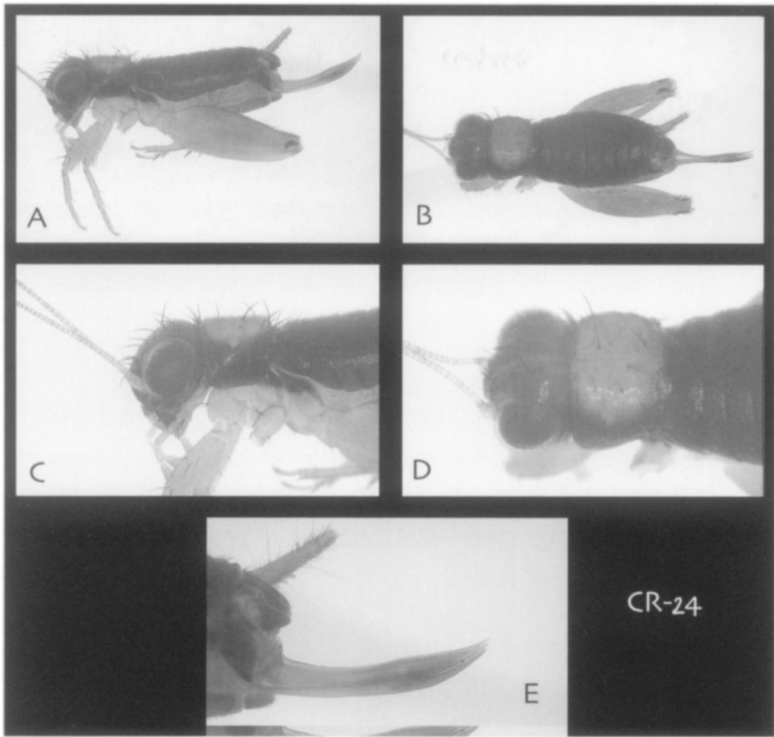


Figure 10. *Absonemobius alatus* holotype. A, B, portraits. C, D, head and pronotum. E, ovipositor.

ABSONEMOBIUS Desutter-Grandcolas

Reference.— Eades, Otte and Naskrecki 2006

Absonemobius alatus new species (Fig. 10)

Type.— Holotype female. CR-24. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, July 1993, INBio-OET (INBio Collection).

Recognition.— Body color black and orange; dorsum of head and pronotum very dark; dorsum of pronotum orange; legs all uniformly orange brown; tibia-1 without tympana; tibia-1 and -2 with 2 and 2 apical spurs respectively.

Measurements (female).— CR-24: body length 5; forewing length -; femur-3 length 3; cerci length broken; number of file teeth: 2.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female. 3 females, same data as holotype.

SUBFAMILY TRIGONIDIINAE

Reference.— Eades, Otte and Naskrecki 2006.

ANAXIPHA Saussure

Reference.— Eades, Otte and Naskrecki 2006.

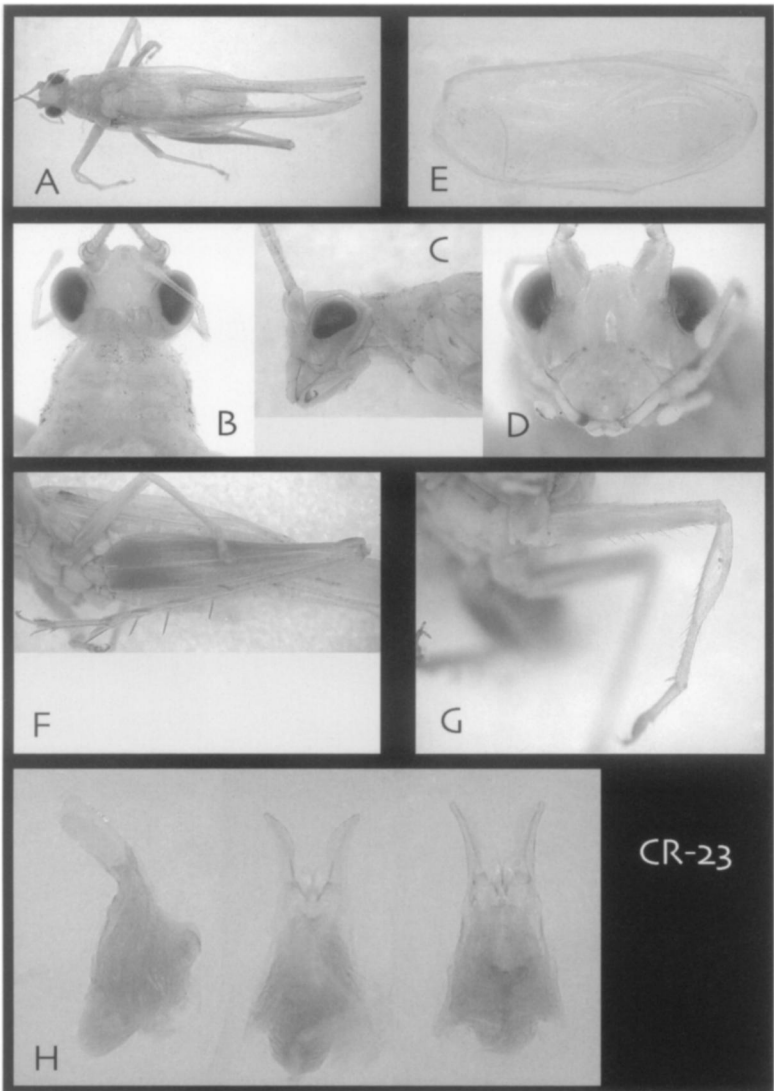


Figure 11. *Anaxipha euthryptos* exemplar. A, portrait. B, C, head and pronotum. D, face. E, forewing. F, femur-3. G, tibia-1 (inner face). H, genitalia (side, top, bottom views).

***Anaxipha championi* Saussure (Fig. 11, 12)**

Type.— Exemplar male. CR-23. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, July 1993, INBio-OET (INBio Collection).

Recognition.— Uniformly very pale brown (probably pale green in life); with large outer and larger inner tympanum; forewings extending well beyond end of abdomen. Quite similar in male genitalia to *A. cayennensis* Saussure (Fig. 13), but epiphallic lobes downturned in latter.

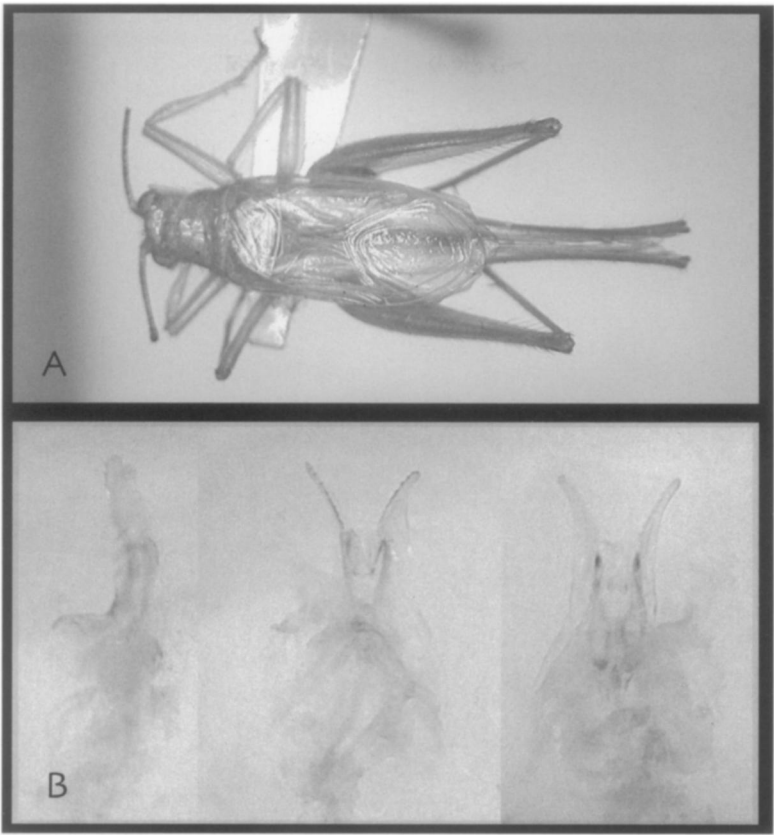


Figure 12. *Anaxipha championi* Saussure, exemplar male from Mexico. A, portrait. B, genitalia (side, top, bottom views).

Measurements (male).— CR-23: body length 7.5; forewing length 6; femur-3 length 5.5; cerci length 4; number of file teeth: 132.

Habitat.— Lowland, tropical rain forest.

Specimens.— Exemplar male.



Figure 13. *Anaxipha cayennensis* Saussure, exemplar male, from French Guyana. Top: portrait. Bottom: genitalia (side, top, bottom views).

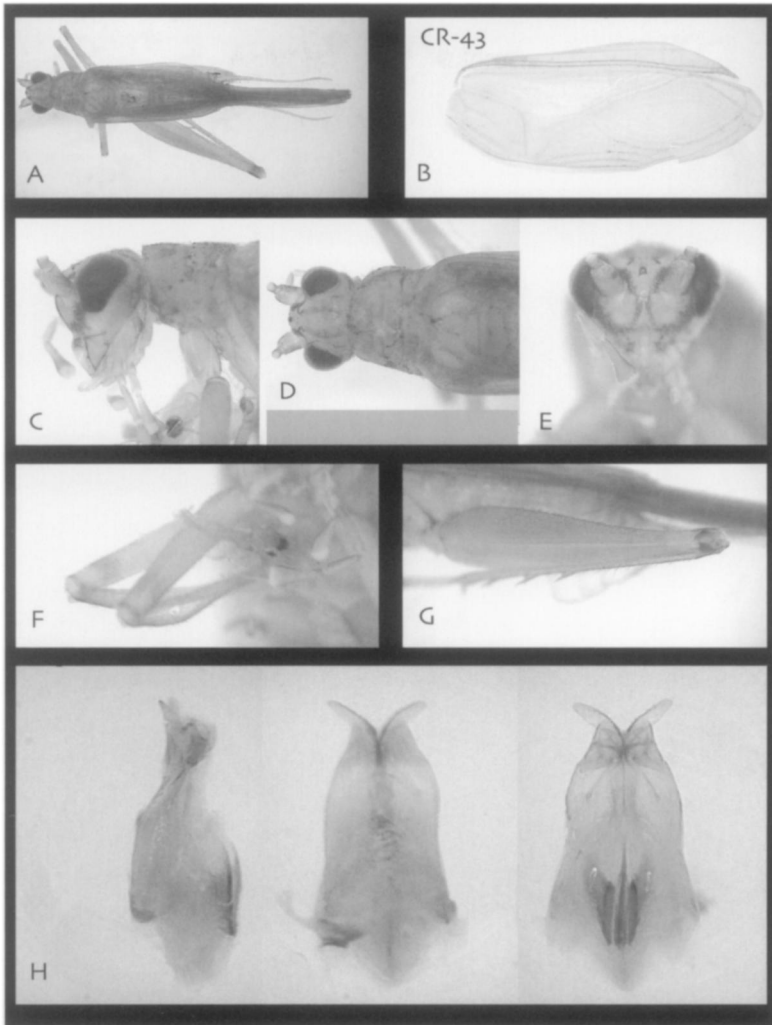


Figure 14. *Anaxipha hypaerios* holotype. A, portrait. B, forewing. C, D, head and pronotum. E, face. F, legs-1 and -2. G, femur-3. H, genitalia (side, top, bottom views).

***Anaxipha hypaerios* new species (Fig. 14)**

Type.— Holotype male. CR-43. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, December 1993, INBio-OET (INBio Collection).

Recognition.— Reddish brown with feintly darker bands on top of head; femora-1 and -2 with a faint distal band; face with two sets of descending bands; femur-3 uniform in color.

Measurements (male).— CR-43: body length 7; forewing length 4.5; femur-3 length 5; cerci length 3.5; number of file teeth: 74.

Measurements (female).— CR-43F: body length 6.5; forewing length 4.6; femur-3 length 5.5; cerci length —; ovipositor length 2.

Specimens.— Holotype male and paratype female.

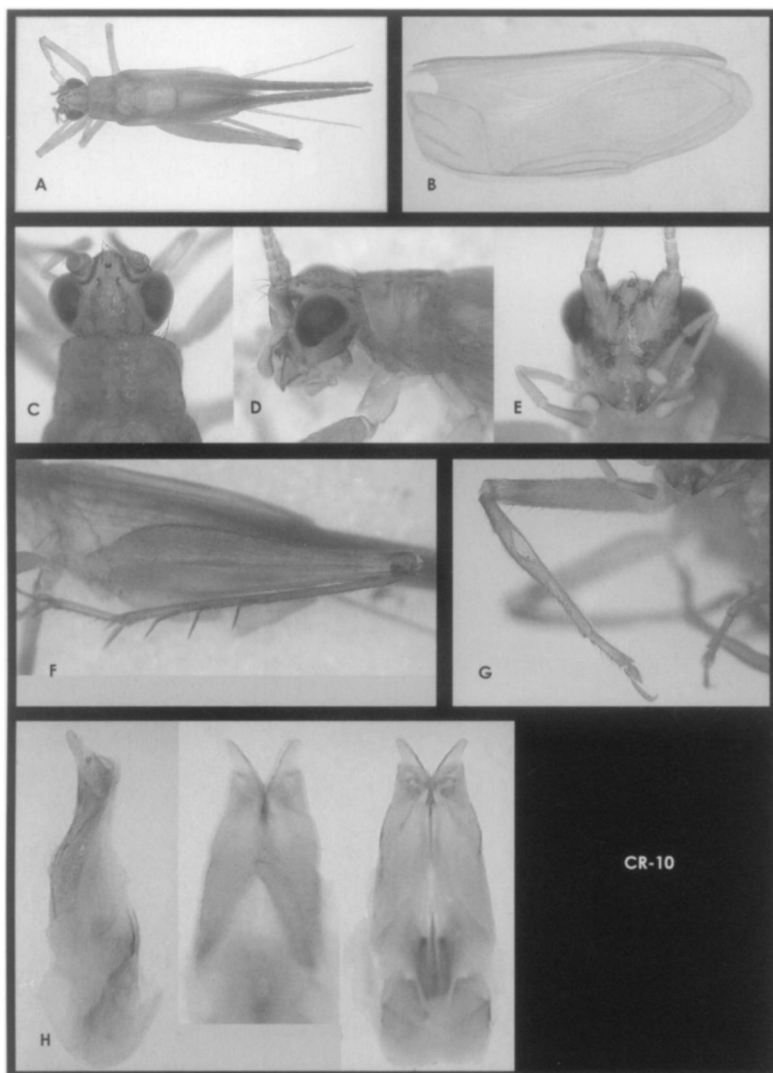


Figure 15. *Anaxipha peregrina* holotype. A, portrait of male. B, forewing. C-E, head and pronotum. F, femur-3. G, tibia-1 (inner face). H, genitalia (side, top and bottom views).

***Anaxipha peregrina* new species (Fig. 15)**

Type.— Holotype male. CR-10. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/03/088, 50-150 m, 10-26N, 84-01W, 2 May 1993, INBio-OET (INBio Collection).

Recognition.— Almost uniformly pale brown (in alcohol). With dark marks on top of head and broad dark descending bands on face.

Measurements (male).— body length 6; forewing length 4; femur-3 length 4.7; cerci length 3.6; number of file teeth: 81.

Measurements (female).— body length ; forewing length ; femur-3 length ; cerci length ; ovipositor length .

Specimens.— Holotype male. 4 paratype males and 3 paratype females from La Virgen — 3 paratype males and 8 paratype females from La Selva.

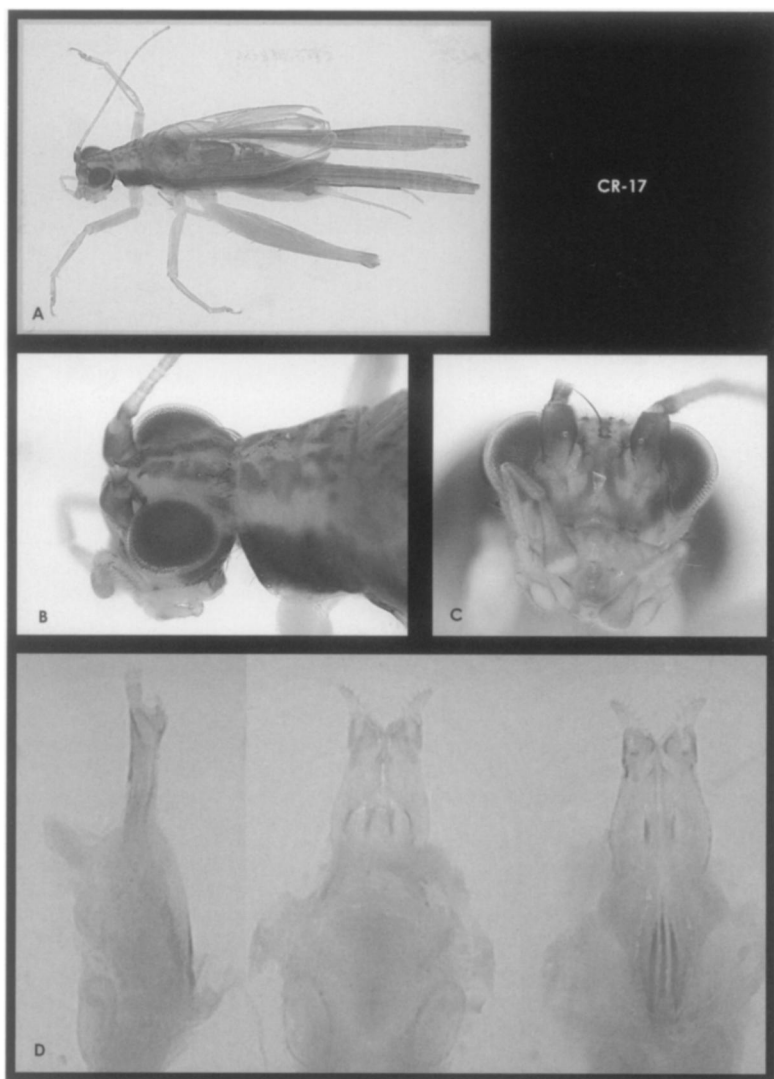


Figure 16. *Anaxipha peticos* holotype.

***Anaxipha peticos* new species (Fig. 16)**

Type.— Holotype male. CR-17. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/304, INBio-OET (INBio Collection).

Recognition.— Pale brown with distinct dark patterns on face, forewings, femur-3 and tibia-3 (as figured).

Measurements (male).— CR-17: body length 6; forewing length 4.3; femur-3 length 4; cerci length 3+; number of file teeth: 128 — CR-18: body length 6; forewing length 5; femur-3 length lost; cerci length e.5; number of file teeth: 140.

Measurements (female).— CR-17F: body length 5.5; forewing length 4; femur-3 length 4.2; cerci length broken; ovipositor length 2 — CR-18F: body length 5.5; forewing length 4; femur-3 length lost; cerci length broken; ovipositor length 1.8.

Specimens.— 12 males, 12 females. Holotype male. Paratype male, 2 paratype females.

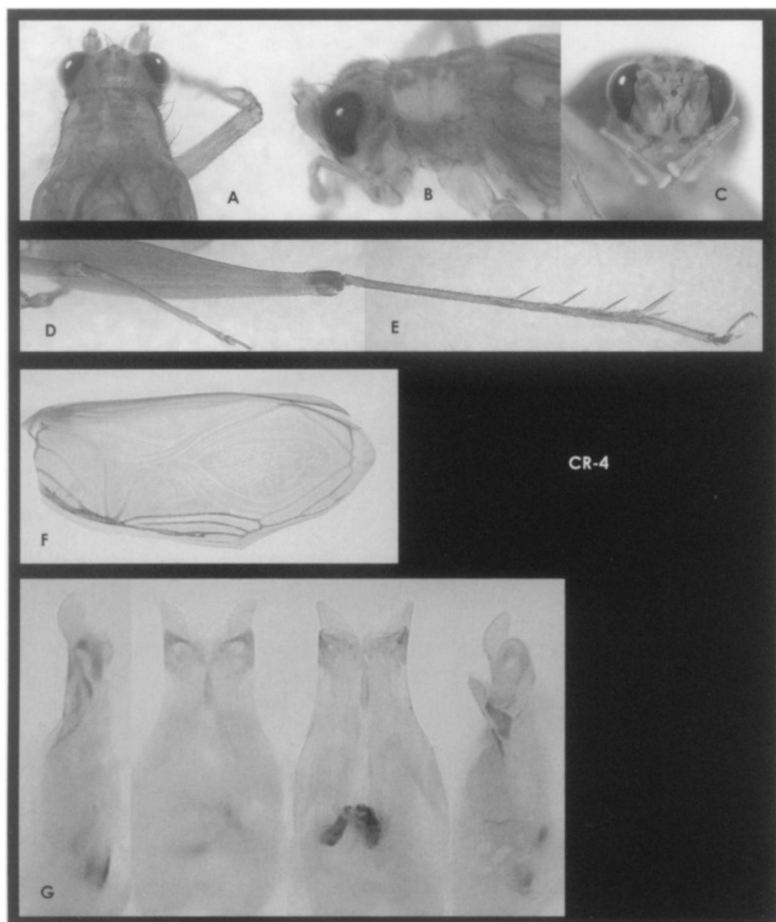


Figure 17. *Anaxipha dapsiles* holotype male.

***Anaxipha dapsiles* new species (Fig. 17)**

Type.— Holotype male. CR-4. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/03/082, 50-150 m, 10-26N, 84-01W, 2 May 1993. INBio-OET (INBio Collection).

Recognition.— Body pale reddish brown; dorsum with darker markings in central region; face with dark brown markings descending between the antennae; top of head with a few dark markings between the eyes; legs-1 and -2 faintly banded; femora-3 dark only at distal end; dorsum of abdomen darker brown in distal tergites; subgenital plate dark brown.

Measurements (male).— CR-4: body length 7; forewing length 5; femur-3 length 5.5; cerci length 4.5.

Measurements (female).— CR-3: body length 7.5; forewing length 5.5; femur-3 length 5; cerci length 4.5; ovipositor length 2.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype CR-4 (see data above). CR-3: paratype female (same data as holotype, except M/08/102, 18 May 1993). — 2 females with same data as holotype except M/11/357, 15 Feb 1994). — 8 paratype males, same locality as holotype.

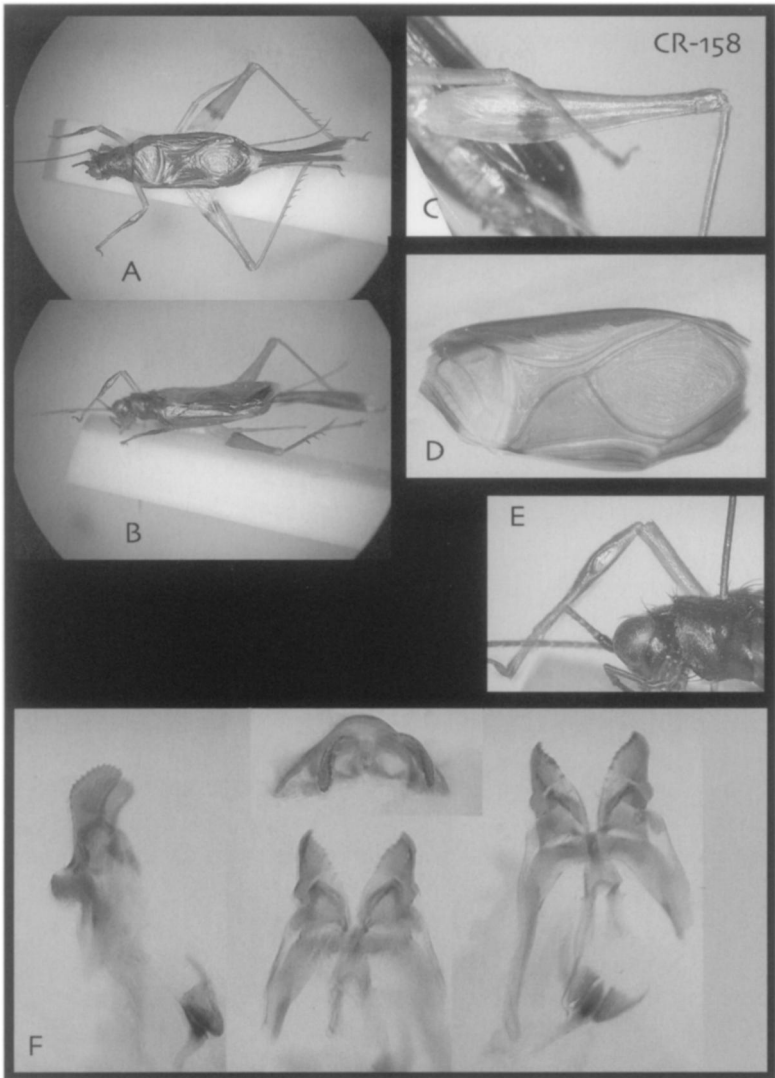


Figure 18. *Anaxipha epicydes* holotype.

***Anaxipha epicydes* new species (Fig. 18)**

Type.— Holotype male. CR-158. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, April 1998, INBio-OET (INBio Collection).

Recognition.—Body color reddish brown; head and pronotum much darker; legs-1 and -2 with darker femora; femur-3 pale in first third, then with a distinct dark band, the reddish brown.

Measurements (male).— CR-158: body length 7; forewing length 5; femur-3 length 5; cerci length 4.5; number of file teeth: 232 — CR-25: number of file teeth: 220.

Specimens.— Holotype male. Paratype male (CR-25), same data as holotype, but 2 September 1993.

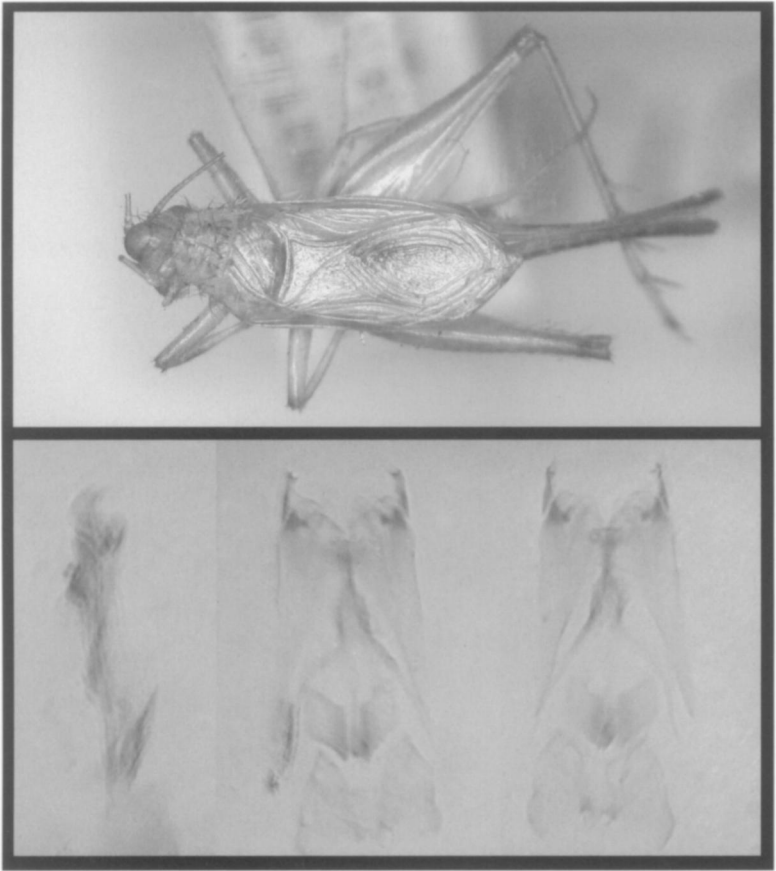


Figure 19. *Anaxipha minuta* Linne exemplar, from Guyana. Top: portrait of male. Bottom: genitalia (side, top, bottom views).

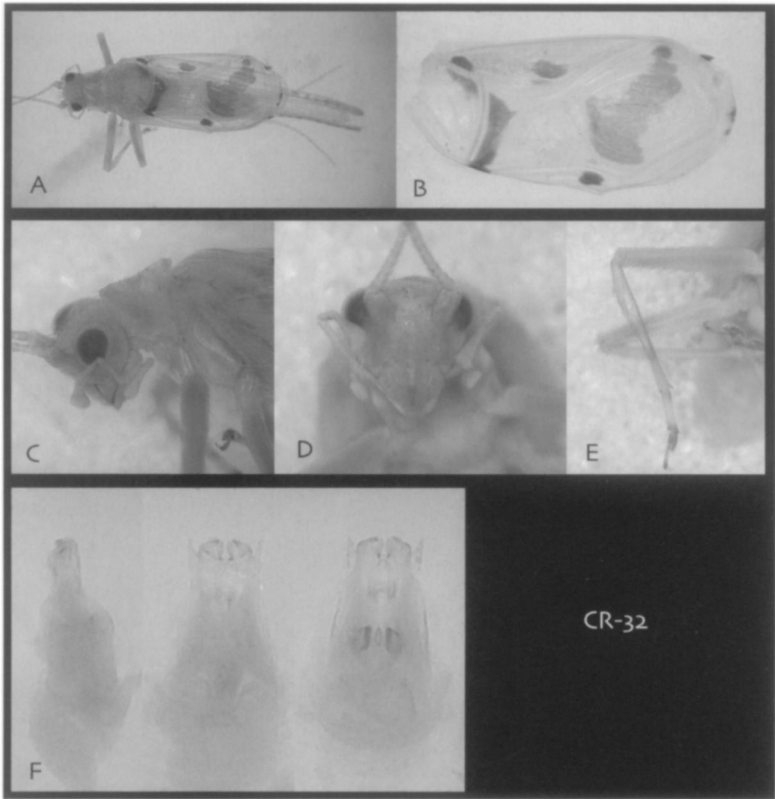


Figure 20. *Anaxipha prosenes* holotype. A, portrait. B, forewing. C, head and pronotum. D, face. E, legs-1 and -2. G, genitalia (side, top, bottom views).

***Anaxipha prosenes* new species (Fig. 20)**

Type.— Holotype male. CR-32. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, March 1994, INBio-OET (INBio Collection).

Recognition.— Pale yellow brown. Forewings with strong dark markings. With large internal and external tympana.

Measurements (male).— CR-32: body length 7; forewing length 6; femur-3 length LOST; cerci length 3.5; number of file teeth: 218.

Measurements (female).— CR-30: body length 7; forewing length 5.3; femur-3 length lost; cerci length 2.5; ovipositor length 2.2 — CR-37: body length 7; forewing length 5; femur-3 length 6; cerci length 4.2; ovipositor length 2.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male and 3 paratype females.

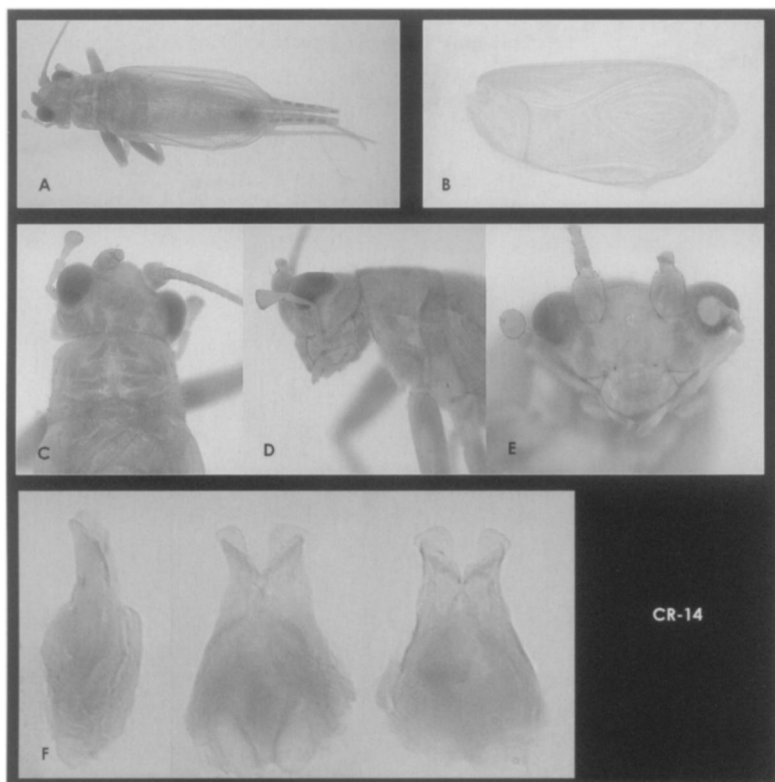


Figure 21. *Anaxipha vera* holotype. A, portrait. B, forewing. C, D, head and pronotum. E, face. G, genitalia (side, top, bottom views).

***Anaxipha vera* new species (Fig. 21)**

Type.— Holotype male. CR-14. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/10/41, 50-150 m, 10-26N, 84-01W, 16 March 1993, INBio-OET (INBio Collection).

Recognition.— Entirely very pale, probably pale green in life. Folded hind wings with a line of darker cells.

Measurements (male).— body length 7; forewing length 4.5; femur-3 length (lost); cerci length 3.5; number of file teeth: 98.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female, same data as holotype.

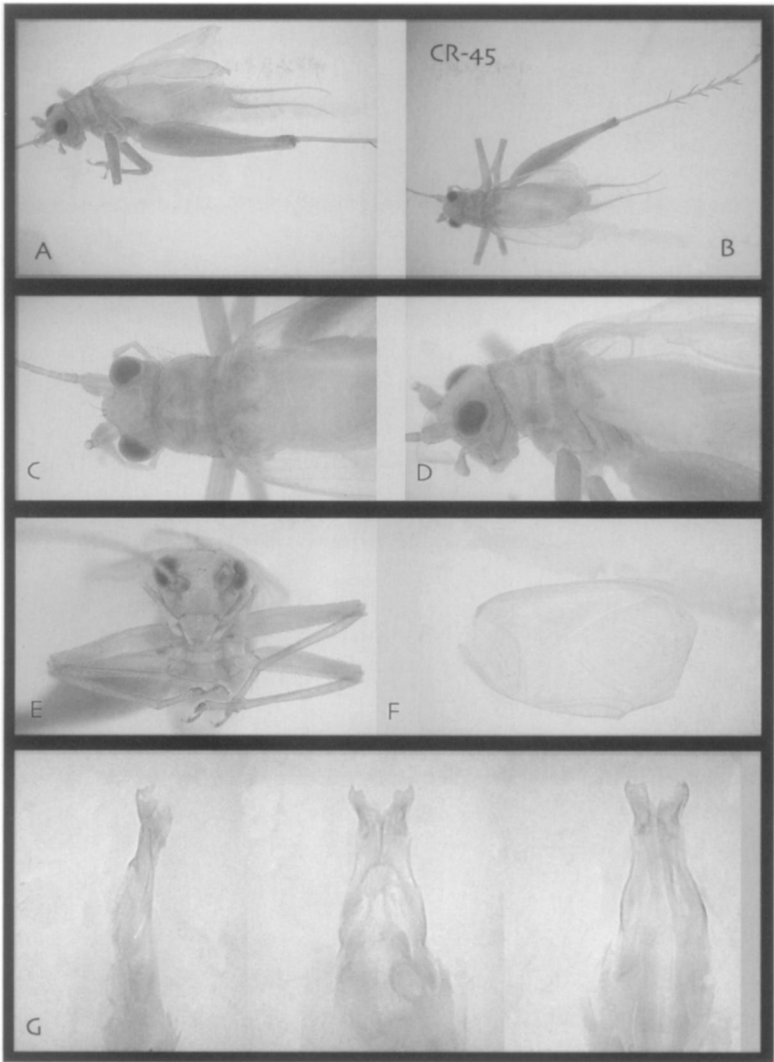


Figure 22. *Anaxipha hyalodes* male holotype. A, B, portrait of male. C, D, head and pronotum. E, face. F, forewing. G, genitalia (side, top, bottom views).

