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Source: Journal of Orthoptera Research, 17(1) : 1-27

Published By: Orthopterists' Society

URL: https://doi.org/10.1665/1082-6467(2008)17[1:TGASAC]2.0.CO;2

The genus *Aleuas* Stål 1878 (Acrididae, Copiocerinae, Aleuasini)

Accepted January 19, 2008

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Contents

Abstract

A revision of the genus *Aleuas* is made, and the genus is redefined. Four known species are redescribed on the basis of the examination of their types and of newly collected specimens. Four new species are described from materials collected by the author or found in the collections of the Academy of Natural Sciences of Philadelphia and the Museu Nacional of Rio de Janeiro. All species of the genus live in the southern part of S. America, east of the Andes. The genus *Zygoclistron* is closely related, and together with *Aleuas*, these genera constitute the tribe Aleuasini of the Acrididae Copiocerinae. The position of the Aleuasini within the Copiocerinae has been recently contested on the basis of certain anatomical and cytological evidence.

Key words

genitalia, geographical distribution, new species, redescriptions, repositories, synonymy

Introduction

The genus *Aleuas* includes a few species found in the southern part of South America. Its species are very distinctive: they cannot be mistaken for those of any other South American genus. Together with the genus *Zygoclistron*, they constitute the tribe Aleuasini of the Copiocerinae, as defined by Amedegnato (1974). The general aspect of *Aleuas* species is different from those of *Zygoclistron*, mainly because of the green or yellowish color and rather smooth integument of most species; those of *Zygoclistron* being mostly brown to straw-yellow, and their integument rugose. Also the color-pattern of the species of *Zygoclistron* is very different from that of the species of *Aleuas*.

For the making of the present revision, the types of all the described species were examined and compared with specimens recently collected. Among the latter, representatives of four undescribed species were found.

Index to specific names

Five species were described in the genus *Aleuas* from 1878 to 1911. One of these (*A. brachypterus* Bruner 1906) was later found to be the same as *A. vitticollis* Stål 1878 (Rehn 1913: 338; this work). To these four valid species we add now four new ones (*A. albinae*, *A. paraguayensis*, *A. paranensis* and *A. uruguayensis*). The genus as known at present is rather small, containing only the following eight species:

***A. albinae* n. sp**.
A. brachypterus Bruner 1906 (= *A. vitticollis* Stål 1878)
A. curtipennis Bruner 1911
A. gracilis Stål 1878.
A. lineatus Stål 1878.
***A. paraguayensis* n. sp.**
***A. paranensis* n. sp.**
***A. uruguayensis* n. sp.**
A. vitticollis Stål 1878.

Materials and methods

Materials.— Most of the specimens used for this work have been collected by the author. Others were borrowed from the Academy of Natural Sciences of Philadelphia and the Museu Nacional de Rio de Janeiro. All existing types of the species previously described have been studied and photographed and some have been compared with specimens in the collection in Montevideo. Methods employed were those usual in taxonomic studies:

Genitalia.— For some of the types and many other specimens these have been dissected, cleaned in a solution of KOH and preserved in glycerin. Details of the cleaning and preparation of genitalia are recorded in Carbonell 2004: 64.

Measurements.— Measures were taken with a sliding stage, its displacement registered by an attached dial caliper. Accuracy is in the range of 1/10 of a millimeter. These measurements are indicated in Fig. 36.

Colors.— Colors named (number designation in parens) according to the nomenclature given in Smithe (1975), have been used to compare to the colors of the specimens. These names are given as a general indication since tones and hues may vary in different specimens of the same species.

Genus *ALEUAS* Stål 1878
Figs 1, 37

Etymology.—The derivation is probably Alevas or Aleuas, the name of a tyrant in ancient Thessaly.

Size.—Among the specimens measured for this work, the largest male belongs to *A. vitticollis*, with a total length of 35.8 mm, the smallest to *A. curtipennis* (22 mm); among the females, the largest is *A. albinae* (60 mm) and the smallest *A curtipennis* (32.1 mm). See Tables 1 to 8.

Caryology.—The species of *Aleuas* whose caryology have been studied have the following chromosomic formulae (Mesa *et al.* 1982: 520):

A. gracilis, males 2n= 20, XY; females 2n=20, XX.
A. lineatus, males 2n=20, XY; females 2n=20, XX.
A. vitticollis, males 2n=20, XY; females 2n=20, XX
A. albinae (as n. sp. Nº 1) males 2n, 20, XY; females 2n=20, XX.
A. paraguayensis (as n. sp. Nº 2) males 2n=22; XY, females 2n=22, XX
A. paranensis (as n. sp. Nº 3) males 2n=20, XY; females 2n=20, XX

Note that the only species with 2n=22 is *A. paraguayensis*, all the others having 2n=20.

Origin.—The center of origin of the genus seems to be that part of southern S. America that includes northern and central Argentina, East Paraguay and the Brazilian states of Mato Grosso and Mato Grosso do Sul. In this area occurs the largest number of species of the genus.

