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## PRELIMINARY HYPOTHESIS ON THE HISTORY OF GRYLLINAE (ORTHOPTERA: GRYLLIDAE) IN AMERICA AND NEW TAXA OF BOTH THE SUBTRIBE ANUROGRYLLINA AND THE GENUS *MEGALOGRYLLUS*

A. V. Gorochov

Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., 199034, Saint Petersburg, Russia

**Author**

Andrey V. Gorochov

 E-mail: [orthopt@zin.ru](mailto:orthopt@zin.ru)

SPIN: 85030

Scopus Author ID: 55948203200

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**Abstract.** The fauna of the subfamily Gryllinae in America is not very diverse and may be divided into three generic groups: (1) the endemic (for America and adjacent islands) subtribe Anurogryllina, (2) American branch of the subtribe Brachytrupina, (3) one genus (*Gryllus* L.) from the subtribe Gryllina. Each of these groups possibly once penetrated this continent in prehistoric times; two of these groups penetrated America earlier and had noticeable adaptive radiation leading to the formation of majority of recent American genera in Gryllinae, but the third group reached America later and is divided only into species. The Anurogryllina is one of subtribes of the widely distributed tribe Gryllini and consists of 4–5 genera clearly distinguished from each other as well as from other subtribes by the male genital structure. The former genus *Urogryllus* Rand. is here restored as a subgenus of the genus *Anurogryllus* Sauss. for the first time. A key to genera and subgenera of Anurogryllina is proposed. A new genus and two new subgenera as well as 10 new species and subspecies of this subtribe are described from Mexico, Peru, Paraguay, Bolivia and Ecuador: *Mexigryllus huatulco* gen. et sp. nov., *M. tuxtla* sp. nov., *Anurogryllus (Forcigryllus)* subgen. nov., *A. (Pilosogryllus)* subgen. nov., *A. (Urogryllus) oaxaca* sp. nov., *A. (U.) parvispeculum* sp. nov., *A. (U.) minimus* sp. nov., *A. (U.) tamaulipas* sp. nov., *A. (U.) pantanal* sp. nov., *A. (U.) mataracu* sp. nov., *A. (Anurogryllus) carinatus* sp. nov., *A. (A.) caraibeus abbreviatus* subsp. nov. The genus *Megalogryllus* Chop. belongs to the subtribe Brachytrupina of the same tribe. Two new species (*M. angustulus* sp. nov., *M. excellens* sp. nov.) and one new subgenus (*Gigantogryllus* subgen. nov., type species *Tarbinskiellus neotropicus* Gor.) of this genus are described from Guyana, Peru and Brazil.

**Keywords:** crickets, taxonomy, historical geography, America, Orthoptera, Gryllidae, Gryllinae, Gryllini, Anurogryllina, new taxa.

## ПРЕДВАРИТЕЛЬНАЯ ГИПОТЕЗА ОБ ИСТОРИИ ПОДСЕМЕЙСТВА GRYLLINAE (ORTHOPTERA: GRYLLIDAE) В АМЕРИКЕ И НОВЫЕ ТАКСОНЫ ПОДТРИБЫ ANUROGRYLLINA И РОДА *MEGALOGRYLLUS*

А. В. Горохов

Зоологический институт Российской Академии Наук, Университетская наб. д. 1, 199034, г. Санкт-Петербург, Россия

**Сведения об авторе**

Андрей Васильевич Горохов

 E-mail: [orthopt@zin.ru](mailto:orthopt@zin.ru)

SPIN-код: 85030

Scopus Author ID: 55948203200

**Аннотация.** Фауна подсемейства Gryllinae в Америке не очень разнообразна и может быть разделена на три родовые группы: (1) эндемичная для Америки и соседних островов подтриба Anurogryllina, (2) американская ветвь подтрибы Brachytrupina, (3) один род (*Gryllus* L.) из подтрибы Gryllina. Каждая из этих групп, возможно, однажды проникла на этот континент в доисторическое время; две из этих групп проникли раньше и испытали заметную адаптивную радиацию, приведшую к формированию большинства современных американских родов у Gryllinae, но третья группа достигла Америки позднее и разделилась лишь на виды. Anurogryllina является одной из подтриб широко распространенной трибы Gryllini и состоит из 4–5 родов, хорошо отличающихся один от другого и от других подтриб строением гениталий самца. Бывший род *Urogryllus* Rand. здесь впервые восстановлен как подрод рода *Anurogryllus* Sauss. Составлена определительная таблица родов и подродов подтрибы Anurogryllina. Из Мексики, Перу, Парагвая, Боливии и Эквадора описаны новый род и два новых подрода, а также 10 новых видов и подвидов этой подтрибы: *Mexigryllus huatulco* gen. et sp. nov., *M. tuxtla* sp. nov.; *Anurogryllus (Forcigryllus)* subgen. nov.; *A. (Pilosogryllus)* subgen. nov., *A. (Urogryllus) oaxaca* sp. nov., *A. (U.) parvispeculum* sp. nov., *A. (U.) minimus* sp. nov., *A. (U.) tamaulipas* sp. nov., *A. (U.) pantanal* sp. nov.; *A. (U.) mataracu* sp. nov.; *A. (Anurogryllus) carinatus* sp. nov., *A. (A.) caraibeus abbreviatus* subsp. nov. Род *Megalogryllus* Chop. принадлежит к подтрибе Brachytrupina той же трибы. Из Гайаны, Перу и Бразилии описаны два новых вида (*M. angustulus* sp. nov.; *M. excellens* sp. nov.) и один новый подрод этого рода (*Gigantogryllus* subgen. nov., типовой вид *Tarbinskiellus neotropicus* Gor.).

**Ключевые слова:** сверчки, таксономия, историческая география, Америка, Orthoptera, Gryllidae, Gryllinae, Gryllini, Anurogryllina, новые таксоны.

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## INTRODUCTION

The fauna of Gryllinae in America is not very diverse and consists of about 20 genera, some of which recently brought to America by man or need to check their validity and systematic position. However, the most part of American genera of Gryllinae is more or less understandable and living in America since prehistoric times; low generic diversity of this fauna in comparison to some other American subfamilies of Gryllidae (Phalangopsinae and Podoscirtinae) or to Gryllinae from the Old World shows that this diverse subfamily evolved mainly in Africa and Eurasia, but some its representatives began to penetrate America rather late and were very rarely successful in this. As a result of such successful invasions, at least three generic groups are formed in America. One of such group is the endemic subtribe Anurogryllina which was originally proposed as a subtribe in the “tribe Gymnogryllini” (Randell 1964), but now it is more reasonable to consider these “tribe” and subtribe as independent subtribes (Brachytrupina and Anurogryllina) of the tribe Gryllini. Anurogryllina is widely distributed in America and includes rather numerous and diverse species, many of which are insufficiently studied or new to science. The genus *Megalogryllus* Chop. is here included in the subtribe Brachytrupina and together with some other genera included in this subtribe very recently (Gorochov 2019) may constitute another important generic group which penetrated America in prehistoric times.

The paper is based on the material collected mainly by Russian investigators and deposited in the collection of the Zoological Institute, Russian Academy of Sciences, Saint Petersburg (ZIN). The specimens are dry and pinned. Photographs of their morphological structures were taken with a Leica M216 stereomicroscope.

## PRELIMINARY HYPOTHESIS ABOUT THE HISTORY OF GRYLLINAE IN AMERICA

The supergeneric classification of Gryllinae is insufficiently elaborated. Based on the

structure of male genitalia, Randell (1964) divided this subfamily into two tribes and four subtribes: Gymnogryllini with Gymnogryllina and Anurogryllina, and Gryllini with Sciobiina and Gryllina. Later, Otte (1994) divided this rather monomorphic subfamily into two subfamilies and seven tribes: Gryllinae with Gryllini, Gryllomorphini (!), Modicogryllini, Petaloptilini (!) and Sciobiini; and Brachytrupinae with Cephalogryllini, Gymnogryllini [including *Anurogryllus* Sauss. and *Brachytrupes* Serv. (!)] and Turanogryllini. This eclectic classification is impossible for any understanding, especially since Otte did not mention any features for characterizing his tribes and subfamilies. It is a reason that Gorochov (1995) did not agree with such classification and indicated that almost all the genera of Gryllinae (except for a few enigmatic genera from Australia and South Asia included in the tribes Sclerogryllini and Eurygryllodini; Gorochov 1985, 1990) have a similar general appearance and the same type of male genitalia with the same set of characteristic genital structures, and these genera must be included in one tribe (Gryllini) possibly having a few subtribes. However, subtribal composition of Gryllini is still unclear, and it is more or less reasonable to divide this tribe into 3–4 subtribes only: Gryllina, Brachytrupina, Anurogryllina and possibly Cophogryllina **stat. nov.** (from Cophogryllini Ichikawa, Murai et Honda, 2000). Three of these subtribes are presented in America.

1) Anurogryllina is an endemic group for America distributed from the USA to Argentina but without any representative in the Old World. This subtribe has rather primitive for Gryllinae and very characteristic structure of male genitalia (Figs 1–12, 65–76, 88–96): ectoparameres are with their distal halves completely sclerotized or divided into sclerotized and almost membranous parts (but the latter sclerites are located more or less along medial and/or lateral edges of ectoparamere, i.e. not as in the subtribe Brachytrupina; for comparison see Figs 14, 16, 18, 22, 27, 29, 32, 35, 38, 41 and 43–52), sacculus is rather small or

medium-sized, and anterior parts of rami are fused with each other (but sometimes this fusion may be secondarily lost at a very short distance; Figs 7, 8, 68, 69).

Perhaps this subtribe was formed already in America, and any relatives of its ancestor penetrating America are now extinct in the Old World (one possible Australian species of this subtribe, *Anurogryllus australis* Sauss., could be brought from America by man). Thus, Anurogryllina may be a rather old group representing a first layer of American Gryllinae. During its American evolution, Anurogryllina was divided into five recent genera: *Anurogryllus*, *Paranurogryllus* Mesa et Garcia-Novo, *Hispanogryllus* Otte et Perez-Gelabert, *Zebragryllus* Desutter-Grandcolas et Cadena-Castañeda (the two latter genera have rather similar genitalia of male and may be only subgenera of the same genus) and *Mexigryllus* **gen. nov.** (see key for genera and subgenera of Anurogryllina below). Their mode of life is rather diverse: from inhabitants of soil surface and its fissures to burrowing mode of life and from life in different ecotones (including anthropogenic ones) to that in forest floor. Such diverse mode of life is characteristic of the most common genus *Anurogryllus*, but the other genera of Anurogryllina may be more connected with forest floor and not burrowing. Three of these genera are recorded from northern or southern parts of Neotropic only; one genus (*Zebragryllus*) lives only in central part of this region; but *Anurogryllus* species are known in all parts of the Anurogryllina area. This distribution of Anurogryllina may be a result of the partial replacement of this group in the central part of Neotropic by stronger competitors belonging to another subtribe of Gryllinae.

2) Such competitors may be representatives of the American branch of Brachytrupina, a subtribe well represented also in recent faunas of the Old World. This subtribe includes the American genera *Miogryllus* Sauss., *Megalogyllus* Chop., *Geogryllus* Otte et Perez-Gelabert, possibly *Gryllita* Heb., *Kazuemba* de Mello, *Rubrogryllus* Vickery, *Faguagryllus* Cadena-Castañeda, *Perugryl-*

*lus* Jaiswara and *Laureopsis* Jaiswara (but the six latter names may be synonyms of *Miogryllus* and *Geogryllus* or belong to their subgenera), as well as numerous genera from the Old World (*Brachytrupes* Serv., *Tarbinskiellus* Gor., *Phonarellus* Gor., *Gymnogryllus* Sauss., *Cephalogyllus* Chop., *Sciobia* Burm., *Modicogryllus* Chop., possibly *Turanogryllus* Tarb., and others). These genera also have the male genitalia similar to each other: epiphallus has a pair of more or less large posterolateral lobes curved upwards but sometimes also with a smaller posteromedian projection (or a pair of such projections); ectoparameres are usually compact and with their distal portion complicated, i.e. partly membranous but having an apical sclerite (*as*) [this sclerite may be partly or completely separated from proximal sclerite (*ps*) by membranous area (*ma*) (Figs 43–45, 47, 48, 51, 52), or *as* may be completely or partly not separated from *ps* (Figs 46, 49, 50)] and a posterodorsal ribbon-like sclerite (*pds*) [*pds* is laterally fused with apical sclerite, and medially fused with the apex of mesal lobe (*aml*) or ending near *aml* (Figs 43–51)]; sacculus is medium-sized or rather large; anterior parts of rami are rather widely separated from each other (Figs 97, 98, 123, 124, 126, 127).

Moreover, American genera of the subtribe Brachytrupina are probably closely related to each other, because ectoparameres in the genera examined have *pds* fused with *aml* and provided with a spine-like process (*spl*) in the place of their fusion (*spl* is directed more or less backwards; Figs 48–51). They might have one ancestor related to *Tarbinskiellus* (*aml* of this genus is not fused with *pds* but having almost spine-like process directed backwards and projected behind *pds*; Fig. 47) but without recent descendants in the Old World. The similar spine-like process is located only on *pds* in some species of American *Megalogyllus* (Fig. 52) and Asiatic *Gymnogryllus* (*G. pravdini* Gor.) as well as in the place of *aml* and *pds* fusion in *Modicogryllus* (Fig. 46): in the first case, it is a result of disappearance of most part of mesal lobe (Fig. 52); but it may be a result of convergent evolution in *G. prav-*

*dini* and *Modicogryllus*, because *G. pravdini* has mesal lobe not fused with *pds*, and ectoparamere of *Modicogryllus* perhaps initially lacks characteristic ventral membranous area (*ma*). *Miogryllus* also partly lacks *ma* separating *as* from *ps* in *Megalogryllus*, *Geogryllus*, *Tarbinskiellus* and some other relative genera (compare Figs 43–45, 47, 48 and 49, 50), but it may be a result of secondary sclerotization of *ma* in *Miogryllus*, because the traces of division of ectoparamere into apical and proximal sclerites are preserved (Figs 49, 50).

Thus, all these American genera probably originated from one ancestor related to Asiatic *Tarbinskiellus* and reaching America probably later than Anurogryllina (but also long time ago), and they constitute a second layer of American Gryllinae. They acquired environmental adaptations similar in diversity to those of Anurogryllina, possibly replaced most part of Anurogryllina representatives in Central part of Neotropic and widely spread to the north and south.

3) The third layer of American Gryllinae is formed by the subtribe Gryllina which seems more young than Brachytrupina and is characterized by the following possible characters: epiphallus usually with a large posteromedian projection and a pair of smaller posterolateral lobes (sometimes this projection may be partly reduced, i.e. smaller than the latter lobes, or these lobes may be lost); ectoparameres are usually with their distal part simple and lacking both membranous area (*ma*) and characteristic posterodorsal ribbon-like sclerite (*pds*) [the latter sclerite (its presence or absence) is especially important for separation of these subtribes from each other] as well as with the mesal lobe probably homologous to that of Brachytrupina; sacculus is medium-sized to very large and sometimes scalloped; anterior parts of rami are not fused with each other and look as in Brachytrupina.