***Anaxipha hyalodes* new species (Fig. 22)**

Type.— Holotype male. CR-45. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1993, INBio-OET (INBio Collection).

Recognition.— Pale yellowish brown; possibly pale green in life; legs and wings unbanded; tympanum on outer face only.

Measurements (male).— CR-45: body length 6; forewing length 4; femur-3 length 4.6; cerci length 3.5; number of file teeth: 62.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

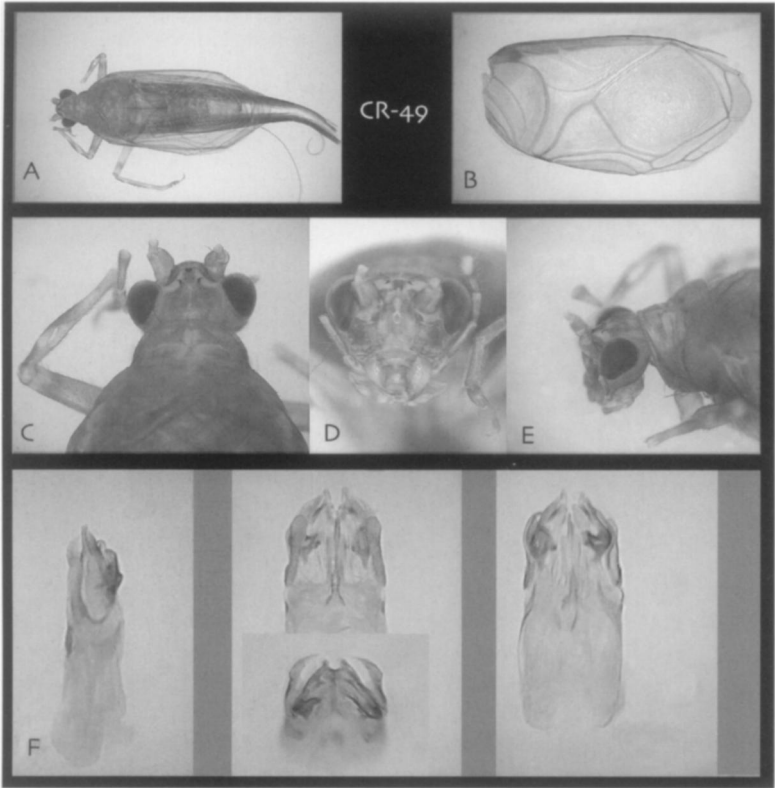


Figure 23. *Anaxipha praepostera* holotype. A, portrait. B, forewing. C, E, head and pronotum. D, face. F, side, top, rear, and bottom views).

***Anaxipha praepostera* new species (Fig. 23)**

Type.— Holotype male. CR-49. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

Recognition.— Nearly uniformly reddish brown; with very wide forewings.

Measurements (male).— CR-49: body length 10; forewing length 8; cerci length 7; number of file teeth: 277.

Habitat.— Lowland, tropical rain forest.

Specimens.— 8 males; 2 females. Holotype male.

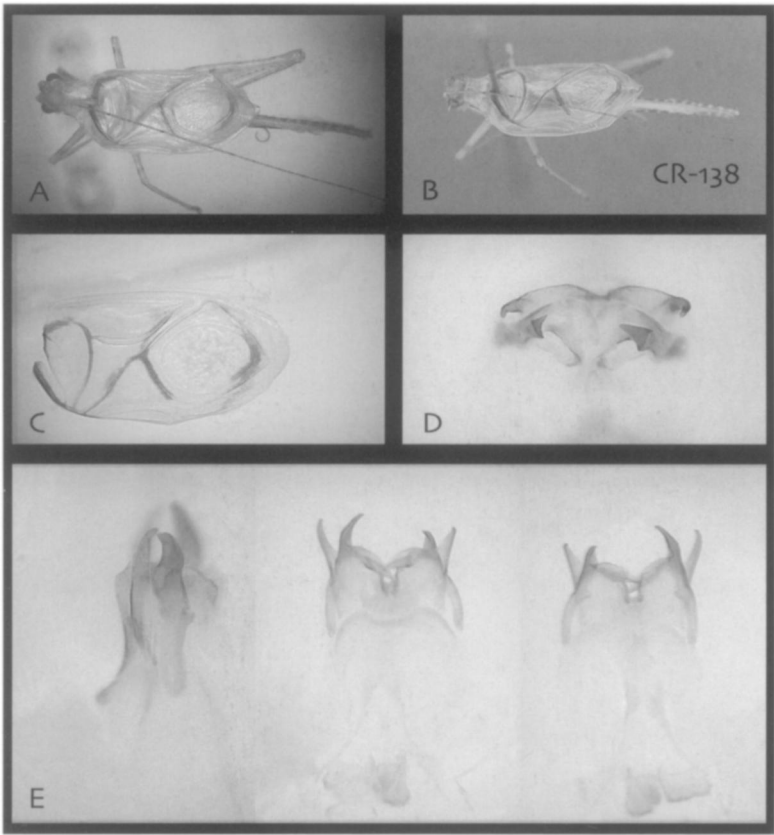


Figure 24. *Anaxipha agaea* holotype. A, B, portraits. C, forewing. D, genitalia (rear). E, genitalia (side, top, bottom views).

***Anaxipha agaea* new species (Fig. 24)**

Type.— Holotype male. CR-138. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.— Pale yellowish (probably green in life) with distinctive dark streaks on the forewings following certain veins; hind wings spotted light and dark on dorsal surface; forewings extremely broad.

Measurements (male).— CR-138: body length 9; forewing length 8.5; femur-3 length 7.15; cerci length 5; number of file teeth: 265.

Measurements (female).— CR-61F: body length ; forewing length ; femur-3 length ; cerci length ; ovipositor length.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

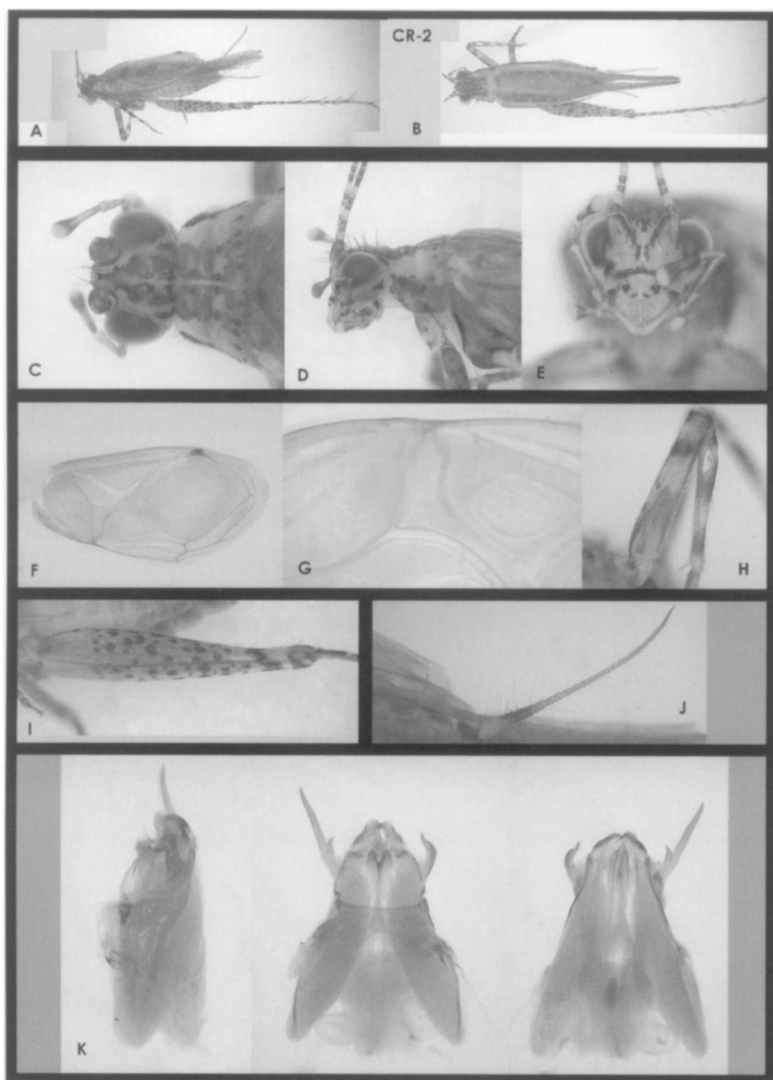


Figure 25. *Anaxipha volucer*. A, C-K, male parts. B, portrait of female. C, D, head and pronotum. E, face. F, forewing. G, stridulatory files. H, tibia-1. I, femur-1. J, cercus. K, genitalia (side, top, bottom views).

Anaxipha volucer new species (Fig. 25)

Type.— Holotype male. CR-2. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, January 1994, INBio-OET (INBio Collection).

Recognition.— Body color generally pale brown, but top variegated with darker brown; a pale band runs from behind the eye onto the forewings; legs-1 and -2 strongly banded; femur-3 with numerous dark spots on upper and outer faces.

Measurements (male).— CR-2: body length 8.3; forewing length 6; femur-3 length 5.5; cerci length 3.2; number of file teeth: 50.



Figure 26. *Anaxipha incompta* Walker exemplar from Tapayos, Brazil. Top: portrait. Bottom: genitalia (side, top, bottom views).

Measurements (female).— CR-2F: body length 7; forewing length 5.5; femur-3 length 5; cerci length 3; ovipositor length 2 — Paratype: body length 6.5; forewing length 5; femur-3 length 5; cerci length 3; ovipositor length 2.

Habitat.— Rain forest.

Specimens.— Holotype male, 4 paratype females all from the type locality.

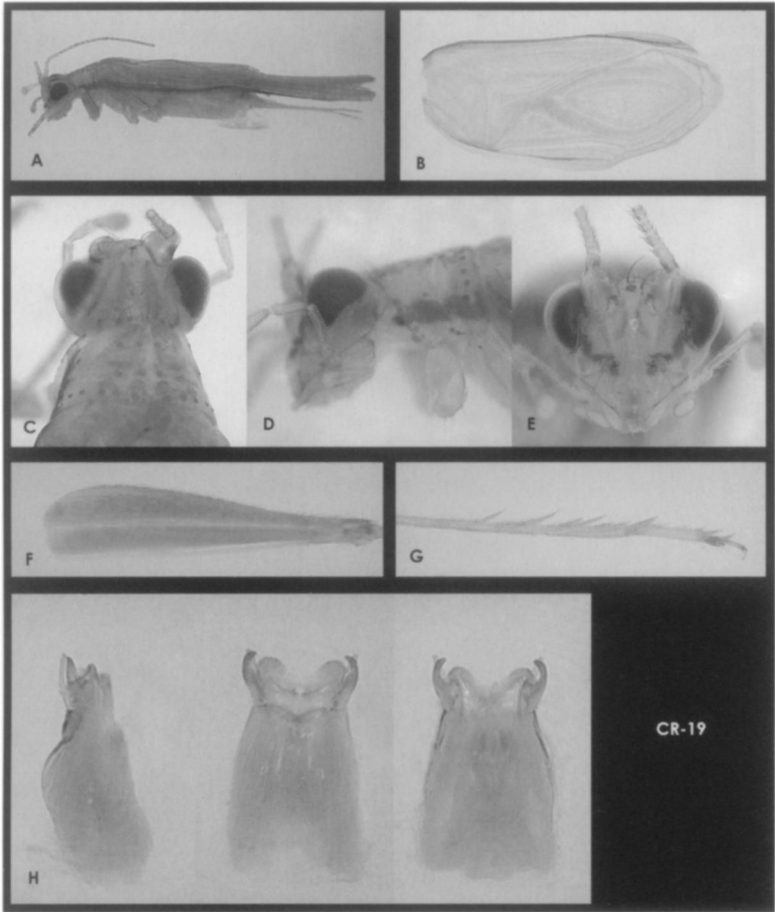


Figure 27. *Anaxipha adventicia* holotype. A, portrait. B, forewing. C, D, head and pronotum. E, face. F, femur-3. G, tibia-3. H, genitalia (side, top, bottom views).

Anaxipha adventicia new species (Fig. 27)

Type.— Holotype male. CR-19. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/304, INBio-OET (INBio Collection).

Recognition.— Pale brown with dark band on side of body from back of eyes through pronotum onto forewing; face with two converging dark streaks descending from eyes; top of pronotum and head slightly banded.

Measurements (male).— CR-19: body length 6; forewing length 4.5; femur-3 length 4; cerci length 3; number of file teeth: 53 — Another male: body length 6; forewing length 4; femur-3 length -; cerci length 3; number of file teeth: 56.

Measurements (female).— CR-19F: body length 6; forewing length 4; femur-3 length -; cerci length 3; ovipositor length 1.8.

Habitat.— Lowland, tropical rain forest.

Specimens.—8 males, 13 females. Holotype male. Paratype female (CF-19F), same data as holotype.

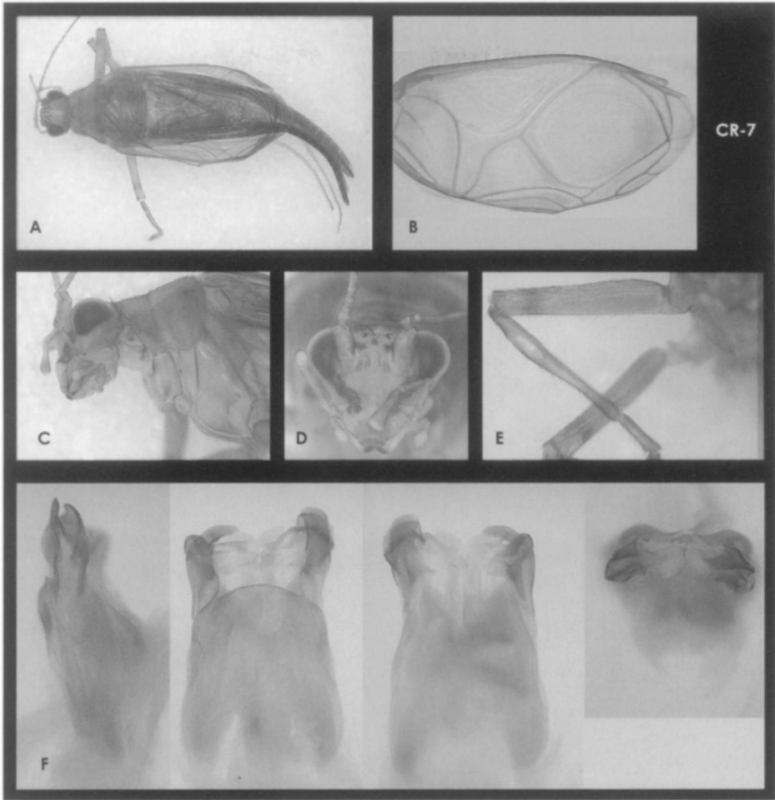


Figure 28. *Anaxipha exagistos* holotype. A, portrait of male. B, male forewing. C, D, head and pronotum. E, inner face of tibia-1. F, male genitalia (lateral, dorsal, ventral, and posterior views).

***Anaxipha exagistos* new species (Fig. 28)**

Type.— Holotype male. CR-7. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/11/389, 50-150 m, 10-26N, 84-01W, 4 April 1994, INBio-OET (INBio Collection).

Recognition.— Orange brown, forewings very broad; face with broad reddish brown bands descending face; top of head with dark pigment around bases of antennae and bordering the ocelli.

Measurements (male).— CR-7: body length 8.5; forewing length 7; femur-3 length lost; cerci length 5.7; number of file teeth: 110 — CR-12: body length 8; forewing length 7; femur-3 length lost; cerci length 6.

Measurements (female).— CR-12F: body length 7; forewing length 5; femur-3 length 5; cerci length 4.

Habitat.— Lowland, tropical rain forest.

Specimens.— 7 males, 5 females. Holotype male (CR-7). CR-8, 2 females, same data as holotype by M/10/104, 18 May 1993. CR-12, male and female, same data as holotype but Feb 1994.

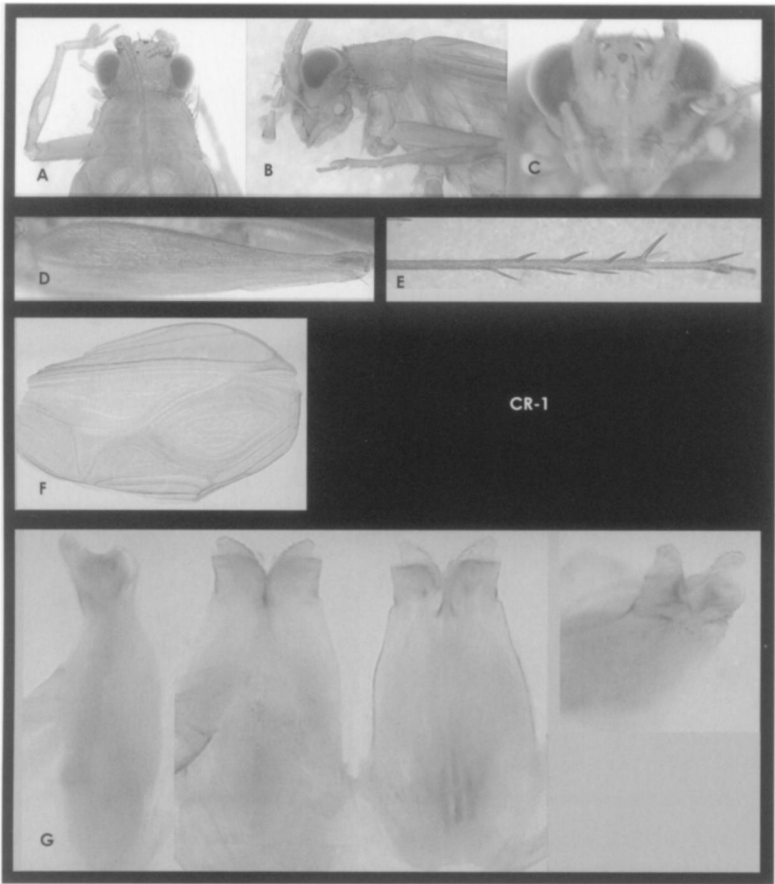


Figure 29. *Anaxipha hypergius* holotype. A, B, head and pronotum. C, face. D, femur-3. E, tibia-3. F, forewing. G, genitalia (side top, bottom, and rear views).

***Anaxipha hypergius* new species (Fig. 29)**

Type.— Holotype male. CR-1. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, 2 April 1993, INBio-OET (INBio Collection).

Recognition.— Body color entirely pale, yellow-brown; without dark markings anywhere; with slightly darker descending bands on face. Forewings extending well beyond the cerci.

Measurements (male).— CR-1: body length 6.5; forewing length 4.5; femur-3 length 4.5; cerci length 4; number of file teeth: 73.

Measurements (female).— CR-1b: body length 6.5; forewing length 5.5; femur-3 length lost; cerci length 3.5; ovipositor length 2.

Habitat.— Rain forest.

Specimens.— Holotype CR-1, 5 paratype males, 1 paratype female (same data as holotype).

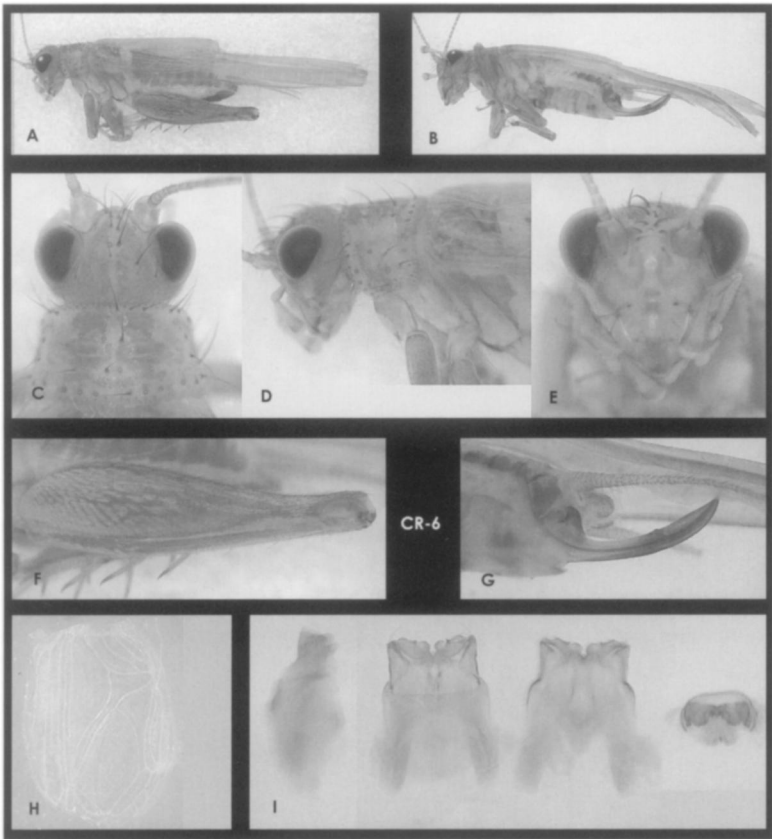


Figure 30. *Anaxipha nava*. A, portrait of male. B, portrait of female. C, D, E, vies of male head and pronotum. F, male femur-3. G, female ovipositor. H, male forewing. I, male genitalia (lateral, dorsal, ventral, and posterior views).

Anaxipha nava new species (Fig. 30)

Type.— Holotype male. CR-6. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/01/080, 50-150 m, 10-26N, 84-01W, 2 May 1993, INBio-OET (INBio Collection).

Recognition.— Pale brown. Top of ehad and pronotum slightly variegated; femur-3 obliquely banded; forewing uniform in color; abdomen venter darker brown.

Measurements (male).— CR-6: body length 6; forewing length 3.5; femur-3 length 4; cerci length 2.5; number of file teeth: 76.

Measurements (female).— CR-6F: body length 5.5; forewing length 4; femur-3 length lost; cerci length 2.3; ovipositor length 2.

Habitat.— Lowland, tropical rain forest.

Specimens.— CR-6 (holotype male); CR-6F (paratype female, same data as holotype).— 2 females (same locality as holotype except from trap M/01/064).— 3 paratype males, same data as holotype.

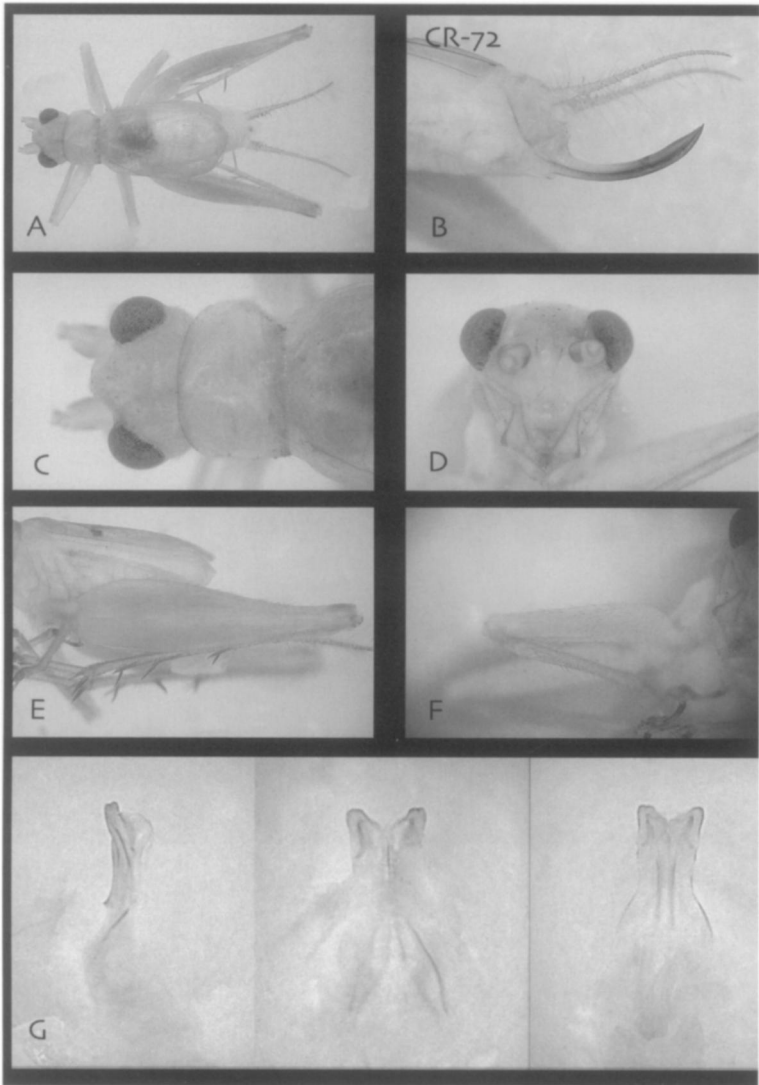


Figure 31. *Anaxipha laepseros*. A, C-G, male holotype. B, ovipositor of paratype female. A, portrait. B, ovipositor. C, head and pronotum. D, face. E, femur-3. F, leg-1. G, genitalia (side, top, bottom views).

***Anaxipha laepseros* new species (Fig. 31)**

Type.— Holotype male. CR-72. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, February 2001 (INBio Collection).

Recognition.— Very pale yellow brown; perhaps green in life; without any banding.

Measurements (male).— CR-72: body length 6.3; forewing length 3.5; femur-3 length 5; cerci length 3; number of file teeth: 95.

Measurements (female).— CR-72f: body length 6; forewing length 3; femur-3 length 5; cerci length 3; ovipositor length 2.5.

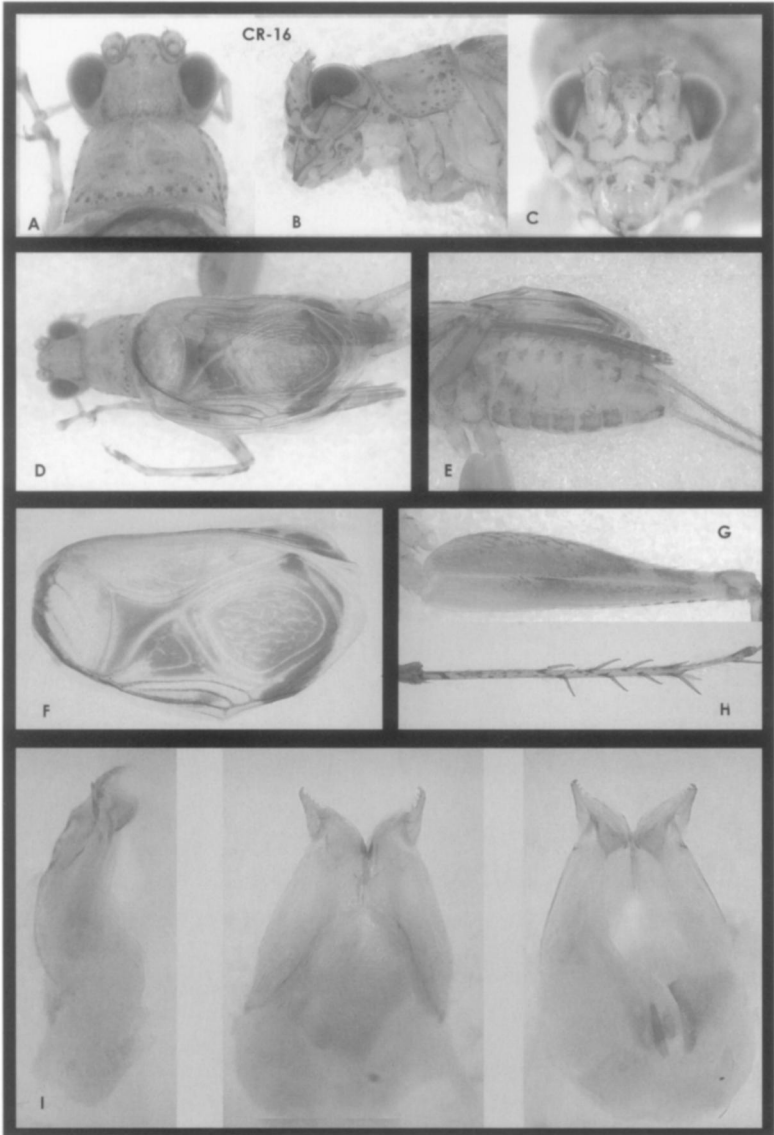


Figure 32. *Anaxipha tychicos* holotype. A, B, head and pronotum. C, face. D, portrait. E, abdomen. F, forewing, G, femur-3. H, tibia-3. I, genitalia (side, top, bottom views).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

***Anaxipha tychicos* new species (Fig. 32)**

Type.— Holotype male. CR-16. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— Pale brown with distinct dark patterns on face, forewings, femur-3

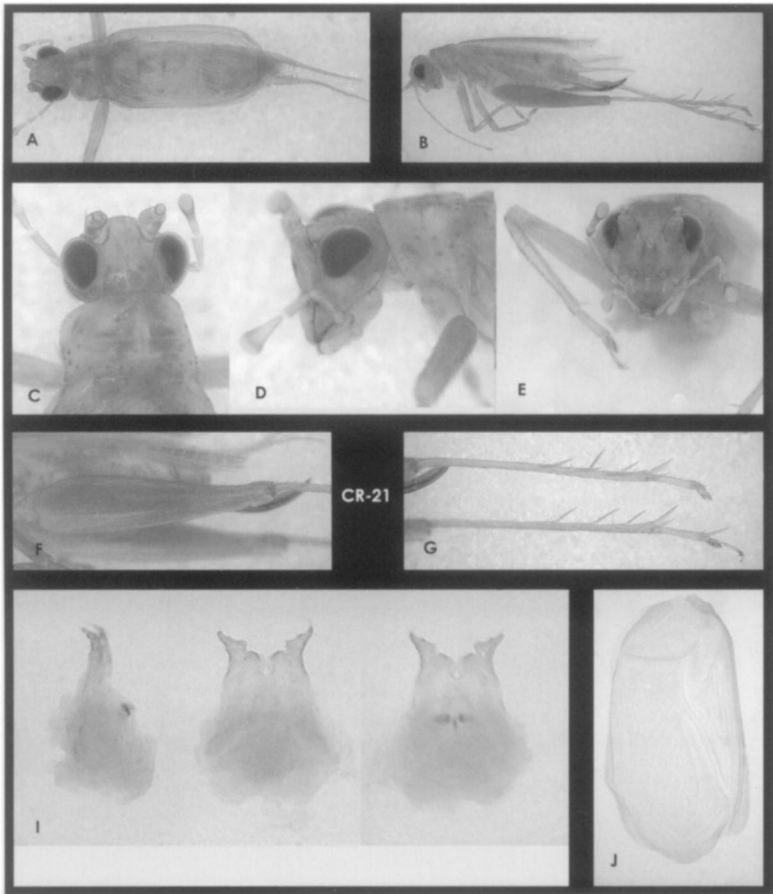


Figure 33. *Anaxipha othnia* holotype. A, D, E, I, J, male. B, F, G, female. A, B, portraits. C, D, head and pronotum. G, face. F, femur-3. G, tibia-3. I, genitalia (side, top, bottom). J, forewing.

and tibia-3 (as figured).

Measurements (male).— CR-16: body length 7.5; forewing length 5; femur-3 length 5.5; cerci length 4; number of file teeth: 118.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. 1 paratype male, 1 paratype female, same data as holotype.

***Anaxipha othnia* new species (Fig. 33)**

Type.— Holotype male. CR-21. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— Pale brown with distinct dark patterns on face, forewings, femur-3 and tibia-3 (as figured).

Measurements (male).— CR-21: body length 6; forewing length 4; femur-3 length -; cerci length 2.3; number of file teeth: 114.

Measurements (female).— CR-21F: body length 6.5; forewing length 4.3; femur-3 length 5; cerci length (broken); ovipositor length 2.

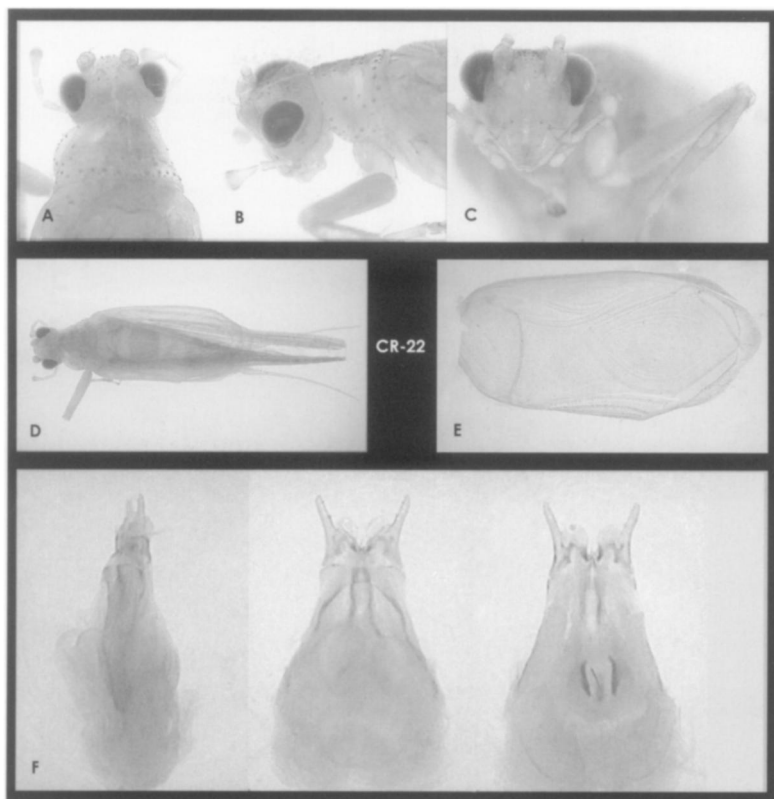


Figure 34. *Anaxipha allotria* holotype. A, B, head and pronotum. C, face. D, portrait. E, forewing. F, genitalia (side, top, bottom views).

Habitat.— Lowland, tropical rain forest.

Specimens.— 4 males, 3 females. Holotype male. Paratype female (same data as holotype).

Anaxipha allotria new species (Fig. 34)

Type.— Holotype male. CR-22. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— Very pale with indistinct darker markings; perhaps green in life.