Distribution.— (Fig. 37). According to the data in the literature and by my own observations, the species of *Aleuas* have been found in southern South America east of the Andes, between parallels 14º 25´S (Diamantino, in State of Mato Grosso, Brasil,) and the province of Chubut in Argentina (approx. 44ºS). Within this large territory, the concrete localities from which specimens of these insects have been available for this study or are mentioned in the literature, allow me to indicate the following geographical areas where species of this genus might be present. Those marked with an asterisk (*) are the ones where the species have been actually found:

Brasil: southern parts of Mato Grosso* and Goias*; the entire states of Mato Grosso do Sul*, Minas Gerais*, Sao Paulo, Parana, Santa Catarina and Rio Grande do Sul*.
Bolivia: Prov. Gutierrez* (ex Prov. Sara) of the Dept. of Santa Cruz.
Paraguay: eastern part*, probably whole country.
Uruguay: whole country*.
Argentina: Provinces of: Formosa*, Chaco*, Misiones*, Santiago del Estero, San Juan*, Santa Fe*, Corrientes*, Catamarca, La Rioja, Tucumán*, Mendoza*, San Luis, Córdoba*, Entre Rios*, La Pampa*, Buenos Aires*, Neuquén, Río Negro* and Chubut*.

Habitat.— There are few observations on the habitat of these species, which are found mostly in grasslands and other rather open plant formations. In the complex of acridoid species that is found in the mentioned area, the species of *Aleuas* are neither common nor abundant. On the map of Cabrera and Willink (1973) of the Botanical Provinces of South America it can be seen that the area occupied by this genus, as defined above, includes parts of the provinces of Cerrado, Paranense, Chaqueña, Espinal, Pampeana, Monte and Patagonica. All these biogeographical provinces have open areas covered with grasses and other herbaceous plants where the species of this genus are found. Some, as the Pampeana, are mostly grassland. Ronderos *et al.* (1981: 74) mention *A. lineatus* and *A. vitticollis* as belonging to the grassland acridid fauna; Sanchez says likewise (1981: 228-9), but also states that neither was numerically abundant in that plant formation.

Food-plants.—My own observations indicate that *A. lineatus* feeds on grasses (Gramineae or Poaceae) and probably also on Cyperaceae. *A. vitticollis* and *A. albinae* live in dense associations of grasses (see below) where they probably do not have ready access to plants of other families. COPR (1982: 181) states that *A. lineatus* feeds on natural grasses, lucerne or alfalfa (*Medicago sativa*) and also on other (undetermined) cultivated plants. Gangwere and Ronderos (1975: 178), with reference to *A. lineatus* and *A. vitticollis*, state that their mandibles are of the graminivorous type, that their feces contain mostly residues of grasses, and that they are unselectively polyphagous. Liebermann (1948: 88, 1950: 10, 1967: 109), Sanchez and De Wysiecki (1993: 31), mention that *A. lineatus* is frequently found in cultures of alfalfa, but also on prairie dominated by *Stipa brachychaeta*, and on millet (*Panicum miliaceum*). I have no data on the food of other species, but the fact that they generally live on grasslands may point to similar feeding habits.

Pathology.— All data on this subject refer to *A. lineatus*. Luna et al. (1981: 245) say that it is susceptible to infection with *Nosema locustae* (Microsporida, Nosematidae). Lange and De Wysieki (1996: 27) did not find infection with that pathogen in one population of this species. Lange (1992) did not find specimens attacked by *Perezia diochroplusiae* (Microspora, Pereziidae) or *Nosema locustae* in Prov. of Buenos Aires. The same author (1996: 108) discovered that *A. lineatus* is apparently resistant to the fungus *Entomophaga grylli*, that attacks other grasshoppers.