The Gryllina is presented in Neotropic and/or Nearctic by a few genera: *Gryllus* L., *Acheta* F., *Gryllodes* Sauss., *Scapsipedus* Sauss. (Otte & Perez-Gelabert 2009) and *Velarifictorus* Rand. (Walker 1977). All these genera are also usual in the Old World. However, only *Gryl-*

*lus* might penetrate America in prehistoric times but much later than other subtribes of this subfamily, because it is widely distributed in this continent and divided into numerous species only. These species are close related to each other and form one morphological group (based on the male genitalia) inside the genus *Gryllus*; this group as well as some other morphological groups of *Gryllus* (may be subgenera) is usual in Africa and adjacent regions. At present, these species live mainly in ecotones and are probably not competitors for forest Gryllinae. The other above-mentioned genera of Gryllina are represented in America by one or a few species which are domestic, almost domestic or known from rare finds; they could be accidentally introduced by man in historic time and are represented in America by the same (or possibly by the same) species as in the Old World.

## TAXONOMY

### Tribe **Gryllini**

#### Subtribe **Anurogryllina**

Among five genera of this tribe, only *Anurogryllus* is divided into three subgenera. The differences between these genera and subgenera are given in a key below (all the species names listed here are given in original binomen).

1. Body apterous or with very short tegmina (visible part of tegminal dorsal field not longer than pronotum; Figs 53–56), which in male with partly reduced stridulatory apparatus (Figs 100, 101); tympana absent; male genitalia with posterior part of epiphallus undivided into a pair of distinct lobes or slightly bilobed; Figs 1, 2, 4, 5) . . . . . 2
- Body apterous or with tegmina diverse in length and structure (Figs 57–64, 77–80, 82, 84, 85, 102–109); tympana developed or absent; male genitalia with epiphallus divided into a pair of distinct lateral lobes in posterior part (Figs 7, 8, 10, 11, 65, 66, 68, 69, 71, 72, 74, 75, 88, 89, 91, 92, 94, 95) . . . . . 3
2. Body with very short tegmina (Figs 53–56), which in male with partly reduced stridu-

latory apparatus (Figs 100, 101); male genitalia with epiphallus elongate (much longer than wide) and having distinct anterodorsal lobe curved upwards-backwards, and with distal part of rachis long and very thin (Figs 1–6); ovipositor well-developed (Fig. 86). [Mexico] .....

..... **genus *Mexigryllus* gen. nov.**

<http://zoobank.org/NomenclaturalActs/3CB4BB94-44C1-48AB-9376-684FBA89C34D>

[Type species *Mexigryllus huatulco* **sp. nov.** Composition: type species and *M. tuxtla* **sp. nov.** Etymology: from Mexico (country) and *Gryllus* (old generic name).]

— Body apterous; male genitalia with epiphallus transverse (wider than long) and lacking distinct anteromedian lobe, and with distal part of rachis short and slightly widened before apical portion; ovipositor rudimentary. [Southern Brazil] .....

..... **genus *Paranurogryllus***

3. Male tegmina with normal stridulatory apparatus (Figs 57, 59, 61, 63, 77, 80, 85, 102–104, 106–109) or without it (Fig. 82, 84, 105); male genitalia with epiphallus long (more than 1.8 times as long as wide) and having distinct anteromedian lobe directed upwards or backwards (Figs 7–12, 65–76, 88–96). [from USA to Argentina] .....

..... **genus *Anurogryllus* s. l.**

(a) Male apterous, subapterous or with tegmina diverse in length but having normal stridulatory apparatus (Figs 57, 59, 61, 63, 77, 80, 82, 84, 85, 102–104, 106–109); male genitalia with apical lobes directed backwards or upwards (Figs 7–12, 65–76, 88–96) .....

(—) Male with moderately short tegmina lacking stridulatory apparatus; male genitalia with apical lobes directed aside (laterally). [Mexico] .....

..... **subgenus *Anurogryllus* (*Forcigryllus* subgen. nov.)**

<http://zoobank.org/NomenclaturalActs/f829c56e-1e88-41ee-b8e0-5c8541b886c8>

[Type species *Gryllodes forcipatus* Saussure 1897. Composition: only type species. Etymology: from *forcipatus* (name of type species) and *Gryllus* (old generic name).]

(b) Male genitalia with epiphallus having posterolateral lobes directed mainly upwards, and lateral surfaces covered with dense hairs (Figs 7–9); ovipositor normal, i.e. not strongly reduced. [Peru, Dominican Republic] .....

..... **subgenus *Anurogryllus* (*Pilosogryllus* subgen. nov.)**

<http://zoobank.org/NomenclaturalActs/8f765070-f4b6-4843-ac25-f62232bf8d5a>

[Type species *Acheta fulvastra* Chopard, 1956. Composition: type species; *Anurogryllus hierroi* Otte et Perez-Gelabert, 2009; possibly *A. ellops* Otte et Perez-Gelabert, 2009. Etymology: from “pilosus” (pilose in Latin) and *Gryllus* (old generic name).]

(—) Male genitalia with epiphallus having posterolateral lobes directed mainly backwards, and lateral surfaces without distinct hairs (Figs 10–12, 65–76, 88–96); ovipositor diverse .....

(c) Ovipositor normal, much longer than genital plate. [from Mexico to Paraguay and Southern Brazil] .....

..... **subgenus *Anurogryllus* (*Urogryllus* Randell, 1964, stat. nov.)**

<http://zoobank.org/NomenclaturalActs/a2f75d82-af56-42bc-9286-57d8bd4a3b40>

[Type species *Gryllodes toltecus* Saussure 1874. Composition: type species; *Gryllita cubensis* Rehn, 1937; *Urogryllus toledopizai* de Mello, 1988; *Anurogryllus matheticos* Otte, 2006; seven new species described here; possibly *A. ecphylos* Otte, 2006, *A. nerthus* Otte et Perez-Gelabert, 2009, *A. amolgos* Otte et Perez-Gelabert, 2009, *A. vibrans* Otte et Perez-Gelabert, 2009, *A. nyctinomos* Otte et Perez-Gelabert, 2009, *A. annae* Otte et Perez-Gelabert, 2009, *A. gnomus* Otte et Perez-Gelabert, 2009 and *A. nigua* Otte et Perez-Gelabert, 2009.]

(—) Ovipositor strongly reduced, not longer than genital plate (Fig. 111). [from Philadelphia (USA) to Buenos Aires (Argentina) .....

..... **subgenus *Anurogryllus* (*Anurogryllus* s. str.)**

[Type species *Gryllus muticus* De Geer, 1773. Composition: type species; *Gryllodes abortivus* Saussure 1874; *G. caraibeus* Saussure

1874; *G. clarazianus* Saussure 1874; *Anurogryllus brevicaudatus* Saussure 1877; *A. fuscus* Caudell, 1913; *A. arboreus* T. Walker, 1973; *A. celerenictus* T. Walker, 1973; possibly *Acheta guadaloupeensis* Fabricius, 1793, *Gryllus comptus* F. Walker 1869, *G. angustulus* F. Walker 1869, (latter three species insufficiently described for inclusion in this subgenus but usually considered as synonyms of type species), *Anurogryllus vanescens* Otte et Perez-Gelabert, 2009, *A. beebei* Otte et Perez-Gelabert, 2009, *A. tapes* Redü, 2017 and *A. patos* Redü, 2017. Subgeneric position of *G. antillarum* Saussure 1874 (Fig. 109) unclear: abdominal apex in specimen, pictured as female in original description (Saussure 1874: fig. VII, 13), more similar to that of male (compare Figs 110 and 111).]

— Male tegmina with normal stridulatory apparatus; male genitalia with epiphallus rather short (less than 1.8 times as long as wide) and having rather diverse anterior part . . . . . 4

4. Male tegmina not reaching middle of abdomen; male genitalia with distinct anteromedian lobe (or a pair of anteromedial lobes?) curved backwards or backwards-upwards. [Dominican Republic, Puerto Rico] . . . . . **genus *Hispanogryllus***

— Male tegmina reaching distal part or apex of abdomen; male genitalia without distinct anteromedian lobe or anteromedial lobes curved backwards and/or upwards. [Colombia, Peru, French Guiana] . . . . . **genus *Zebragryllus***

***Mexigryllus huatulco* sp. nov.**

(Figs 1–3, 13, 14, 53, 54, 86, 100)

<http://zoobank.org/>

NomenclaturalActs/70729933-401d-4354-a987-14b115469163

*Material.* Holotype — male, **Mexico**, Oaxaca State, 35 km NNE of Santa Cruz Huatulco Town (10 km N of Xadani Vill.), 900–1000 m, secondary forest, 7–11.05.2006, A. Gorochoch & M. Berezin (ZIN). Paratypes: 1 male, 1 female, same data as for holotype (ZIN).

*Description.* Male (holotype). Body rather small for this subtribe. Colouration of epic-

ranium and pronotum black, but area along clypeal suture and regions of subgenae dark brown, ocelli light brown, hairs along anterior and posterior pronotal edges brownish, and pubescence on lateral pronotal lobes well-developed and yellowish; antennae uniformly light brown; mouthparts brown with labrum, lower half of clypeus and visible parts of both labium and maxillae light brown (but palpi intermediate between brown and light brown); legs brown with almost dark brown femora and coxae, and with light brown distal parts of tarsi and dorsal surface (including dorsal spines) of hind tibia; tegmina brown with almost light brown membranes between some longitudinal veins located in dorsal fields along their lateral edges (Fig. 53); sternites and abdominal tergites dark brown with lightish transverse stripes along posterior edges of three posterior sternites and six posterior tergites; anal and genital plates as well as paraprocts brown to dark brown; cerci light brown with barely darkened middle parts. Head semiglobular, slightly higher than wide, with rostrum weakly projected and rounded in profile, with space between antennal cavities almost twice as wide as scape, and with all ocelli distinct but rather small and situated almost on one transverse line; pronotum slightly transverse, with weakly concave anterior and posterior edges of disc, and with moderately low lateral lobes having ventral edges almost straight and more or less parallel to dorsal edges; legs moderately short, not digging, without tympana, but with hind femora well-widened (adapted to strong jumps), five pairs of articulated dorsal spines and three pairs of apical spurs on each hind tibia, as well as 6–7 outer and 5–7 inner dorsal denticles on hind basitarsus (except for a pair of apical spurs); tegmina reaching posterior part of first abdominal tergite, with widely rounded (but not roundly truncate) distal parts, with partly reduced stridulatory apparatus (dorsal field with developed stridulatory vein, but other veins of this field rather irregular and practically not forming mirror; Fig. 100), as well as with 3–4 longitudinal (almost parallel) veins and without crossveins in lateral field;



Figs 1–12. *Mexigryllus* and *Anurogryllus*, male: 1–3 — *M. huatulco* sp. nov.; 4–6 — *M. tuxtla* sp. nov.; 7–9 — *A. (Pilosogryllus) fulvaster* (Chop.); 10–12 — *A. (Anurogryllus) carinatus* sp. nov. Genitalia from above (1, 4, 7, 10), from below (2, 5, 8, 11) and from side (3, 6, 9, 12)

hind wings absent; anal plate simple, almost triangular but with rather widely and roundly truncate apex; genital plate approximately twice as long as anal plate and with gradually narrowing distal portion having roundly truncate apical part; paraprocts rather small and rounded; genitalia with distal portion of epiphallus rather narrow (but slightly widened and barely notched at apex) and long as well as slightly and arcuately curved upwards, with anteromedian epiphallic lobe rather narrow and not very long as well as truncately rounded at apex (Fig. 13), with moderately short ectoparameres (their shape as in Fig. 14), with rather long and strongly arcuate endoparameres having moderately large anterodorsal apodemes partly fused with each other, with very long rachis having very thin distal part significantly protruding beyond epiphallic apex, with moderately large sacculus, and with narrow rami clearly fused with each other anteriorly (Figs 1–3).

Variations. Second male with greyish brown proximal parts of antennae, reddish tinge on hind femur and lighter lateral areas on dorsal tegminal fields, without distinct lightish stripes along posterior edges of tergites and sternites, with most proximal pair of dorsal spines on left hind tibia very small, and with denticles of hind basitarsus insignificantly varied in number.

Female. General appearance as in holotype, but: colouration of sternites as in male paratype; tegmina reaching base of metanotum, widely rounded in distal half, not in contact with each other, light brown, and having 7–8 visible and almost straight longitudinal veins only (Fig. 54); armament of hind legs in limits of variability of males. Genital plate almost 1.5 times as long as nearest sternite but narrower (weakly transverse) and slightly narrowing to almost widely truncate (barely concave) apex; ovipositor not very long (hind femur 1.3–1.4 times as long as ovipositor) and with distal part as in Fig. 86.

Length in mm. Body: male 11–12, female 11.5; pronotum: male 2.1–2.3, female 2.1; visible parts of tegmina: male 1.9–2.2, female 0.5; hind femora: male 6–6.5, female 6.8; ovipositor 5.

*Comparison.* Differences of this species from all other known representatives of Anurogryllina are given in the aforementioned generic key.

*Etymology.* The new species is named after the Santa Cruz Huatulco Town situated not far from its type locality.