Measurements (male).— CR-22: body length 8; forewing length 5.5; femur-3 length lost; cerci length 4.3; number of file teeth: 151.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

SYMPHYLOXIPHUS Rehn

Reference.— Eades, Otte and Naskrecki 2006

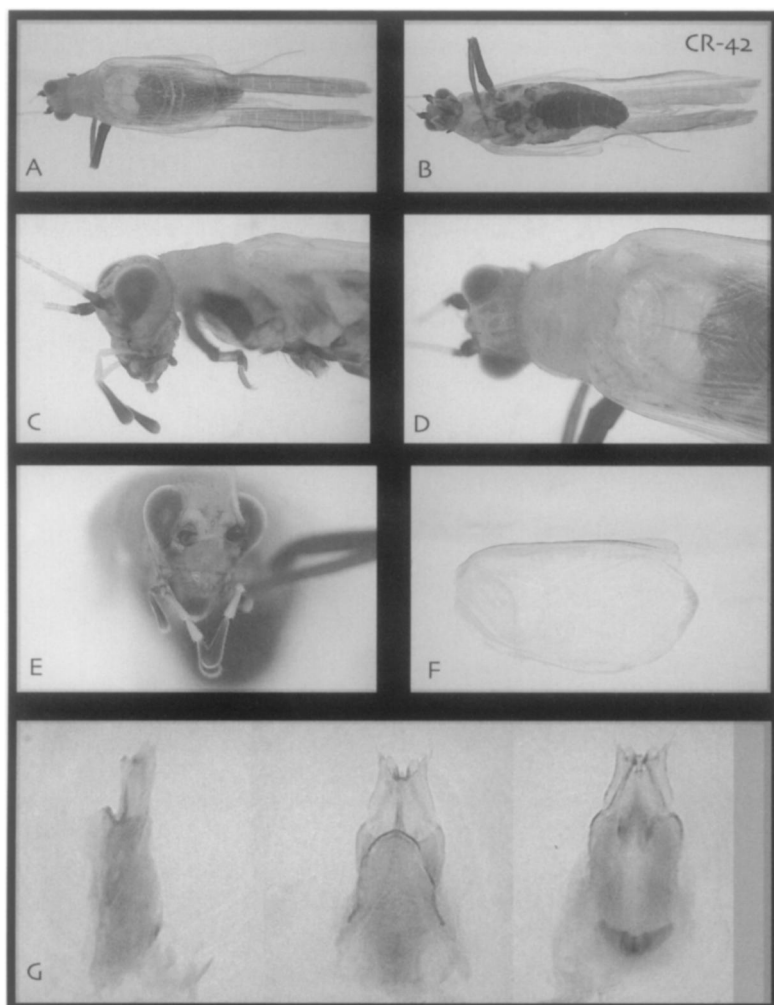


Figure 35. *Symphyloxyphus magnificus* Rehn exemplar male. A, B, portraits. C, D, head and pronotum. E, face. F, forewing. G, genitalia (side, top, bottom views).

***Symphyloxyphus magnificus* Rehn (Fig. 35)**

Type.— Exemplar male. CR-42. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— Body reddish brown and black; head and pronotum rusty red; legs black; bases of antennae black; palpi pale with dark brown terminal segments.

Measurements (male).— CR-42: body length 7; forewing length 5; femur-3 length — ; cerci length 3; number of file teeth: 84.

Habitat.— Lowland, tropical rain forest.

Specimens.— Exemplar male.

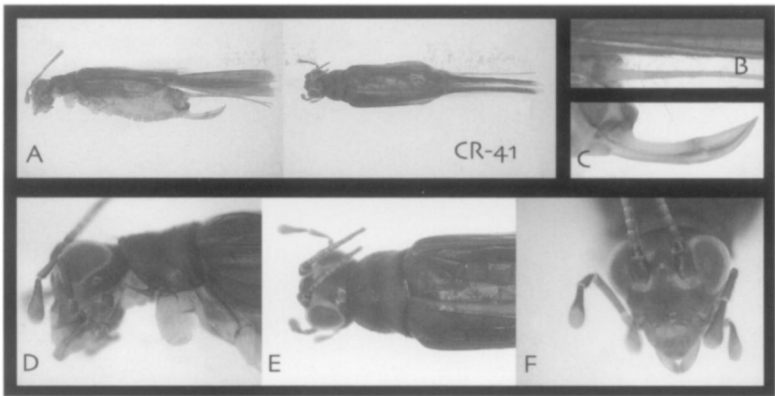


Figure 36. *Symphyloxipha impigra* holotype female. A, portrait. B, cercus. C, ovipositor. C, E, head and pronotum. F, face.

***Symphyloxiphus impigra* new species (Fig. 36)**

Type.— Holotype female. CR-41. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, March 1993, INBio-OET (INBio Collection).

Recognition.— Body color mostly black.

Measurements (female).— CR-41: body length 6.5; forewing length 4.5; femur-3 length —; cerci length 4; ovipositor length 1.8.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female.

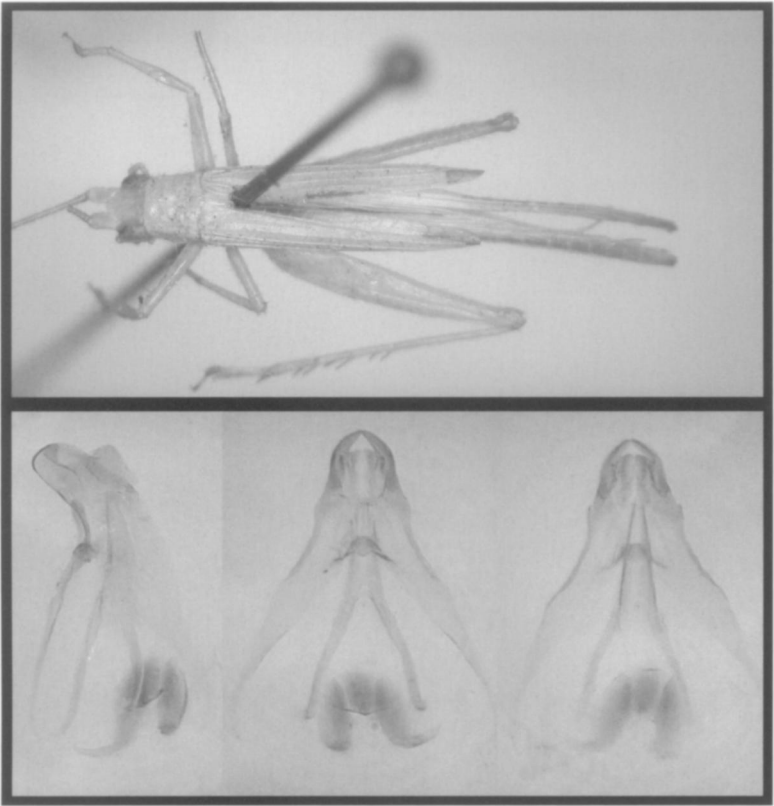


Figure 37. *Hebardinella americana* Chopard exemplar male from French Guyana. Top: portrait. Bottom: genitalia (side, top, bottom views).

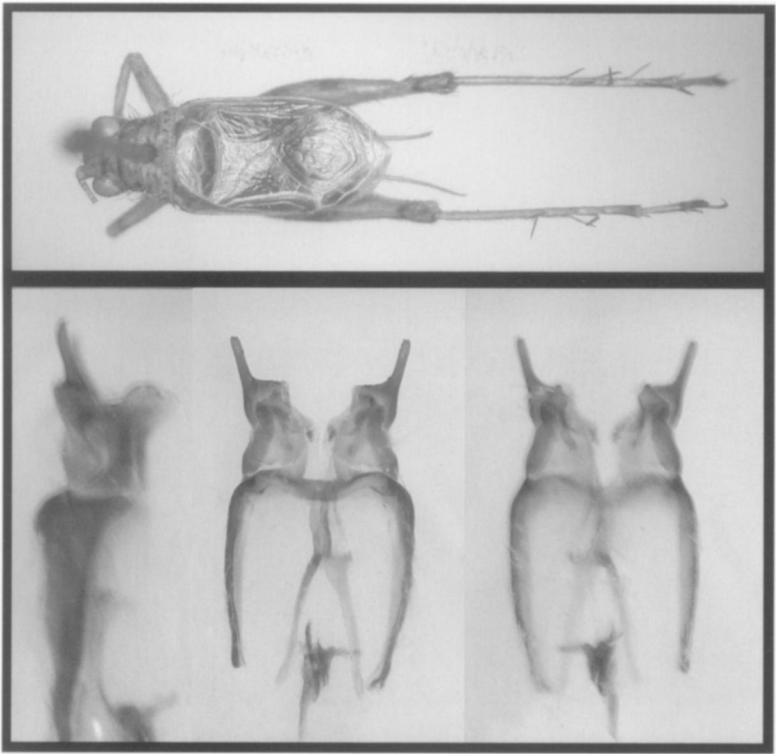


Figure 38. *Trigonidium bifasciatum* (Shiraki), exemplar male from Japan. This species was described under *Paratrigonidium*. But it appears similar to the Hawaiian species of *Trigonidium*. It is almost certainly not a member of *Paratrigonidium*.

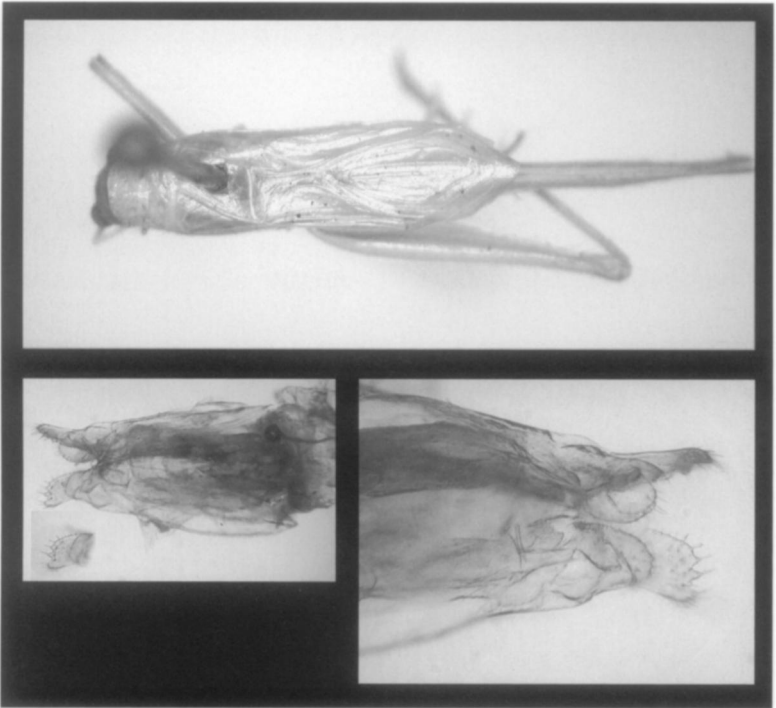


Figure 39. *Macroanaxipha macilenta* Saussure, exemplar male from Mexico.

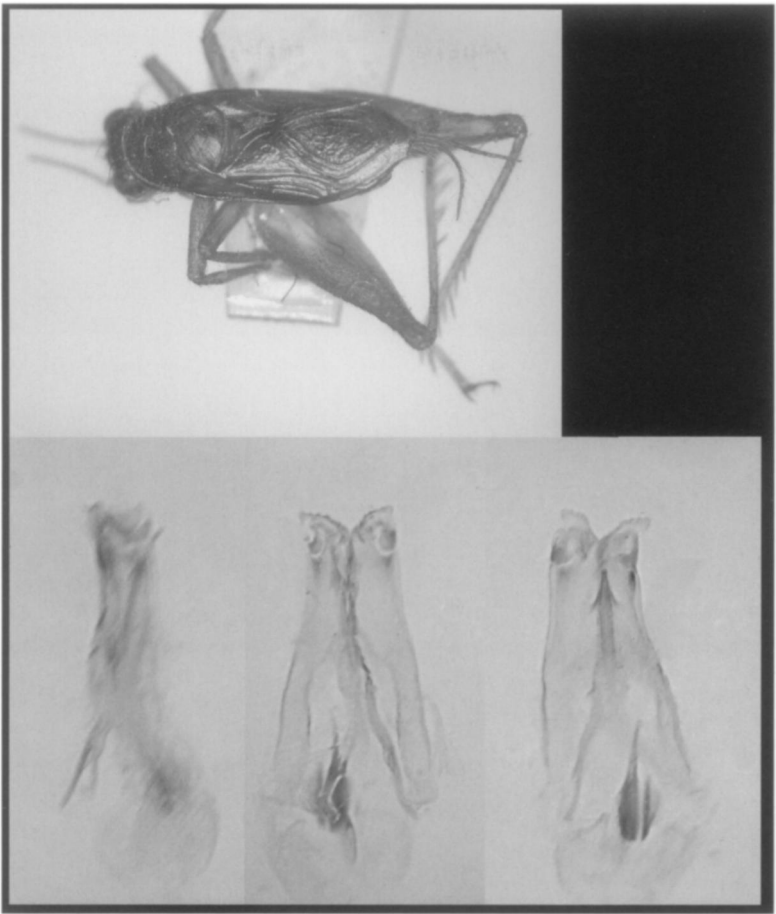


Figure 40, *Anaxipha nigrellus* (Hebard) exemplar male from Costa Rica. This species is here moved from the genus *Symphloxiphus*.

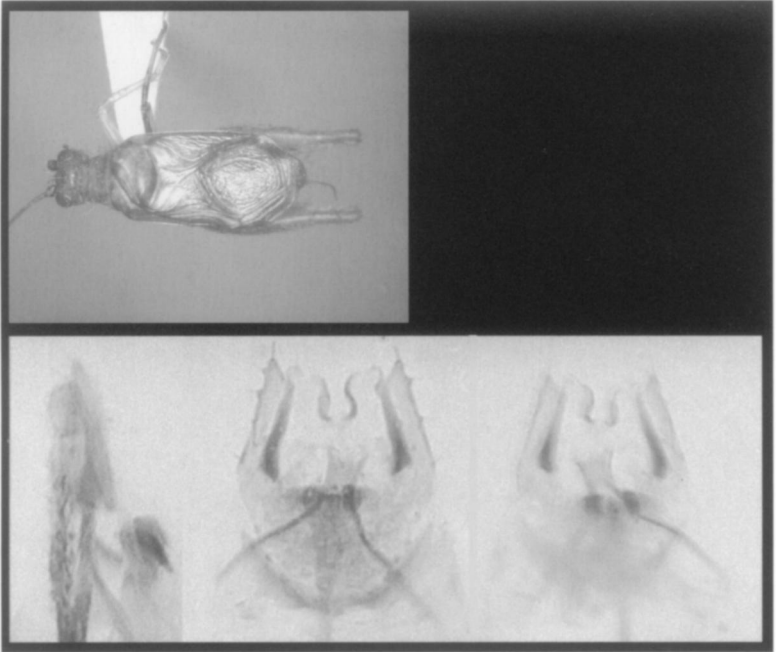


Figure 42. *Symphyloxiphus abbreviatus* Bruner exemplar male.

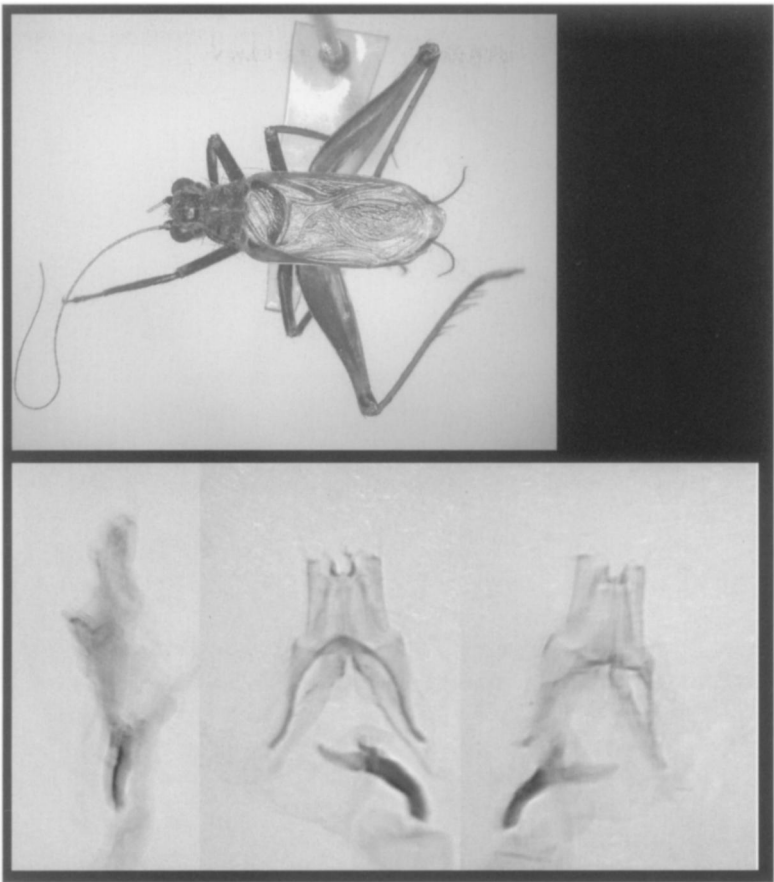


Figure 43. *Symphyloxiphus riveti* Chopard, exemplar male from Ecuador.

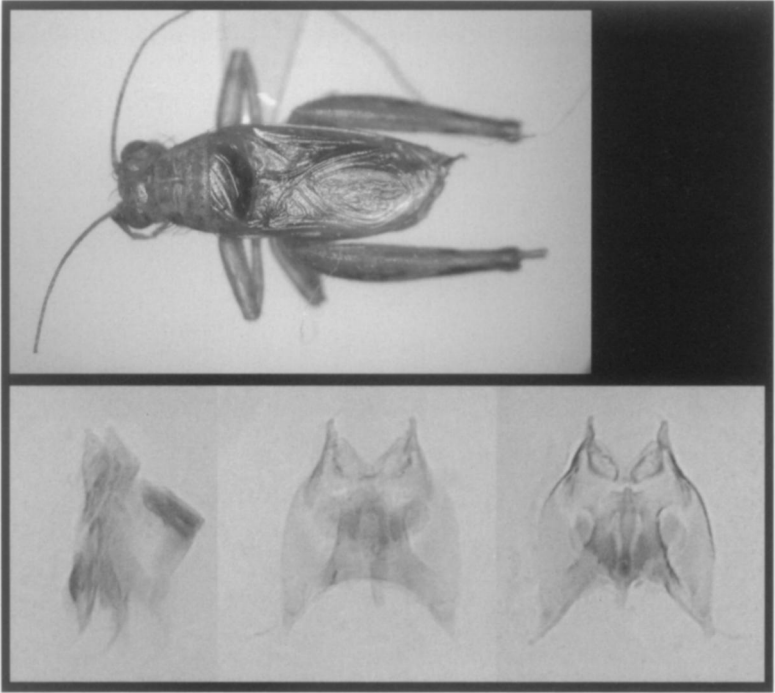


Figure 44. *Symphyloxiphus varians* Hebard, exemplar male from Belize,

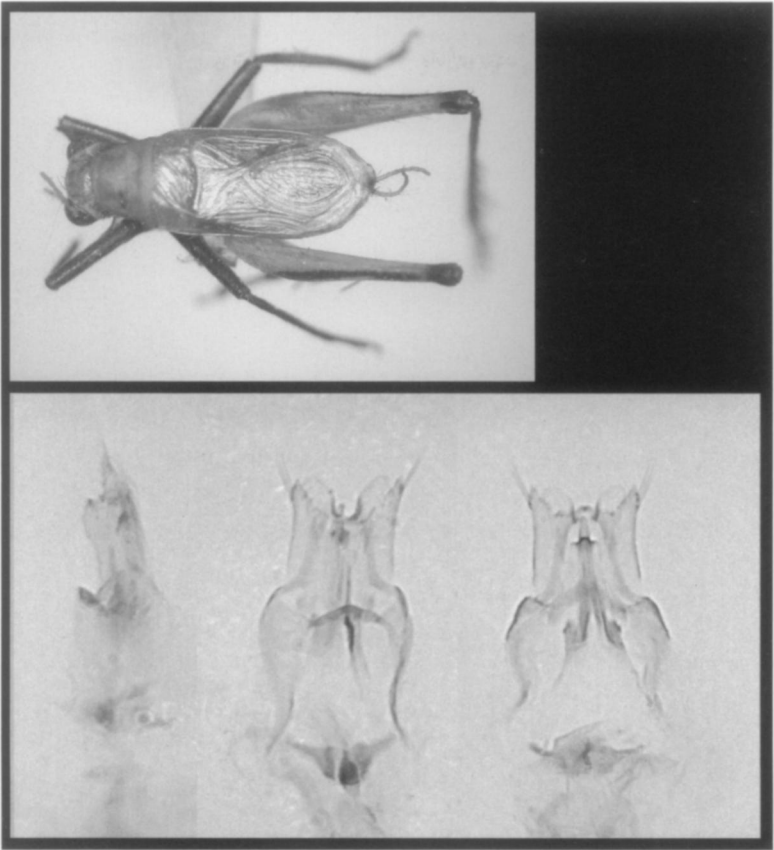


Figure 45. *Symphyloxiphus pictus* Saussure, exemplar male from Panama.



Figure 46. *Phylloscyrtus cicindelloides* Gerstaecker, exemplar male.



Figure 47. *Phylloscyrtus viridicatus* Saussure exemplar male and female.



Figure 48. *Phylloscyrtus magdalenae* exemplar male (top) and exemplar female (bottom)

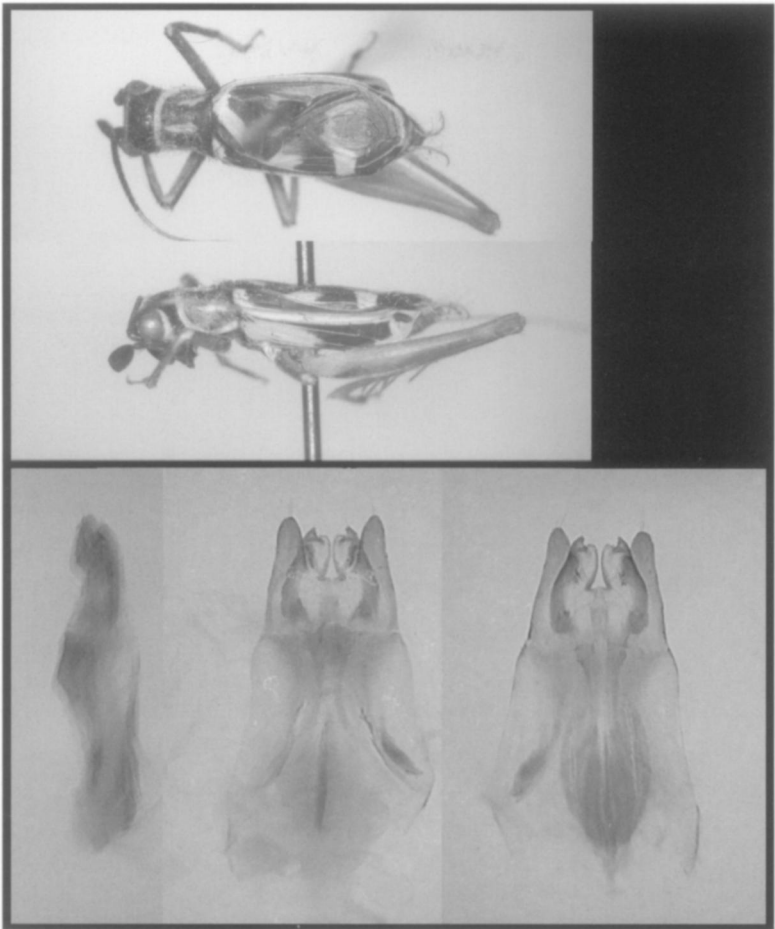


Figure 49. *Phylloscyrtus amoenus* Burmeister exemplar male.

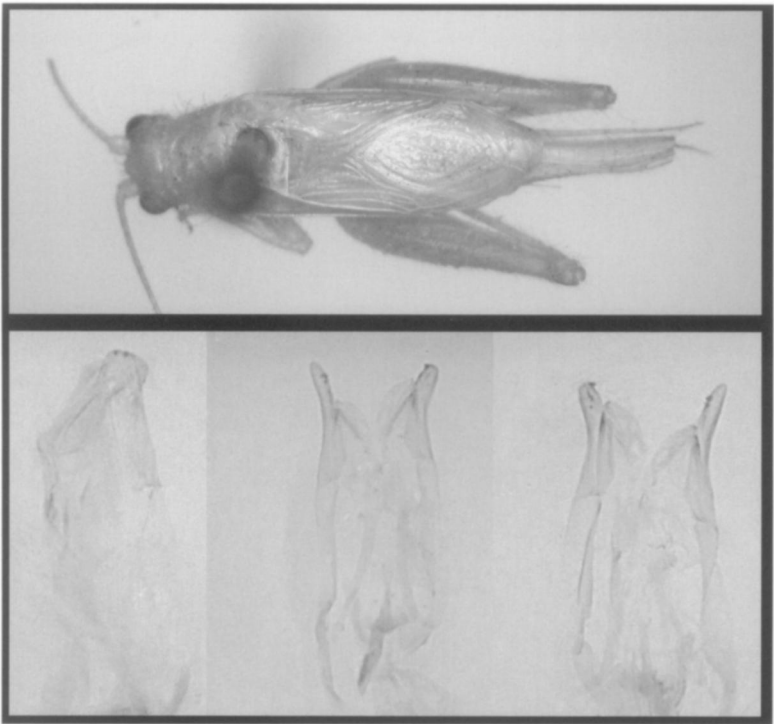


Figure 50. *Cyrtoxipha confusa* TJ Walker, exemplar male from Florida.

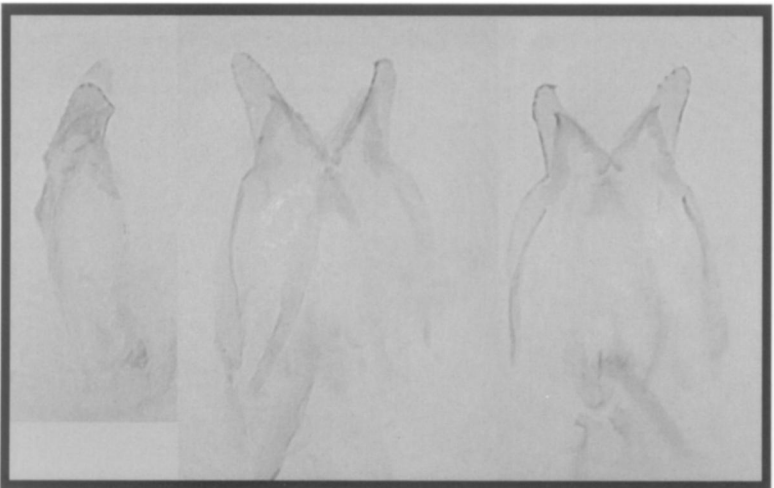


Figure 51. *Cyrtoxipha nola* TJ Walker exemplar male genitalia, from Florida.

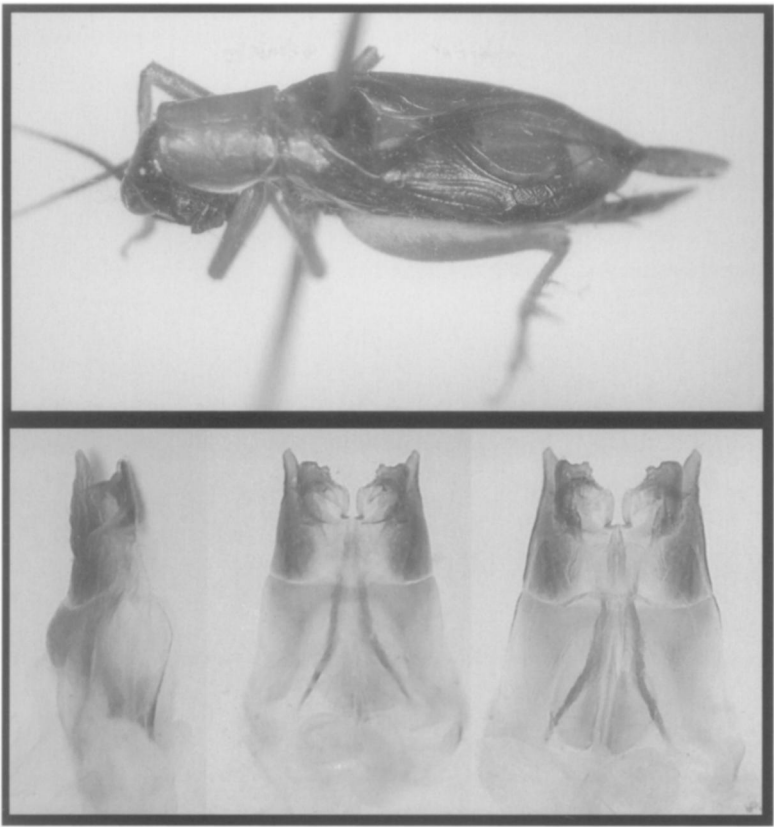


Figure 52. *Cranistus canotus* Saussure, exemplar male.

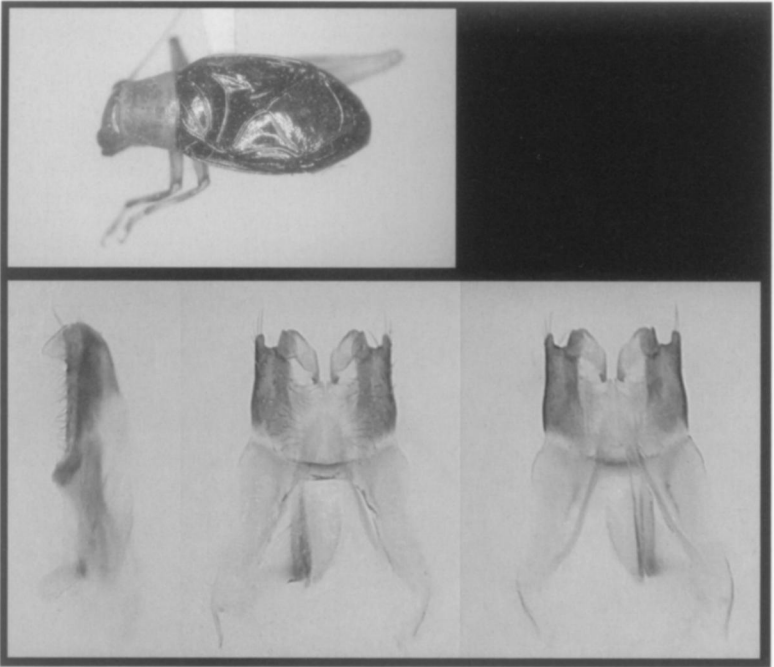


Figure 53. *Phyllopalpus brunnerianus* Saussure, exemplar male, from Mexico.

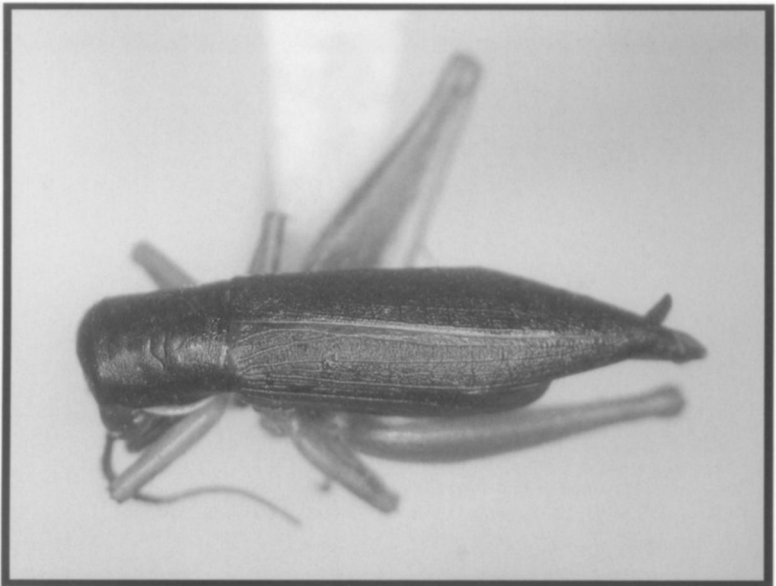


Figure 54. *Phyllopalpus caeruleus* Saussure, exemplar female, from Mexico.

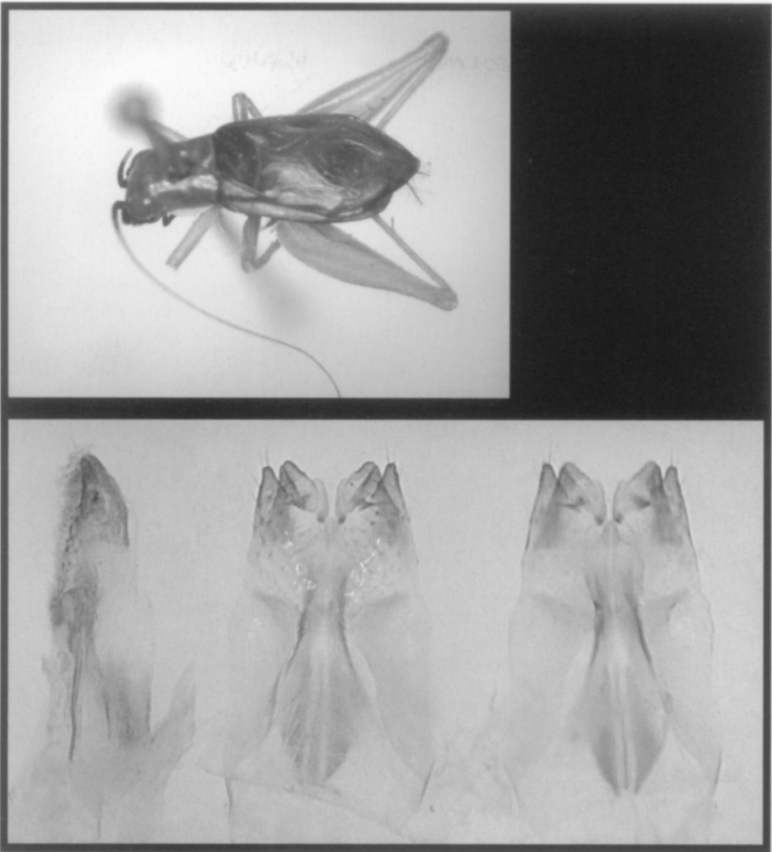


Figure 55. *Phyllopalpus pulchellus* Uhler, exemplar male from United States.

SUBFAMILY PENTACENTRINAE

Reference.— Eades, Otte and Naskrecki 2006.

NEMOBIOPSIS Bruner

Reference.— Eades, Otte and Naskrecki 2006.

Nemobiopsis eugethes new species (Fig. 55)

Type.— Holotype male. CR-61. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Body orange brown; head dark reddish brown; scape of antennae yellowish; tibiae-1 and -2 dark brown; femur-3 with broad cross bands; tibia-1 with a large inner and no outer tympanum; tibia-1 and -2 with 2 and 2 apical spurs respectively; tibia-3 with 5 inner and 6 outer spurs.

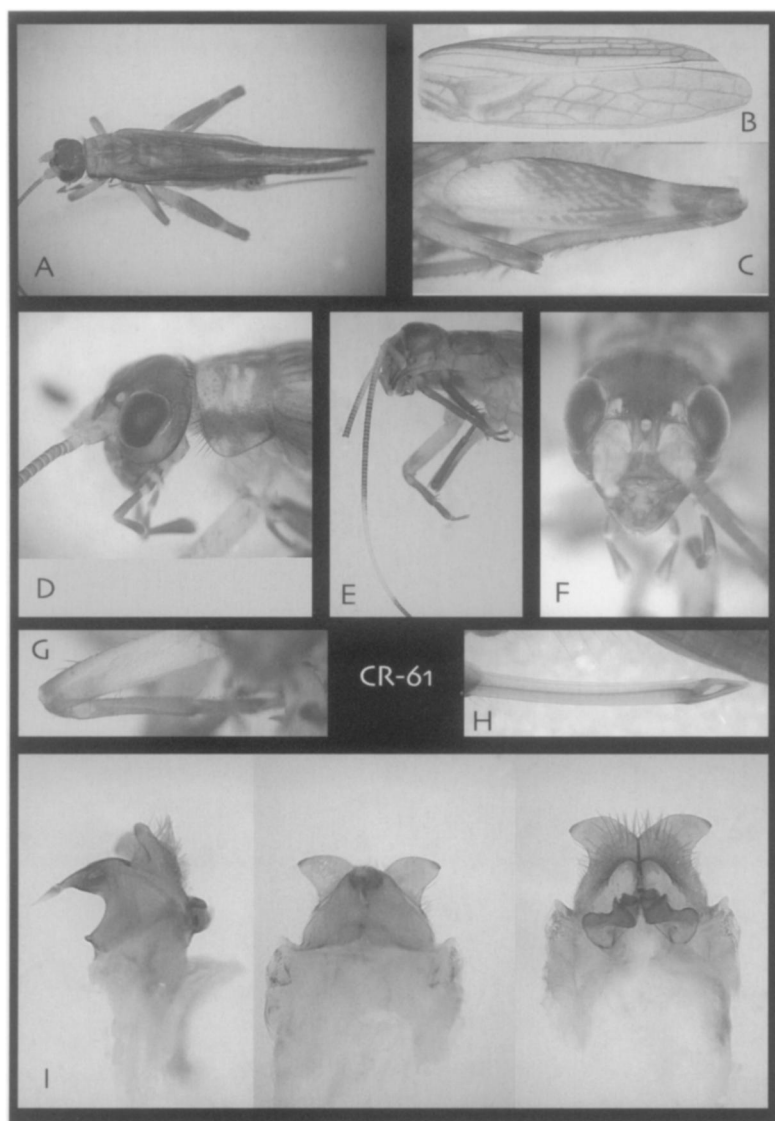


Figure 56. *Nemobiopsis eugethes*. A-G, I, male holotype. H, female paratype, ovipositor. A, portrait. B, forewing. C, femur-3. D, E, head and pronotum. F, face. G, tibia-1. I, genitalia (side, top, bottom views).