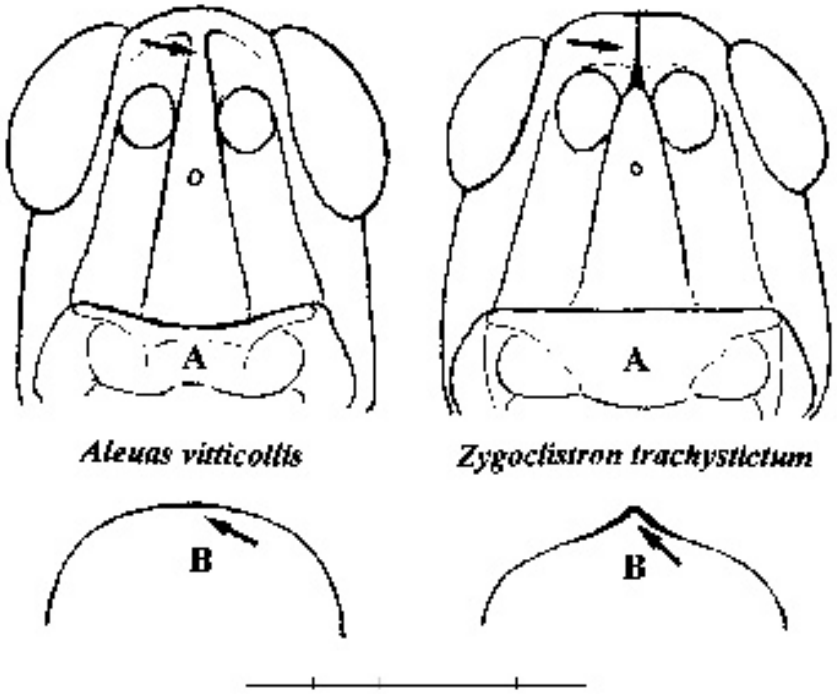

Fig. 1. Genera *Aleuas* and *Zygoclistron*, differences most visible on head and pronotum indicated by arrows. **A.** Head frontal. **B.** Transverse section of metazona. *A. vitticollis*, male, from Argentina, Corrientes, Arroyo San Joaquin. *Zygoclistron trachystictum*, male, from Paraguay, Dept. Caaguazú, near Ihú. Scale line 5 mm.

Taxonomy.— Most of the morphological characters of the species of this genus can be seen in the corresponding illustrations. Only a few of these features that are considered generically important will be mentioned here. Integument smooth on head, abdomen and legs; from impresso punctate to slightly rugose on pronotum. Head globose, slightly opisthognathous; antennae filiform; fastigium very short and blunt in some species, angular in others, always shorter than the width of interocular space. Pronotum: prozona longer than metazona in most known species, equal to it in *A. albinae*; median dorsal carina from slightly elevated to almost obsolete, lateral carinae absent; anterior margin evenly rounded to almost straight, posterior margin either rounded or slightly angulate in different species; prosternal tubercle spiniform, slightly retrorse. Tegmina and wings from well-developed and reaching or surpassing end of abdomen, to reduced to a variable extent, this more frequently in females than in males.

Fore and middle legs without particularities, the hind with carinae well-marked, smooth; hind tibiae with 7 to 9 external spines (exceptionally 6 or 10) and 8 to 10 internal ones (exceptionally 12); some in the apical part modified, as a part of the stridulatory apparatus. Intermesosternal space closed or very narrowly open in males, open in females; intermetasternal space closed in males, open in females. General coloration green in some species, light brown in others; some species having green and brown forms.

Stridulatory mechanism. (Fig. 35) This apparatus and the sounds produced are described in detail by Lorier *et al*. (2002). It consists of modified spines on the internal side of the distal end of the hind tibiae, which are almost parallel to the tibial axis, and modified cross veins on the radial area of the tegmen, elevated over its general surface. Stridulation is produced by rapid movements of the hind tibia that run its modified apical spines over the said veinlets. The sounds produced are not very loud. Species of *Zygoclistron* have the same type of stridulating apparatus, but it is worth mentioning that, while the raised crossveins on the tegmina are very conspicuous, in that genus there are no modified spines on the hind tibiae; the normal spines seem to effect that function. *A. curtipennis* and *A. uruguayensis* lack the stridulatory mechanism.

Key to species of the genus *Aleuas*.

Males

1 Cerci strongly incurved, apices spatulate 2
1′ Cerci slightly incurved or straight, apices acute 3
2 Large (Table 1), abdominal terminalia as in Fig. 25B . . . . . *A. albinae*
2′ Small (Table 4), abdominal terminalia as in Fig. 25A . . . . . *A. lineatus*
3 With lines of contrasting color along sides of pronotal disk 4
3′ With lines of contrasting color along sides of pronotal disk and median carina 5
4 Lines red, on prozona only . . . . . *A. paraguayensis*
4′ Lines black, on pro- and metazona 6
5 Fastigium in dorsal view with sides rounded, forming an obtuse angle . . . . . *A. vitticollis*
5′ Fastigium in dorsal view with sides forming an acute angle . . . . . *A. gracilis*
6 Short-winged, fastigium in dorsal view with sides carinated, its surface excavated, without median carina . . . . . *A. curtipennis*
6′ Short-winged, fastigium in dorsal view with sides rounded, forming a right angle, median carina marked only at its apex . . . . . *A. paranensis*
6″ Long-winged, fastigium in dorsal view with sides converging in an acute angle, median carina well-marked on fastigium and vertex . . . . . *A. uruguayensis*

Females

1 Pronotal disk with lines of contrasting color along sides only 2
1′ Pronotal disk with lines of contrasting color along sides and median carina 4
1″ Without the above lines on pronotal disk 6
2 Lines red, marked on prozona only . . . . . *A. paraguayensis*
2′ Lines black, marked on pro- and metazona 3
3 Large (Table 1), hind tibiae and tarsi vinaceous . . . . . *A. albinae*
3′. Smaller (Table 4), hind tibiae and tarsi green . . . . . *A. lineatus*
4 Fastigium in dorsal view with sides converging in an obtuse