***Mexigryllus tuxtla* sp. nov.**

(Figs 4–6, 15, 16, 55, 56, 101)

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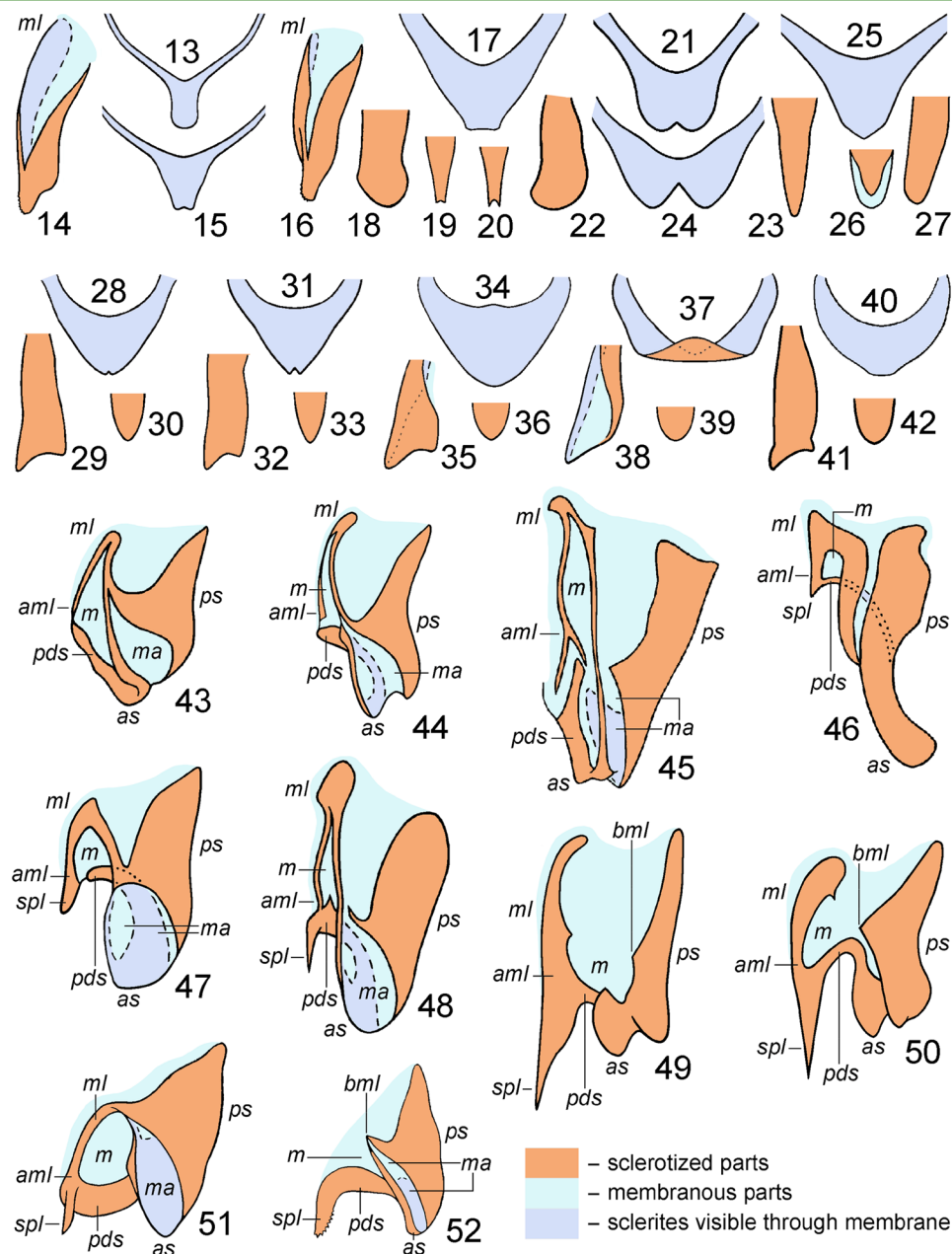
NomenclaturalActs/3814B46B-1903-40CD-85BC-DA46C39C5247

Material. Holotype — male, Mexico, Chiapas State, environs of Tuxtla Gutierrez City near El Ocote Reserve, 600–1000 m, primary forest, 19–24.05.2006, A. Gorochoy & M. Berezin (ZIN). Paratypes: 1 male, 1 female, same data as for holotype (ZIN).

*Description.* Male (holotype). General appearance very similar to that of *M. huatulco*, but antennae completely greyish brown, all parts of legs with reddish tinge, fore and middle coxae with blackish areas, tegmina with slightly oblique posteromedial edges of dorsal fields and with larger light areas (Figs 55, 101), abdomen almost blackish (without distinct lightish stripes) and with greyish brown cerci having light brown basal parts, hind tibiae with six pairs of dorsal spines on right leg as well as with six outer and five inner dorsal spines on left leg, and hind basitarsus with seven outer and six inner dorsal denticles. Genitalia also similar to those of *M. huatulco*, but: distal portion of epiphallus somewhat wider, shorter, slightly more notched at apex and less curved upwards (almost not arcuate); anteromedian epiphallic lobe almost triangular in shape, i.e. wider at base and with slightly bilobate apex (Fig. 15); ectoparameres as in Fig. 16; endoparameres shorter, with smaller anterodorsal apodemes and more distinct apodemes in middle part of endoparameres; rachis much shorter, not reaching epiphallic apex; sacculus clearly smaller; rami with posterior halves widened (Figs 4–6).

Variations. Second male with pronotal disc having a pair of small red spots, lateral tegminal field light brown but having brown





**Figs 13–52.** Structures of male genitalia in Anurogryllina and Brachytrupina, schematically: 13, 14 — *Mexigryllus huatulco* sp. nov.; 15, 16 — *M. tuxtla* sp. nov.; 17–20 — *Anurogryllus (Urogryllus) oaxaca* sp. nov.; 21–24 — *A. (U.) mataracu* sp. nov.; 25–27 — *A. (U.) tamaulipas* sp. nov.; 28–30 — *A. (U.) parvispeculum* sp. nov.; 31–33 — *A. (U.) minimus* sp. nov.; 34–39 — *A. (U.) pantanal* sp. nov.; 40–42 — *A. (Pilosogryllus) fulvaster* (Chop.); 43 — *Phonarellus minor* (Chop.); 44 — *Cephalogryllus lifouensis* Gor.; 45 — *Sciobia lusitanica* (Ramb.); 46 — *Modicogryllus frontalis* (Fieb.); 47 — *Tarbinskiellus portentosus* (Drury); 48 — *Geogryllus mezzai* Gor. et Izersky; 49 — *Miogryllus* sp. from Peru; 50 — *M. sp.* from Ecuador; 51 — *Megalogryllus (Gigantogryllus) neotropicus* (Gor.); 52 — *M. (Megalogryllus) excellens* sp. nov. Anteromedian lobe of epiphallus from above (13, 15, 17, 21, 24, 25, 28, 31, 34, 37, 40); ectoparamere from below (14, 16, completely; 18, 22, 27, 29, 32, 35, 38, 41, apical portion) as well as from below and slightly medially (43–52); apical part of rachis from below (19, 20, 23, 26, 30, 33, 36, 39, 42) Abbreviations: *aml* — apex of mesal lobe; *as* — apical sclerite; *bml* — base of mesal lobe, but without most part of this lobe (52) or only without its small part (49, 50); *m* — membrane between mesal lobe and posterodorsal sclerite; *ma* — membranous area between apical and proximal sclerites; *ml* — mesal lobe; *pds* — posterodorsal sclerite; *ps* — proximal sclerite; *spl* — spine-like process at apex of mesal lobe (47), at apex of proximal sclerite (52), and in place of their fusion (46, 48, 49, 50, 51)

veins, abdomen having lightish stripes along posterior edges of two posterior sternites, and armament of hind legs insignificantly varied.

Female. Colouration and structure of body (Fig. 56) as in holotype, but hind tibiae with five inner and six outer dorsal spines, and tegmina as well as genital plate and ovipositor practically indistinguishable from those of female of *M. huatulco*.

Length in mm. Body: male 11–11.5, female 11.8; pronotum: male 2–2.2, female 2.4; visible parts of tegmina: male 1.8–2, female 0.6; hind femora: male 6.5–7.2, female 8; ovipositor 6.

*Comparison.* The new species is clearly distinguished from *M. huatulco* by the characters of male genitalia listed above (in the description of *M. tuxtla*).

*Etymology.* The new species is named after the Tuxtla Gutierrez City situated not far from its type locality.

***Anurogryllus (Urogryllus) oaxaca* sp. nov.**

(Figs 17–20, 57, 58, 65–67, 102)

<http://zoobank.org/>

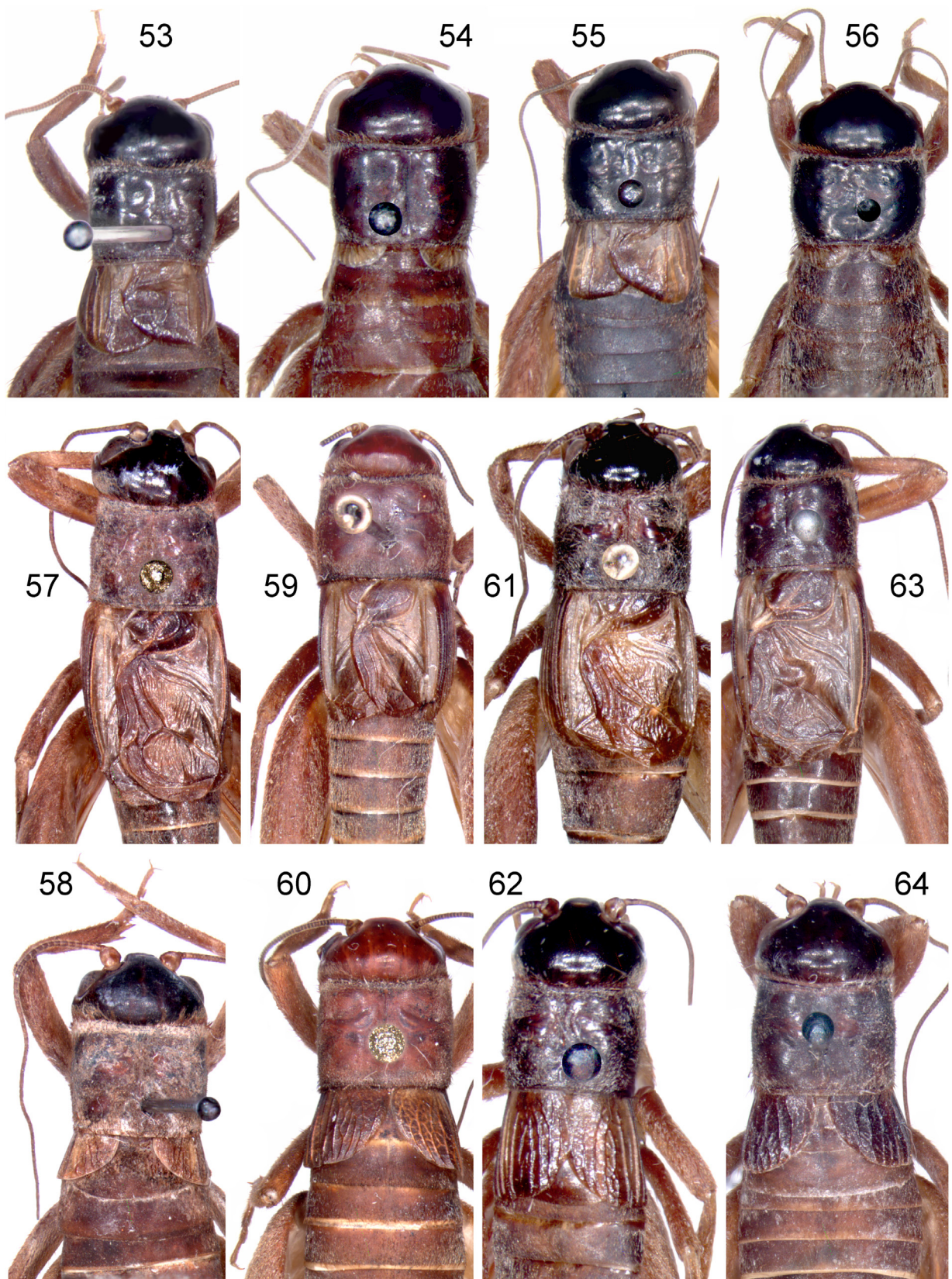
NomenclaturalActs/95F3B227-14FD-4D34-A773-B20133A8215C

*Material.* Holotype — male, **Mexico**, Oaxaca State, 35 km NNE of Santa Cruz Huatulco Town (10 km N of Xadani Vill.), 900–1000 m, secondary forest, 7–11.05.2006, A. Gorochoy & M. Berezin (ZIN). Paratypes: 1 male, 1 female, same data as for holotype (ZIN).

*Description.* Male (holotype). Body medium-sized for this genus. Colouration generally brown, but head with dark brown epicranium and light brown most part of both labium and maxillae (including their palpi), pronotum also almost dark brown and more pubescent (less shining) than head, legs with almost dark brown distal part of hind femur and proximal part of hind tibia (borders between darker and lighter parts of these structures indistinct) as well as dorsal denticles of hind basitarsus, tegmina with dorsal field having lighter (light brown) semitransparent M–CuA and partly CuA–CuP areas as well as with light brown lateral field having brown band along dorsal edge and almost whitish

band along ventral edge, abdominal tergites and anal plate as well as paraprocts almost dark brown, and cerci with light brown proximal parts. Head almost semiglobular, with ocelli moderately small, located in corners of transverse triangle, and with rostrum between antennal cavities ~1.6 times as wide as scape; pronotum approximately as wide as head, slightly transverse, with weakly concave anterior and almost straight posterior edges of disc (Fig. 57), and rather high lateral lobes having ventral edges almost parallel to dorsal edges; legs moderately stout, with fore tibia having elongate and oval outer tympanum only, with hind femur strong (well-adapted to jumps), with hind tibia having six pairs of articulated spines and three pairs of apical spurs, and with hind basitarsus having 7–8 outer and six inner dorsal denticles as well as a pair of apical spurs; tegmina reaching middle of fifth abdominal tergite, with three oblique veins, almost longitudinal and weakly curved both diagonal vein and chords situated in medial half of dorsal field near each other, rather large and clearly transverse mirror having one longitudinal crossvein only, short apical area having traces of two transverse branches and widely rounded posterior edge, and lateral field having 7–8 more or less longitudinally parallel veins and poorly distinct crossveins between them (Figs 57, 102); hind wings rudimentary; anal and genital plates simple, but first plate almost triangular with rounded apex, and second plate elongate (almost 1.5 times as long as anal plate) as well as gradually narrowing to roundly angular apex; genitalia (Figs 65–67) with posterolateral lobes of epiphallus thin (narrow in profile), with anteromedian epiphallic lobe as in Fig. 17, with ectoparameres having rounded widening at apex (Fig. 18), and with sclerotized apical part of rachis narrow and slightly bifurcate; Fig. 19).

Variations. Second male with tegmina having two oblique veins, two somewhat reduced dividing veins in mirror and two longitudinal veins in lateral field (two latter veins partly fused with each other), with hind basitarsus having nine outer and five inner dorsal den-



Figs 53–64. *Mexigryllus* and *Anurogryllus*, body without distal part from above: 53, 54 — *M. huatulco* sp. nov.; 55, 56 — *M. tuxtla* sp. nov.; 57, 58 — *A. (Urogryllus) oaxaca* sp. nov.; 59, 60 — *A. (U.) parvispeculum* sp. nov.; 61, 62 — *A. (U.) tamaulipas* sp. nov.; 63, 64 — *A. (U.) minimus* sp. nov. Male (53, 55, 57, 59, 61, 63) and female (54, 56, 58, 60, 62, 64)

ticles, and with male genitalia having sclerotized apical part of rachis somewhat more deeply notched (Fig. 20).