Measurements (male).— CR-61: body length 10; forewing length 8; femur-3 length 5.5; cerci length 5; number of file teeth: 112.

Measurements (female).— CR-61F: body length 9; forewing length 7; femur-3 length —; cerci length —; ovipositor length 3.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Numerous individuals. Holotype male. Paratype females (same data as holotype).

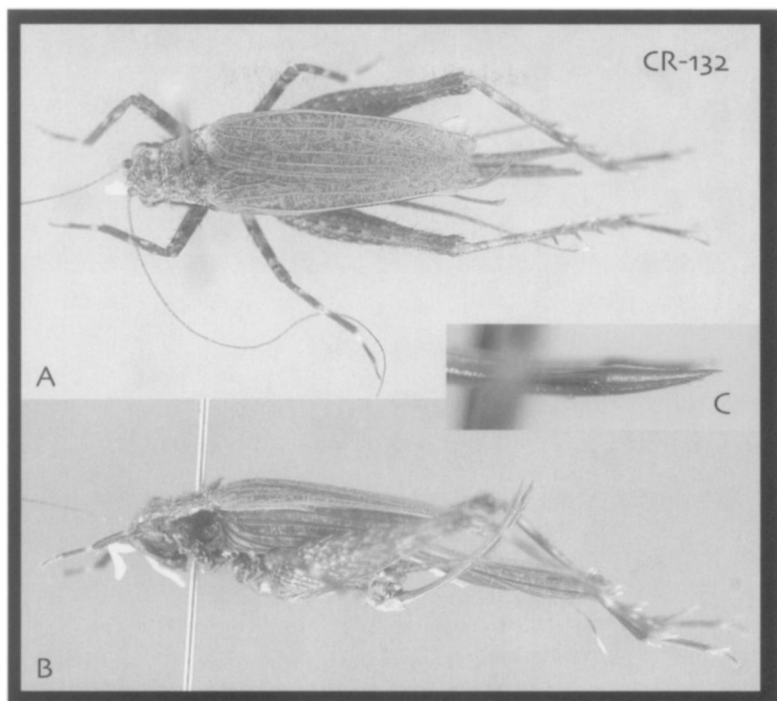


Figure 57. *Eneoptera spodios* holotype female. A, B, portraits. C, end of ovipositor.

SUBFAMILY ENEOPTERINAE

Reference.— Eades, Otte and Naskrecki 2006.

ENEOPTERA Burmeister

Reference.— Eades, Otte and Naskrecki 2006.

***Eneoptera spodios* new species (Fig. 57)**

Type.— Female. Heredia. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.— Dark brown and black; face and side of pronotum black; with white maxillary palpi; top of head and pronotum blotchy pale and dark brown; cells on dorsum of forewings containing many small dark markings; legs strongly banded; with large inner and smaller outer tympanum; tibia-1 and -2 with 2 and 3 apical spurs respectively; tibia-3 with 7 inner and 7 outer spurs.

Measurements (female).—CR-132: body length 12; forewing length 10, femur-3 length 8.5; cerci length 9, ovipositor length 7.—CR-115: body length 11, forewing length 10; femur-3 length 8.5; cerci length 9; ovipositor length 6.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female and paratype female (see type data).

***Eneoptera panoplos* new species (Fig. 58)**

Type.— Female. Heredia. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1994, INBio-OET (INBio Collection).

Recognition.— Grey in color; face with 3 indistinct vertical bands; top of head dark

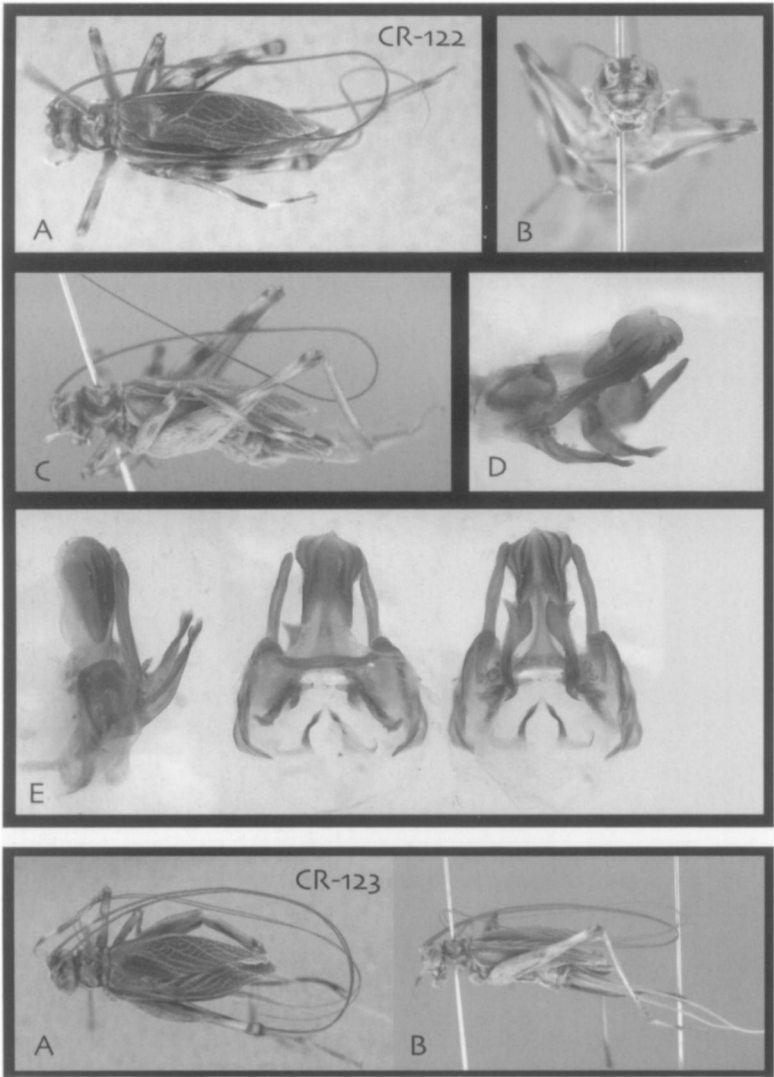


Figure 58. *Top*: *Eneoptera panoplos* holotype male. A, C, portraits. B, face. D, genitalia (partial rear view). E, genitalia (side, top, bottom views). *Bottom*: A, B, female paratype.

between eyes; pronotum dorsum with black bands along front and rear margins; lateral lobes with downward arching broad black band through middle section; forewing with pale veins and darker cells; harp with 5 veins; mirror with 5 cross veins; legs distinctly banded; cerci extremely long.

Measurements (male).—CR-122: body length 19; forewing length 14, femur-3 length 15; cerci length 20+.

Measurements (female).—CR-123: body length 19, forewing length 16; femur-3 length 16; cerci length 26; ovipositor length 15.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female and paratype female (see type data).

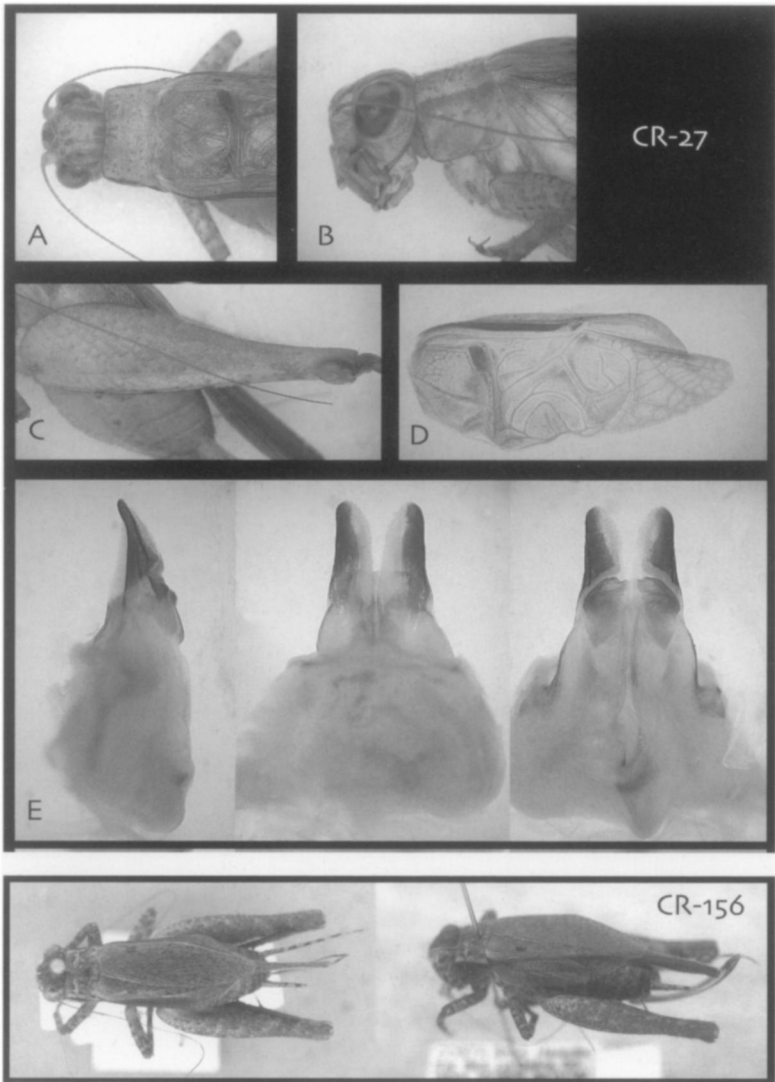


Figure 59. *Eneoptera surinamensis* exemplar male (A-E) and female (bottom). A, B, head and pronotum. C, femur-3. D, forewing. E, genitalia (side, top, bottom). Bottom: portraits of female.

***Eneoptera surinamensis* De Geer (Fig. 59)**

Type.— Exemplar male. CR-27. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, June 1993, INBio-OET (INBio Collection).

Measurements (male).— CR-25: body length 20; forewing length 13; femur-3 length 14; cerci length 8+; number of file teeth: 344.

Habitat.— Lowland, tropical rain forest.

Specimens.— Numerous males and females.

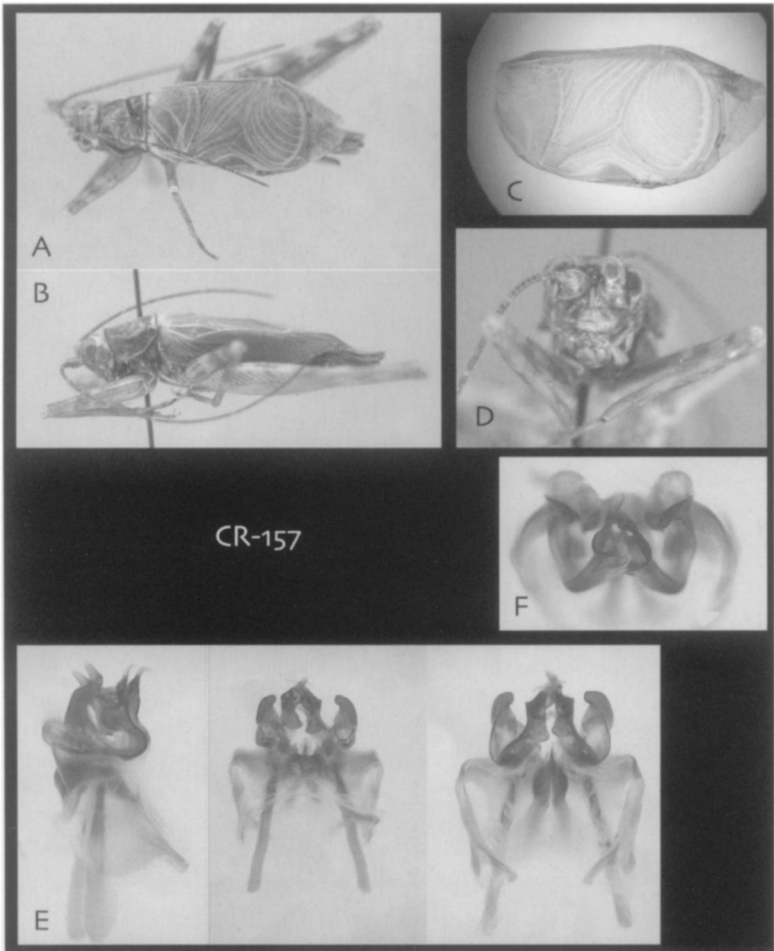


Figure 60, *Paragryllus eclogos* holotype mle. A, B, portrait. C, forewing. D, face. E, F, genitalia (side, top, bottom and rear views).

PARAGRYLLUS Guerin

Reference.— Eades, Otte and Naskrecki 2006.

Paragryllus eclogos new species (Fig. 60)

Type.— Holotype female. CR-157. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1994, INBio-OET (INBio Collection).

Recognition.— File teeth with long wings. With no obvious metanotal glands. With small inner and no outer tympanum. Antennae with bristles.

Measurements (male).— CR-157: body length 37; forewing length 19; femur-3 length 21; cerci length —; number of file teeth: 299.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

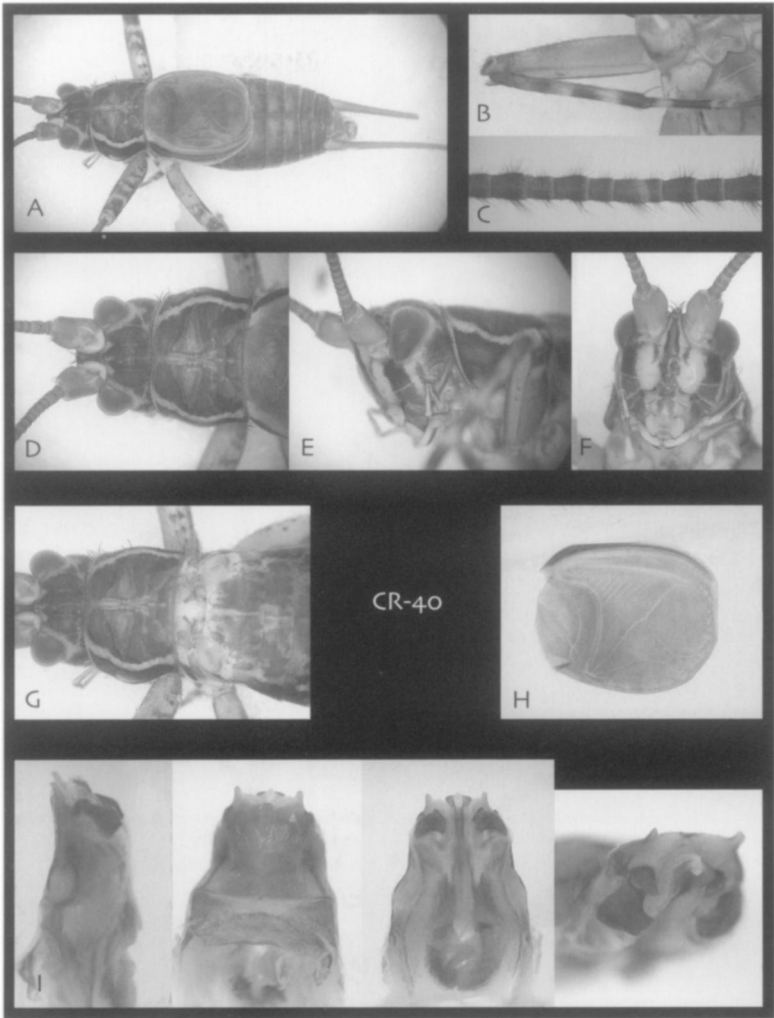


Figure 61. *Aclodes scandens* holotype. A, portrait, B, tibia-1. C, middle section of antenna. D,E,F,G, head and pronotum. H, forewing. I, genitalia (side, top, bottom, rear views).

***ACLODES* Hebard**

Reference.— Eades, Otte and Naskrecki 2006.

***Aclodes scandens* new species (Fig. 61)**

Type.— Holotype male. CR-40. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/11/341, 1993, INBio-OET (INBio Collection).

Recognition.— Dark reddish brown and black with striking ivory colored bands along eyes and at lateral margins of pronotal disk; face with broad and narrow pale and dark bands; tibia-1 with small inner and no outer tympanum; tibia-1 and -2 with 2 and 3 apical spurs respectively; hind leg lost; harp with 9 veins; mirror with 3 cross veins, but posterior

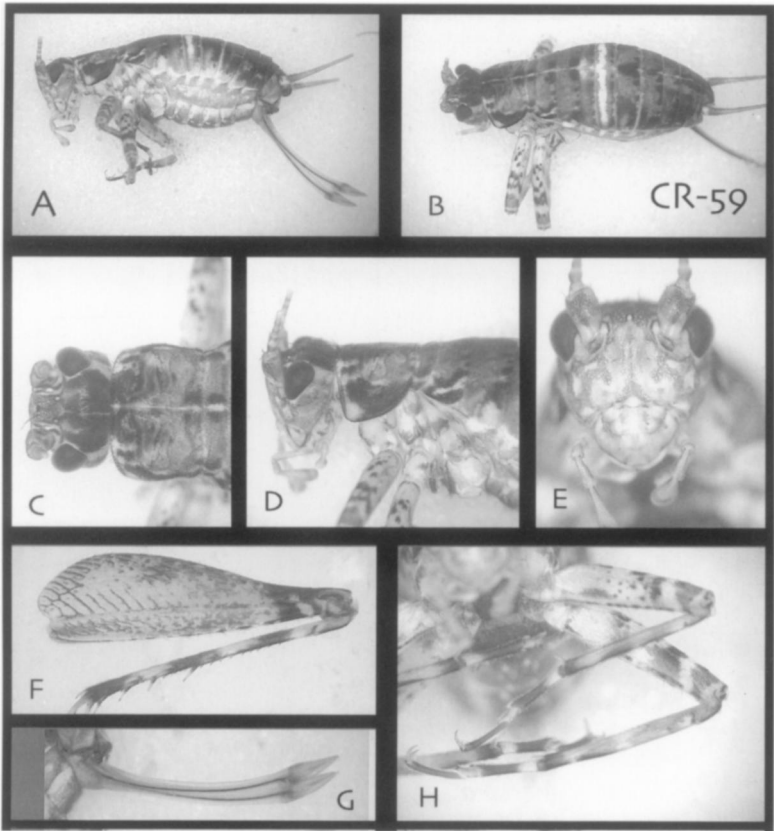


Figure 62. *Aclodes orchestes* holotype female. A, B, portraits. C, D, E, head and pronotum. F, femur-3. G, ovipositor. H, legs-1 and -2.

of mirror not clearly defined; antennae with strong bristles in groups; metanotum without obvious glands.

Measurements (male).— CR-40: body length 18.5; forewing length 7; femur-3 length lost; cerci length 16; number of file teeth: 120.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

***Aclodes orchestes* new species (Fig. 62)**

Type.— Holotype female. CR-59. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, February 2001 (INBio Collection).

Recognition.— Small; patterned with dark brown, reddish brown, and yellow brown markings; legs distinctly banded; face somewhat banded; without auditory tympana (suggesting male is mute); tibia-3 with 6 inner and 7 outer spurs; tibia-1 and -2 with 2 and 2 apical spurs respectively.

Measurements (female).— CR-59: body length 11; forewing length none; femur-3 length 8; cerci length broken; ovipositor length 5.5.

Habitat.— Lowland, tropical rain forest.

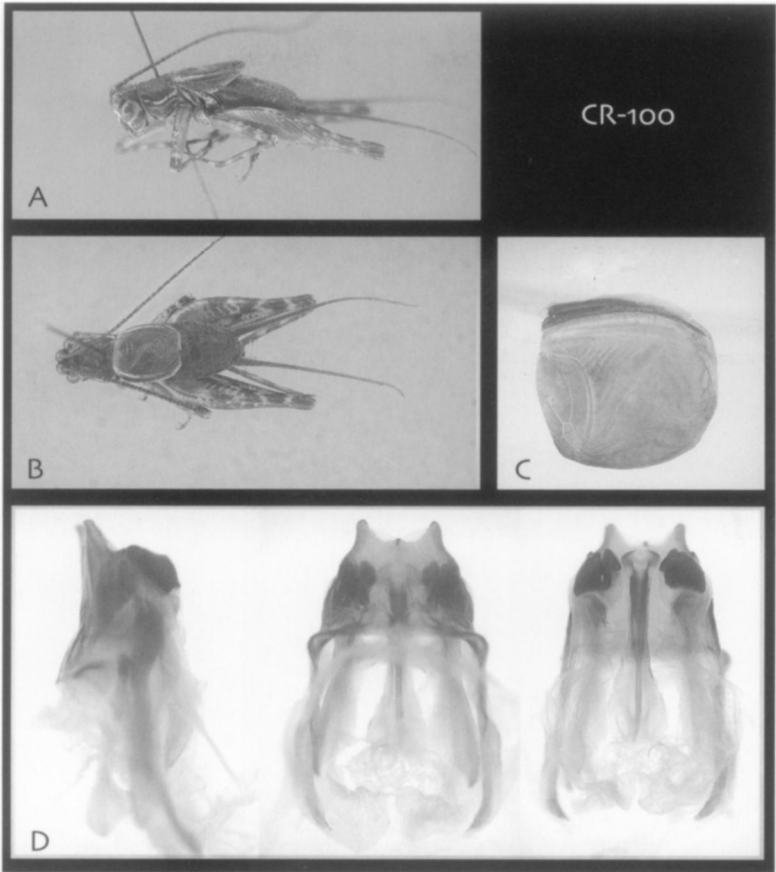


Figure 63. *Aclodes herpon* holotype. A, B, portrait. C, forewing. D, genitalia (side, top, bottom views).

Note.—Possibly this species will belong to a new genus because the absence of tympana suggests that the male are mute.

Specimens.— Holotype female.

***Aclodes herpon* new species (Fig. 63, 64)**

Type.— Holotype male. CR-100. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Very similar to *A. scandens* but proportions of genitalic lobes distinctive; also banding on top of head not nearly so marked.

Measurements (male).— CR-100: body length 18; forewing length 7; femur-3 length 15; cerci length 16 — CR-105: body length 20; forewing length 6; femur-3 length 13.5; cerci length 14+; number of file teeth: 124.

Measurements (female).— CR-99: body length 18; forewing length 1; femur-3 length 14; cerci length 16+; ovipositor length 17.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype male (CR-105), same data as holotype, but April 1994. Paratype female (CR-99), same data as holotype, but April 1996.

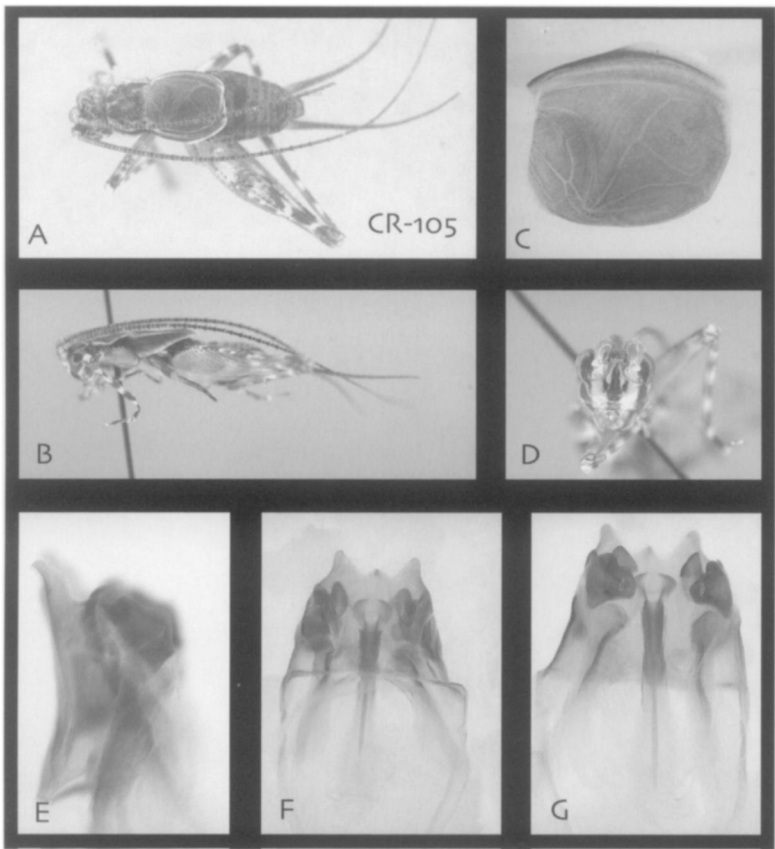


Figure 64. *Aclodes herpon* paratype. A, B, portrait. C, forewing. D, genitalia (side, top, bottom views).

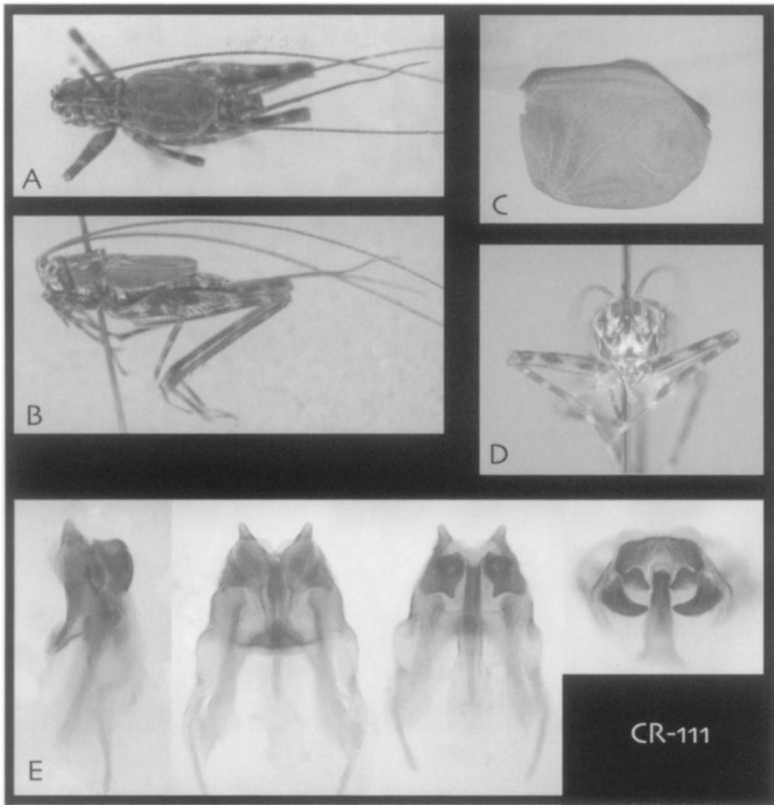


Figure 65. *Aclodes turbidus* holotype. A, B, portraits. C, forewing, D, face. E, genitalia (side, top, bottom and rear views).

Aclodes turbidus new species (Fig. 65, 66)

Type.— Holotype male. CR-111. Costa Rica, Coto Brus, Las Cruces, Jardín Botánico Wilson, March 1994, coll. P. Naskrecki (INBio Collection).

Recognition.— Dark brown with some pale stripes on pronotum; these stripes are broken up, not continuous as in *A. scandens* and *A. herpon*; genitalic lobes forming more of a V.

Measurements (male).— CR-111: body length 17; forewing length 7; femur-3 length 12.5; cerci length 17; number of file teeth: 157 — CR-90: body length 27; forewing length 7; femur-3 length 14; cerci length 21; number of file teeth: 154.

Measurements (female).— CR-110: body length 17; forewing length 4.5; femur-3 length 14; cerci length 17.5; ovipositor length 12.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (CR-110), same data as holotype. Paratype male (CR-90) Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

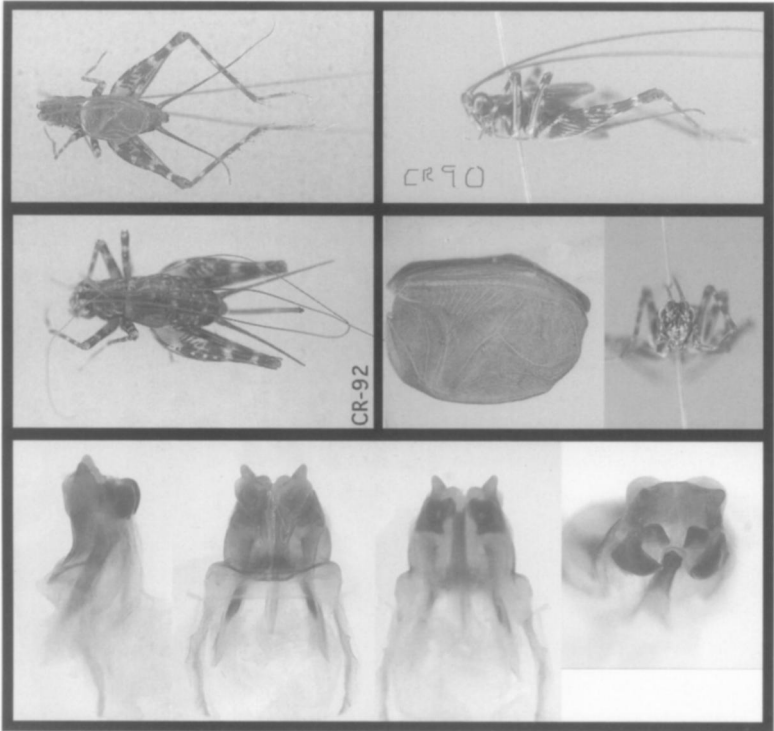


Figure 66. *Aclodes turbidus* paratype. Genitalia views: side, top, bottom and rear.

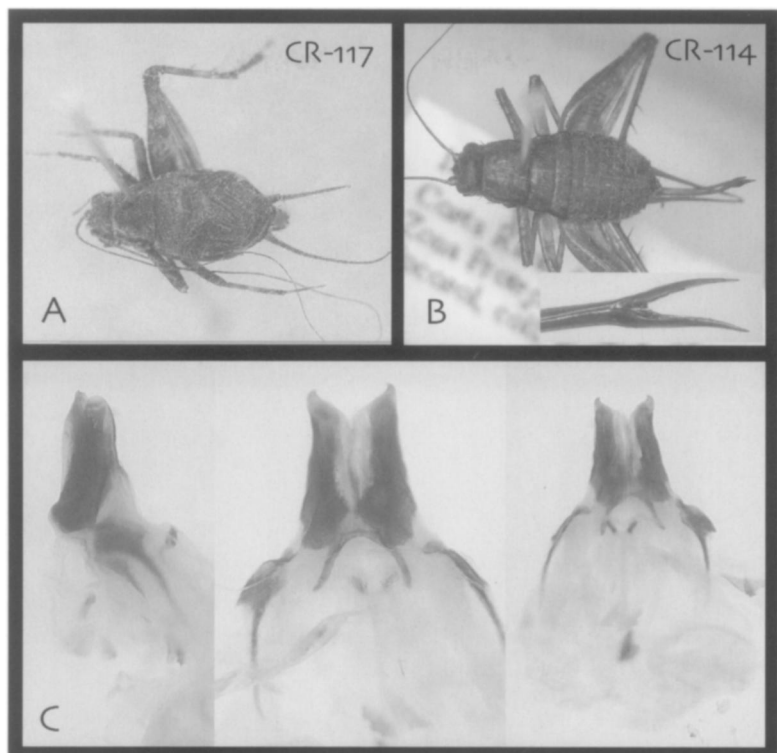


Figure 67. *Paracloides minor* holotype male (A,C) and paratype female (B). C, genitalia (side, top, and bottom views).

PARACLODES Desutter-Grandcolas

Reference.— Eades, Otte and Naskrecki 2006.

Paracloides minor new species (Fig. 67)

Type.—Holotype male. Costa Rica. Alajuela Province, Zona Protectora de Arenal Pocosol, 16 February 1994 (P. Naskrecki) (InBio Collection)

Recognition.— Variegated dark and pale brown; face dark brown; cheeks and lateral lobes blackish; top of pronotum variegated; forewing with 5 harp veins; tibia-1 and -2 with 2 and 2 apical spurs respectively; tibia-3 with 6 inner and 7 outer spurs; with small inner and no outer tympana.

Measurements (male).— body length 8; forewing length 5; femur-3 length 6; cerci length ca. 7.

Measurements (female).— body length 9; without forewings; femur-3 length 76; cerci length ca. 7; ovipositor length ca. 6.

Specimens.— Holotype male (see holotype data) and paratype female (same data as holotype).

AMPHIACUSTA Saussure

Reference.— Eades, Otte and Naskrecki 2006.

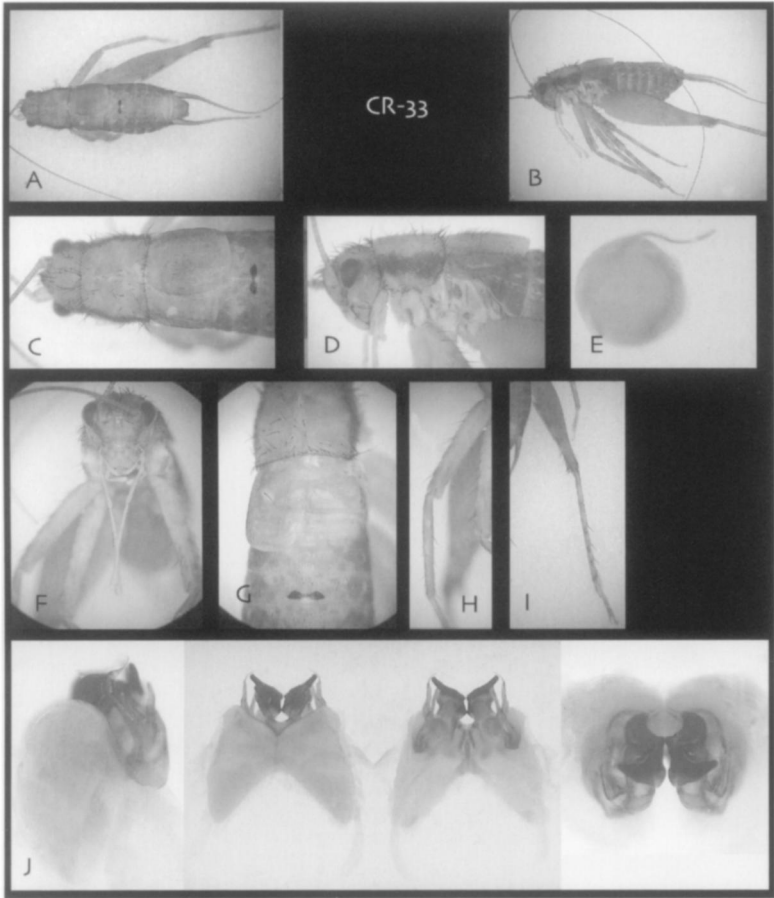


Figure 68. *Amphiacusta rica* holotype. A, B, portraits. C, D, head and pronotum, E, spermatophore. F, face. G, forewing. H, tibia-1. I, femur-3. J, genitalia (side, top, bottom and rear views).