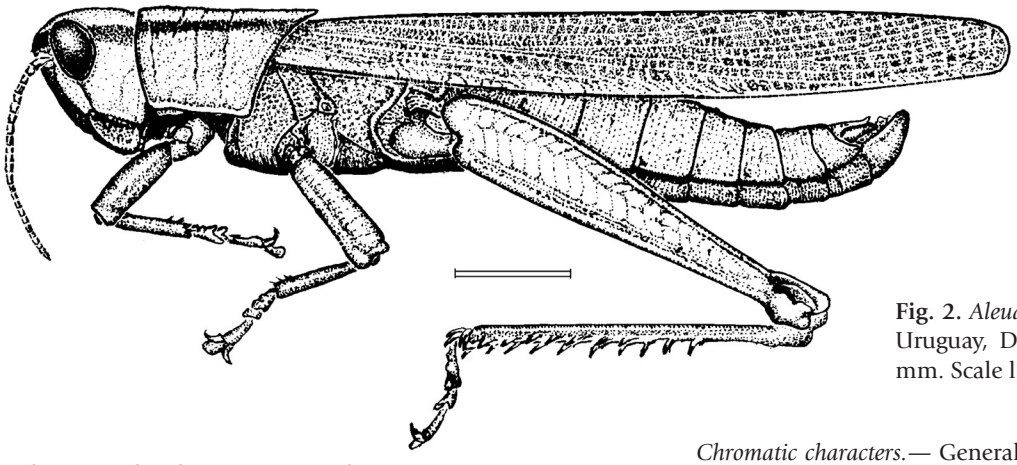

Fig. 2. *Aleuas albinae* n. sp. habitus. Male from Uruguay, Dept. Florida, Casupá. Length 41.8 mm. Scale line 5 mm.

angle, general color green or pale cinnamon, most specimens short-winged, rarely long-winged . . . . . *A. vitticollis*
4′ Fastigium in dorsal view with sides converging in a right or slightly acute angle 5
5 Inner pagina of hind femur light-colored, with a barely marked dark line along region of pinnae (Fig. 24) . . . . . *A. gracilis*
5′ Internal pagina of hind femur mostly black (Fig. 23) . . . . . *A. paranensis*
6. Fastigium in dorsal view with sides converging in a right angle, median carina marked on fastigium and vertex . . . . . A. *uruguayensis*
6′. Fastigium with sides converging in an obtuse angle, its surface excavated, without median carina, inner pagina of hind femur partially marked with black (Fig. 23) . . . . . *A. curtipennis*

Aleuas albinae n.sp.
Figs 2, 3, 20, 21, 22, 23, 25B, 27, 37. Table 1

Etymology.— Specific name dedicated to my wife Albina, without whose help much of my work could not have been done.

Taxonomy.— One of the largest species (Table 1). Fastigium in dorsal view projected forwards in a very obtuse angle; frontal margin of pronotum almost straight, slightly curved; sides of posterior margin in an almost right angle (Fig. 22); median carina of pronotum very slightly marked. Male cerci strongly incurved, with spatulate apices (Fig. 25), a character shared within the genus only with *A. lineatus*, but found in most species of *Zygoclistron*. Furculae of the 10th abdominal segment of males absent in this species (and in *A. lineatus*), though present in all the other species (Figs 25, 26). Stridulatory mechanism with three modified spines on hind tibiae in both sexes (as in *A. paraguayensis*, Fig. 35). Phallic complex (Fig. 27): characteristic are the massive apical valves of the endophallus.

Chromatic characters.— General coloration light apple-green (61). Dusky-brown (19) lateral postocular bands continued on sides of pronotal disk; a white (slightly yellowish) band immediately below it on prozonal lateral lobes, that disappears on metazona; lower margins of lateral lobes narrowly fringed with white. Fore and middle legs light cinnamon; hind femora apple-green (61) with upper surface yellow in females, black markings on internal side (female) as shown in Fig. 23. Hind tibiae and tarsi vinaceous (4).

Affinities.—This species seems very closely related to *A. lineatus*, from which, however, it can be readily separated by its much larger size and other characters as indicated in the respective descriptions and in the keys.

Habitat.— The habitat of this species is the same as described below for *A. vitticollis*. Like the latter species, it is nocturnal and, being far less common, it is almost impossible to find specimens in the daytime. Unlike *A. vitticollis*, all specimens, male and female, are long-winged; we have never found a short-winged individual.

Known distribution.— (Fig. 37). Uruguay: probably most of the country. The nocturnal habits of this species, its restricted habitat and the fact of its being rather scarce, make its presence probable in areas of Argentina and Brasil where it has not been found to date.