Female. General appearance (Fig. 58) as in males, but: tegmina almost completely light brown, reaching base of first abdominal tergite, well separated from each other, with rounded edges and 12–13 longitudinal veins (lateral field with five arcuate veins; dorsal field with 7–8 almost irregular veins and traces of crossveins between them); pterothoracic tergites brown to almost dark brown; hind basitarsus with 5–6 inner and eight outer dorsal denticles. Genital plate almost square but slightly narrowed in distal part and with distinctly concave posterior edge; ovipositor approximately equal to hind femur in length and with acute apex.

Length in mm. Body: male 17.5–19.5, female 19; pronotum: male 3.4–3.8, female 4; tegmina: male 6.5–7, female 2; hind femora: male 11.5–12.5, female 12; ovipositor 12.

*Comparison.* The new species is most similar to *A. (U.) toltecus* (Saussure 1874) from “Cordillère orientalis” (Saussure 1874) in Mexico (Fig. 108), but it is distinguished from the latter species by the mirror of male tegmen distinctly less transverse (~1.3 times as wide as long; *vs.* ~1.8 times as wide as long), female tegmina much shorter (pronotum ~2 times as long as tegmen; *vs.* they almost equal to each other in length), and ovipositor approximately equal to the hind femur in length (*vs.* this femur ~1.4 times as long as ovipositor). From some Caribbean congeners with the male tegmina similar, *A. (U.) oaxaca* differs in the mirror of these tegmina less transverse or more transverse, posterolateral lobes of epiphallus narrower in profile, or region of oblique veins (harp) in the male tegmina clearly less transverse.

*Etymology.* The new species is named after the Oaxaca State in Mexico where it was collected.

*Anurogryllus (Urogryllus) parvispeculum*  
**sp. nov.**

(Figs 28–30, 59, 60, 68–70, 103)

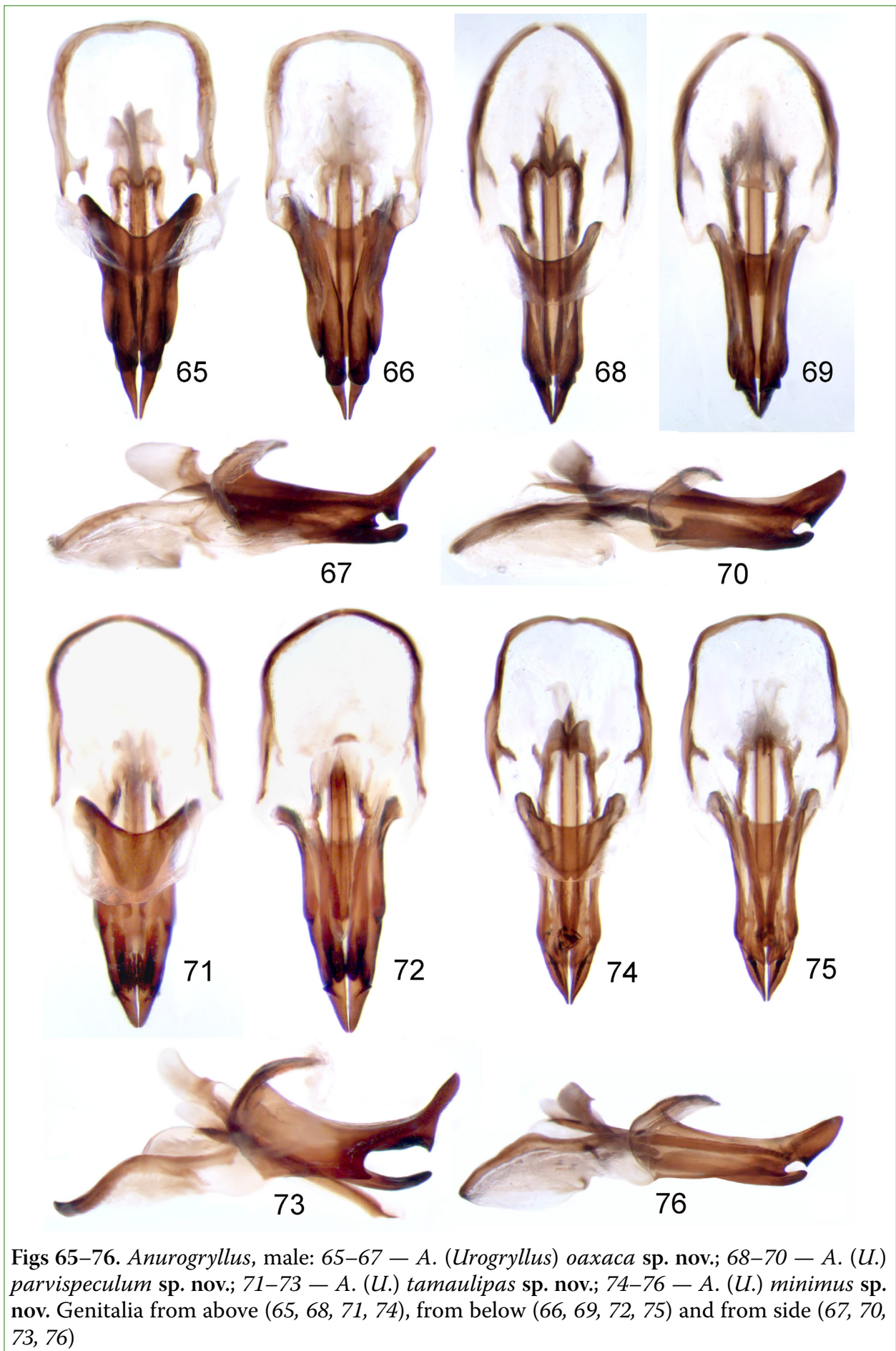
<http://zoobank.org/NomenclaturalActs/A3977C4B-787F-41F3-9FC7-6020FD996ED1>

*Material.* Holotype — male, **Mexico**, Oaxaca State, 35 km NNE of Santa Cruz Huatulco Town (10 km N of Xadani Vill.), 900–1000 m, secondary forest, 7–11.05.2006, A. Gorochov & M. Berezin (ZIN). Paratypes: 1 male, 2 females, same data as for holotype (ZIN).

*Description.* Male (holotype). Colouration and structure of body very similar to those of *A. (U.) oaxaca*, but: head with brown (almost reddish brown) epicranium, legs almost not darkened in distal part of hind femur and in proximal part of hind tibia, tegmina with slightly darker (brown) most part of lateral field, and cerci almost uniformly brown; rostrum between antennal cavities slightly wider (~1.8 times as wide as scape); hind tibiae with seven inner and 6–7 outer dorsal spines which somewhat more stout than in *A. oaxaca*; hind basitarsus with seven outer and 4–5 inner dorsal denticles; tegmina shorter, reaching middle part of third abdominal tergite, with two oblique veins, somewhat more straight diagonal vein and chords, very small mirror lacking dividing veins, barely shorter (than in *A. oaxaca*) apical area lacking distinct longitudinal branches and having roundly truncate posterior edge, and seven longitudinal veins in lateral field only (Figs 59, 103); genitalia (Figs 68–70) with posterolateral lobes of epiphallus distinctly wider in profile, with anteromedian epiphallic lobe as in Fig. 28, with ectoparameres having two angular projections in apical part (medial projection longer than lateral one; Fig. 29), with apical sclerotized part of rachis rounded in ventral view (Fig. 30), and with rami separated from each other by short semisclerotized interspace.

Variations. Second male with slightly lighter (light brown) most part of dorsal and lateral fields in tegmina (but basal area of dorsal field brown), as well as with seven outer dorsal spines on each hind tibia and six inner dorsal denticles on each hind basitarsus.

Female. General appearance (Fig. 60) as in males, but one female with epicranium barely darker, tegmina in all females brown with slightly lighter veins as well as with light brown proximal part of dorsal field and longitudinal band along its lateral edge, tegminal



**Figs 65–76.** *Anurogryllus*, male: 65–67 — *A. (Urogryllus) oaxaca* sp. nov.; 68–70 — *A. (U.) parvispeculum* sp. nov.; 71–73 — *A. (U.) tamaulipas* sp. nov.; 74–76 — *A. (U.) minimus* sp. nov. Genitalia from above (65, 68, 71, 74), from below (66, 69, 72, 75) and from side (67, 70, 73, 76)

distal part rounded and reaching posterior or middle parts of first abdominal tergite, dorsal tegminal field with 6–7 not very regular longitudinal veins and rather numerous irregular crossveins, lateral tegminal field with 7–8 almost regular and slightly arcuate longitudinal veins as well as with very sparse crossveins; other parts of body as in female of *A. oaxaca* but with genital plate having slightly deeper concavity of posterior edge.

Length in mm. Body: male 17–19, female 18–19.5; pronotum: male 3.5–3.8, female 3.8–4; tegmina: male 4.8–5.2, female 3.5–3.7; hind femora: male 10–11, female 11.6–11.9; ovipositor 11–11.5.

*Comparison.* The new species differs from all other similar congeners in the male tegminal mirror very small, male genitalia with rami almost not fused with each other, and additionally from *A. oaxaca* and *A. nyctinomos* Otte et Perez-Gelabert in posterolateral epiphallic lobes clearly wider in profile.

*Etymology.* This species name consists of the Latin prefix “parvi-” (small) and word “speculum” (mirror) in connection with small size of mirror in the male tegmina.

***Anurogryllus (Urogryllus) minimus* sp. nov.**

(Figs 31–33, 63, 64, 74–76, 106)

<http://zoobank.org/NomenclaturalActs/AABE1516-6A9A-4F78-B423-254D22417DA5>

*Material.* Holotype — male, **Mexico**, Chiapas State, ~130 km NW of Tapachula City, environs of Ejido Las Golondrinus Vill. near El Triunfo Reserve, 800–1000 m, secondary forest, 13–17.05.2006, A. Gorochoy & M. Berezin (ZIN). Paratypes: 1 male, 1 female, same data as for holotype (ZIN).

*Description.* Male (holotype). General appearance as in both previous species described here (Fig. 63), but body distinctly smaller. Colouration brown with following marks: head in upper half almost black, but ocelli yellowish, palpi and small spots under lateral ocelli light brown, and vertical area under median ocellus as well as antennae brown; pronotum dark brown to blackish with a pair of reddish brown spots on disc; legs with light

brown coxae, reddish brown rest parts, and blackish dorsal denticles on hind basitarsus; tegmina with dorsal field having dark brown basal area and light brown (semitransparent) rest part except for brown apical area and region of chords, and with lateral field having whitish stripe along proximal two thirds of costal edge, light brown apical part of thid field and reddish brown three dorsal longitudinal veins; sternites brown to dark brown with yellowish stripe along each posterior edge of five posterior sternites; abdominal tergites dark brown with similar yellowish stripes; small lateral parts of tenth abdominal tergite and proximal part of genital plate almost dark brown. Head with rostrum between antennal cavities ~1.4 times as wide as scape; fore tibia with outer tympanum only (this tympanum approximately as in previous congeners in shape); hind tibia with 5–6 pairs of articulated dorsal spines; hind basitarsus with 6–7 outer and 6–7 inner dorsal denticles; tegmina reaching middle of fifth abdominal tergite, with two weakly curved oblique veins, moderately large and transversally triangular mirror having one arcuate dividing vein, normal diagonal vein that in contact with mirror in its medial half, short apical area having three distinct branches and widely rounded posterior edge (Fig. 63, 106), and lateral field almost lacking crossveins but having 7–8 almost parallel longitudinal veins and one short branchlet near apex of Sc stock; genitalia as in *A. (U.) parvispeculum*, but ectoparameres and rachis having their posterior parts somewhat narrower (for comparison see Figs 29, 30 and 32, 33), and rami normal for this genus (i.e. fused with each other anteriorly; see Figs 68–70 and 74–76).

Variations. Second male with six pairs of dorsal spines on each hind tibia and six inner dorsal denticles on each hind basitarsus, and with posterolateral epiphallic lobes slightly longer and narrower in profile (the latter individual difference even more significant than that between holotypes of both *A. parvispeculum* and this species; see Figs 70 and 76).

Female. Colouration and external structure of body as in male paratype, but: tegmina

reaching middle of first abdominal tergite, not in contact with each other, rounded in distal part, with six longitudinal veins in lateral field (these veins more or less as in male but slightly more arcuate and without branchlets) and 6–7 such veins in dorsal field (however, these veins somewhat less regular, and this field uniformly dark brown as well as with irregular crossveins); legs with hind basitarsus having 6–8 outer and 5–6 inner dorsal denticles. Genital plate and distal part of ovipositor practically indistinguishable from those of females of previous congeners, but ovipositor clearly shorter than hind femur.

Length in mm. Body: male 14–15.5, female 16; pronotum: male 2.6–2.8, female 3.3; tegmina: male 5.7–6, female 3; hind femora: male 8.5–9, female 10.3; ovipositor 8.5.

*Comparison.* The new species is most similar to *A. (U.) toltecus*, *A. (U.) oaxaca* and *A. (U.) parvispeculum* but distinguished from them by the following characters: mirror of male tegmina is less transverse than in *A. toltecus* (~1.2 times as wide as long; *vs.* ~1.8 times as wide as long), posterolateral epiphallic lobes are clearly wider in profile than in *A. oaxaca*, and male tegminal mirror is much larger than in *A. parvispeculum*.

*Etymology.* This species' name is the Latin word "minimus" (minimal), because this cricket is small for the genus *Anurogryllus*.

***Anurogryllus (Urogryllus) tamaulipas* sp. nov.**

(Figs 25–27, 61, 62, 71–73, 107)

<http://zoobank.org/NomenclaturalActs/CD-9CC007-5AC1-4405-8E55-2D6FDF9921B5>

*Material.* Holotype — male, **Mexico**, Tamaulipas State, Gomez Farias, Los Cedros, 340 m, 08–11.2002, S. Trjapitsyn (ZIN). Paratypes: 2 males, 5 females, same data as for holotype (ZIN); 1 female, same data but 1–13.11.2002 (ZIN); 1 male, same state, Gomez Farias, Alta Cima, 900 m, 2–9.11.2000, D. Kasparyan (ZIN); 2 females, same state, Gomez Farias, forest, 28.11–20.12.1998, D. Kasparyan (ZIN).

*Description.* Male (holotype). Colouration and structure of body similar to those of *A. (U.) oaxaca* but with following differences:

most part of epicranium black; short proximal parts of antennae dark brown; lateral lobes of pronotum blackish; hind basitarsus with 7–9 outer and seven inner dorsal spines; tegmina reaching posterior part of fourth abdominal tergite, with two oblique veins which somewhat shorter and more transverse (slightly less S-shaped), with mirror distinctly smaller (but clearly larger than in *A. parvispeculum*) and without dividing veins (Figs 61, 107), and with lateral field having 8–9 longitudinally parallel veins but lacking crossveins; genital plate with distinct almost angular posteromedian notch; genitalia with posteroventral notch on each lateral side of epiphallus (between its ventroapical and ventrosabapical angular porojections) clearly longer than in all other congeners having known male genitalia, with anteromedian epiphalluc lobe slightly narrower and longer than in previous congeners described here, with distal parts of ectoparameres much longer as well as completely sclerotized and having obliquely truncate but almost rounded apices, and with apical part of rachis rounded in ventral view and membranous along lateral edges (its sclerotized part barely curved upwards and narrow in profile; Figs 25–27, 71–73).