Amphiacusta rica new species (Fig. 68, 69)

Type.— Holotype male. CR-33. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, March 1993, INBio-OET (INBio Collection).

Recognition.— Pale reddish brown; small; forewing venation and condition of stridulatory vein suggest this species no longer signals with sound, but it retains a small inner (but no outer) tympanum.

Measurements (male).— CR-33: body length 9.5; forewing length 2.5; femur-3 length 7; cerci length 6.5; number of file teeth: 11 (very small, non-functional).

Measurements (female).— CR-28: body length 11; forewing length 1.5; femur-3 length 9; cerci length 5+; ovipositor length.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (CR-28), same data as holotype, but September 1993 — Paratype male, and female.

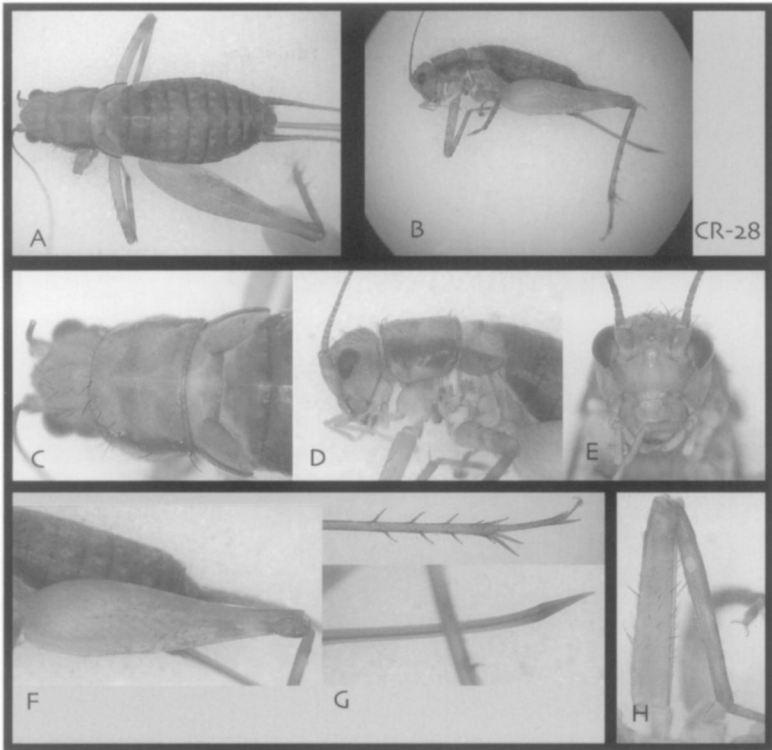


Figure 69. *Amphiacusta rica* paratype female. A, B, portraits. C, D, E, head and pronotum. F, femur-3. G, tibia-3 and ovipositor. H, tibia-1.

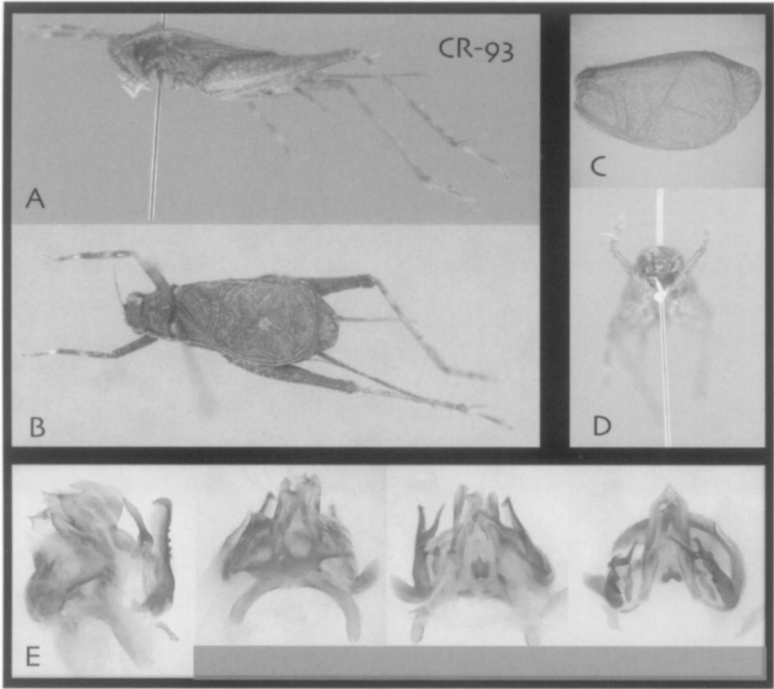


Figure 70. *Amphiacusta digrediens* holotype. A, B, portraits. C, forewing. D, face. E, genitalia (side, top, bottom and rear views).

***Amphiacusta digrediens* new species (Fig. 70)**

Type.— Holotype female. CR-93. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Body color mottled gray-brown. Face black.. Maxillary palpi white. Forewing finely mottled. Mirror with two dividing veins. Harp with 5 veins. C-sclerite of genitalia with serrations.

Measurements (male).— CR-93: body length 11.5; forewing length 9; femur-3 length 8.5; cerci length 9; number of file teeth: 171.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

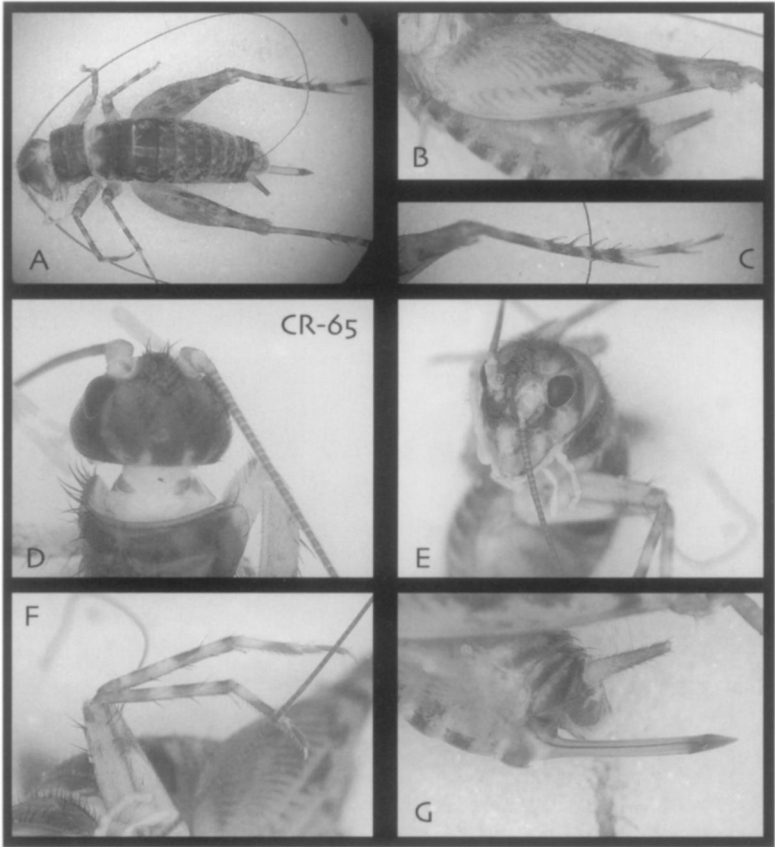


Figure 71. *Amphiacusta diaphoros* holotype female. A, portrait, B, femur-3. D, E, head and pronotum. F, legs-1 and -2. G, ovipositor.

***Amphiacusta diaphoros* new species (Fig. 71)**

Type.— Holotype female. CR-65. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, February 2001 (INBio Collection).

Recognition.— Top of thorax and head mostly dark brown; abdomen highly patterned; femora and tibiae banded; face mostly dark brown; without auditory tympana. Ovipositor much shorter than in *Amphiacusta rica*.

Measurements (female).— CR-65: body length 12; femur-3 length 8; ovipositor length 3.5.

Habitat.— Tropical rain forest.

Note.— We tentatively place this species in *Amphiacusta*, though it is probable that it belongs elsewhere. The absence of auditory tympana suggests that the male is mute, a condition not known in *Amphiacusta* (but see *A. rica* above which seems to represent the intermediate condition).

Specimens.— Holotype female.

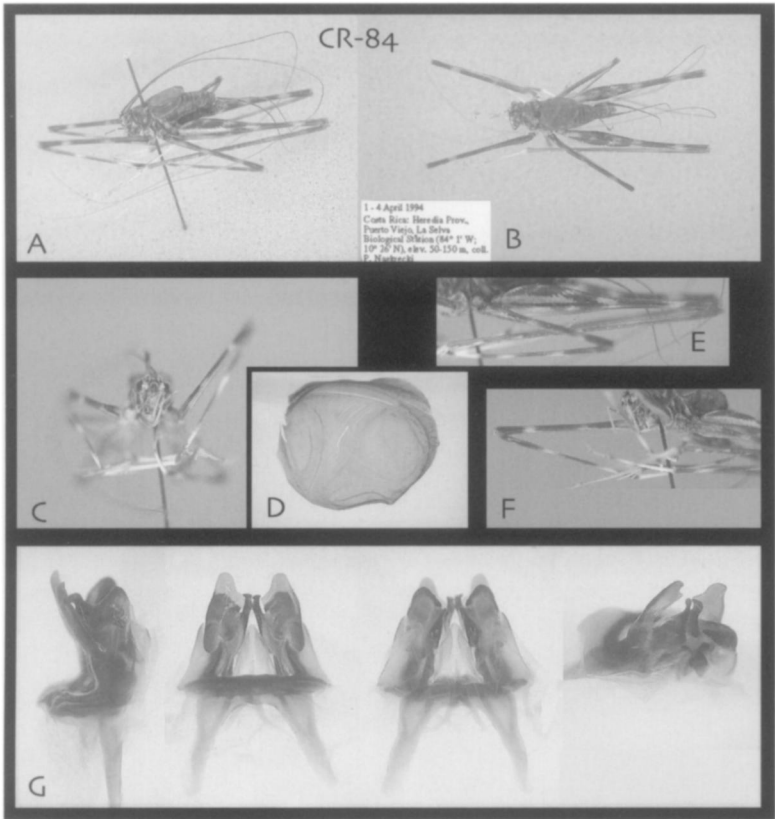


Figure 72. *Amphiacusta salticus* holotype. A, B, portraits. C, face. D, forewing. E, femur-3. F, tibia-1. G, genitalia (side, top, bottom and rear views).

***Amphiacusta salticus* new species (Fig. 72)**

Type.— Holotype female. CR-84. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Extremely long-legged; femur-1 much longer than femur-2 (20mm vs 14mm); tibia-1 with small inner and no outer auditory tympanum; tibia-1 and -2 with 2 and 2 apical spurs; tibia-3 with 6 inner and 7 outer spurs.

Measurements (male).— CR-84: body length 20; forewing length 7; femur-3 length 26; cerci length 19; number of file teeth: 183 — CR-84: body length 22; forewing length 7.5; femur-3 length 30; cerci length 14; number of file teeth: — CR-84: body length 18; forewing length 6.5; femur-3 length 28; cerci length 17.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

***LEPTOPEDETES* Desutter-Grandcolas**

Reference.— Eades, Otte and Naskrecki 2006.

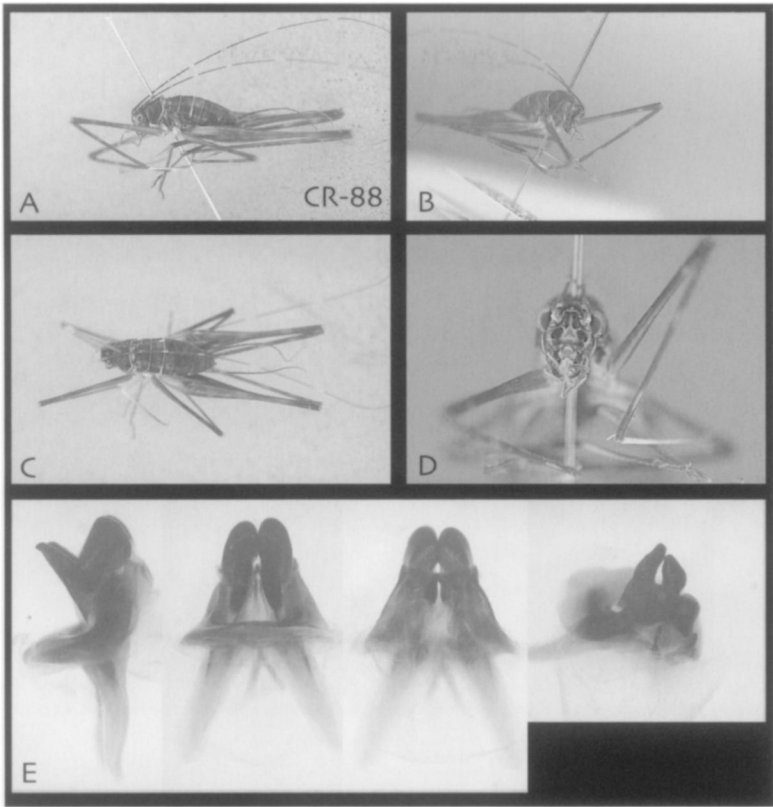


Figure 73. *Leptopedetes idalimos* holotype. A, B, C, portraits. D, face and tibia-I. E, genitalia (side, top, bottom and rear views).

***Leptopedetes idalimos* new species (Fig. 73)**

Type.— Holotype female. CR-88. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— A very dark species with reddish legs and striking but thin white band crossing the body and bordering the pronotum; extremely long legged; with very small oval wing pads; without auditory tympana; tibia-1 and -2 with 2 and 2 apical spurs respectively; tibia-3 with 6 inner and 7 outer spurs; tarsi-1 and 2 white in basal half.

Measurements (male).— CR-88: body length 15; forewing length 1; femur-3 length 19; cerci length 13.

Measurements (female).— CR-88F: body length 18; femur-3 length 22; cerci length 12; ovipositor length 20.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

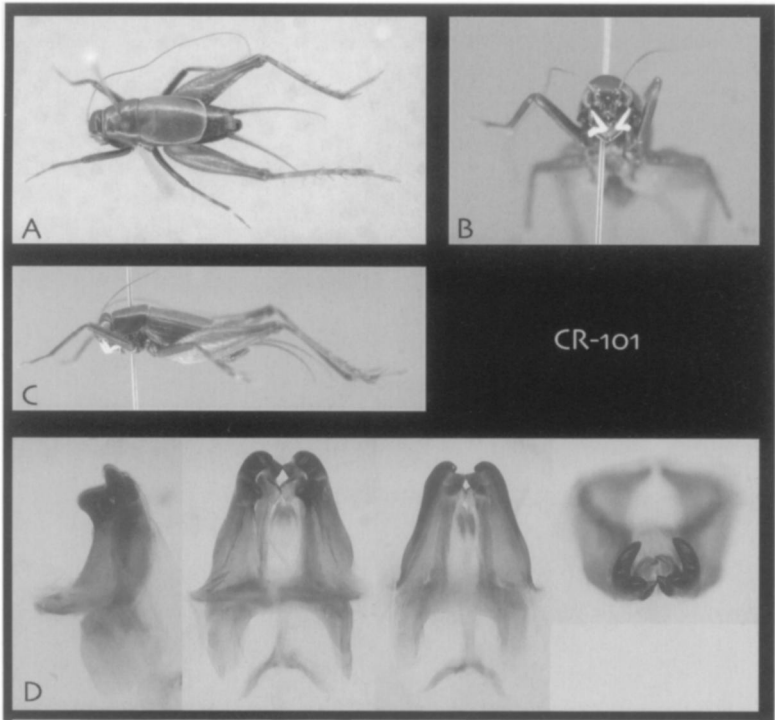


Figure 74. *Luzara phyxelis* holotype. A, C, portraits. B, face. D, genitalia (side, top, bottom and rear views).

LUZARA Walker

Reference.— Eades, Otte and Naskrecki 2006.

Luzara phyxelis new species (Fig. 74)

Type.— Holotype male. CR-101. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Dark reddish brown; very shiny; with small inner and no outer tympanum; tibia-1 and -2 with 2 and 3 apical spurs respectively; tibia-3 with 7 inner and 7 outer spurs.

Measurements (male).— CR-101: body length 13.5; forewing length 5.5; femur-3 length 10; cerci length 9; number of file teeth: none.

Measurements (female).— CR-102: body length 14; forewing length 4; femur-3 length 10; cerci length 8+; ovipositor length 7.5 — CR-103: body length 13; forewing length 4; femur-3 length 10; cerci length 10; ovipositor length 8.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (CR-102) same data as holotype. Paratype female (CR-103), same data as holotype, but April 1998.

Luzara catherpon new species (Fig. 75)

Type.— Female. CR-104. Costa Rica. Puntarenas Province. Valle de Coto Brus, Las Cruces, Wilson Botanical Gardens, 700-1000 m, 1-6 December 1995 (P. Naskrecki)

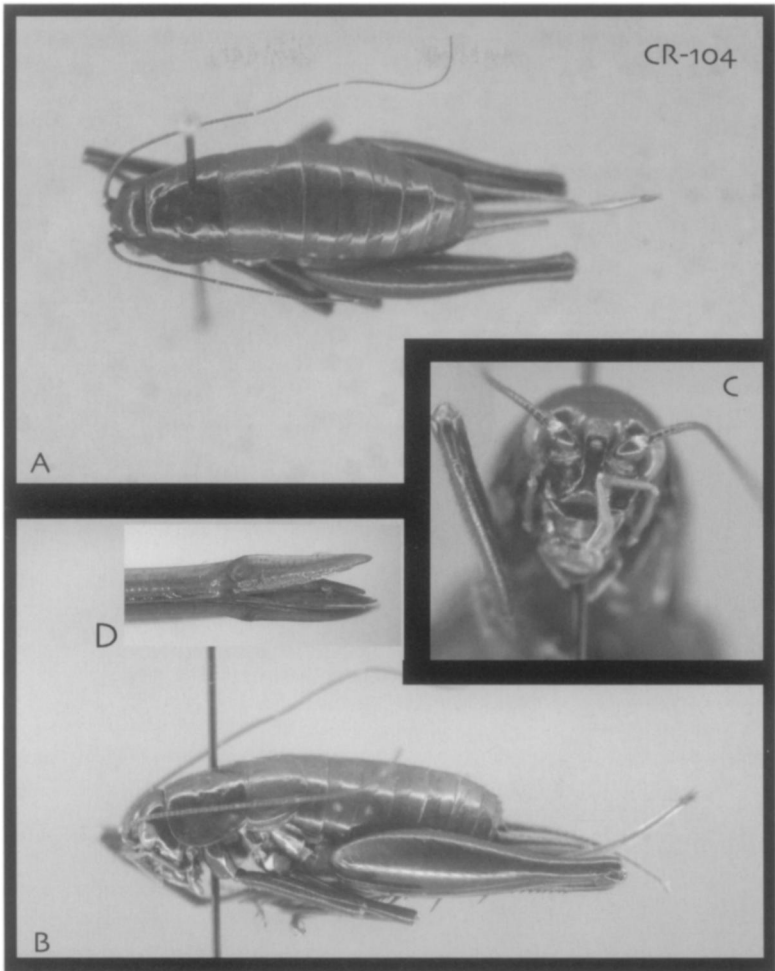


Figure 75. *Luzara catherpon* holotype female. A, B, portraits. C, face. D, ovipositor.

(InBio Collection).

Recognition.— Shiny, dark reddish brown; tibia-3 with 6 inner and 7 outer spurs; tibia-1 and -2 with 2 and 4 apical spurs respectively; tibia-1 with small inner and outer tympana.

Measurements (female).— body length 24; forewing length 4; femur-3 length 17; cerci length broken; ovipositor length 13.

Specimens.— Holotype female (see holotype data).

***SELVACLA* new genus**

Type species.—*Selvacla troxalis* n. sp.

Diagnosis.—Very similar to *Aclodes*, but epiphallus with central lobe extending beyond lateral lobes or without lateral lobes. Genitalia somewhat similar to *Yoyuteris*, but in the latter genus there are no wings.

Selvacla troxalis new species (Fig. 76)

Type.— Holotype male. CR-66. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

Recognition.— Dark reddish brown with black patterns and bands over most of the body; forewings short and uniform brown in color; face largely unbanded; without metanotal gland; file teeth surrounded by bristles, so probably not capable of producing sound; with a large internal tympanum.

Measurements (male).— CR-66: body length 14; forewing length 3; femur-3 length 10; cerci length 9+; number of file teeth: 40.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

Selvacla choreutes new species (Fig. 77)

Type.— Holotype female. CR-76. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, December 1993, INBio-OET (INBio Collection).

Recognition.— Pronotum almost entirely black. Forewing reddish brown; short; with 10 crossveins; harp with 9 veins. Small inner and no outer tympanum. No clear metanotal glands.

Measurements (male).— CR-76: body length 19; forewing length 7; femur-3 length 14; cerci length 14.5; number of file teeth: 70.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

Selvacla saltator new species (Fig. 78)

Type.— Holotype female. CR-94. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1994, INBio-OET (INBio Collection).

Recognition.— Body generally very dark brown, with pale cross bands on tibiae and femora. Face with a median vertical pale band, broader ventrally. Forewing dark reddish brown; mirror with 9 crossveins. Harp with 7 veins. Most similar to *S. choreutes*, but body darker and proportions of male genitalia different.

Measurements (male).— CR-94: body length 17; forewing length 7; femur-3 length 15; cerci length br; number of file teeth: 72.

Measurements (female).— CR-96: body length 17; forewing length 0; femur-3 length 13; cerci length 18; ovipositor length 13.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (CR-96, same data as holotype but September 1995).

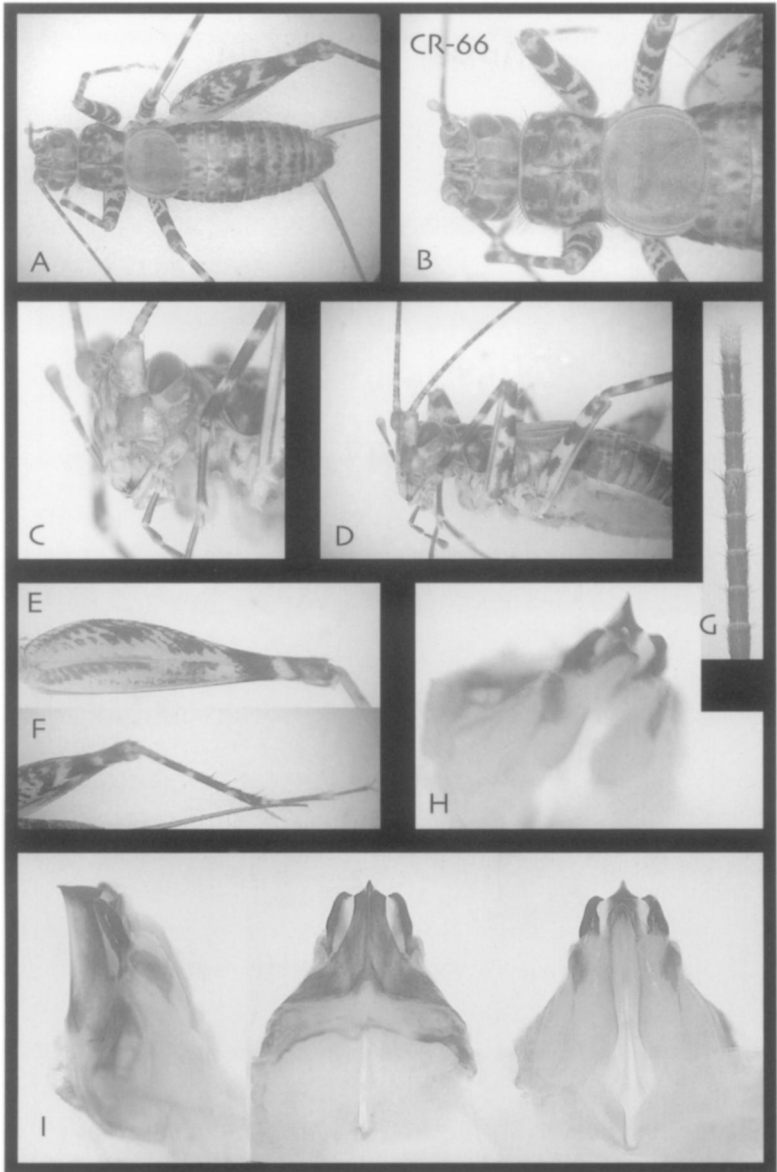


Figure 76. *Selvacla troxalis* holotype. A, portrait. B, C, head and pronotum. D, legs-1 and -2. E, femur-3. F, leg-3. H, genitalia (partial rear view). I, genitalia (side, top, bottom).

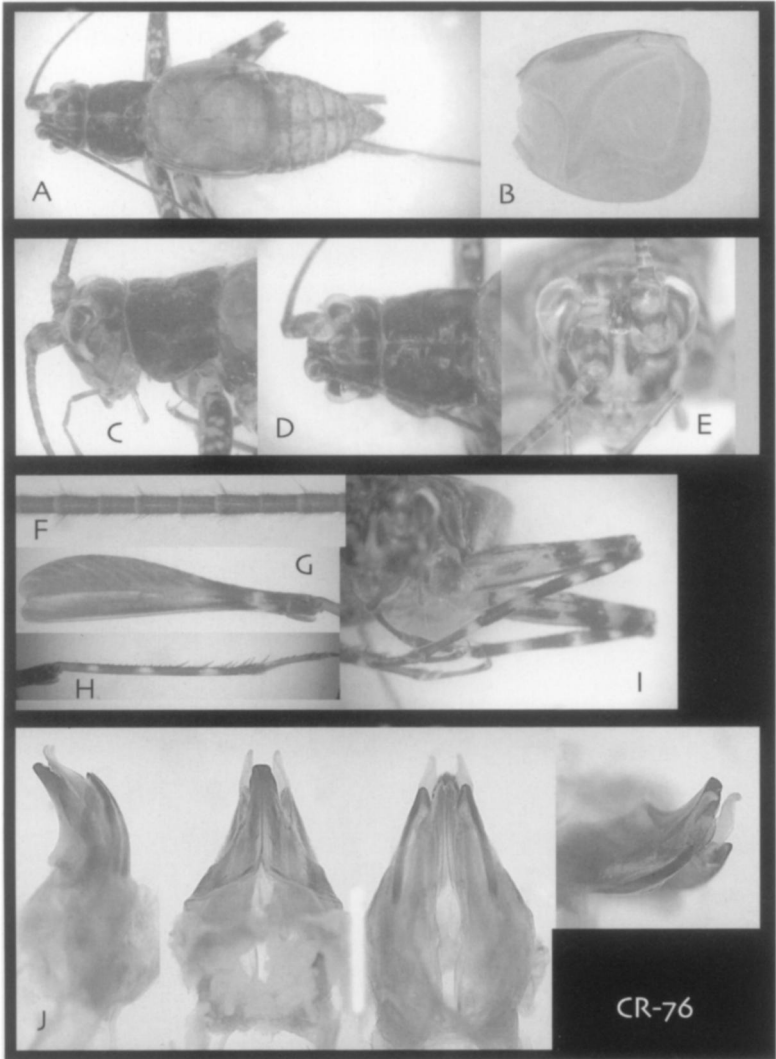


Figure 77. *Selvacla choreutes* holotype. A, portrait, B, forewing, C-E, head and pronotum. F, antennal segments. G, femur-3. H, tibia-3. I, legs-1 and -2. J, genitalia (side, top, bottom and partial rear views).

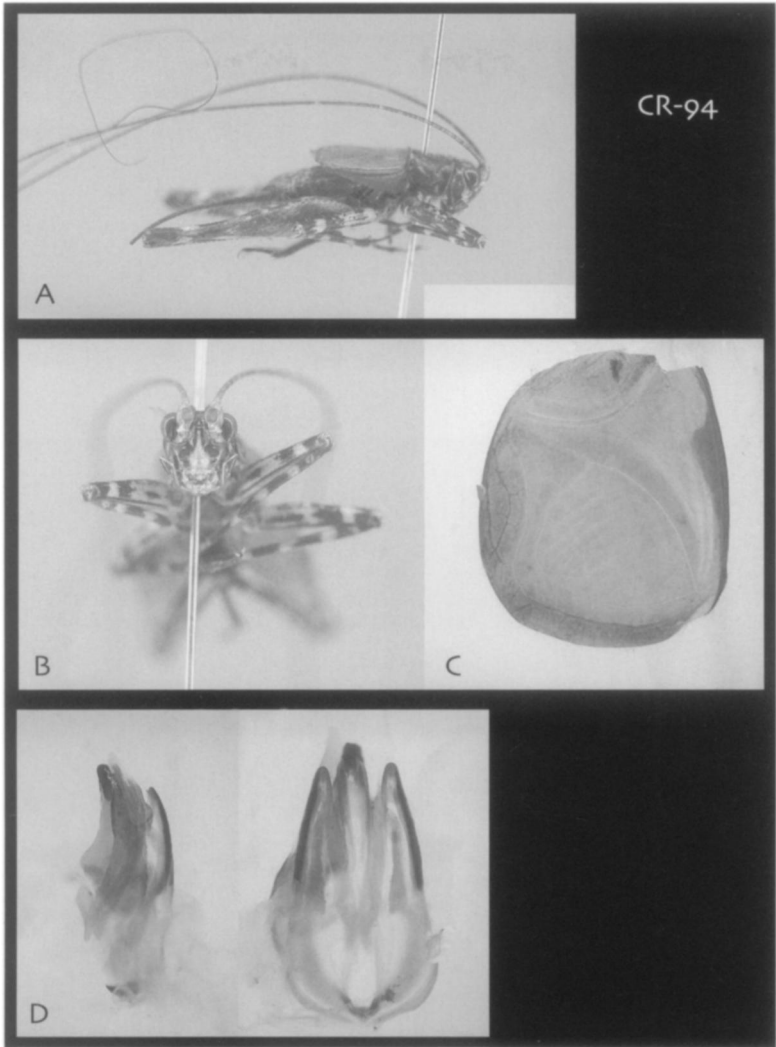


Figure 78. *Selvacla saltator* holotype. A, portrait. B, face. C, forewing. D, genitalia (side and bottom views).

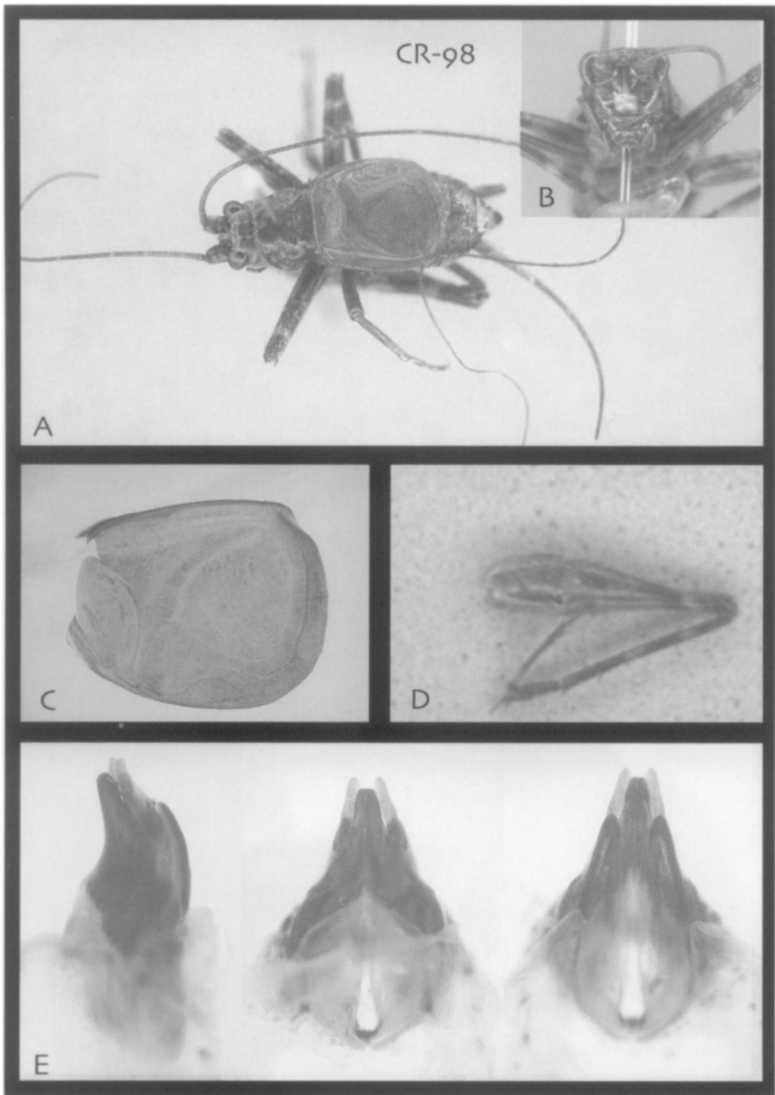


Figure 79. *Selvacla alsiosus* holotype. A, portrait. B, face. C, forewing. D, femur-3. E, genitalia (side, top and bottom views).

***Selvacla alsiosus* new species (Fig. 79)**

Type.— Holotype female. CR-98. Costa Rica: Alajuela Province, Zona Protectora de Arenal. Pocosol, coll. P. Naskrecki (INBio Collection).

Recognition.— Generally quite dark brown. Facial pale band narrower at top and wider at bottom than *S. saltator*. Mirror with 11 crossveins. Harp with 9 veins. Genitalia narrower than in *S. saltator*.

Measurements (male).— CR-98: body length 17; forewing length 8; femur-3 length 15; cerci length 15+; number of file teeth: 78.

Measurements (female).— CR-97: body length 17; forewing length 3; femur-3 length 14; cerci length (broken); ovipositor length 16.

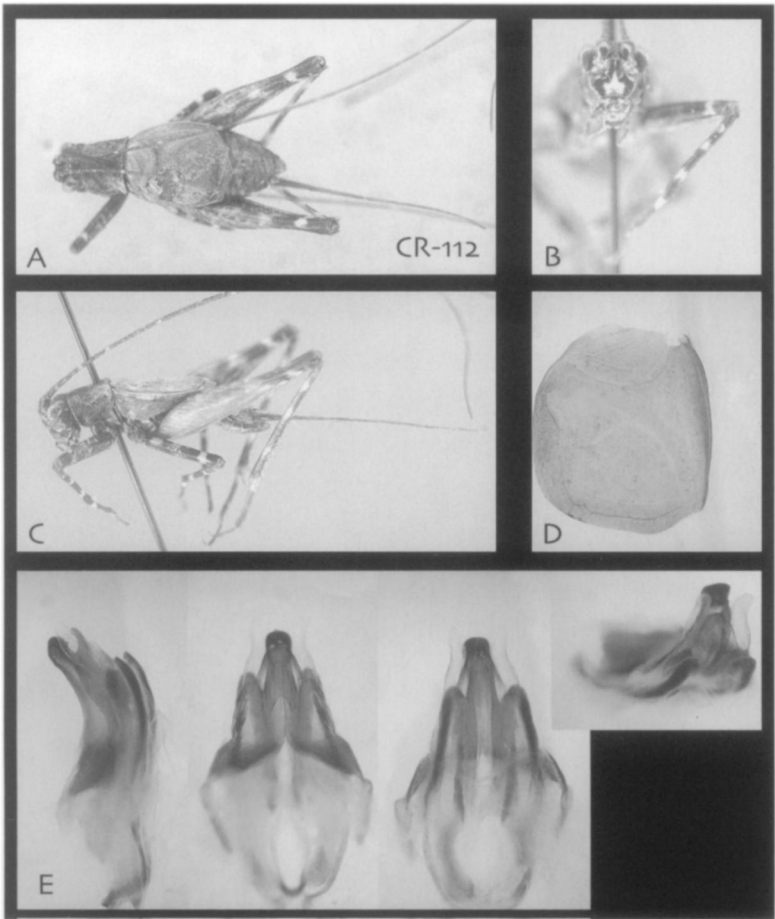


Figure 80. *Selvacla sophos* holotype. A, C, portrait. B, face. D, forewing. E, genitalia (side, top, bottom and rear views).