Aleuas curtipennis Bruner 1911
Figs 4, 5, 20, 21, 22, 23, 26D, 28, 37, Table 2

Etymology.— Latin, *curtus*, short and *penna*, wing or feather.

Taxonomy.— A small-sized species (Table 2). Fastigium in dorsal view projected forwards in an obtuse angle; pronotum with tegument rugose, anterior margin evenly curved, posterior with sides in an obtuse angle (females) or an almost right angle (males), median

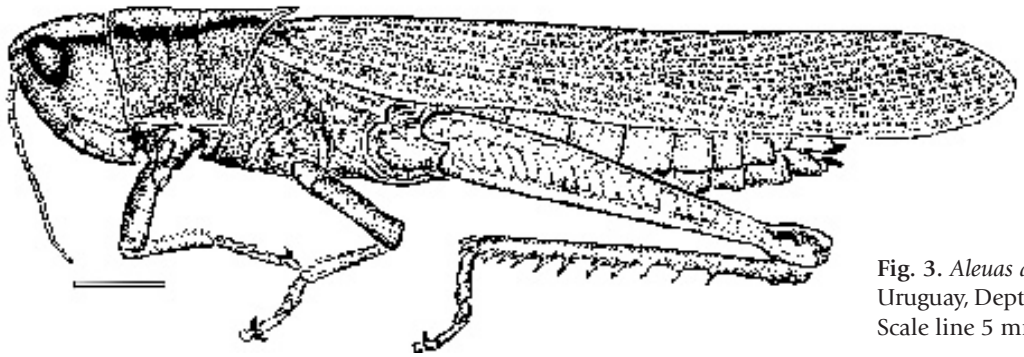

Fig. 3. *Aleuas albinae* n. sp. habitus. Female from Uruguay, Dept. Florida, Casupá. Length 60.2 mm. Scale line 5 mm.

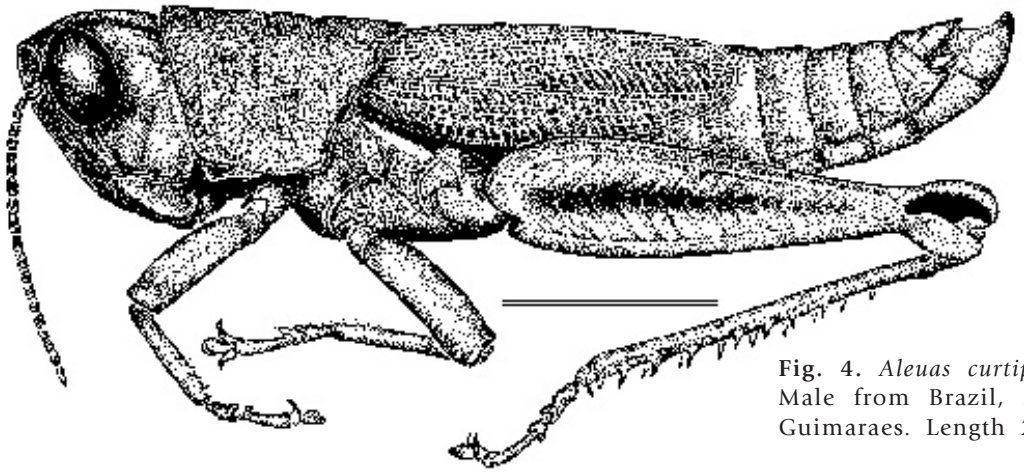

Fig. 4. *Aleuas curtipennis* Bruner 1911, habitus. Male from Brazil, Mato Grosso, Chapada dos Guimaraes. Length 22.5 mm. Scale line 5 mm.

dorsal carina marked, more prominent in females than in males (Figs 21, 22). Both sexes short-winged, tegmina reaching to about middle of abdomen. End of abdomen in males (Fig. 26): furculae prominent, triangular, divergent; epiproct with an acute caudal projection; cerci conical, short, slightly incurved, not surpassing end of epiproct. Without stridulatory mechanism. Phallic complex (Fig. 28): apical valves of arch-endophallus in dorsal view mark the most important difference with other species.

Chromatic characters.— General coloration from raw-umber (23) on its darker parts, to buff (24) on lighter ones. Antennal segments mostly fuscous (21), narrowly banded with buff (124) at their apices: area of contact of metathoracic epimeron-episternum black; tegmina with buff (124) veins over a much darker (brown) membrane. All legs mostly buff (124), hind tibiae carmine (8). Inner side of hind femora in females widely marked with black (Fig. 23).

Affinities.— This seems most closely related to *A. uruguayensis*, these two species lacking the stridulatory mechanism present in all the other species.

Habitat.— Low places with herbaceous vegetation and shrubs.

Known distribution.— Brasil: Mato Grosso, Mato Grosso do Sul and Goias. For what we know of the distribution of the species of *Aleuas*, this is the northernmost, being recorded between parallels lat 14º 24'S (Diamantino, Mato Grosso) and lat 19º 01'S (Corumbá, Mato Grosso do Sul) (Fig. 37).