*Variations.* Sometimes pronotal disc also blackish, spines on legs insignificantly varied in number, and tegminal mirror with 1–2 dividing veins.

*Female.* General appearance as in males, but tegmina reaching posterior part of second or anterior part of third abdominal tergites and with distal part widely rounded, tegminal dorsal field brown to dark brown as well as with 7–8 longitudinal veins and sparse crossveins (Fig. 62), tegminal lateral field light brown to brown with light longitudinal stripe along dorsal edge (this field with 7–8 longitudinal parallel veins and without crossveins); genital plate and ovipositor very similar to those of female of *A. oaxaca*, but ovipositor clearly shorter than hind femur.

Length in mm. Body: male 12–15.5, female 10–14.5; pronotum: male 2.8–3, female 2.5–3; tegmina: male 5–5.5, female 3–3.7; hind femora: male 9–10, female 8.3–9.5; ovipositor 6–7.5.

**Comparison.** The new species is clearly distinguished from all the congeners with known male genitalia by the characteristic epiphallus having psteroventral notches significantly longer, distal portions of ectoparameres also longer and completely sclerotized as well as with apical parts obliquely truncate but almost rounded. From *A. (U.) toltecus*, it differs in the male tegminal mirror somewhat less transverse and almost not oblique (compare Figs 107 and 108); and from *A. (U.) cubensis*, in the ovipositor clearly shorter (in *A. cubensis*, hind femur barely shorter than ovipositor).

***Anurogryllus (Urogryllus) pantanal* sp.**

**nov.** (Figs 34–39, 77–79, 88–93, 104)

<http://zoobank.org/>

NomenclaturalActs/1BA0DD17-CB98-4DBE-9CF9-48AA94FD1D61

**Material.** Holotype — male, **Paraguay**, “Reserva Pantanal Paraguayo” near Bolivia, Los Tres Gigantes Biological Station on Rio Negro (Parana Basin), on road among grassland with bushes and sparse trees, at night, 31.01–4.02.2014, A. Gorochov (ZIN). Paratypes: 1 male, 2 females, same data as for holotype (ZIN).

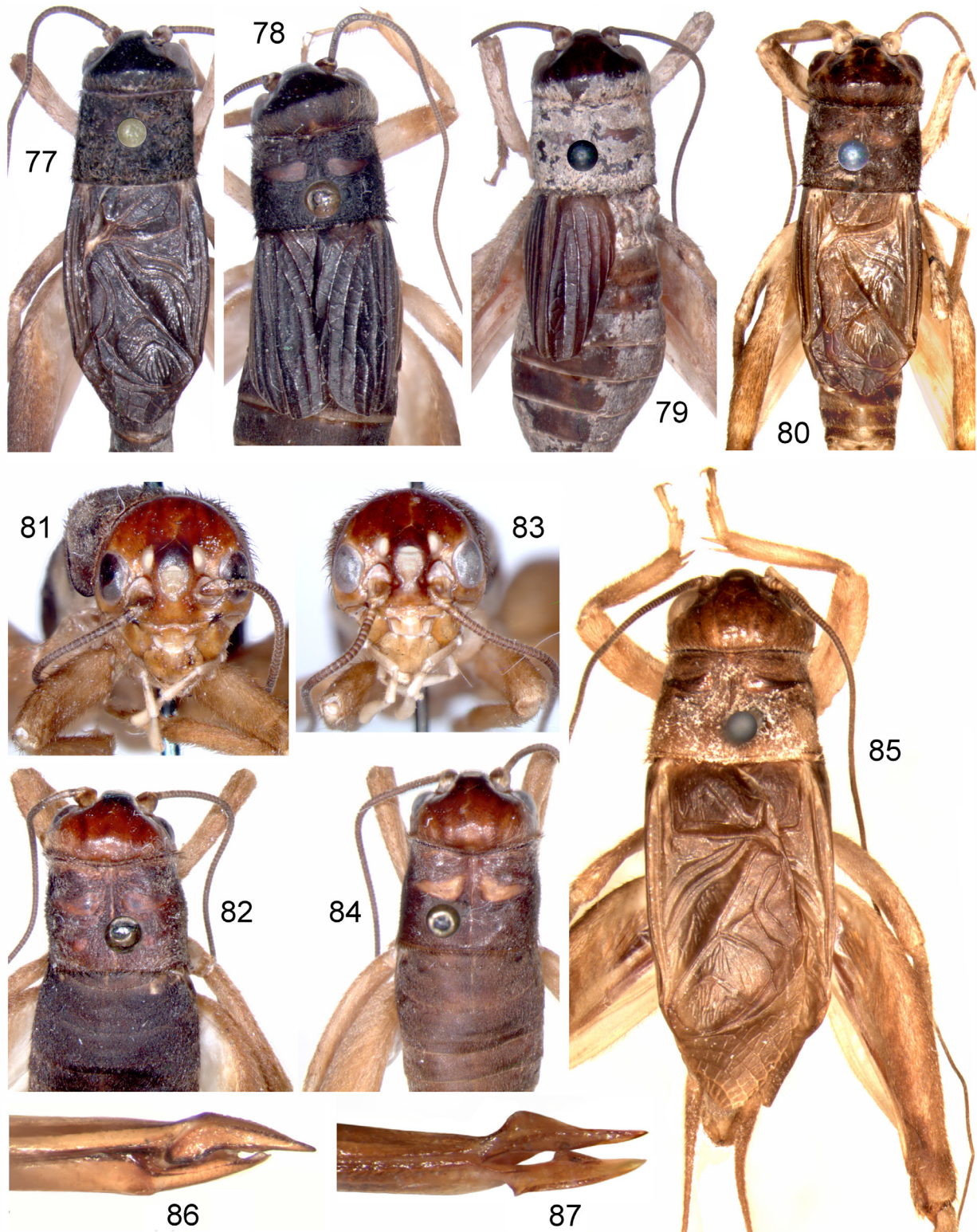
**Description.** Male (holotype). General appearance similar to *A. (U.) minimus*, but: epicranium and pronotum black with yellowish ocelli and palpi, greyish brown antennae, clypeus and bases of mandibles, light brown rest of mouthparts, and whitish pubescence on pronotum; legs, sternites and genital plate yellowish with light brown hind tibia as well as distal halves of fore and middle femora, and with brown to light brown dorsal half of distal two thirds of hind femur; tegmina with dark brown dorsal field having small yellowish spot near plectrum, and with blackish lateral field having lightish branches of Sc and wide whitish band along costal edge; cerci and visible part of abdominal tergites dark brown with light brown cercal bases; anal plate and paraprocts light brown to brown; external structure of body distinguished from that of *A. minimus* by slightly narrower rostrum between antennal cavities (~1.2 times as wide as scape), presence of traces of inner tympanum on fore tibia (in addition to rather long outer tympanum),

6–7 outer and 5–6 inner dorsal spines of hind tibiae, and longer tegmina reaching middle of seventh abdominal tergite and having longer mirror as well as less shortened apical area (this area with four branches and rounded posterior edge; Figs 77, 104) and 7–8 longitudinal almost parallel veins in lateral field (stock of Sc also with one branchlet in distal half, but crossveins in this field absent); hind wings torn off or removed after flight period. Genitalia with anteromedian epiphallic lobe curved upwards in proximal half and upwards-forwards in distal half (this lobe possibly deformed, because in above-mentioned congeners, it completely curved backwards), with posterolateral epiphallic lobes in profile almost as wide as in *A. parvispeculum* and *A. minimus*, with each ectoparamere having small subapical widening and almost angular apical (posteromedial) projection as well as large semimembranous distal area, and with rachis distinctly shorter than in these species and having apical part rounded and completely sclerotized in ventral view (Figs 37–39, 88–90).

**Variation.** Paratype with tegmina missing and distinguished from holotype by following characters: most part of epicranium dark brown; antennae almost light brown; legs with darkened parts of femora somewhat lighter (light brown to almost yellowish) and with six pairs of dorsal spines on hind tibia; genitalia (for comparison see Figs 34–36, 91–93 and 37–39, 88–90) with anteromedian lobe of epiphallus normal for this genus (i.e. directed backwards, not upwards-forwards), posterolateral epiphallic lobes having somewhat narrower distal parts in profile, ectoparamere having distal part more sclerotized and with two angular apical projections (longer medial projection and shorter lateral one, but in holotype, this distal part with only medial apical projection; see Figs 35 and 38), and rachis somewhat narrower in anterior half as well as with almost angular apex (see Figs 36 and 39).

**Female.** Colouration and external structure of body (Figs 78, 79) as in males, but: pronotum with a pair of reddish brown spots on disc; tegmina blackish to dark brown with ventral half of lateral field brown to light brown and





Figs 77–87. *Anurogryllus*, *Mexigryllus* and *Megalogryllus*: 77–79 — *A. (Urogryllus) pantanal* sp. nov.; 80 — *A. (Pilosogryllus) fulvaster* (Chop.); 81–84 — *A. (U.) mataracu* sp. nov. (81, 82, holotype; 83, 84, paratype); 85 — *A. (Anurogryllus) carinatus* sp. nov.; 86 — *Mexigryllus huatulco* sp. nov.; 87 — *Megalogryllus (Megalogryllus) angustulus* sp. nov. Body without distal part from above, male (77, 80, 82, 84, 85) and female (78, 79); head of male in front (81, 83); distal part of ovipositor from side (86, 87)

having narrower whitish band along costal edge; abdominal venter with brown posterior half of last tergite and light brown genital plate; dorsal tegminal field reaching anterior or posterior part of fourth abdominal tergite, with 6–8 almost regular longitudinal veins and several irregular crossveins; lateral tegminal field with 6–7 longitudinal veins as well as without crossveins and branchlets on Sc; genital plate and ovipositor approximately as in *A. minimus* in shape (however, ovipositor slightly shorter than hind femur).

Length in mm. Body: male 12.5–13.5, female 13.5–16; pronotum: male 2.6–2.7, female 2.8–2.9; tegmina: male 7, female 5.5–6; hind femora: male 8–8.5, female 9–9.5; ovipositor 8–8.5.

*Comparison.* From *A. (U.) minimus*, the new species differs in the tegmina longer, male tegminal mirror also longer, male genitalia with the rachis distinctly shorter, and ovipositor slightly shorter than hind femur. From *A. oaxaca* and *A. parvispeculum*, it is distinguished by the body smaller, posterolateral lobes of epiphallus in profile wider than in the first species, and mirror of male tegmina much larger than in the second species; from *A. toltecus*, by this mirror not transverse; and from all the other species of this subgenus, by the male tegmina and/or their mirror clearly longer.

***Anurogryllus (Urogryllus) mataracu* sp. nov.**

(Figs 21–24, 81–84, 94–96, 105)

<http://zoobank.org/NomenclaturalActs/C244B0F3-51DC-47C3-A355-5D2DCD4C902F>

*Material.* Holotype — male, **Bolivia**, Santa Cruz Prov., ~70 km NWW of Santa Cruz City, Amboro National Park, Mataracu Camp, ~800 m, primary forest, 8–13.02.2014, A. Gorochoy (ZIN). Paratypes: 2 males, 2 females, same data as for holotype (ZIN).

*Description.* Male (holotype). Body medium-sized. Colouration of epicranium reddish brown with dark brown area between ocelli and a pair of dots in dorsolateral corners of clypeus, a few poorly distinct darkish longitudinal lines on dorsum, light brown lower part of epicranium, and yellowish ocelli as well as small areas around lateral ocelli and under

median ocellus; antennae greyish brown with small lightish spots on scape and at base of flagellum; subgenae and rest of mouthparts light brown with yellowish palpi and visible parts of maxillae and labium; pronotum brown with disc having reddish stripe along anterior edge and two pairs of spots behind it (Figs 81, 82); legs light brown with brown distal part of hind femur and yellowish areas on all coxae; other tergites uniformly dark brown; sternites light brown with brown last sternite and lateral areas on abdominal sternites; anal and genital plates as well as paraprocts and cerci greyish brown. Head typical of this genus in shape (Fig. 81); rostrum between antennal cavities approximately 1.4 times as wide as scape; ocelli located in corners of transverse triangle, with lateral ocelli moderately small and round, and with median ocellus somewhat wider (transverse); pronotum slightly transverse, with moderately high lateral lobes having their ventral edges almost parallel to dorsal ones; legs moderately long but stout, without tympana, with widened hind femora (adapted to strong jumps), with six inner and five outer dorsal spines on hind tibia, and with 6–7 outer and 5–6 inner dorsal denticles on hind basitarsus; tegmina very strongly shortened, scale-like, reaching base of metanotum (barely visible behind pronotum), and with a few almost straight and poorly distinct longitudinal veins (Figs 82, 105); anal plate typical of this subgenus; genital plate almost 1.5 times as long as anal plate, with distal half gradually narrowing to roundly angular apex; genitalia (Figs 94–96) similar to those of *A. (U.) oaxaca*, but posterolateral epiphallic lobes with wider proximal half and acute distal part in profile, anteromedian epiphallic lobe rather long and with more or less rounded apex having small median notch (Fig. 21), apical widening of ectoparameres with more distinct posteromedial tubercle and less projected posterolateral (lobe-like) convexity (Fig. 22), and rachis with distal part lacking distinct apical notch (Fig. 23).

Variations. Other males (Figs 83, 84) with head dorsum and area between ocelli almost uniformly brown, pronotum dark with light brown to brown both anterior stripe and one

pair of spots behind it on disc, lateral ocelli slightly larger, legs and abdomen barely lighter, and armament of hind legs insignificantly varied; but one male with anteromedian epiphallic lobe somewhat shorter and wider as well as more deeply notched at apex (Fig. 24).

Female. General appearance as in males paratypes, but: dorsum of head with traces of lightish longitudinal lines; in one female, pronotum with lighter (brown) posterior part of disc, colouration of hind femur as in holotype, and abdomen with lightish median line on dorsum; in second female, pronotum without lighter stripe along anterior edge. Genital plate distinctly shorter and narrower than last sternite but slightly transverse and narrowing to widely and roundly notched apex (this notch very shallow); ovipositor distinctly shorter than hind femur.

Length in mm. Body: male 15–17, female 15–20; pronotum: male 3.3–3.7, female 3.6–3.8; visible parts of tegmina: male 0.3–0.5, female 0.2–0.8; complete tegmina in both sexes probably about 1.2; hind femora: male 12–13, female 12.5–13; ovipositor 8.5–9.