Specimens.— Holotype male. Paratype female (CR-97), same data as holotype.

***Selvacla sophos* new species (Fig. 80)**

Type.— Holotype male. CR-112. Costa Rica: Las Cruces, Coco Brus, Jardín Botánico Wilson, March 1994, coll. P. Naskrecki (INBio Collection).

Recognition.— Most similar to *S. alsiosus*, but mirror with 5 crossveins. Har with 8 veins. Lobes of male genitalia wider.

Measurements (male).— CR-112: body length 17; forewing length 7; femur-3 length 13; cerci length 16; number of file teeth: 195.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype female (same data as holotype).

YOYUTERIS Ruiz and Otte

Reference.— Eades, Otte and Naskrecki 2006.

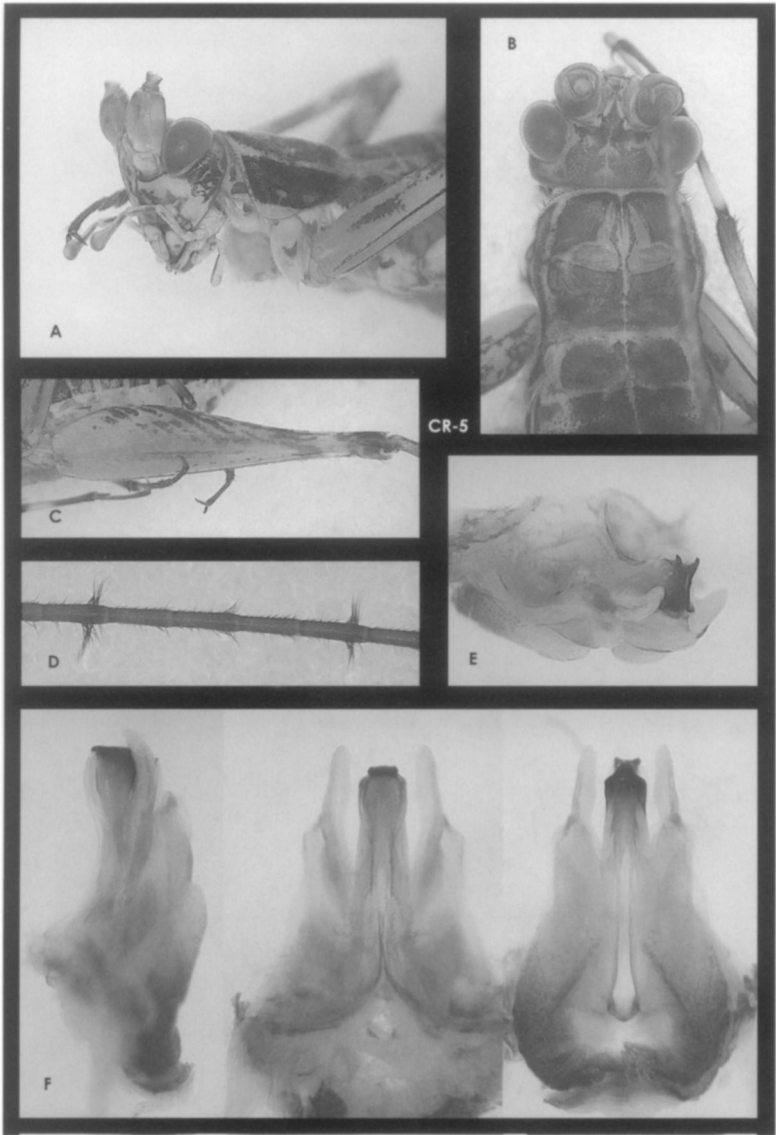


Figure 81. *Yoyuteris ballator* holotype male. A, B, head and pronotum. C, femur-3. D, middle of antenna. E, genitalia (partial rear view). F, genitalia (side, top, bottom).

Yoyuteris ballator new species (Fig. 81, 82)

Type.— Holotype male. CR-5- Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/12/075, 50-150 m, 10-26N, 84-01W, 16 April 1993, INBio-OET (INBio Collection).

Recognition.—Body reddish brown with distinct lateral pale areas; face banded with orange, dark brown and ivory; lateral lobes of pronotum mostly black, with pale ventral area and a pale stripe along the top; legs strongly banded; abdomen with regular pattern of dark and light areas; antennae with intermittent patches of strong bristles; with very small

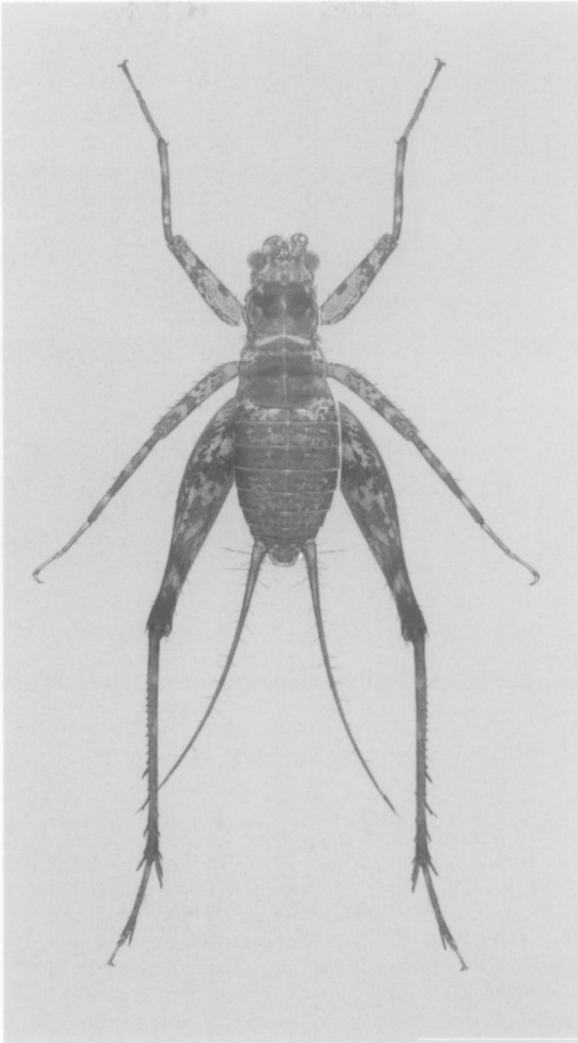


Figure 82. *Yoyuteris epiroticos* holotype male.

forewings—these have two indistinctly marked veins, but there is no trace of stridulatory teeth.

Measurements (male).— CR-5: body length 14.5; forewing length 1; femur-3 length 10; cerci length (broken).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

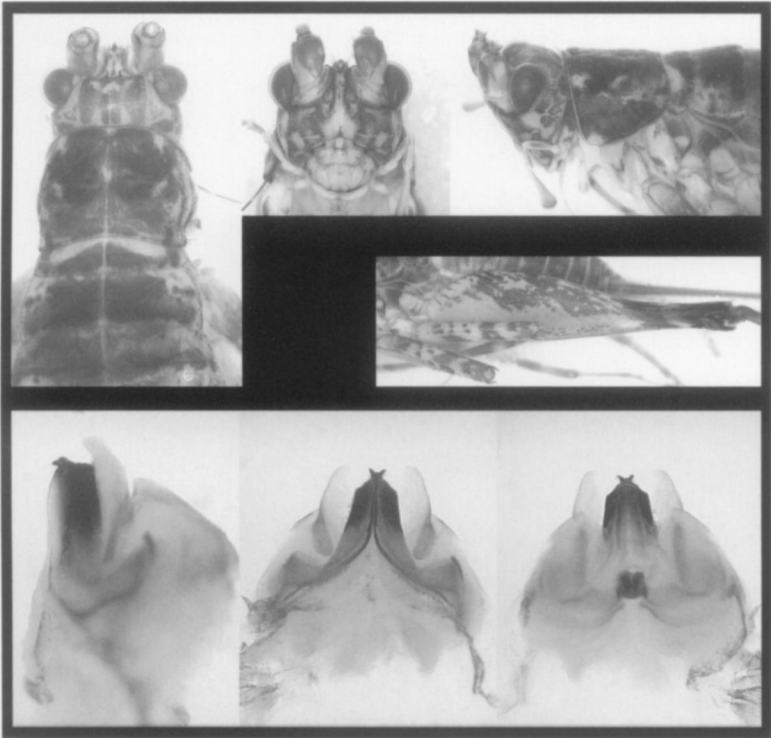


Figure 83. *Yoyuteris epiroticos* holotype. Top: head and pronotum. Middle: femur-3. Bottom: genitalia (side, top, bottom views).

***Yoyuteris epiroticos* new species (Fig. 83)**

Type.— Holotype male. CR-9. Costa Rica: Heredia, Est. Biol. la Selva, Malaise trap M/10/388, 50-150 m, 10-26N, 84-01W, April 1994, INBio-OET (INBio Collection).

Recognition.— Strongly marked with pale, brown and black markings; body color reddish brown, with very dark areas on pronotum and face; without any trace of wings; legs strongly banded; face vertically banded; labrum ivory colored; with small inner auditory tympana.

Measurements (male).— CR-9: body length 15; forewing length none; femur-3 length 12; cerci length 13+ broken near end.

Measurements (female).— CR-11: body length 18; forewing length -; femur-3 length 12.5; cerci length 11+; ovipositor length 14.

Habitat.— Lowland, tropical rain forest.

Specimens.— CR-9 Holotype male. CR-11 paratype female (same data as holotype).

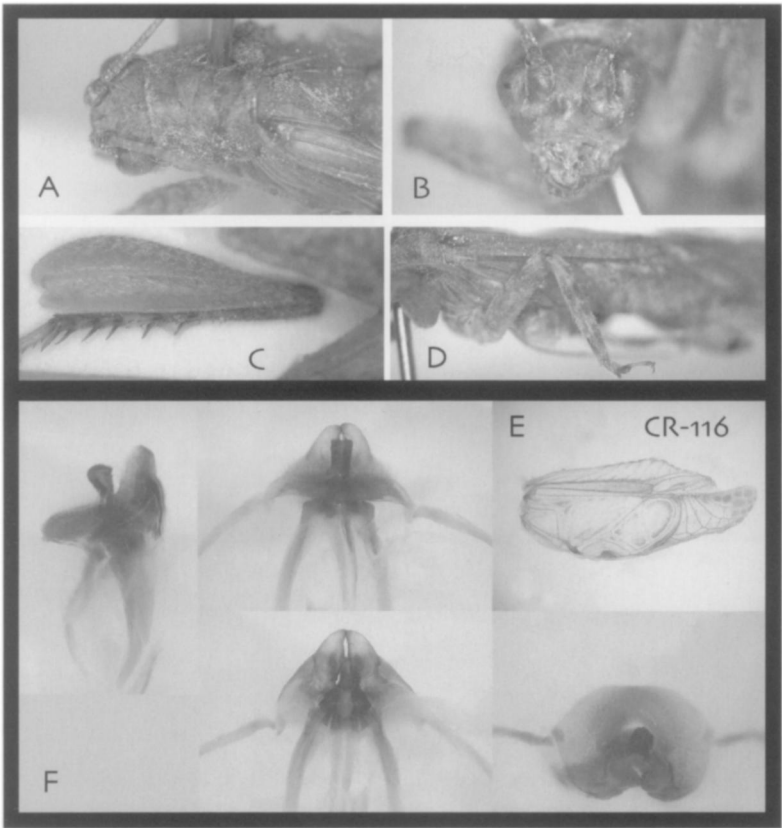


Figure 84 *Paroecanthus exaetos* holotype. A, portrait. B, face. C, femur-3. D, leg-3. E, forewing. F, genitalia (side, top, bottom, rear views).

SUBFAMILY PODOSCIRTINAE

Reference.— Eades, Otte and Naskrecki 2006.

PAROECANTHUS Saussure

Reference.— Eades, Otte and Naskrecki 2006.

Paroecanthus exaetos new species (Fig. 84)

Type.— Male. Heredia. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, November 1995, INBio-OET (INBio Collection).

Recognition.— Mostly uniform pale brown; face with a dark brown band across upper part; tibia-1 and -3 slightly banded; tibia-3 spurs black at base; with large outer and slightly longer inner auditory tympanum; tibia-3 with 8 inner and 8 outer spurs.

Measurements (male).— body length 12.5; forewing length 11, femur-3 length 8; cerci length 6+.

Specimens.— Holotype male.

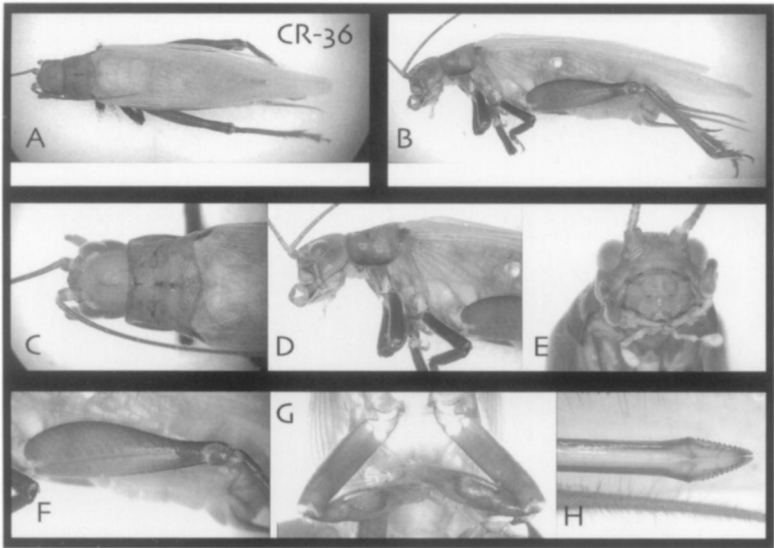


Figure 85. *Paroecanthus versutus* holotype. A, B, portraits. C, D, E, head and pronotum. F, femur-3. G, legs-1 and -2. H, ovipositor.

Paroecanthus versutus new species (Fig. 85)

Type.— Holotype female. CR-36. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/384, 2 September 1993, INBio-OET (INBio Collection).

Recognition.— Head and pronotum rusty red. Legs 1 and 2 black. Femur-3 rusty red.

Measurements (female).— CR-36: body length 17; forewing length 15; femur-3 length 7.5; cerci length 5; ovipositor length 4.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female.

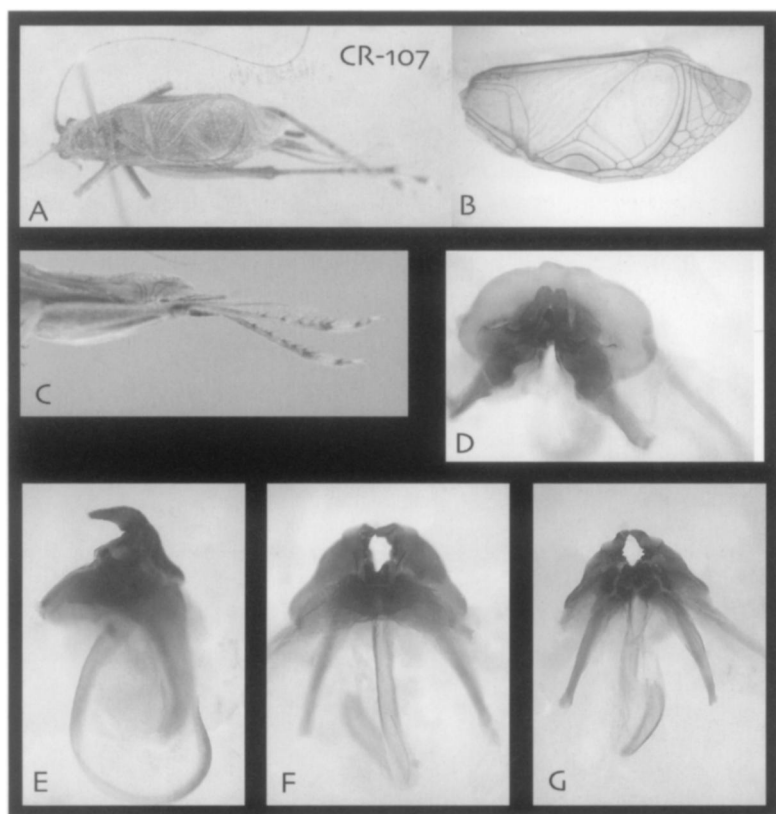


Figure 86. *Paroecanthus pipizon* holotype. A, portrait, B, forewing, C, femur-3. D, E, genitalia (rear, side, top, and bottom views).

***Paroecanthus pipizon* new species (Fig. 86)**

Type.— Holotype male. CR-107. Costa Rica: Alajuela Province, Zona Protectora de Arenal, Pocosol, coll. P. Naskrecki (INBio Collection).

Recognition.— Uniform brown, but legs somewhat banded. Large inner and large outer tympanum. With two small metanotal bumps close together. Mirror with one dividing vein. Harp with 7 veins.

Measurements (male).— CR-107: body length 12; forewing length 10; femur-3 length 8.5; cerci length 12; number of file teeth: 26 (no hump).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

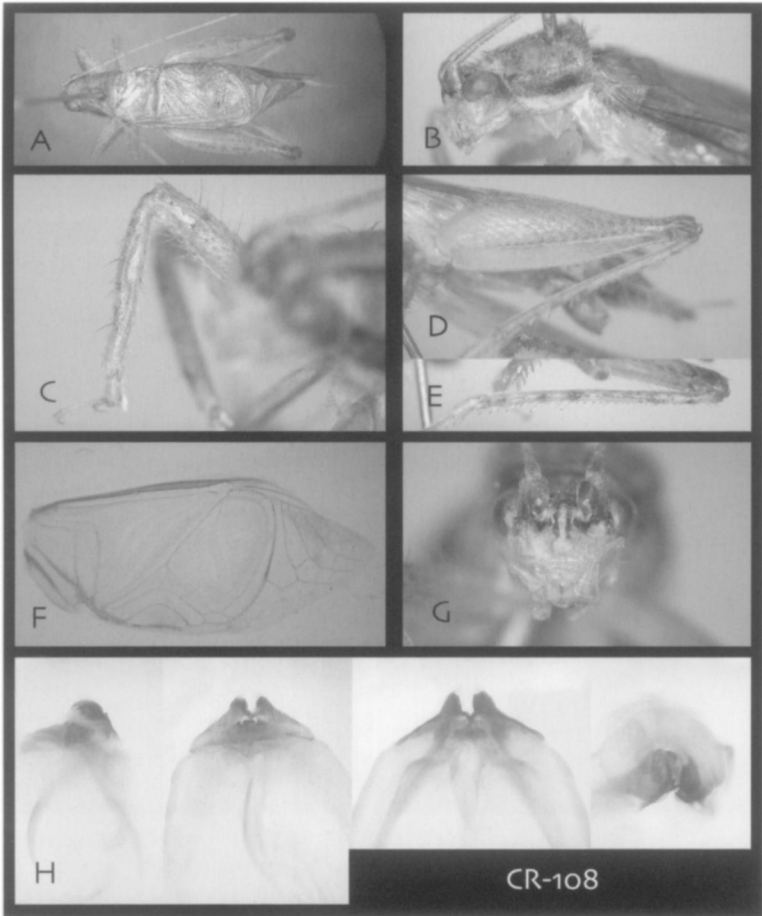


Figure 87. *Paroecanthus optivus* holotype. A, portrait. B, head and pronotum. C, leg-1. D, femur-3. E, tibia-3. F, forewing. G, face. H, genitalia (side, top, bottom, rear).

***Paroecanthus optivus* new species (Fig. 87)**

Type.— Holotype male. CR-108. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Grey brown with a broad black band on side of body from back of eye, through pronotum and onto forewings; face with banding at upper quarter, between the antennae; legs pale with small darker spots; tibia-1 with large inner and outer tympanum; tibia-1 and -2 with 2 and 3 apical spurs respectively; tibia-3 with 8 inner and 8 outer spurs.

Measurements (male).— CR-108: body length 12; forewing length 10; femur-3 length 8; cerci length broken; number of file teeth: 95 (no hump).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

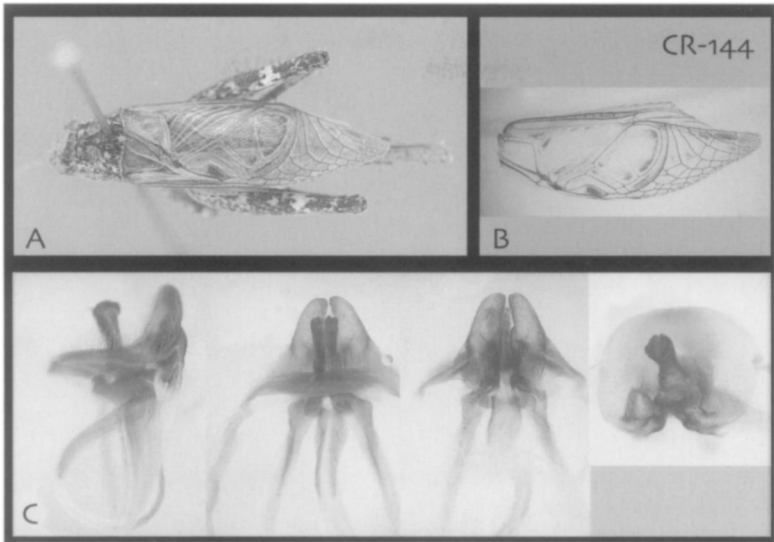


Figure 88. *Paroecanthus desumptus* holotype. A, portrait. B, forewing. C, genitalia (side, top, bottom, rear views).

***Paroecanthus desumptus* new species (Fig. 88)**

Type.— Holotype female. CR-144. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Pronotum and hind femora strongly marked with light and dark patterns. Forewing with distinct dark markings. With large inner and outer tympanum.

Measurements (male).— CR-144: body length 13; forewing length 11.5; femur-3 length 8; cerci length —; number of file teeth: 18 (very short file).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

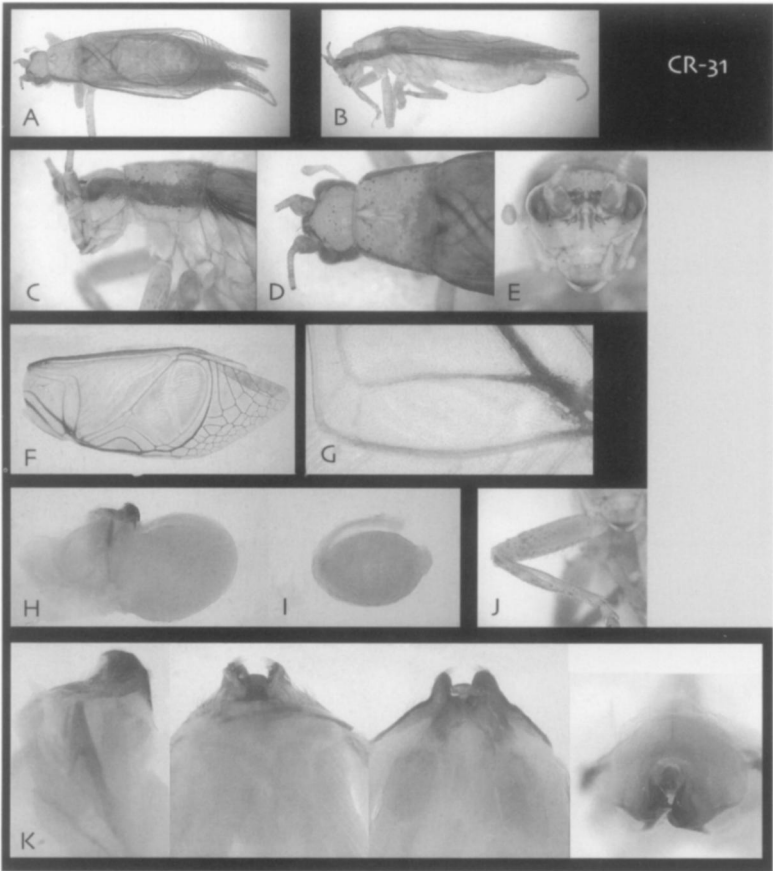


Figure 89. *Paroecanthus eudoxos* holotype. A, B, portraits, C-E, head and pronotum. F, forewing. G, stridulatory vein of forewing. H, genitalia holding spermatophore. I, spermatophore. J, leg-1. K, genitalia (side, top, bottom and rear views).

***Paroecanthus eudoxos* new species (Fig. 89)**

Type.— Holotype male. CR-31. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, August 1993, INBio-OET (INBio Collection).

Recognition.— Side of body with distinct dark band stretching from back of eye onto forewings. Face with dark markings in dorsal section around the ocelli. Forewing without dark markings on dorsum. With large inner and outer tympana.

Measurements (male).— CR-31: body length 14; forewing length 10; femur-3 length lost; cerci length 7+; number of file teeth: 98.

Measurements (male).— CR-34: body length 13; forewing length 10; femur-3 length 8; cerci length broken.

Measurements (female).— body length ; forewing length ; femur-3 length ; cerci length ; ovipositor length.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype male CR-34, same locality by September 1993 — 3 females, same locality as holotype.

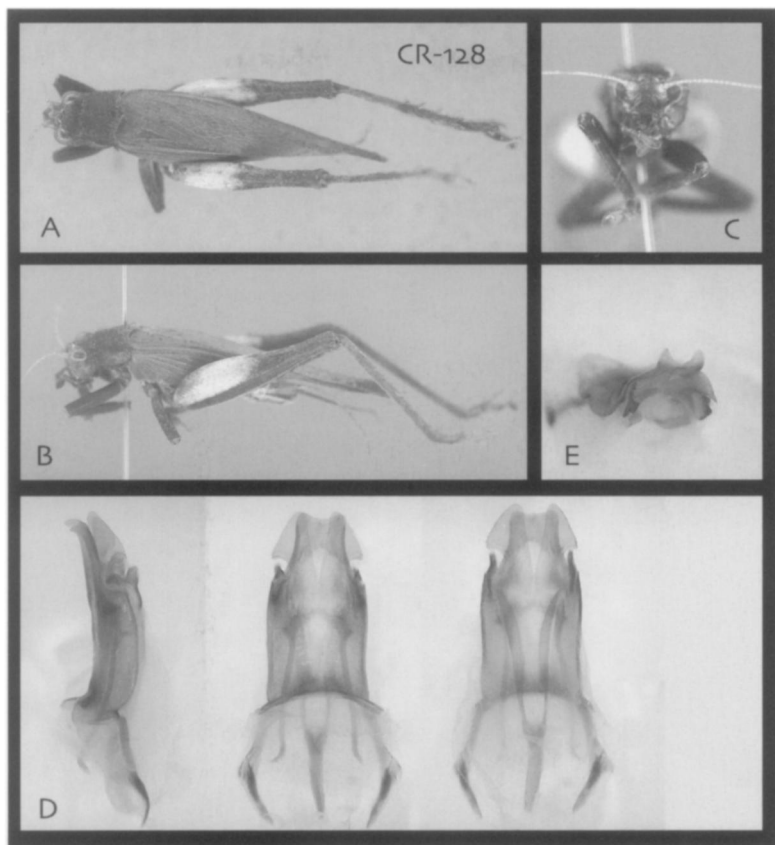


Figure 90. *Aphonomorphus bicolor* Hebard exemplar male. A, B, portraits. C, face. E, rear of genitalia. D, genitalia (side, top, and bottom views).

Genus *APHONOMORPHUS* Rehn

Reference.— Eades, Otte and Naskrecki 2006.

***Aphonomorphus bicolor* Hebard (Fig. 90,91)**

Exemplar male (CR-128).—Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Exemplar female (CR-126).—Heredia. October 1995.

Recognition.— Body color brown and rusty brown, with whitish femur-3. With large inner and no outer auditory tympanum; tibia-1 and -2 with 3 and 4 apical spurs respectively; tibia-3 with 9 or 8 inner and 8 outer spurs.

Measurements (male).— body length 22; forewing length 20; femur-3 length 15; cerci length 12.

Measurements (female).— body length 24; forewing length 26; femur-3 length 19; ovipositor length 20.

Habitat.— Lowland, tropical rain forest.

Specimens.— Male and female from La Selva.

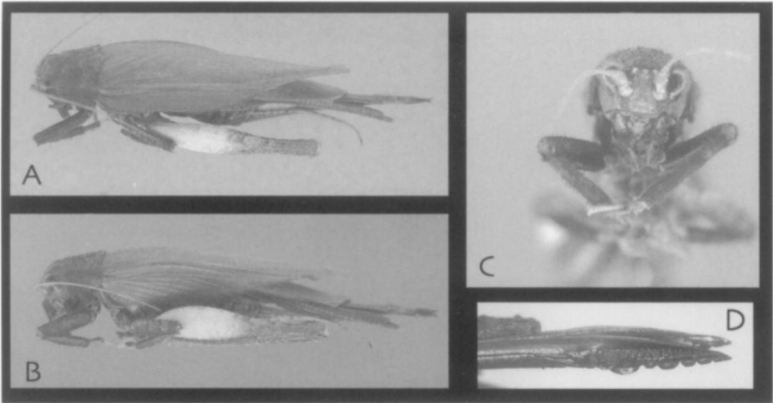


Figure 91. *Aphonomorphus bicolor* Hebard exemplar female.

Aphonomorphus ferox new species (Fig. 92)

Type.— Holotype male. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.— Black with pale brown forewings; antennae banded; with large inner and no outer auditory tympanum; tibia-3 with 8 inner and 8 outer spurs; tibia-1 and -2 with 3 and 4 apical spurs respectively.

Measurements (male).— body length 24; forewing length 24; femur-3 length 17; cerci length 12+.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male (see type data above).

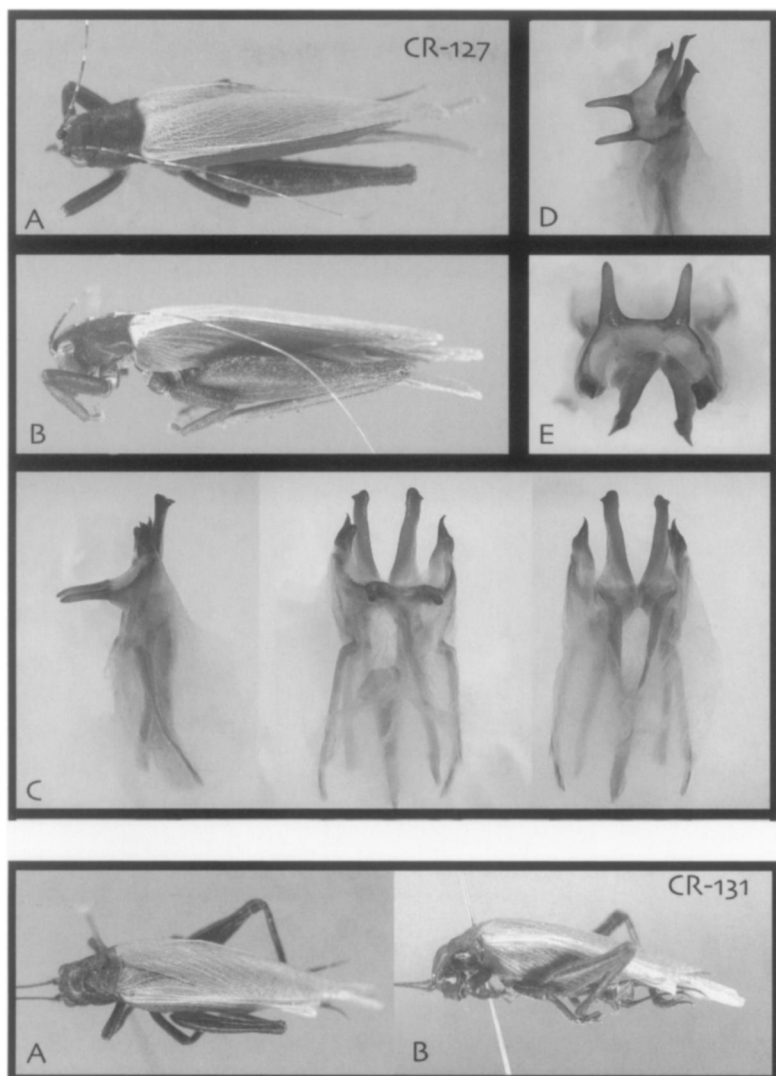


Figure 92. TOP: *Aphonormorphus ferox* holotype. A, B, portraits. C, genitalia (side, top, bottom views). D, genitalia (partial rear view). E, genitalia (rear view). BOTTOM: A, B, paratype female.

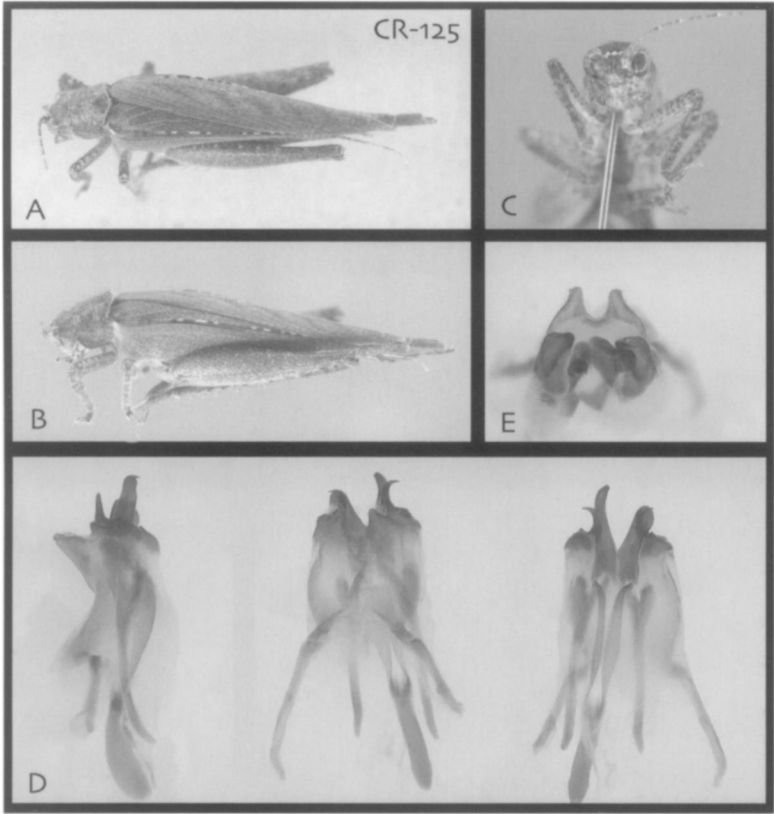


Figure 93. *Aphonormorphus halans* holotype. A, B, portraits. C face. D, genitalia (side, top and bottom views). E, genitalia (rear view).

***Aphonormorphus halans* new species (Fig. 93)**

Type.— Holotype male. CR-125. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection). Paratype female from Heredia, but March 1993.

Recognition.— Uniform brown; slightly speckled on legs; forewings with a line of black and pale marks along wing angle; with large inner and no outer tympana; male tibia-3 with 8 inner and 9 outer spurs; female tibia-3 with 8 inner and 10 outer spurs.