Aleuas gracilis Stål 1878
Figs 6, 7, 20, 21, 22, 24, 26B, 29, 37, Table 3

Etymology.— Latin, *gracilis*, slim, slender.

Taxonomy.— Males small-sized, females considerably larger (Table 3). Fastigium in dorsal view projecting forwards, its sides forming a right angle (slightly acute in some specimens). Disk of pronotum with anterior margin curved, posterior one with sides in an obtuse angle, apex rounded; median dorsal carina well-marked, somewhat prominent in females. Tegmina reaching almost end of second abdominal segment in females, nearly apex of abdomen in males; end of male abdomen (Fig. 26): furculae placed close together, their inner margins contiguous; epiproct triangular, acutely pointed; cerci conical, very slightly incurved, not surpassing end of epiproct. Stridulatory mechanism with two modified pre-apical spines on hind tibiae in males and females. The latter have abbreviated tegmina lacking the corresponding stridulatory crossveins; this might mean that there are also long-winged females, as in the case of *A. vitticollis*, where the stridulatory apparatus may be functional. Phallic complex (Fig. 29): apical valves of endophallus arch in dorsal and lateral views are characteristic.

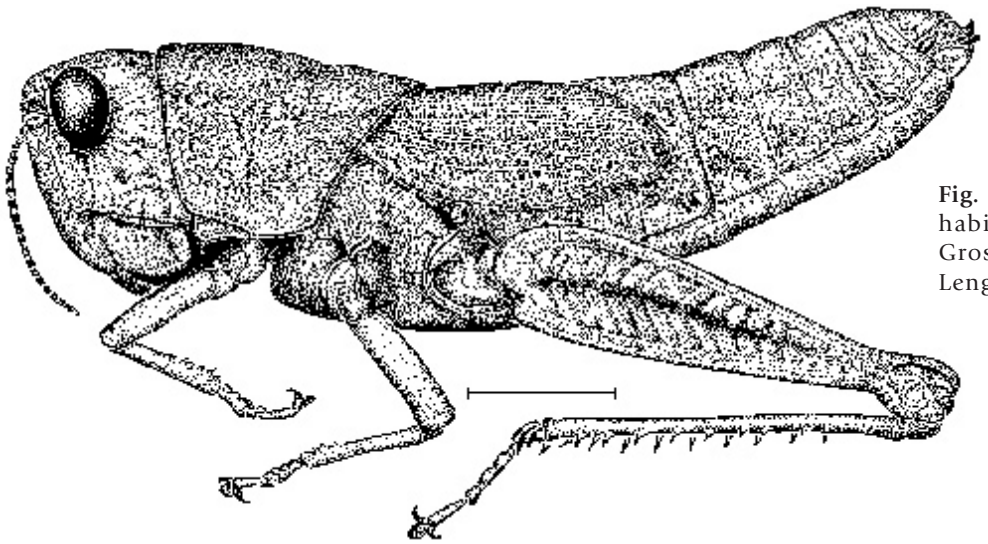

Fig. 5. *Aleuas curtipennis* Bruner 1911, habitus. Female from Brazil, Mato Grosso, Chapada dos Guimaraes. Length 32 mm. Scale line 5 mm.

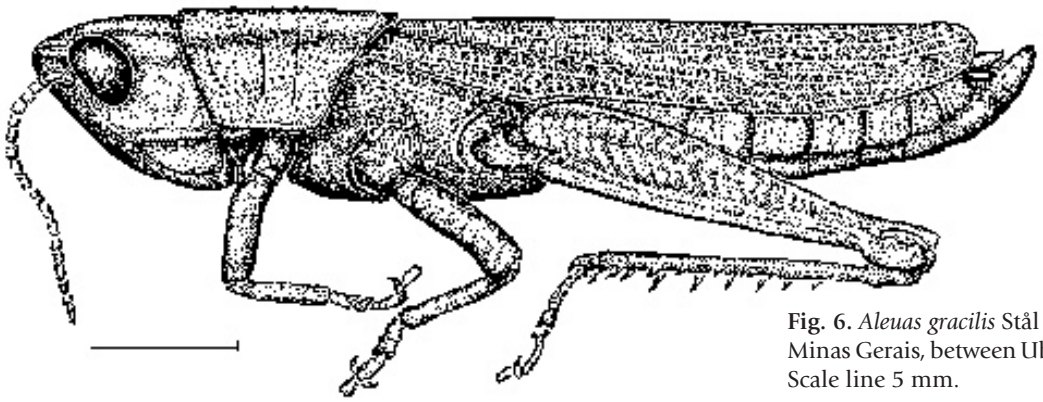

Fig. 6. *Aleuas gracilis* Stål 1878, habitus. Male from Brazil, Minas Gerais, between Uberaba and Araxa. Length 32 mm. Scale line 5 mm.