*Comparison.* The new species is distinguished from all *Urogryllus* species by the subapterous body as well as the absence of stridulatory apparatus and tympana in both sexes. From apterous *A. hierroi* and subapterous *A. ellops* (they belong or possibly belong to *Pilosogryllus*), the new species differs in the male genitalia typical of *Urogryllus* (see generic and subgeneric key for Anurogryllina above); and from apterous *A. brevicaudatus* and subapterous *A. abortivus* (their male unknown) included here in *Anurogryllus* s. str., *A. mataracu* differs in the ovipositor much longer.

*Etymology.* The new species is named after the Mataracu Camp, its type locality.

***Anurogryllus (Pilosogryllus) fulvaster***  
(Chopard, 1956)

(Figs 7–9, 40–42, 80)

*Material.* **Peru:** 3 males, 4 females, Loreto Department, bank of Rio Pacaya (tributary flowing into “Canal de Puinahua” of Ucay-

ali River), ~10 km from Bretana Vill., Pacaya Samiria National Park (cordon PVC 1), 05°14'39.83" S, 74°23'206" W, lowlying primary forest, 10–14.01.2019, A. Gorochov & V. Izersky (ZIN).

*Note.* This rather small species was described from Bolivia (holotype) and Peru; my males have small differences in shape of ectoparameral apices from the male pictured in original description (Chopard 1956: fig. 3a) and may represent a new subspecies, but Chopard's description and picture are insufficiently understandable for such decision.

***Anurogryllus (Anurogryllus) carinatus* sp. nov.**

(Figs 10–12, 85, 111–114)

<http://zoobank.org/Nomenclatura-1Acts/B4CFB538-9084-46A3-9A90-BD-C67875BD55>

*Material.* Holotype — male, **Ecuador**, western slope of Andes, ~10 km E of Agua Blanca Vill. located near Puerto Lopez Town, San Sebastian Natural Boundary, cloud primary forest, ~700 m, 26–29.10.2005, A. Gorochov & A. Ovtshinnikov (ZIN). Paratype — female, same data as for holotype (ZIN).

*Description.* Male (holotype). Body rather small for this subgenus. Colouration light brown with following marks: head with area between eyes and antennal cavities slightly darker (almost brown), with ocelli light brown to yellowish, and with distal halves of palpi almost whitish; pronotum with yellowish bands along ventral and posterior edges of lateral lobes and with almost brown rest parts of these lobes; legs with yellowish bases (from coxae to bases of femora) and wide band on outer and inner surfaces of hind femur along its ventral edge (this band not reaching apical part of this femur), with brown apical part of hind femur, and with intermediate (between brown and light brown) spots on fore and middle femora near their apices as well as areas at base of all tibiae and on most part of rest distal two thirds of hind femur; tegmina with similar (intermediate in colour: see above) basal area on dorsal field and band on lateral field (along its dorsal edge) as well as with yellowish-whitish rest of lateral field; sternites and genital plate as well

as cercal bases yellowish. Structure of body typical of this subgenus and similar to that of *Urogryllus* and *Pilosogryllus* but with some characteristic features: rostrum between antennal cavities approximately 1.5 times as wide as scape; ocelli moderately large (median ocellus transverse, lateral ones round) and located almost on one transverse line; inner tympanum rather long, but outer one absent; hind tibia with seven pairs of dorsal spines (one proximal pair of them very short); hind basitarsus with six inner and 5–8 outer dorsal denticles; tegmina reaching abdominal apex, with 29 teeth on stridulatory vein, with mirror clearly longer than apical area, with other structures of dorsal field as in Fig. 85, and with lateral field having 9–10 longitudinal and almost parallel veins (these veins slightly oblique and barely S-shaped, and one of them branching from Sc stock in its distal part) as well as lacking distinct crossveins; hind wings torn off or removed after flight period; genitalia very similar to those of other species of this subgenus (Figs 10–12, 112–114) but distinguished by posterolateral epiphallic lobe slightly wider in profile and having small (but distinct) keel-like fold (*f*) running from posteroventral projection of epiphallus to middle of this lobe (Fig. 112), and by endoparameres with rather short anterior (proximal) apodemes (Figs 10–12).

Female. General appearance as in male, but head with a few darkish longitudinal lines on posterior part of dorsum, pronotum with brown areas along posterior edges of lateral lobes, tegmina reaching middle part of fifth abdominal tergite and distinctly narrower (dorsal field with 7–8 slightly irregular longitudinal veins and moderately sparse crossveins; lateral field with sparse crossveins and 7–8 longitudinal veins, but latter veins straighter and without distal branch), and hind legs with armament of tibia and basitarsus hardly different; genital plate much smaller than last abdominal sternite, subquadratic with rounded posterolateral corners and shallow posteromedian notch; ovipositor strongly reduced (visible part of its valves shorter than genital plate; Fig. 111).

Length in mm. Body: male 15.5, female

18; pronotum: male 3.2, female 3.4; tegmina: male 10, female 8; hind femora: male 9.3, female 10.3; visible part of ovipositor 0.6 mm.

*Comparison.* The new species differs from representatives of *Anurogryllus* s. str. with known male genitalia in the posterolateral epiphallic lobes having a distinct keel-like fold on each lateral surface, and in the endoparameres having short anterior (proximal) apodemes. From the species of this subgenus with unknown male genitalia, the new species is distinguished by the following set of characters: body rather small and light, inner tympanum absent, and tegmina of both sexes not strongly shortened.

*Etymology.* This species' name is the Latin word "carinatus" (carinated, with keel), because the epiphallic posterolateral lobes of the new species have distinct keel-like lateral folds.

*Anurogryllus (Anurogryllus) caraiheus abbreviatus* subsp. nov.

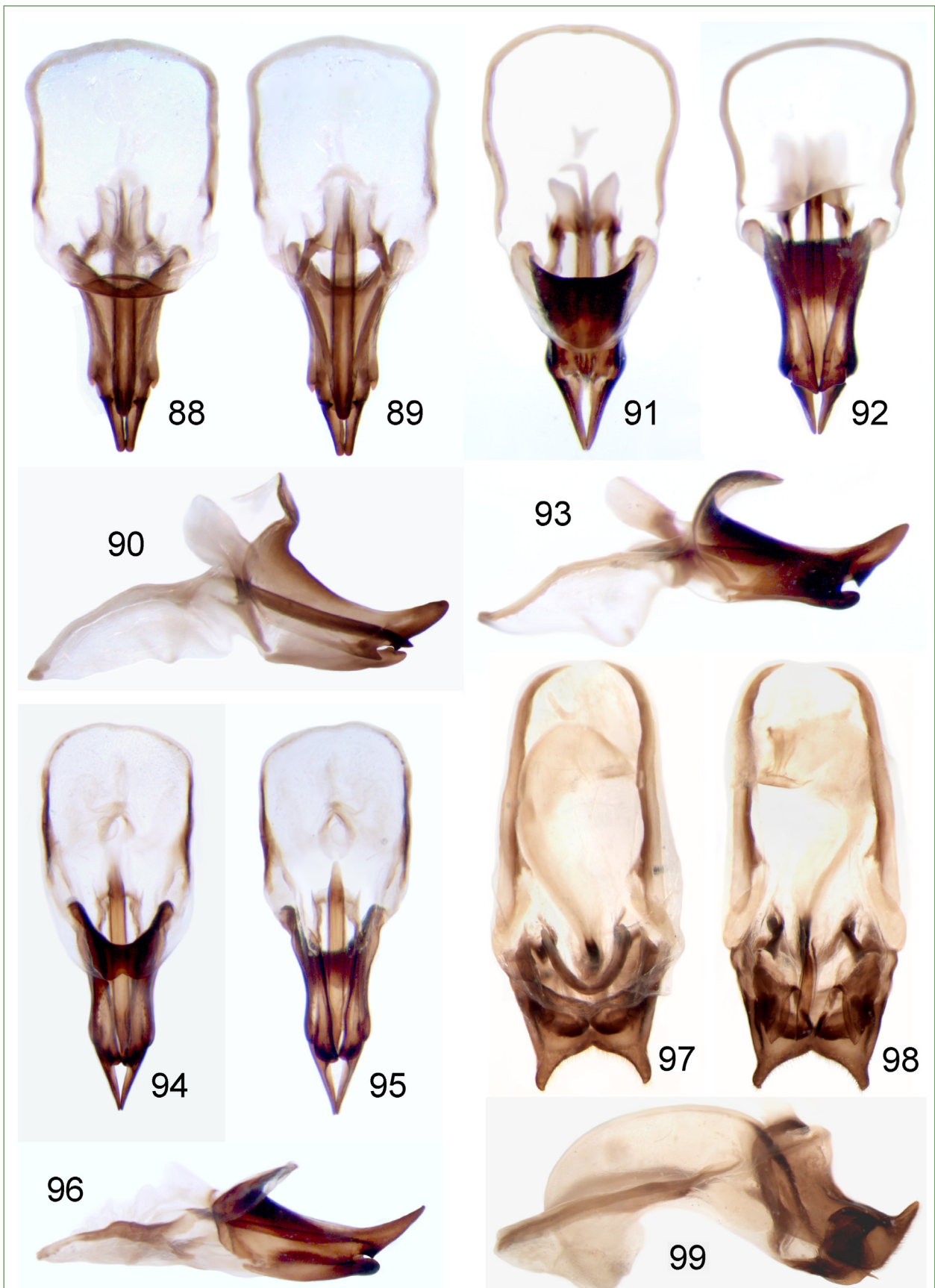
(Fig. 115)

<http://zoobank.org/NomenclaturalActs/c540a510-fcbc-42b6-926c-25dec99c51bf>

*Material.* Holotype — male, **Mexico**, Tamaulipas State, Gomez Farias, Los Cedros, 340 m, 04–05.2002, S. Trjapitsin (ZIN). Paratype — male, same data as for holotype (ZIN).

*Description.* General appearance very similar to that of *A. (A.) carinatus* including absence of inner tympanum, but dorsum of head with darkish longitudinal stripes similar to those of female of this species. Male tegmina with 48 teeth in stridulatory vein, with mirror almost as long as wide, and with length of apical area 0.9 times as great as mirror length and 0.9 times as great as mirror width; hind wings torn off or removed after flight period. Main differences from *A. carinatus*: genitalia with posterolateral epiphallic lobes somewhat narrower in profile, with distinctly shorter keel-like fold (*f*) running from posteroventral projection of epiphallus to base of this lobe (Fig. 115), and with endoparameres having rather long anterior (proximal) apodemes (approximately as long as in *A. pantanal*).

Variation. Paratype almost without darkish stripes on head dorsum; its male tegmina with



Figs 88–99. *Anurogryllus* and *Megalogryllus*, male: 88–93 — *A. (Urogyllus) pantanal* sp. nov.; 94–96 — *A. (U.) mataracu* sp. nov.; 97–99 — *M. (Gigantogryllus) neotropicus* (Gor.). Genitalia from above (88, 91, 94, 97), from below (89, 92, 95, 98) and from side (90, 93, 96, 99)

43–44 teeth in stridulatory vein, with mirror 1.1 times as long as wide, and with length of apical area 1.1 times as great as mirror length; its male genitalia with anterior endoparameral apodemes slightly longer than in holotype.

Female unknown.

Length in mm. Body 14.7–15.4; pronotum 2.9–3.1; tegmina 9–10; hind femora 9.5–10.

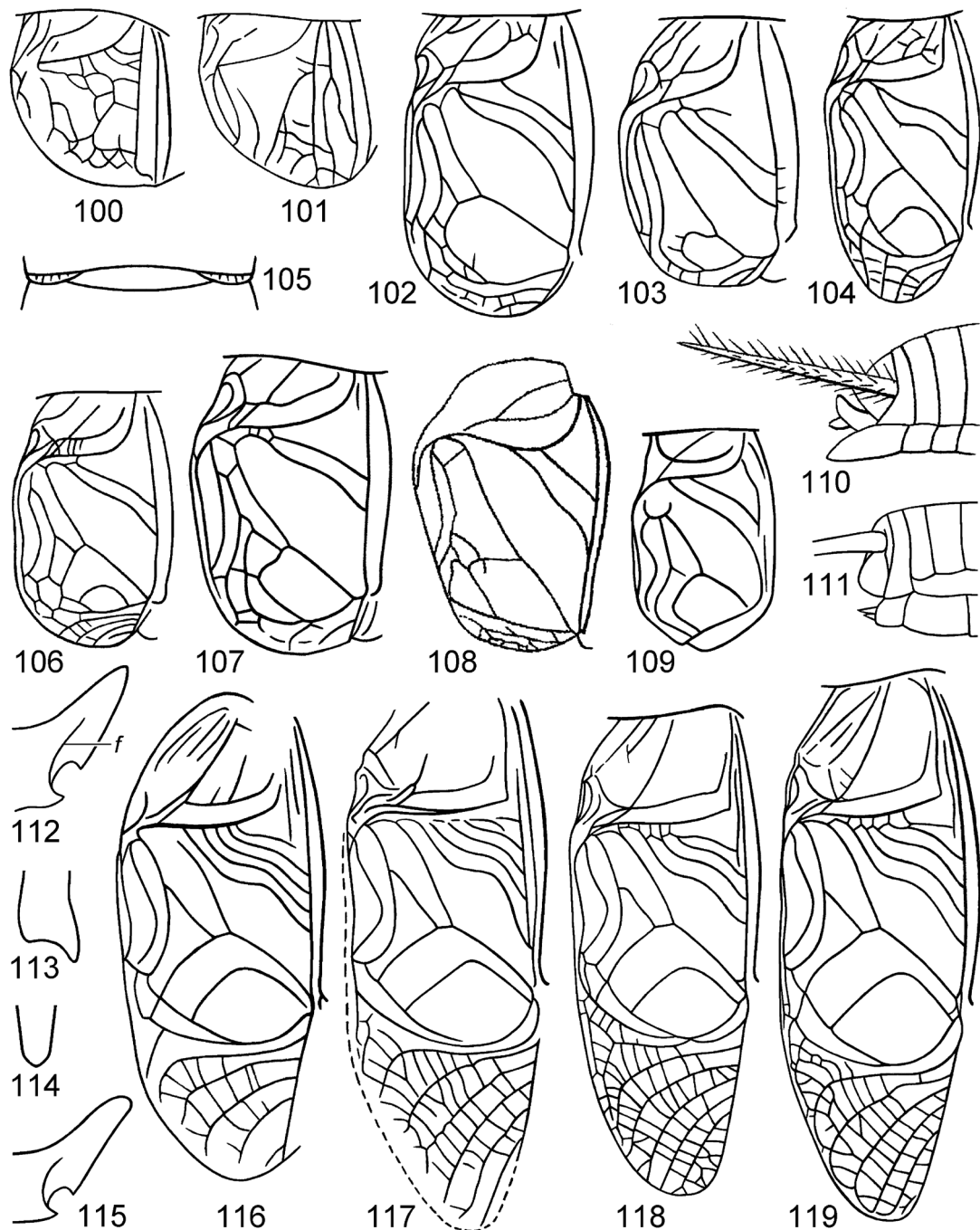
*Comparison.* This subspecies differs from the nominotypical subspecies in the body slightly smaller and male tegmina with distinctly shorter apical area; in *A. (A.) caraibeus caraibeus* **comb. nov.**, which is understood here according to Otte & Perez-Gelabert (2009: *A. muticus caraibeus*), the pronotum is 3.2–3.5 mm in length, and apical area of male tegmen is almost 1.4 times as long as mirror. The other characters of *A. c. caraibeus* (including body colouration, condition of inner tympanum, number of stridulatory teeth, shape of mirror and structure of male genitalia) are very similar to those of *A. c. abbreviatus*. The nominotypical subspecies is recorded by the above-mentioned authors from the Dominican Republic and Saba, and now it is tentatively indicated for Cuba [one female from “Vynialis” in Cuba, 17.V.1967, D. Panfilov (ZIN)]. From some other species of this subgenus lacking inner tympanum but having the male genitalia almost identical, the new subspecies is distinguished by the clearly less numerous stridulatory teeth (from *A. tapes* with 59–73 teeth and *A. arboreus* with 63–78 teeth distributed in South Brazil and the USA, respectively; but condition of inner tympanum in the latter species is unknown) or by less transverse mirror in the male tegmen (from *A. vanescens* with mirror 1.25 times as wide as long, Lesser Antilles; *A. guadaloupenensis* insufficiently described from another island of this archipelago is possibly a synonym of this species). From the other more or less understandable species of *Anurogryllus* s. str., *A. c. abbreviatus* differs in the absence of inner tympanum, male tegmina not shortened, or some characters of male genitalia (see its description above).