Measurements (male).— body length 21; forewing length 23; femur-3 length 15; cerci length ca. 15.

Measurements (female).— body length 23; forewing length 26; femur-3 length 16; cerci length 16; ovipositor length 19.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype and paratype female (see type data).

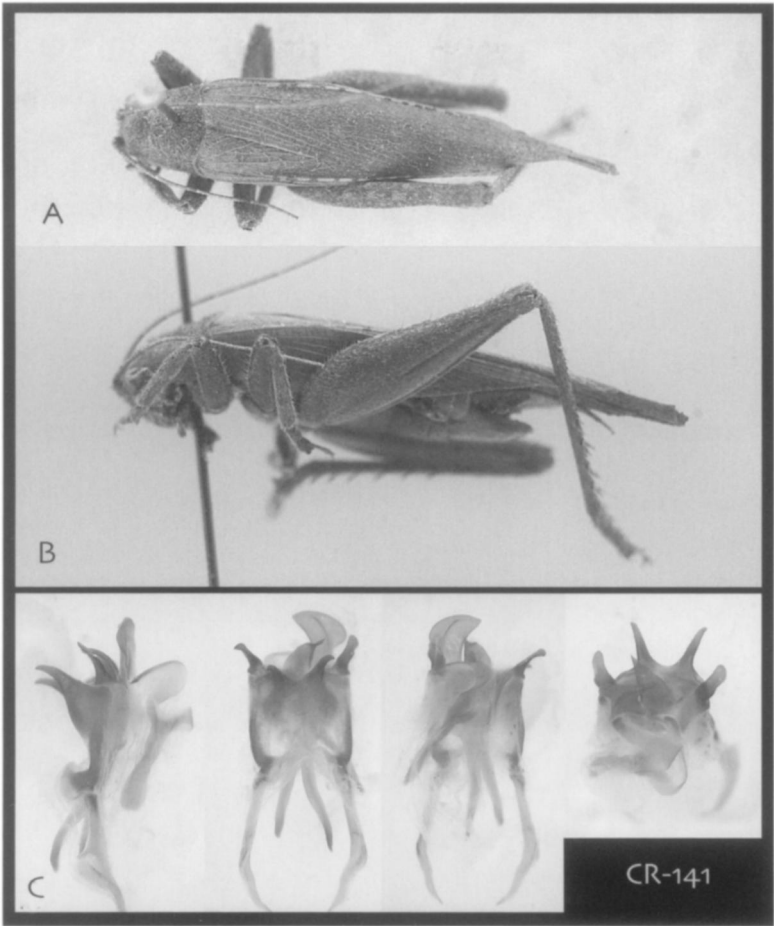


Figure 94. *Aphonormorphus socors* holotype. A, B, dorsal and lateral portraits. C, genitalia (side, top, bottom and rear views).

***Aphonormorphus socors* new species (Fig. 94)**

Type.— Holotype male. CR-141. Costa Rica: San Jose Province; Cordillera de Talamanca, Cerro de la Muerte, elev. 2700 m, P. Naskrecki (INBio Collection).

Recognition.— Body very dark brown. Legs not banded. Genitalia highly asymmetrical. Tibia-1 with large inner and no outer tympanum.

Measurements (male).— CR-141: body length 21; forewing length 17; femur-3 length 12.5; cerci length 8.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

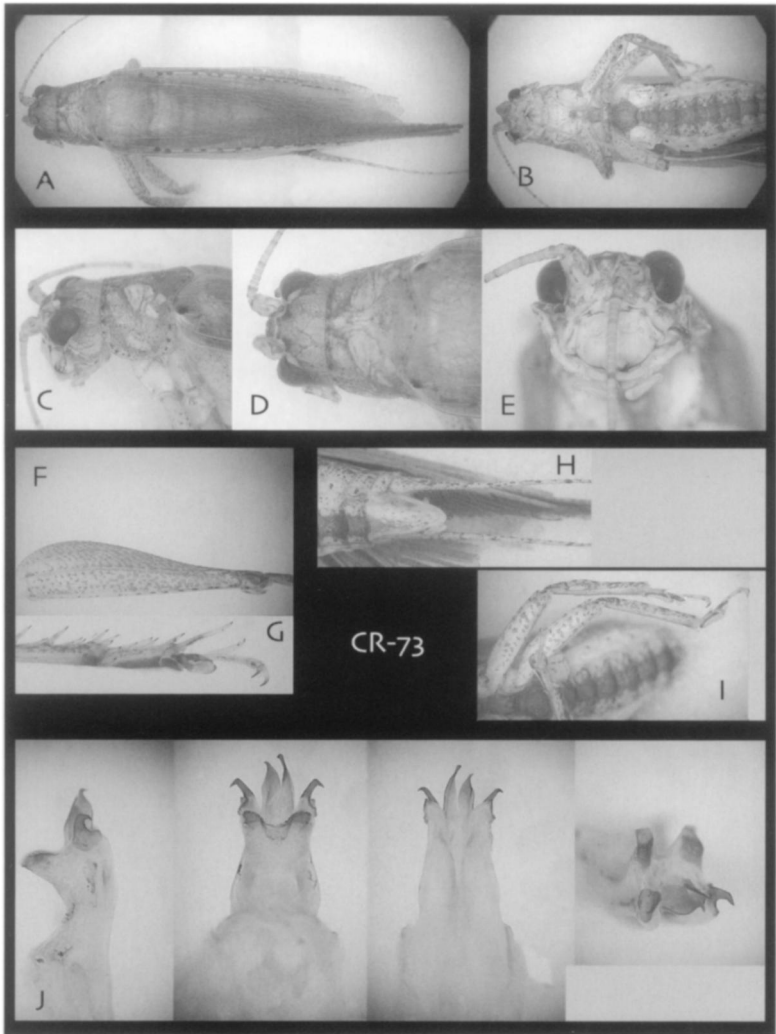


Figure 95. *Aphonomorphus beltistos* holotype. A, portrait. B, venter of body. C, D, E, head and pronotum. F, femur-3. G, tibia-3. H, venter of end of abdomen. I, legs-1 and -2. J, genitalia (side, top, bottom and rear views).

***Aphonomorphus beltistos* new species (Fig. 95)**

Type.— Holotype female. CR-73. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, February 2001 (INBio Collection).

Recognition.— Body pale brown, with mottled legs. Face pale. Forewings with lateral veins banded. With large inner and no outer tympanum.

Measurements (male).— CR-73: body length 23; forewing length 21; femur-3 length 14; cerci length 12.5; number of file teeth: none.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

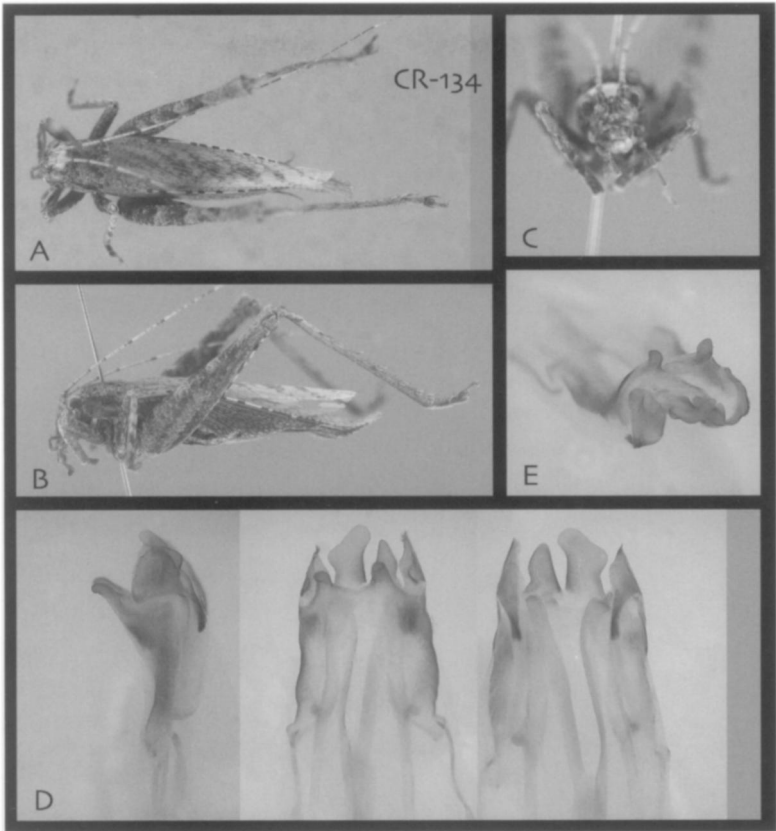


Figure 96. *Aphonormorphus celeticos* holotype. A, B, portraits. C, face. D, genitalia (side, top and bottom). E, genitalia (partial rear view).

***Aphonormorphus celeticos* new species (Fig. 96)**

Type.— Holotype female. CR-134. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.— Strongly mottled body. Face banded. Top of head pale. Lateral veins of forewings banded. Femur-3 banded light and dark on dorsum.

Measurements (male).— CR-134: body length 12; forewing length 18; femur-3 length 15.5; cerci length 8.5; number of file teeth: no file.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

***HAPITHUS* Uhler**

Reference.—Eades, Otte, and Naskrecki 2006

***Hapithus auditor* new species (Fig. 97)**

Type.— Holotype male. CR-71. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

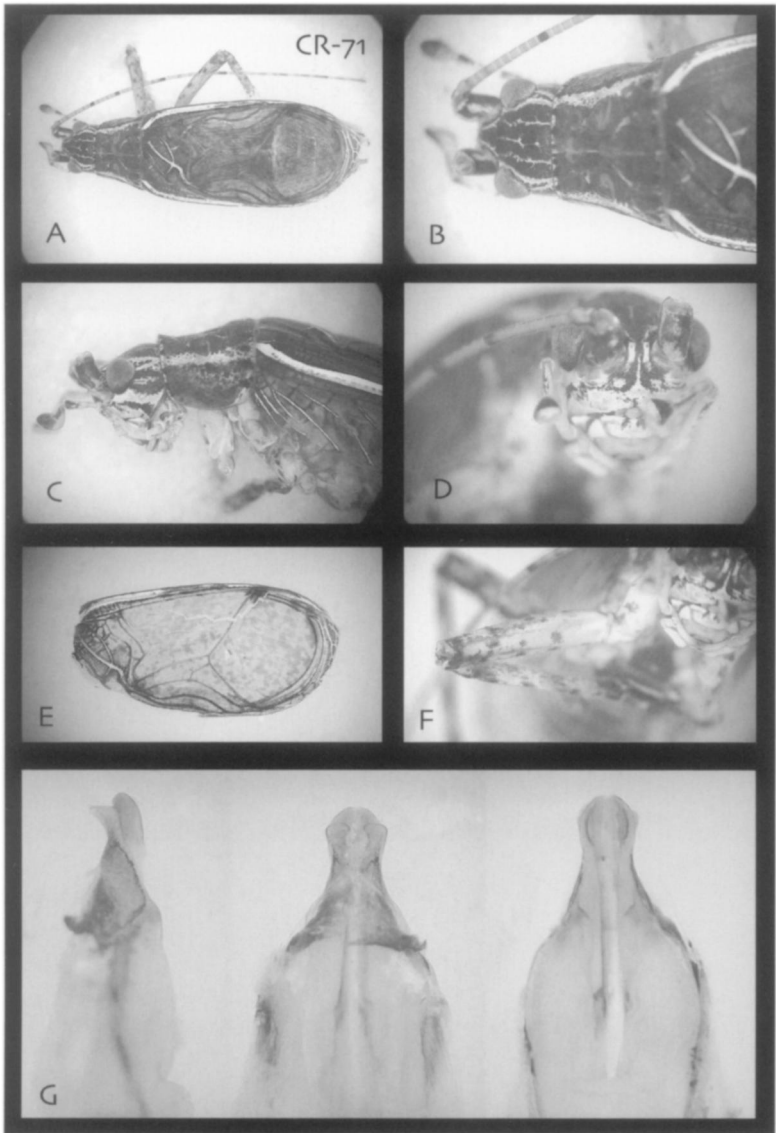


Figure 97. *Hapithus auditor* holotype. A, portrait, B, C, head and pronotum. D, face. E, forewing. F, tibia-1. G, genitalia (side, top, bottom).

Recognition.— Grey brown with distinct white markings on side of body and forewings; face strongly banded with white and black; legs spotted and banded; venter of abdomen mostly black.

Measurements (male).— CR-71: body length 14; forewing length 11; femur-3 length —; cerci length —; number of file teeth: about 25, very difficult to count.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

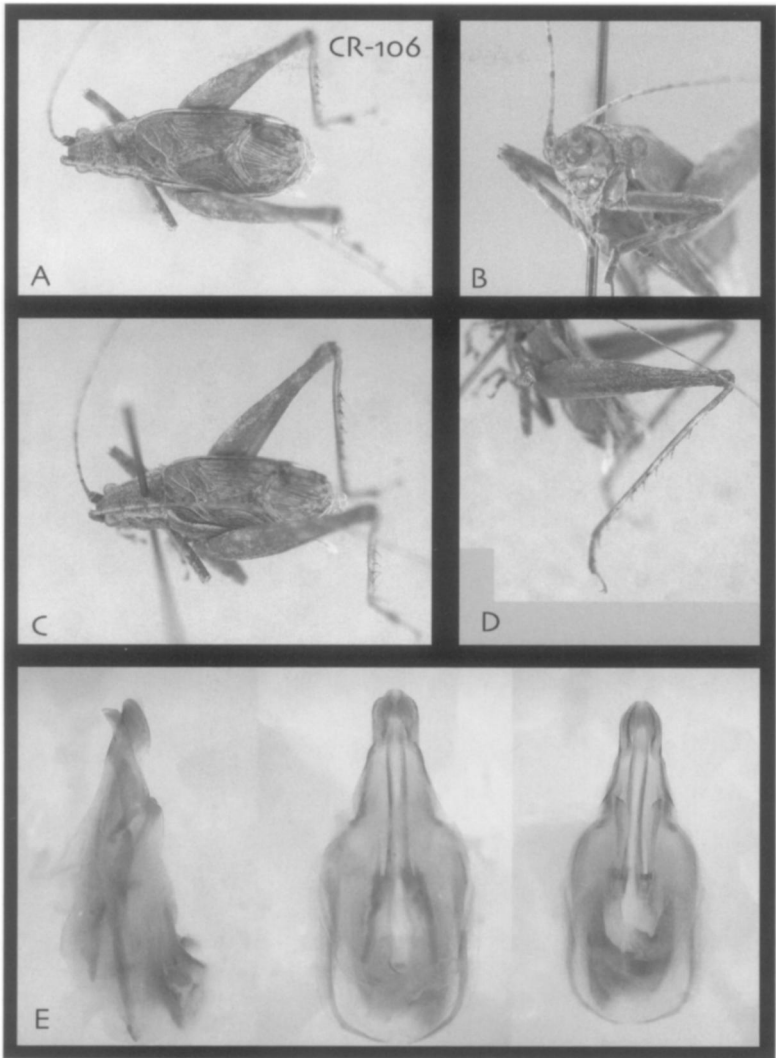


Figure 98. *Hapithus libratus* holotype. A, C, portraits. B, face. D, femur-3. E, genitalia (side, top, and bottom).

***Hapithus libratus* new species (Fig. 98)**

Type.—Male. CR-106. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, February 1994, INBio-OET (INBio Collection).

Recognition.—Dark brown with distinct pale bands on head, pronotum and forewings; face banded; with large inner and no outer auditory tympana; tibia-1 and -2 with 3 and 4 apical spurs; tibia-3 with 8 inner and 11 outer spurs.

Measurements (male).—CR-106: body length 13; forewing length 10; femur-3 length 11; cerci length 4. File not counted.

Habitat.—Lowland, tropical rain forest.

Specimens.—Holotype male (see type data).

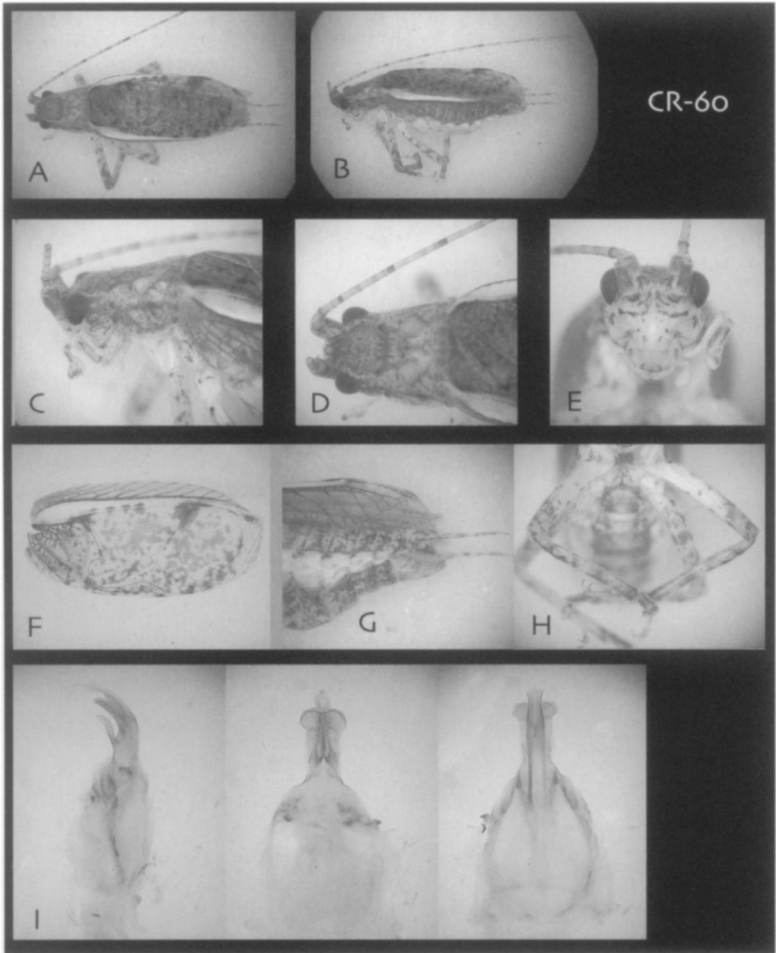


Figure 99. *Hapithus symphonos* holotype. A, B, portraits. C, D, E, head and pronotum. F, forewing. G, end of abdomen. H, legs-1 and -2. I, genitalia (side, top, bottom).

Hapithus symphonos new species (Fig. 99, 100)

Type.— Holotype male. CR-60. Costa Rica: La Virgen, March 2001.

Recognition.— Body yellowish brown, strongly speckled; legs pale brown and banded; forewings with white lateral margins; face banded; with inner tympanum only.

Measurements (male).— CR-60: body length 14; forewing length 10; femur-3 length lost; cerci length 3.6; number of file teeth: 77+4 on knob.

Measurements (female).— CR-60F: body length 13; forewing length 9; femur-3 length 10.3; cerci length 3.3; ovipositor length 8.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

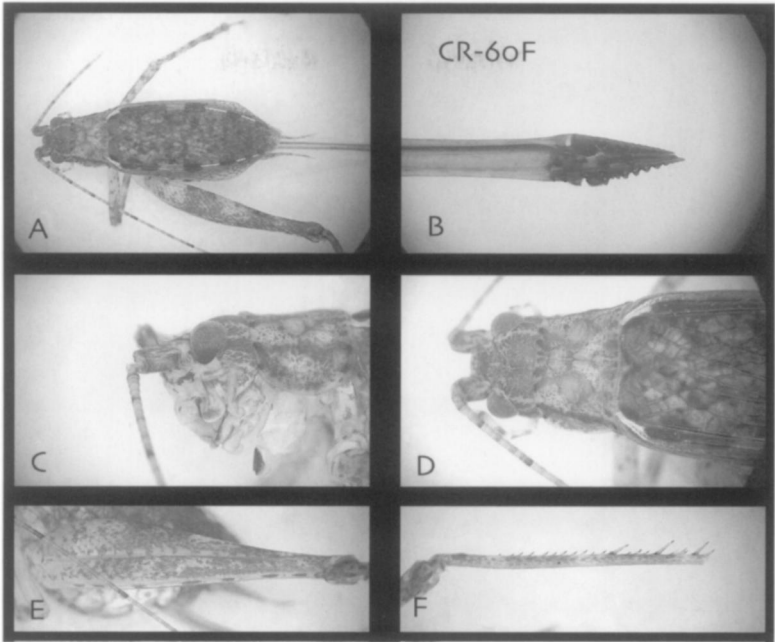


Figure 100. *Hapithus symphonos* paratype female. A, portrait. B, ovipositor. C, D, head and pronotum. E, femur-3. F, tibia-3.

Hapithus onesimos new species (Fig. 101, 102)

Type.— Holotype female. CR-145. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— Body strongly mottled, with pale bands along the margins of the upper surface, stretching from the eyes to the back of the forewings. Face brightly patterned. Legs all spotted.

Measurements (male).— CR-145: body length 13.6; forewing length 10; femur-3 length 12; cerci length 4; number of file teeth: 27 (with hump).

Measurements (female).— body length ; forewing length ; femur-3 length ; cerci length ; ovipositor length.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

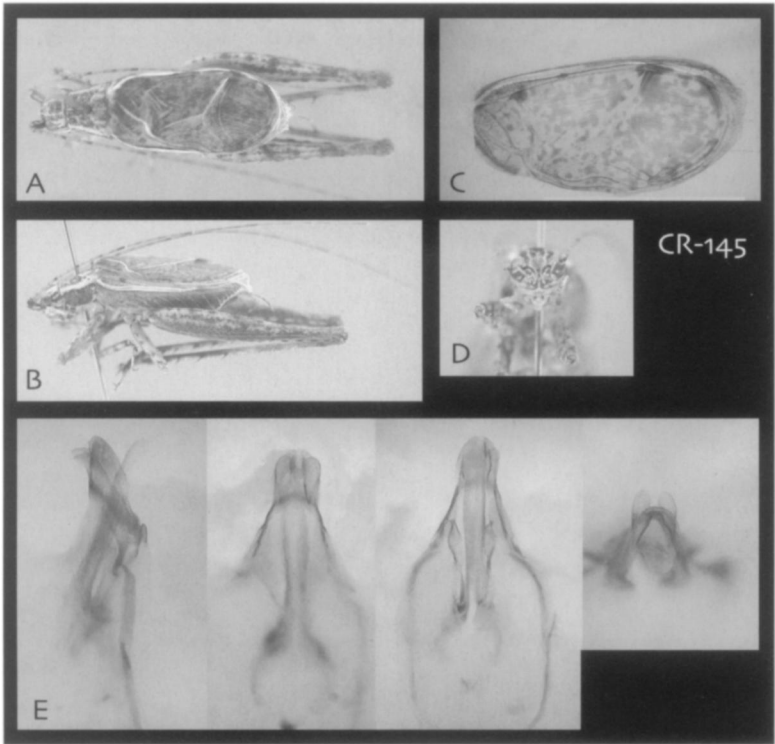


Figure 101. *Hapithus onesimos* holotype. A, B, portrait. C, forewing. D, face. E, genitalia (side, top, bottom, and rear views).

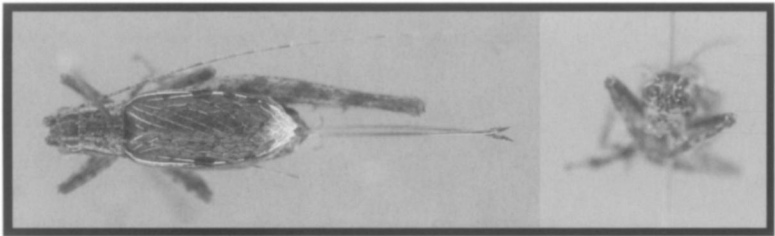


Figure 102. *Hapithus onesimos* paratype female.

***OROCHARIS* Uhler**

Reference.— Eades, Otte and Naskrecki 2006.

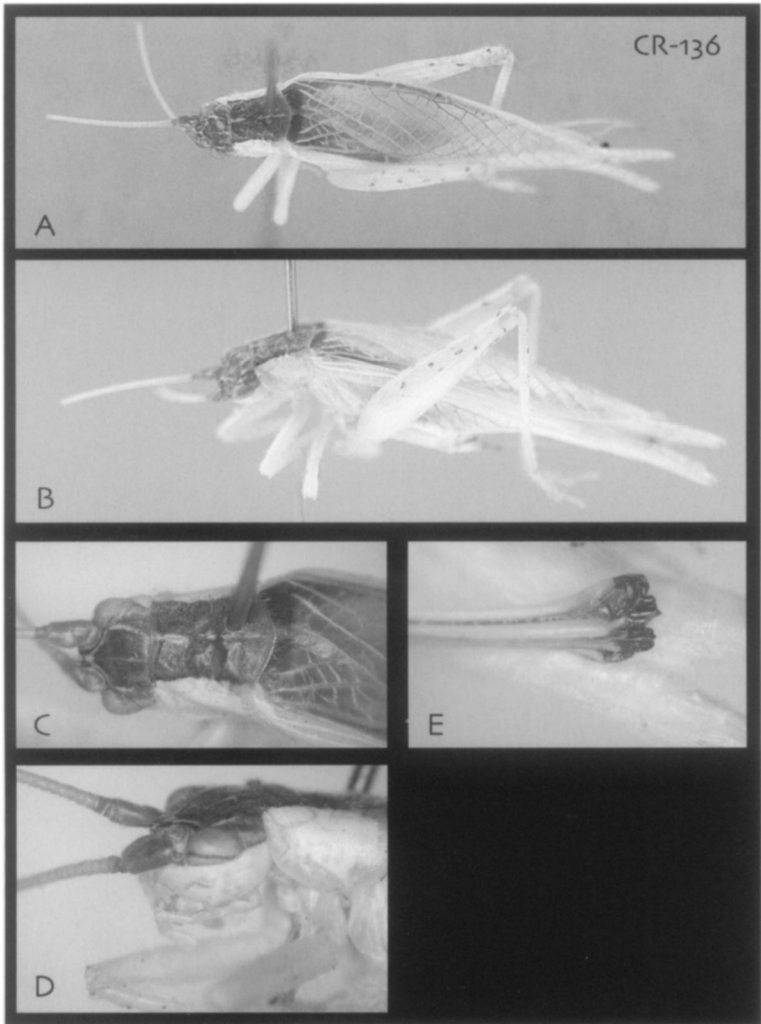


Figure 103. *Orocharis legnotos* holotype. A, B, portraits. E, ovipositor, C, D head and pronotum.

***Orocharis legnotos* new species (Fig. 103)**

Type.— Female. CR-136. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.—Body pale green on legs and side of body, very dark on top head and pronotum; face pale green; top of head dark brown, black along antennal sockets, with pale streaks along these dark streaks and reaching back from inner margins of eyes to the pronotum; upper field of pronotum mostly dark brown, with a narrow pale median streak; forewing dark brown at base and along lateral margins of dorsal field; lateral field pale green; tibia-1 with large outer and inner tympana; femur-2 with a small black dot on outer face; femur-3 pale green with scattered small dark dots on outer and upper faces; base of antennae dark brown; remainder pale green; eyes with dark horizontal stripe on outer face;



Figure 104 *Orocharis habros* holotype female.

tibia-3 with two black dots in proximal part of posterior face; with 7 inner and 8 outer spurs.

Measurements (female).— CR-136: body length 11; forewing length 13; femur-3 length 8; cerci length 9; ovipositor length 7.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female (see type data).

***Orocharis habros* new species (Fig. 104)**

Type.— Female. CR-140. Guanacaste Province., Palo Verde National Park, P.V. Biological Station., 1-5 February, 1994 (P. Naskrecki).

Recognition.—Body pale brown; head somewhat darker orange brown; top of head with Y-shaped pale band poster to each eye; with dark spot next to each ocellus; face with dark streak along upper groove of clypeus; pronotum with four dark spots near front median margin, and with two black dots in posterior half, one each of median; lateral lobes pale; legs unbanded; tibia-1 with smaller outer tympanum and a very large inner tympanum hidden beneath a large shelf; tibia-3 with 8 inner and 8 outer spurs. Ovipositor flattened dorso-ventrally.

Measurements (female).— BI 18; forewing length 15; femur-3 length 11; cerci length 7; ovipositor length 6.5. —

Specimens.— Holotype female (see type data).

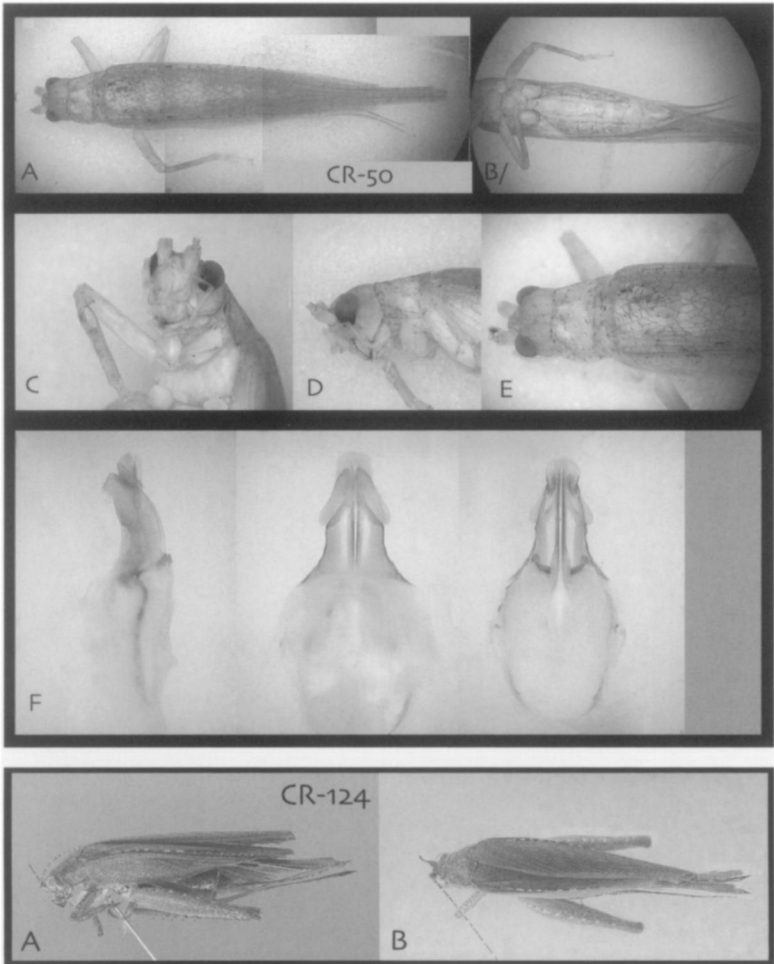


Figure 105. TOP: *Orocharis taciturnus* holotype. A, portrait, B, venter of abdomen. C, E, E, head and pronotum. F, genitalia (side, top and bottom). BOTTOM: *Orocharis taciturnus* paratype female.

***Orocharis taciturnus* new species (Fig. 105)**

Type.— Holotype male. CR-50. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

Recognition.— Yellowish brown; pronotum slightly speckled with darker spots; forewings with small brown veins and with a row of dark spots at lateral margins; legs-1 and -2 slightly speckled. With large inner and outer tympana, but without a stridulatory file.

Measurements (male).— CR-50: body length 19; forewing length 18; femur-3 length —; cerci length 7; number of file teeth: no file.

Measurements (female).— body length; forewing length; femur-3 length; cerci length; ovipositor length.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

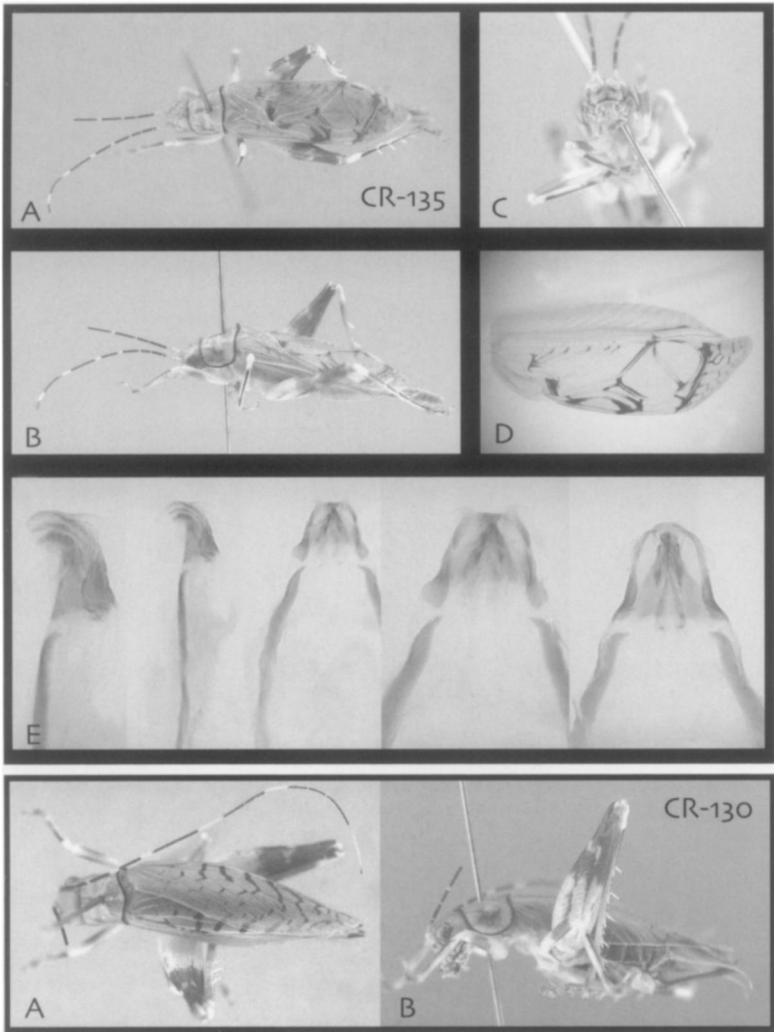


Figure 106. TOP: *Orocharis electos* holotype. A, B, portraits. C, face. D, forewing. E, genitalia (side, top, bottom views). BOTTOM: A, B, paratype female.

***Orocharis electos* new species (Fig. 106)**

Type.— Holotype male. CR-135. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.— Pronotum with a black margin throughout. Antennae with broad black and white bands. Forewing with distinct dark patterns. White knees of femur-3 white, with black stripe between spurs.

Measurements (male).— CR-135: body length 9.5; forewing length 14.5; femur-3 length 9; cerci length 6; number of file teeth: 10 (with hump, with clubbed hairs at beginning).

Measurements (female).— CR-130: body length 17; forewing length 15; femur-3 length 11; cerci length 7; ovipositor length 6.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male (CR-135). Paratype female (CR-130) (same data as holotype).