Chromatic characters.— General color of body and legs light tawny (38). Postocular bands chestnut (32), continued on upper parts of lateral lobes of pronotum and on tegmina; in females a narrow median band of same color along median dorsal carina of pronotum, continued on terga of metanotum and first abdominal segment; caudal margins of abdominal segments narrowly margined with same color. Tegmina of males very pale apple-green (61) on area above R veins (cubital and vannal areas). Inner pagina of hind femora in females narrowly marked with black, this mark much wider and darker in males; hind tarsi in both sexes superiorly red, this color also on apices of hind tibiae.

Affinities.— Seems closely related to *A. vitticollis*.

Habitat.— Grassland with shrubs.

Known distribution.— Brasil: Mato Grosso do Sul. Paraguay: eastern part (Fig. 37).

Aleuas lineatus Stål 1878
Figs 8, 9, 20, 21, 22, 24, 25A, 30, 37. Table 4

Etymology.— From Latin, *linea*, thread or line, referring to the dark lines on pronotum.

Taxonomy.— In its general aspect and coloration, this species looks like a smaller form of *A. albinae*. Head: integument smooth, matte; fastigium in dorsal view (Figs 21, 22), short, blunt, sides converging in an obtuse angle. Pronotum (Figs 21, 22): anterior margin of disk slightly curved or straight, posterior one projecting caudad in an obtuse angle, its apex rounded. Tegmina and wings surpassing end of abdomen in both sexes. Male abdominal terminalia (Fig. 25) with furculae absent or barely marked as undulations of margin of 10th segment, placed far apart; epiproct subquadrate with small triangular projection in posterior edge; cerci very large, strongly incurved, their apices spatulate (similar to those of *A. albinae*). Stridulatory mechanism with three modified pre-apical spines in the hind tibiae of males, none in the females; where the crossveins that in other species are raised, these are flat and hence without sound-producing function. Phallic complex (Fig. 30) similar in general to that of *A. albinae*, main differences lie in shape of epiphallus and of cingulum in dorsal view.

General coloration light apple-green (61) to straw-yellow (56). Cinnamon (39) postocular bands continued on sides of pronotum where there are, immediately below them, white bands continuous on pro- and metazona; lower margins of pronotal lobes narrowly fringed with white. All legs straw-yellow (56), including hind tibiae and tarsi. Tegmina light apple-green at sides, the discal or vannal part very pale flesh-color (5).

Affinities.— As said above, very closely related to *A. albinae*.

Habitat.— Usually found in rather humid places, where the vegetation of grasses and Cyperaceae is rather dense (but usually not in the places described below as the habitat of *A. vitticollis*). It is even abundant in hills and sierras, whenever a small spring makes a patch of denser vegetation grow surrounded by much drier grassland. But it seems tolerant of drier situations, since some specimens can also be found (but not abundantly) in drier places with less dense vegetation. It is a diurnal species but also shows some nocturnal activity.

Known distribution.— Bruner (1906:668) wrote: "This is the most abundant and, at the same time, most widely distributed species of the genus". Working about a hundred years later, I have verified Bruner's statement. Recorded from Argentina: Provinces of Buenos

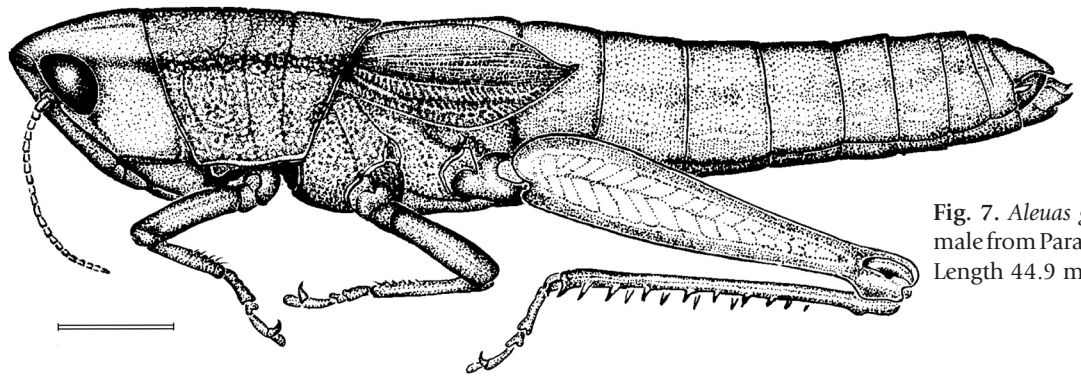

Fig. 7. *Aleuas gracilis* Stål 1878, habitus. Female from Paraguay, Dept. Paraguarí, Sapucay. Length 44.9 mm. Scale line 5 mm.