*Etymology.* This subspecies name is the Latin word “abbreviatus” (shortened), be-

cause this subspecies has the male tegmina with moderately short apical areas.

*Anurogryllus (Anurogryllus) muticus* –  
*celerinctus* species complex

*Material.* **Cuba:** 1 male, 1 female, “San Jose”, at light, 27.04–15.10.1971, V. Deryabin (ZIN); **Mexico:** 1 male, Oaxaca State, 35 km NNE of Santa Cruz Huatulco Town (10 km N of Xadani Vill.), 900–1000 m, 7–11.05.2006, A. Gorochoy & M. Berezin (ZIN); 4 males, 2 females, Veracruz State, 15–20 km NE of Catemaco Town, Los Tuxtlas (biostation of Mexico University) not far from Mexican Gulf, rainforest on hills, 6–17.11.2006, A. Gorochoy & A. Ovtshinnikov (ZIN). **Honduras:** 1 male, 2 females, Lempira Town, Cerro Minas, Celaque National Park, 1400 m, 14°33'46" N, 88°38'34" W, 1–6.07.2013, A. Pushenkov (ZIN). **Nicaragua:** 1 male, 2 females, Managua City, 27–28.02.1985, L. Medvedev (ZIN); 1 male, northern coast of Managua Lake, dry forest, 2.02.1985, L. Medvedev (ZIN). **French Guiana:** 1 female, Cayenne, “N 131-97”, “*Anurogryllus muticus*, de Geer”, “Saussure det.” (ZIN). **Venezuela:** 1 female, Caracas City, 10.1926, Woronov (ZIN). **Columbia:** 1 male, 1 female, Penas Blancos, Rio Magdalena, 26.04–5.05.1926, Woronov (ZIN). **Ecuador:** 1 male, 1 female, eastern part of country, ~70 km SE of Lago Agrio Town, environs of S. Pablo de Kantesiya Vill. on Rio Aguarico, lowlying forest, 10–17.11.2005, A. Gorochoy & A. Ovtshinnikov (ZIN); 1 male, 2 females, Morona Santiago Prov., bank of Rio Morona near border with Peru, environs of Puerto Morona Vill., ~300 m, 5–15.01.2010, A. Gorochoy (ZIN). **Peru:** 2 males, 1 female, Loreto Department, Maynas Prov., Fuerte de Momon Vill. on Rio Momon (tributary of Amazon River) in 10–15 km from Iquitos City, 3°37'0–40" S (3.61–63 S), 73°19'20–40" W (73.32–33 W), lowlying forest, 16–18.01.2019, A. Gorochoy & V. Izerskyy (ZIN); 1 male, 2 females, 57 km along road from Iquitos City between Puente Itaya and San Juaquin (near Amazon River), 1–15.02.2006. N. Kluge (ZIN); 1 male, 2 females, same department, bank of Rio Pacaya (tributary flow-



Figs 100–119. *Mexigryllus*, *Anurogryllus* and *Megalogryllus*: 100 — *Mexigryllus huatulco* sp. nov.; 101 — *M. tuxtla* sp. nov.; 102 — *A. (Urogryllus) oaxaca* sp. nov.; 103 — *A. (U.) parvispeculum* sp. nov.; 104 — *A. (U.) pantanal* sp. nov.; 105 — *A. (U.) mataracu* sp. nov.; 106 — *A. (U.) minimus* sp. nov.; 107 — *A. (U.) tamaulipas* sp. nov.; 108 — *A. (U.) toltecus* (Sauss.); 109 — *A. (?) antillarum* (Sauss.); 110 — *A. (?)* sp. (female of *A. antillarum* [?] according to Saussure); 111–114 — *A. (Anurogryllus) carinatus* sp. nov.; 115 — *A. (A.) caraibeus abbreviatus* subsp. nov.; 116 — *Megalogryllus (Megalogryllus) clamosus* Mesa et Garcia-Novo; 117 — *M. (M.) molinai* Chop.; 118 — *M. (M.) angustulus* sp. nov.; 119 — *M. (M.) excellens* sp. nov. Dorsal field of right male tegmen (100–104, 106–109, 116–119); posterior part of pronotum with visible parts of tegmina and mesonotum as well as with anterior part of metanotum, male (105); abdominal apex from side, female (111) and possibly male (110); distal part of epiphallus from side (112, 115); apex of both left ectoparamere (113) and rachis (114) from below. [109, 110 — after Saussure (1874) and 116 — after Mesa & Garcia-Novo (2004), modified; 117 — after photograph of holotype in Cigliano et al. (2019)]

ing into “Canal de Pinahua” of Ucayali River), ~10 km from Bretaña Vill., Pacaya Samiria National Park (cordon PVC 1), 5°14'39.83" S, 74°23'206" W, lowlying forest, 10–14.01.2019, A. Gorochov & V. Izersky (ZIN); 2 males, 6 females, Ucayali Department, “estacion IVITA” in 60 km W of Pucallpa, 25.04–6.05.1986, A. Zakharov (ZIN); 1 female, same data but 16.07–31.08.1988, Suvorov (ZIN); 1 male, 8 females, Junin Department, Satipo Prov., garden-forest in Satipo Town, ~600 m, 15.09–6.11.2008, A. Gorochov, M. Berezin, L. Anisyutkin & E. Tkatsheva (ZIN); 1 female, same department and province, 12 km N of Satipo Town, “Concesion de Conservacion de la Universitaria”, 11.2031563° S, 74.61914062° W, ~600 m, 26–27.11.2017, A. Gorochov & G. Irisov (ZIN); 2 females, same department and province, ~25 km SE of Satipo Town, environs of Rio Venado Vill., ~1200 m, 20–23.10.2008, A. Gorochov, M. Berezin, L. Anisyutkin, E. Tkatsheva (ZIN); 1 female, same department and province, Rio Tambo Distr., 6 km N of Pichiguia Vill., “Reserva Comunal Ashaninka”, 11.358244° S, 74.0320473° W, ~500 m, 14–23.11.2017, A. Gorochov & G. Irisov (ZIN). **Paraguay:** 1 male, 3 females, “Reserva Pantanal Paraguayo” near Bolivia, Los Tres Gigantes Biological Station on Rio Negro (Parana Basin), 31.01–4.02.2014, A. Gorochov (ZIN). **Brazil:** 1 male, “Rio J.” [Rio de Janeiro], “*Anurogryllus muticus* De Geer”, “Brunner v. W. det.” (ZIN).

In this group, I tentatively include a few closely related species which have a small or very small inner tympanum, long tegmina reaching or almost reaching the abdominal apex (all the specimens listed above are macropterous, but hind wings in male from Honduras somewhat less long than in other specimens, and in some specimens, these wings are torn off or removed after flight period), 33–50 teeth in the stridulatory vein, and male genitalia practically identical to those of *A. caraiheus*.

*Anurogryllus muticus* and *A. celerinictus* are distinguished from each other by their acoustic behavior, but the morphological characters used for their separation (Walker 1973) are

significantly overlapping and do not give possibility for exact determination of my material; for example, my specimens from “San Jose” in Cuba probably belong to *A. celerinictus*, because they are rather large, and this species is also large and distributed from Southern Florida to Jamaica and Grand Cayman.

*Anurogryllus fuscus* from Peru and *A. comptus* from “Constancia” (Walker 1869) are rather dark in colouration and insufficiently described, and the latter name is usually considered as a synonym of *A. muticus*. But they also may be subspecies of this species or closely related species; my specimens from Honduras, Paraguay and Fuerte de Momon in Peru are also rather dark, and some of them may belong to these subspecies or species. *Anurogryllus patos* (South Brazil) is similar to my males from Nicaragua, Colombia as well as the locality between Puente Itaya and San Juaquin in Peru in the male tegmen with long apical area (1.3–1.4 times as long as mirror), but this species differs from them in more transverse mirror (almost 1.2 times as wide as long; vs. 1–1.1 times as wide as long). My male from Rio de Janeiro has distinctly shorter apical area and less transverse mirror in the male tegmen than in *A. patos*, and differences of this male as well as *A. patos* from Argentinian *A. clarazianus* is also unclear.

Finally, *A. bebeeii* from Trinidad I. and *A. angustulus* insufficiently described from the other Caribbean Islands are more or less similar to all my others specimens of this group having their body dorsally from light brown with brown spot between ocelli to brown with dark brown head dorsum, mirror in the male tegmen almost not transverse, and apical area of this tegmen less long than in *A. patos*. Moreover, the type material of *A. muticus* from Surinam is also insufficiently studied. Thus, division of this complex into species and subspecies is work for the future.

#### Subtribe **Brachytrupina**

#### **Genus *Megalogryllus* Chopard, 1930**

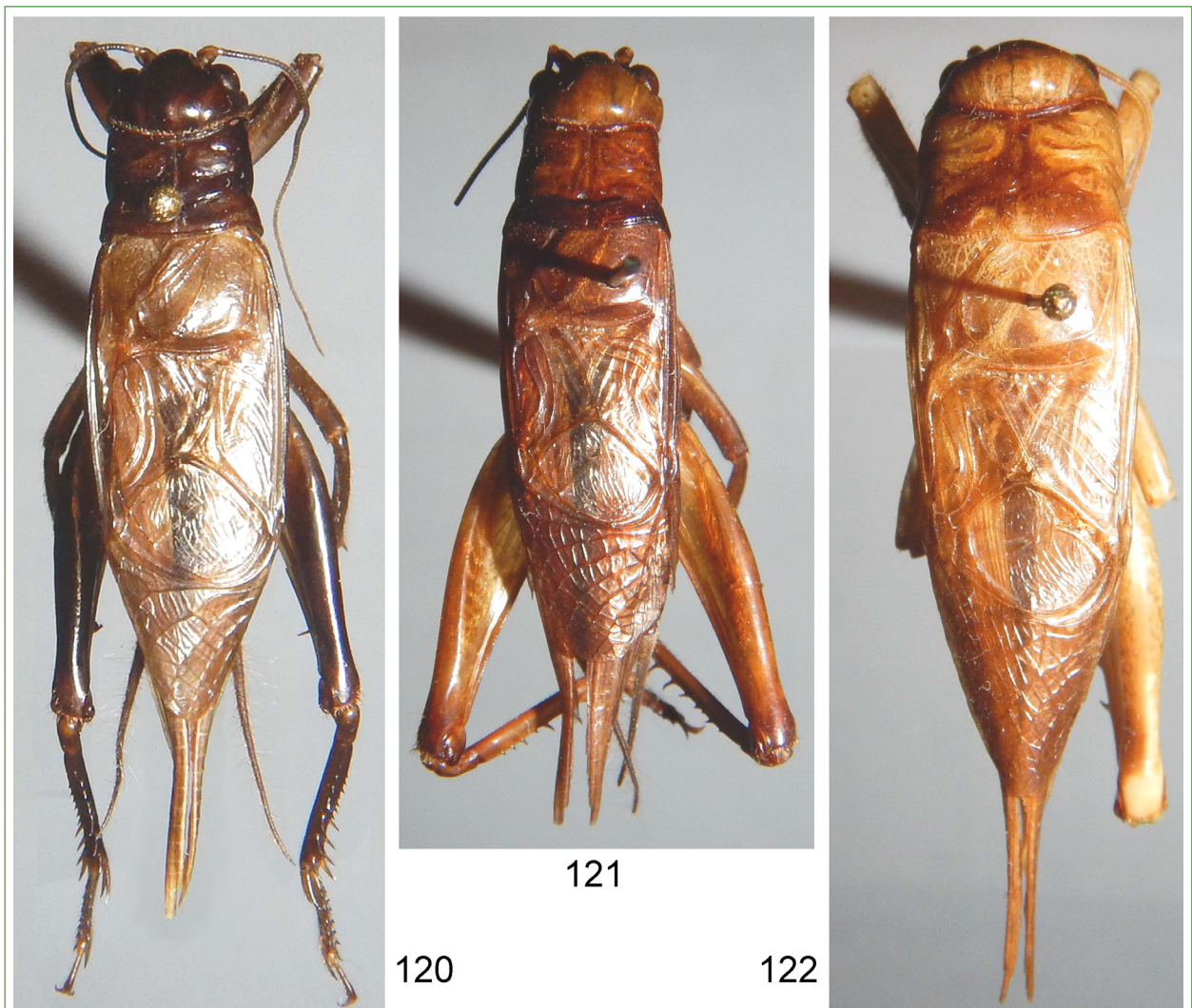
The genus is here considered as consisting of two subgenera, because one previously described Brazilian species is removed from



the Indo-Malayan genus *Tarbinskiellus* Gor. and included in a new subgenus of the Neotropical genus *Megalogyllus*. Such erroneous systematic position was originally established for this largest cricket of America (Gorochov 2001) in connection with its significant external similarity to the representatives of *Tarbinskiellus* and intermediate (between this genus and *Megalogyllus*) structure of the male genitalia: ectoparamere of this Brazilian species has developed mesal lobe (as in *Tarbinskiellus*) but is more similar to that of *Megalogyllus* type species in shape (see key to subgenera of this genus below). Also, it is necessary to note that all the representatives of *Megalogyllus* (including one described as *Tarbinskiellus* species) have very characteris-

tic armament of hind tibiae which separates this genus from all the other genera of Gryllini: dorsal spines of these tibiae are divided into normal (articulated) spines and shortened (non-articulated, denticle-like) ones (the latter spines are usually located in more proximal part of tibia than normal spines). However, fusion of bases of articulated spines with hind tibia is also recorded for *Gryllus madagascariensis* F. Walk., which undoubtedly belongs to the genus *Gryllus*.