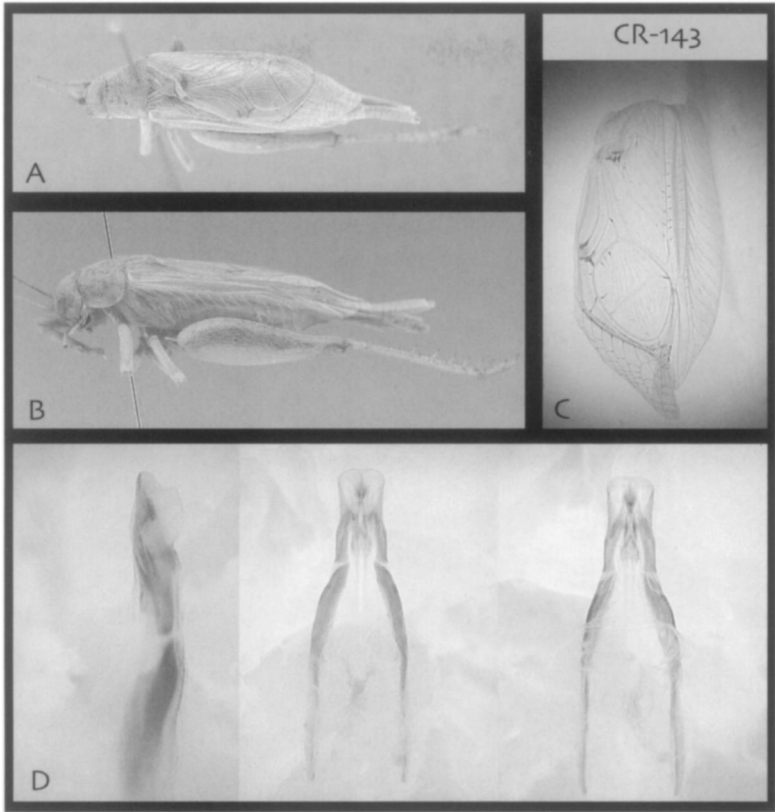


Figure 107. *Orocharis aeschyntelos* holotype. A, B, portraits. C, forewing. D, genitalia (side, top, bottom).

***Orocharis aeschyntelos* new species (Fig. 107)**

Type.— Holotype male. CR-143. Costa Rica: Guanacaste Province, Palo Verde National Park, P.V. Biological Station, 1-5 February 1994, P. Naskrecki (INBio Collection).

Recognition.— Body generally pale brown, legs not banded. With large metanotal pit. With large inner and outer tympana, inside cavity with slit. With a strange small file.

Measurements (male).— CR-143: body length 19; forewing length 16; femur-3 length 10.5; cerci length 7.5; number of file teeth: 10 (with hump).

Measurements (female).— CR-142: body length 16; forewing length 16; femur-3 length 11; cerci length 8; ovipositor length 7.

Specimens.— Holotype male (see type data). Paratype female (same data as holotype).

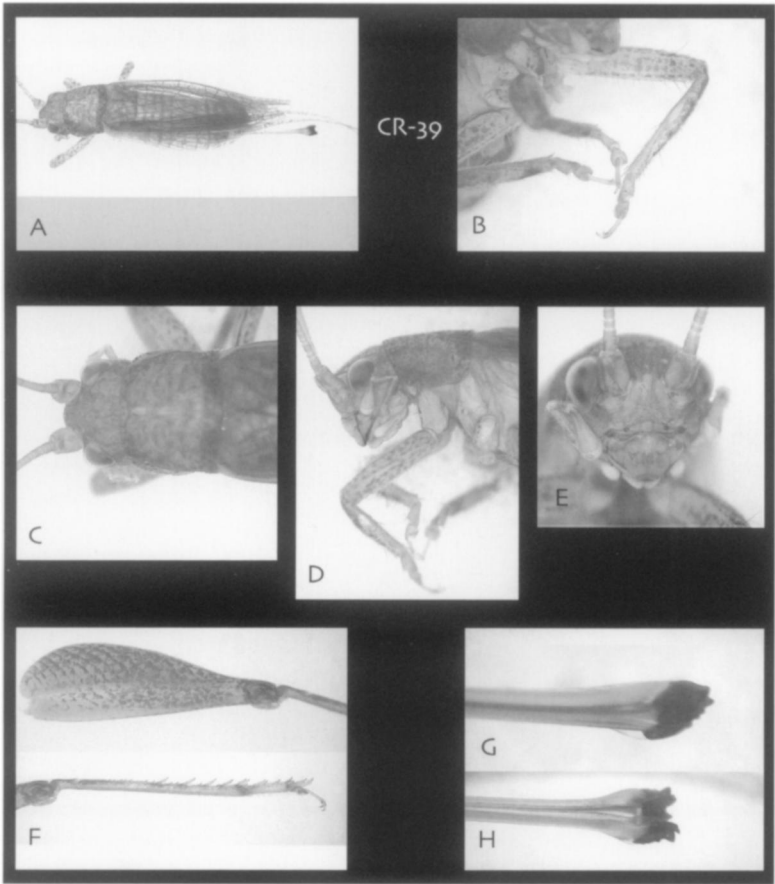


Figure 108. *Orocharis apogon* holotype female. A, portrait. B, tibia-1. C, D, E, head and pronotum. F, femur-3 and tibia-3. G, H, ovipositor.

***Orocharis apogon* new species (Fig. 108)**

Type.— Holotype female. CR-39. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, M/01/292, 1993, INBio-OET (INBio Collection).

Recognition.— Grey brown, head, pronotum and legs finely speckled; without any strong dark bands; tibia-1 with large inner and outer tympana.

Measurements (female).— CR-39: body length 9; forewing length 7; femur-3 length 6.3; cerci length 5.2; ovipositor length 3.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female.

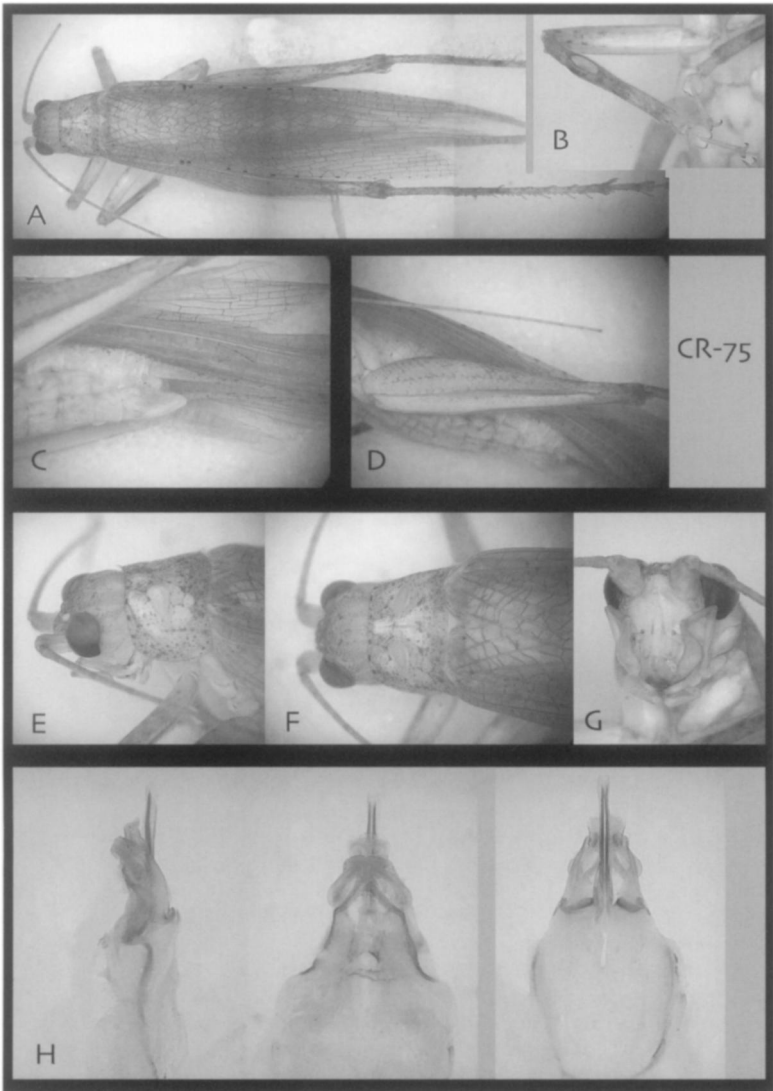


Figure 109. *Orocharis curiosus* holotype. A, portrait. B, tibia-1. C, end of abdomen. D, femur-3. E, F, G, head and pronotum. H, genitalia (side, top, bottom).

***Orocharis curiosus* new species (Fig. 103)**

Type.— Holotype male. CR-75. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, March 2001 (INBio Collection).

Recognition.— Body pale brown, with small dark speckles. Back of head feintly banded. Face pale. With large inner and outer tympana.

Measurements (male).— CR-75: body length 18; forewing length 19; femur-3 length 12; cerci length 7.3; number of file teeth: none.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

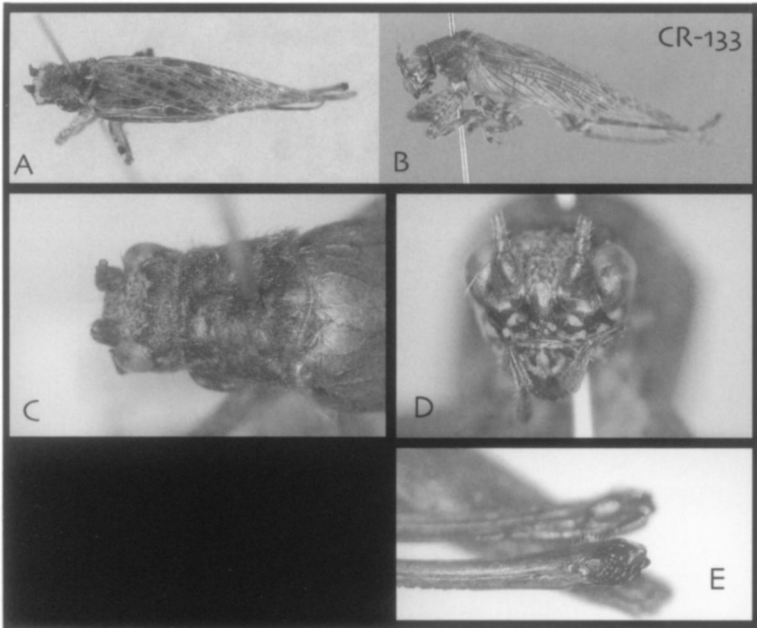


Figure 110. *Orocharis epipolios* holotype. A, B, portraits. C, head and pronotum. D, face. E, ovipositor.

Orocharis epipolios new species (Fig. 110)

Type.— Holotype female. CR-133. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Strongly blotches with light and dark brown; face mostly black with with pale markings; tip of head pale in front half; black in back half; forewings with dark veinings and dark in the center of each cell.

Measurements (female).—CR-133: BI 12; forewing length 12.5; femur-3 length (lost); cerci length 7; ovipositor length 8.

Specimens.—Holotype female.

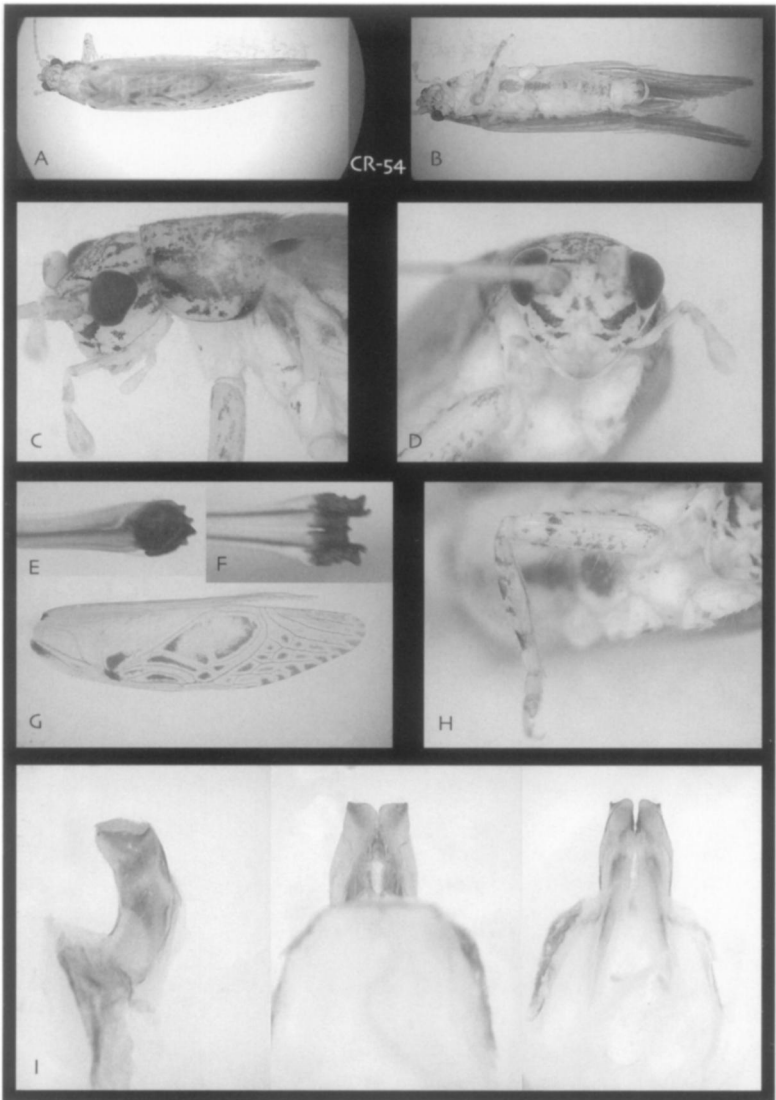


Figure 111. *Orocharis tolmeros* holotype (except E,F). A, B, portraits. C, head and pronotum, D, face. E, F, ovipositor of paratype female. G, forewing. H, leg-1. I, genitalia (side, top, bottom)

***Orocharis tolmeros* new species (Fig. 111)**

Type.— Holotype male. CR-54. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, April 2001 (INBio Collection).

Recognition.— Yellowish brown; head and pronotum speckled with dark brown; sides of head and pronotum with distinct dark bands; forewing with larger dark areas; posterior part of forewings with cells dark in their centers. With large inner and outer tympana.

Measurements (male).— CR-54: body length 12; forewing length 12; femur-3 length

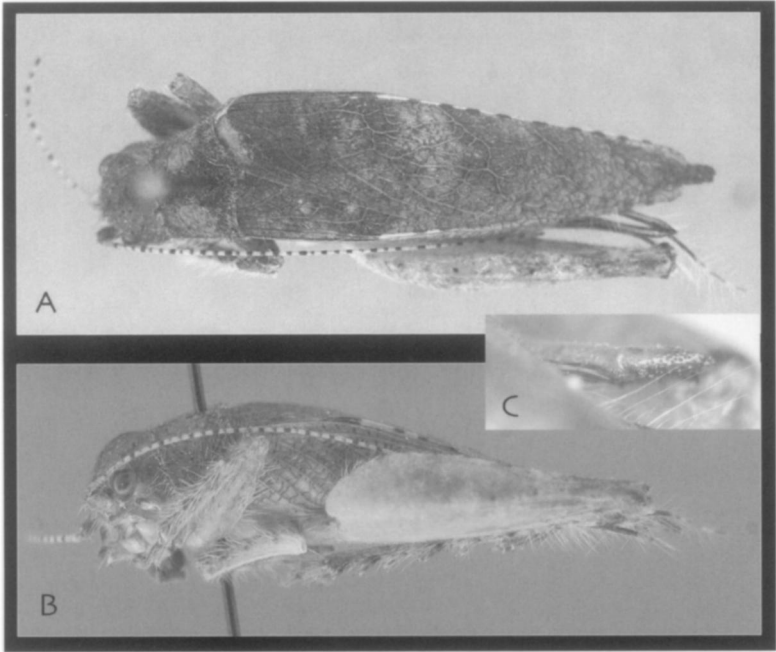


Figure 112 *Phyllogryllus dasos* holotype. A, B, portraits. C, ovipositor end.

—; cerci length 5; number of file teeth 21.

Measurements (female).— CR-54F: body length 12; forewing length 11; femur-3 length

—; cerci length —; ovipositor length 5.5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Numerous males and females.

***PHYLLOGRYLLUS* Saussure**

Reference.— Eades, Otte and Naskrecki 2006.

***Phyllogryllus dasos* new species (Fig. 112)**

Type.— Holotype female. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, 15 November 1995, INBio-OET (INBio Collection).

Recognition.— Body blotchy grey-brown with strikingly banded antennae; head strongly bulbous; legs very hairy; veins on forewing not parallel; with both inner and outer tympana; tibia-1 and -2 with 3 and 4 apical spurs respectively.

Measurements (female).— Bl 19; forewing length 18; femur-3 length 14; cerci length 11; ovipositor length 8.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female (see type data).

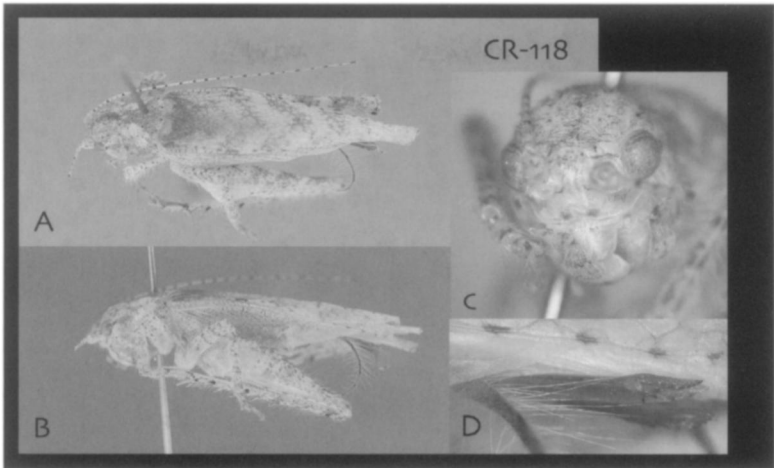


Figure 113. *Phyllogryllus eusemos* holotype. A, B, portraits. C, face. D, ovipositor.

Phyllogryllus eusemos new species (Fig. 113)

Type.— Holotype female. CR-118. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Very pale, straw colored; marked with darker splotches, and may small dots; face mostly pale; top of head and pronotum with faint longitudinal bands and small dark spots; legs very hairy and spotted; antennae pale with short dark rings; with large inner and outer auditory tympana; tibia-3 with 9 inner and 8 outer spurs; tibia-1 and-2 with 3 and 4 apical spurs respectively.

Measurements (female).— CR-118: body length 19; forewing length 17; femur-3 length 12; cerci length ca. 8; ovipositor length 6.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype female (see type data).

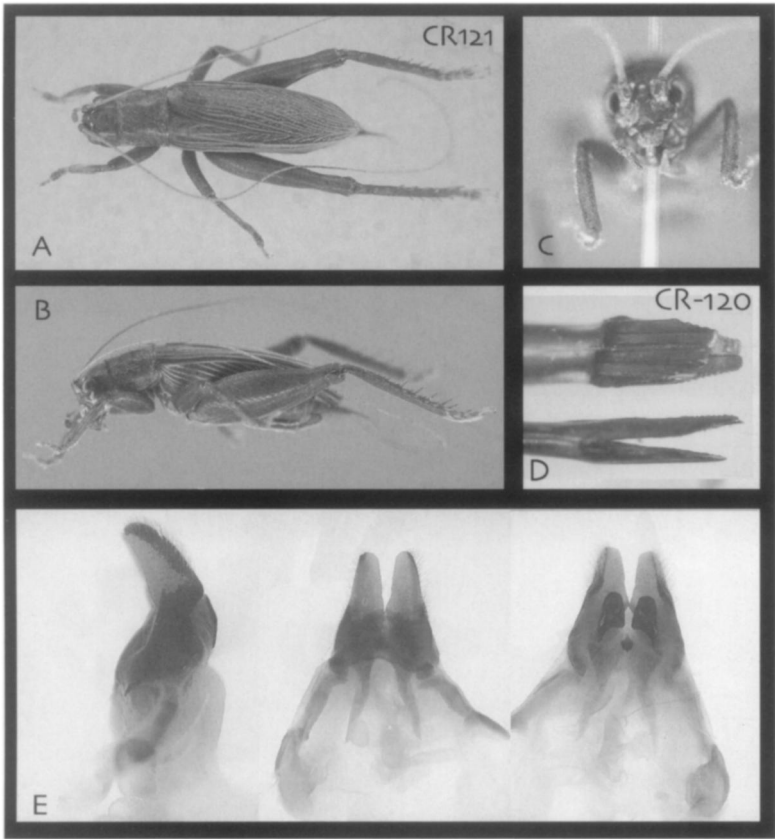


Figure 114. *Tafalisca furfurosa* holotype (A-C, E). A, B, portraits, C, face. D, paratype female ovipositor. E, genitalia (side, top, bottom).

***Tafalisca furfurosa* new species (Fig. 114)**

Type.—Holotype male. Heredia. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.—Dark reddish brown; shiny; head and pronotum with fine silvery pubescence; without inner and outer tympana; tibia-1 and -2 with 3 and 4 apical spurs respectively; tibia-3 with 8 inner and 8 outer spurs.

Measurements (male).—CR-121: body length 27; forewing length 19; femur-3 length 15; cerci length 9.

Measurements (female).—CR-120: body length 29; forewing length 23; femur-3 length 19; cerci length 12; ovipositor length 16.

Habitat.—Lowland, ropical rain forest.

Specimens.— Holotype male and paratype female (see type data).

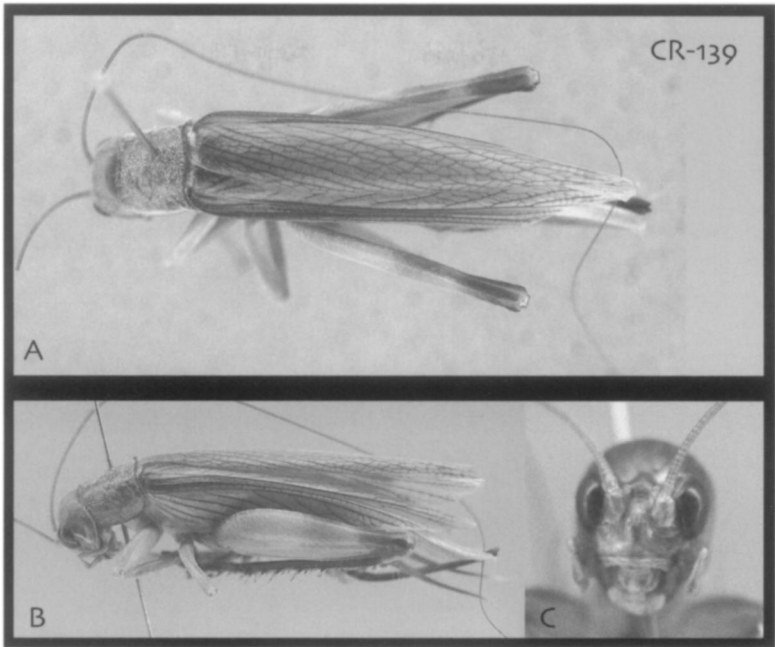


Figure 115. *Stenogryllus pudens* holotype female.

Stenogryllus pudens new species (Fig. 115)

Type.— Holotype male. CR-139. Heredia. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1998, INBio-OET (INBio Collection).

Recognition.—Pale brown, with black bands along dorsal margins of forewings beginning at shoulder; face mostly uniform brown, but with black area between the ocelli; pronotum reddish brown, covered with fine silvery pubescens; forewings with black band along lateral margins; most veins blackish; legs-1 and -2 uniform in color; femur-3 slightly banded, becoming dark brown at knees; tibia-3 darker brown, with 8 outer and 7 inner spurs; tibia-1 with no outer and a small inner tympanum; tibia-1 and -2 with 3 and 4 apical spurs respectively; cerci becoming dark brown in distal half.

Measurements (female).—CR-139: BI 26; forewing length 26; femur-3 length 15; cerci length 11; ovipositor length 11.5.

Specimens.—Holotype female.

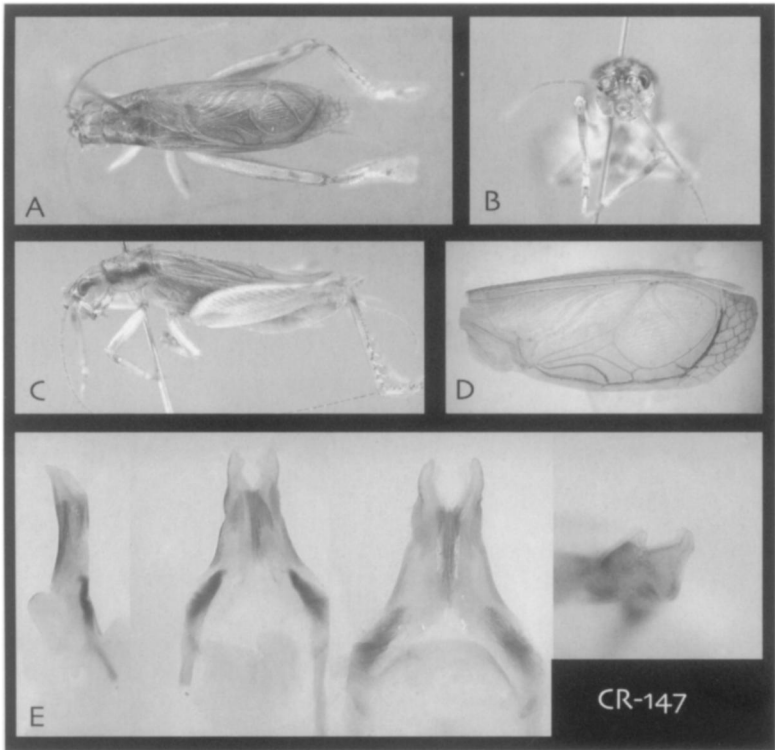


Figure 116. *Selvagryllus spizon* holotype. A, C, portraits. B, face. D, forewings. E, genitalia (side, top, bottom, rear views).

***SELVAGRYLLUS* new genus**

Type species.— *Selvagryllus spizon*, new species

Recognition.— See Recognition of type species.

***Selvagryllus spizon* new species (Fig. 116)**

Type.— Holotype male. CR-147. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, October 1995, INBio-OET (INBio Collection).

Recognition.— Large inner and large outer tympana. Body light reddish brown. Legs pale orange brown. Genitalia: epiphallus elongate and strongly bilobed. Forewing harp with eight veins. Mirror with one dividing vein. Stridulatory vein sinuate, with two major bends.

Measurements (male).— CR-147: body length 15.5; forewing length 12; femur-3 length 9; cerci length 7.5; number of file teeth: 12 (with hump).

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

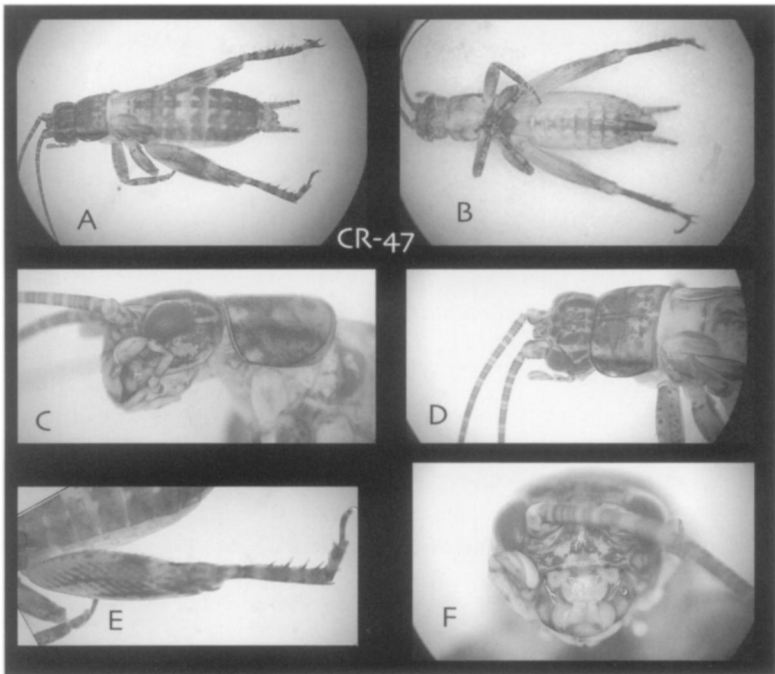


Figure 117. *Landreva rica* holotype. A, B, portraits. C, D, head and pronotum, E, femur-3. F, face.

SUBFAMILY LANDREVINAE

LANDREVA Walker

Reference.— Eades, Otte and Naskrecki 2006.

Landreva rica new species (Fig. 117)

Type.— Holotype male nymph. CR-47. Costa Rica: Prov. Heredia, 16 km SSE of La Virgen, 10°16' N 84°05' W, 1050-1150 m, INBio-OET ALAS transect, November 2001 (INBio Collection).

Recognition.— A flattened cricket patterned with dark and light brown; side of head and pronotum darker than dorsum; back of head distinctly banded; face orange and ivory with patches of dark brown; maxillary palps with expanded distal segment; hind tibiae relatively short (as in Landrevinae).

Measurements (female).— CR-47: body length 14.5; forewing length nymph; femur-3 length 6.5; cerci length br; ovipositor length 2.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male.

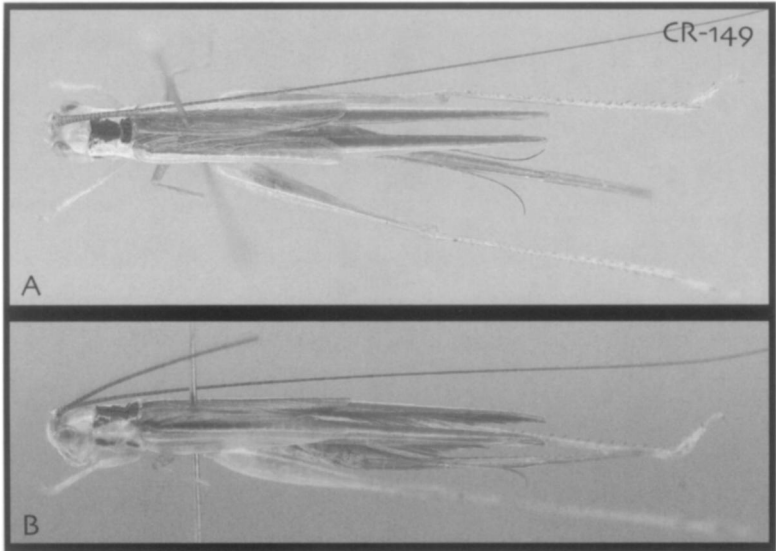


Figure 118. *Patiscus elegans* holotype female.

***PATISCUS* Stal**

Reference.— Eades, Otte and Naskrecki 2006.

Patiscus elegans new species (Fig. 118)

Type.— Holotype female. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, April 1996, INBio-OET (INBio Collection).

Recognition.— Pale brown to greenish. Pronotum with broad median black band with two black spots on the lateral lobes. Forewings brown on dorsal field, turning black laterally; lateral field pale; hindwings dark brown on dorsal field; legs 1 and 2 pale; femur-3 reddish on upper face; tibia-3 with small black mark near base; tibia-3 with 12 inner and 9 outer spurs.

Measurements (male).— CR-149: body length 15; forewing length 12; femur-3 length 12; cerci length 9; ovipositor length 14.

Specimens.— Holotype female.

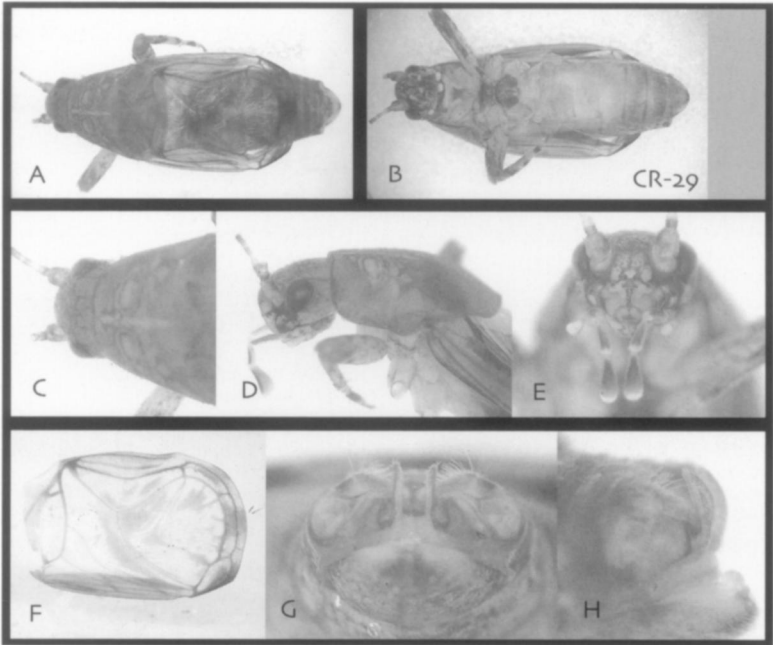


Figure 119. *Ornebius cydistos* holotype. A, B, portraits. C, D, head and pronotum. E, face. F, forewing. G, H, anal processes.

ORNEBIUS Guerin

Reference.— Eades, Otte and Naskrecki 2006.

Ornebius cydistos new species (Fig. 119)

Type.— Holotype male. CR-29. Costa Rica: Heredia, Est. Biol. la Selva, 50-150 m, 10-26N, 84-01W, September 1993, INBio-OET (INBio Collection).

Recognition.— .

Measurements (male).— CR-29: body length 8; forewing length 3.6; pronotum length: 3; femur-3 length lost; cerci length lost; number of file teeth: 222 — CR-35: body length 9; forewing length 4.5; femur-3 length 5.

Habitat.— Lowland, tropical rain forest.

Specimens.— Holotype male. Paratype CR-35: same data as holotype except November 1993.

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- McDade, L. A., K. S. Bawa, H. A. Hespenheide, G. S. Hartshorn (eds.) *La Selva: Ecology and Natural History of a Tropical Rainforest*, University of Chicago Press.
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DERIVATION OF NAMES

(L = Latin; G = Greek)

accipienda - acceptable - L	hypacrios - aerial - G
adhaerens - clinging - L	hypergios - above ground - G
admordens - gnawing - L	idalimos - comely - L
adventicius - foreign - L	idmon - skilled - G
aeschyntelos - bashful - G	impigra - active - L
agea - admirable - G	itamos - bold - G
allogria - foreign - G	laepseros - agile - G
amatorios - amorous - L	larvalis - ghostly - L
anxius - anxious - L	legnotos - bordered with color - G
apogon - beardless - G	libratus - balanced - L
ballator - dancer - L	nava - active - L
beltistos - best - G	olbios - blessed - G
benignus - beneficent - L	optimus - chosen - L
catherpon - creeping - G	orchestes - dancer - G
cautus - cautious - L	othnia - foreign - G
celeticos - charming - G	pammelas - all black - G
celsiosus - cold sensitive - L	panoplos - armed - G
choreutes - dancer - G	peregrina - foreign - L
cremastos - hanging - G	phyxelis - cowardly - G
curiosus - careful - L	pipans - chirping - L
cydistos - glorious - G	pipizon - chirping - G
dapsiles - abundant - G	pneon - breathing - G
dasos - burnt - G	praepostera - absurd - L
desumptus - chosen - L	prosenes - gentle - G
eclectos - chosen - G	pteticos - flying - G
eclogos - chosen - G	pudens - bashful - L
ecphylos - alien - G	reptabundus - creeping - L
eneplos - armed - G	saliens - jumping - L
epicydes - glorious - G	saltator - dancer - L
epipolios - grizzled - G	salticus - dancing - L
epiroticos - continental - G	scandens - climbing - L
eudoxos - glorious - G	scythros - angry - G
eugethes - cheerful - G	socors - careless - L
eusemos - auspicious - G	sophos - clever - G
euthryptos - fragile - G	spizon - chirping - G
exaetos - choice, select - G	spodios - ash colored - G
exagistos - accursed - G	struthizon - chirping - G
ferox - bold - L	symphonos - harmonious - G
fidens - bold - L	thambetos - astonishing - G
furfurosa - brownish - L	tolmeros - bold - G
habros - graceful - G	troxalis - cricket - L
halans - breathing - L	turbidus - confused - L
herpesticos - creeping - G	tychicos - fortuitous - G
herpon - creeping - G	vera - genuine - L
hyalodes - glassy - L	vivus - alive - L
hyalos - alabaster - G	volucer - flying - L