1. Body moderately large (length of pronotum 3.7–4.2 mm); pronotum not very wide, i.e. its anterior half not wider than head and slightly or barely narrower than tegminal dorsal field (Figs 120, 121); ectoparamere of male genitalia without distinct mesal



Figs 120–122. *Megalogyllus*, male body from above: 120 — *M. (Megalogyllus) excellens* sp. nov.; 121 — *M. (M.) angustulus* sp. nov.; 122 — *M. (Gigantogyllus) neotropicus* (Gor.)

lobe and with spine-like process located on apex of posterodorsal sclerite (Figs 52, 123–128). [from Guyana to Southern Brazil] .....

..... **subgenus *Megalogyllus* s. str.**

[Type species *Megalogyllus molinai* Chopard, 1930. Composition: type species; *M. clamosus* Mesa et Garcia-Novo, 2004; *M. (Megalogyllus) angustulus* sp. nov.; *M. (M.) excellens* sp. nov.]

— Body largest among Gryllidae of America [length of pronotum 6.2 mm; for *Titanogyllus* Jaiswara et al., recently described as genus in Gryllinae but having more primitive type of endoparameres (judging by photo in Jaiswara et al. 2018: figs 5, 6, 9, 12) and requiring examination of its subfamily position, this length 3.7–5.6 mm]; pronotum very wide, i.e. its anterior half wider than head and not narrower than tegminal dorsal field (Fig. 122); ectoparamere of male genitalia with distinct mesal lobe as well as with spine-like process located in place of fusion of both apex of mesal lobe and apex of posterodorsal sclerite (Fig. 51, 97–99). [Brazil: “Para-Minas”] .....

**subgenus *Gigantogyllus* subgen. nov.**

<http://zoobank.org/NomenclaturalActs/D5C2AE99-E854-4028-B375-15A78E383BE9>

[Type species *Tarbinskiellus neotropicus* Gorochov, 2001. Composition: only type species. Etymology: from “giganteus” (gigantic in Latinized Greek) and genus *Megalogyllus*.]

***Megalogyllus (Megalogyllus) angustulus* sp. nov.**

(Figs 87, 118, 121, 123–125)

<http://zoobank.org/>

NomenclaturalActs/74C96DDE-2EBC-4AC4-BAAA-7E1D7C363DE7

*Material.* Holotype — male, **Guyana**, “British Guiana: New River”, 750 ft., 10–20. III.1938, C. Hudson (ZIN). Paratype — female, same data as for holotype but 1–3.03.1938 (ZIN). Both specimens determined as “*Megalogyllus molinai* Chopard” by B. Townsend and received by ZIN in exchange with Natural History Museum, London.

*Description.* Male (holotype). Body medi-

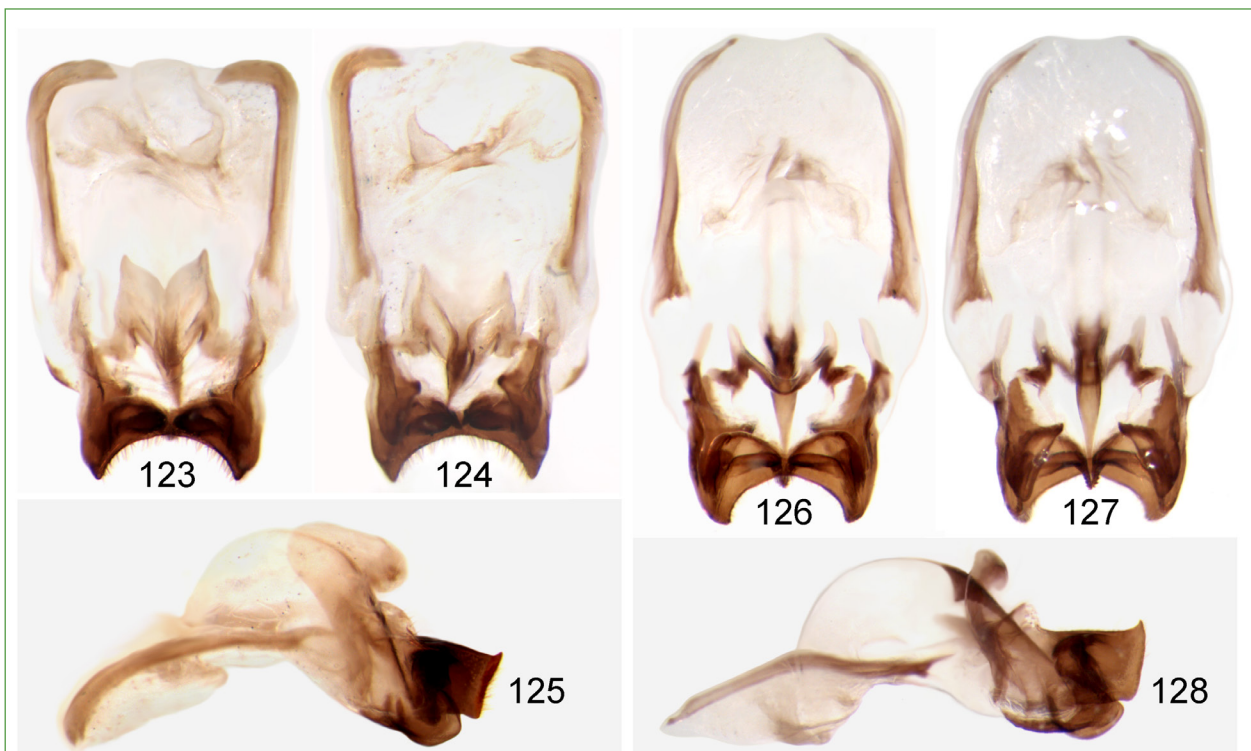
um-sized for this subgenus. Colouration light brown with reddish tinge and following marks (Fig. 121): epicranium with light yellowish brown dorsum, reddish brown transverse band between eyes crossing lateral ocelli and reaching median ocellus, light reddish brown ocelli and brown eyes; antennae with brown flagellum; mouthparts with almost dark brown lower half of clypeus; pronotum with brown to dark brown wide band along posterior edges; legs with barely darkened apical part of femora, base and distal part of tibiae, and most part of tarsi; tegmina with lighter (semitransparent) membranes in region of oblique veins and between chords and posterior edge of mirror, and almost reddish brown basal and apical areas in dorsal field; visible parts of hind wings very light brown; abdomen light brown to brown with almost dark brown cerci. Head semiglobular but barely flattened in anterodorsal part; ocelli moderately large, located almost on one transverse line (lateral ocelli round, but median one transverse); rostrum between antennal cavities approximately 1.7 times as wide as scape, widely rounded in profile. Pronotum distinctly transverse, barely narrowing to head, with shallowly concave anterior and barely convex posterior edges (Fig. 121), and with rather low lateral lobes having ventral edge almost parallel to dorsal edge. Legs moderately long but stout; fore tibia with three strong (digging) apical spurs, moderately large and elongate outer tympanum, and rather small (but also elongate) inner tympanum; hind femur weakly widened (weakly thickened); hind tibia with three pairs of elongate articulated dorsal spines on distal part as well as with 8–9 outer and five inner non-articulated dorsal denticles on rest parts of this tibia (one of outer denticles located between articulated spines in left tibia; most proximal one of inner denticles longer, spine-like and almost articulated in both tibiae); hind basitarsus with 8–9 outer and 7–9 inner dorsal denticles. Tegmina almost reaching abdominal apex, with dorsal field as in Figs 118 and 121, and with lateral field having very sparse crossveins and 10–11 longitudinal veins; latter veins parallel and

located longitudinally in proximal two thirds but curved more or less downwards in distal third (one of these veins branching from distal part of Sc stock); hind wings significantly protruding beyond tegminal apices. Anal plate narrowly rounded at apex; genital plate somewhat longer than anal one but rather wide and slightly narrowing to widely rounded apex; genitalia with short epiphallus having widely rounded posteromedian notch, with short ectoparameres having their lateral edges clearly concave in middle part, with posterodorsal ectoparameral sclerite (*pds*) having spine-like apical process (*spl*) denticulated and directed more downwards than backwards, with endoparameres having large (long) anterior apodemes, with rachis having anterior (sclerotized) part narrow in profile, and with rami having rather wide distal part strongly curved medially (Figs 123–125).

Female. General appearance as in male, but: reddish tinge less distinct; epicranium with darkened (brown) band located only between ocelli; clypeus and pronotum almost uniformly light brown; ocelli and labrum yellowish;

tegmina light brown to yellowish with semitransparent some membranes in lateral field; dorsal tegminal field with 13–14 moderately regular and barely oblique longitudinal veins as well as rather numerous and somewhat irregular crossveins; lateral tegminal field with 9–10 longitudinal veins similar to those of male but more straight (crossveins in this field also very sparse); hind tibia with four outer and three inner non-articulated denticles (two inner ones spine-like and almost articulated); hind basitarsus with seven outer and five inner dorsal denticles; cerci brown with light brown bases. Genital plate transverse (shorter than anal plate) and slightly narrowing to widely truncate apex (posterolateral corners of this plate rounded); ovipositor short, but much longer than genital plate and with distal part more or less normal for Gryllini (i.e. specialized to digging; Fig. 87).

Length in mm. Body: male 24, female 28; body with wings: male 30, female 36; pronotum: male 3.9, female 4.1; tegmina: male 16, female 22; hind femora: male 14, female 15.5; ovipositor 4.3.



Figs 123–128. *Megalogryllus*, male: 123–125 — *M. (Megalogryllus) angustulus* sp. nov.; 126–128 — *M. (M.) excellens* sp. nov. Genitalia from above (123, 126), from below (124, 127) and from side (125, 128)

**Comparison.** The new species is most similar to *M. molinai*, which was described by Chopard (1930) after a male (holotype) from Brazil (“Brésil: Manaus”) and a female from Guyana (“Guyane anglaise”), but it is distinguished from the latter species as well as from *M. clamosus* (Southern Brazil) by the male tegmina with less numerous oblique veins, but mainly by the mirror of male tegmina clearly less transverse (compare Figs 116, 117 and 118). Ratios of some structures in the male tegmina (mirror width / mirror length; mirror length / distance between mirror and stridulatory vein; length of apical area / mirror length) are approximately equal to 1.15, 1.2, 1.3 in the new species and 1.3, 1, 1.5 in *M. molinai*, respectively. From *M. clamosus*, the new species additionally differs in the male tegmina somewhat narrower and with longer apical area. The female paratype of *M. molinai* from Guyana may belong to *M. angustulus* in reality.

**Etymology.** The name of this species originates from the Latin word “angustus” (narrow) and means “narrowish” in English.

***Megalogyllus (Megalogyllus) excellens*  
sp. nov.**

(Figs 52, 119, 120, 126–128)

<http://zoobank.org/NomenclaturalActs/C5B-BE967-F4FB-4104-80F5-8CDB73DF8D8B>

**Material.** Holotype — male, **Peru**, bank of Rio Morona near its mouth and not far from Puerto America Town, ~200 m, primary forest, at light, 20–23.01.2010, A. Gorochoy (ZIN). Paratypes: 7 males, 4 females, same data as for holotype (ZIN); 2 females, **Peru**, “Rio Amazon & Rio Ucayali, between Iquitos and Pucallpa”, at light in ship, 17–20.02.2006, N. Kluge (ZIN).

**Description.** Male (holotype). General appearance (Fig. 120) similar to that of *M. (M.) angustulus* but with following differences: body slightly larger; colouration of head and pronotum uniformly dark brown with ocelli, pedicel and apex of labrum light brown, scape and rest of mouthparts brown, and antennal flagellum greyish brown; legs with light brown proximal parts (from coxa to base of

femur) and greyish brown rest parts (dorsal surface of hind femur almost dark brown); tegmina light greyish brown with semitransparent membranes as in *M. angustulus* and almost transparent some membranes in lateral field; abdomen with light brown venter and greyish brown rest parts (including cerci and apical portion of genital plate); hind tibia with 6–7 outer and 3–4 inner dorsal non-articulated denticles located more proximally than longer articulated spines; hind basitarsus with 6–8 outer and six inner dorsal denticles; tegmina slightly protruding beyond abdominal apex, with dorsal field somewhat larger (wider) as well as having more numerous oblique veins (5 instead 4) and larger mirror (see Figs 118 and 119), and with lateral field practically lacking crossveins. Genitalia also very similar to those of this species, but ectoparameres without concavity in middle part of their lateral edges, posterodorsal ectoparameral sclerite (*pds*) with spine-like apical process (*spl*) directed more backwards than downwards, endoparameres having small (short) anterior apodemes, rachis with anterior (sclerotized) part widened in profile, and rami with distal part very narrow and less curved (Figs 52, 126–128).

**Variations.** Other males with colouration from similar to that of holotype to clearly lighter [with brown epicranium having dark spot between ocelli and lightish longitudinal lines on dorsum, almost light brown mouthparts, pronotum and femora, and slightly lighter (than femora) rest of legs, sternites, abdominal tergites and cerci; number of spines and denticles on hind tibia and tarsus as well as oblique veins and longitudinal veins in lateral field of tegmina insignificantly varied; widened part of rachis sometimes indistinct in profile.

**Female.** Colouration and general structure of body as in lighter males and almost indistinguishable from those of female of *M. angustulus*, but number of tibial and tarsal spines and denticles as well as longitudinal veins in tegmina insignificantly varied; structure of genital plate and ovipositor also very similar to that of this female.

Length in mm. Body: male 25–29, female 26–32; body with wings: male 33–36, female 35–38; pronotum 3.7–4, female 3.9–4.2; tegmina: male 19–21, female 20–23; hind femora: male 14–15, female 14.8–16; ovipositor 3.9–4.2.

*Comparison.* The new species is most similar to *M. angustulus* but distinguished from the latter species in some proportions of structures of male tegminal stridulatory apparatus (mirror width / mirror length, mirror length / distance between mirror and stridulatory vein, and length of apical area / mirror length are approximately equal to 1.1, 1.2, 1.15 in the new species and 1.15, 1.2, 1.3 in *M. angustulus*, respectively) and the above-mentioned characters of male genitalia (see the description above). From *M. molinai* and

*M. clamosus*, the new species differs in the male tegmina with their stridulatory apparatus longer than in *M. molinai*, apical area longer than in *M. clamosus*, and mirror distinctly less transverse than in the both species (see Figs 116, 117 and 119).

*Etymology.* Name of this species is the Latin word “excellens” (excellent).

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