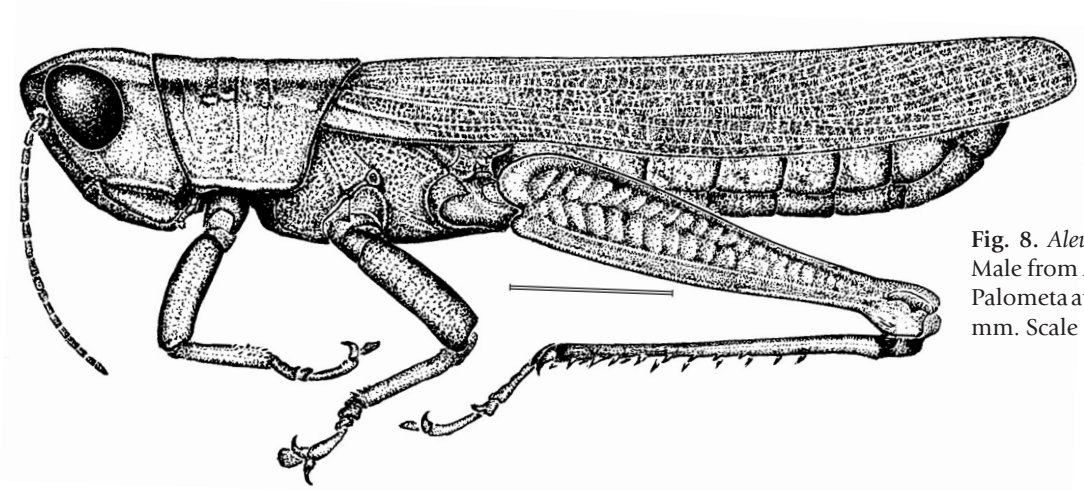

Fig. 8. *Aleuas lineatus* Stål 1878, habitus. Male from Argentina, Prov. Chaco, Arroyo Palometa at National Route 11. Length 31.5 mm. Scale line 5 mm.

Aires, La Pampa, Formosa, Chaco, Corrientes, San Juan, Tucumán, Santa Fe, Entre Rios, Mendoza, Rio Negro and Chubut. Brasil: Rio Grande do Sul. Paraguay: eastern part. Uruguay: whole country. According to what is known of its distribution in Argentina and Paraguay, it is very probable that its distribution in Brasil is much larger than recorded and includes the large area between Mato Grosso and Rio Grande do Sul (Fig. 37).

Aleuas paraguayensis n. sp.
Figs 10, 11, 20, 21, 22, 24, 25C, 31, 37. Table 5

Etymology.— Refers to the country of its origin.

Taxonomy.— A medium-sized species (Table 5). Head rather large and globose, especially in females, its integument very smooth and shiny; fastigium very short, in superior view roundly curved in females (Fig. 22), obtusely angulate in males (Fig. 21). Pronotum (Figs 21, 22): median carina almost obsolete; integument impresso-punctate over most of the surface, except in discal part of prozona, that being covered with cicatricose depressions placed close together. Tegmina and wings reaching or surpassing end of abdomen in both sexes. Male terminalia (Fig. 25) with triangular furculae placed close together, epiproct subquadrate, with small triangular projection in middle of caudal edge; cerci conical, incurved, greatly surpassing caudal end of epiproct. Stridulatory mechanism (Fig. 35) has three pre-apical modified spines in hind tibiae of both sexes, and a long series of prominent crossveins on the tegmina. Phallic complex (Fig. 31): apical valves of archendophallus of characteristic shape, in lateral view similar to same in most species of *Zygoclistron* (as figured in Carbonell 1969).

Chromatic characters: the most colorful member of the genus. Antennae, lateral areas on pronotal prozona, and hind tarsi, scarlet (14). General body color sulphur yellow (57) to straw-yellow (56). Head with small black areas above antennal sockets (Fig. 20), and the following black bands: from upper parts of antennal sockets, continued narrowly on front margin of eyes; two sets of postocular bands, one from upper part of eyes to occiput, bordered on both sides with sulfur-yellow (157), other from lower part of margin of eye, fading towards middle of genae; another along basis of mandibles, the latter with black apices. Fore legs: tibiae cinnamon-rufous (40), femora with tawny (38) bands on upper surface: middle legs with femora sulphur-yellow (57), tibiae tawny (38) to scarlet (14) on upper surface: hind legs straw-yellow (56) with black bands along upper lateral carinae, this color fading to gray on upper parts of region of pinnae: hind tibiae black at bases, becoming flesh-color (5) and scarlet (14) at their tips. Tegmina sulphur-yellow (57) with pale yellow veins.

Affinities.—Not clear: epiproct of the same general shape as that of *A. lineatus* and *A. albinae*; cerci similar in form to those of *A. curtipennis*, *A. gracilis* and *A. uruguayensis*, but proportionally much longer.

Habitat.—The place where the known specimens of this species were found was mostly grassland, with spots of bushy vegetation.

Known distribution.— Has been found only once in the province of Caaguazú of Paraguay, a few kilometers south of the town of Ihú (Fig. 37).

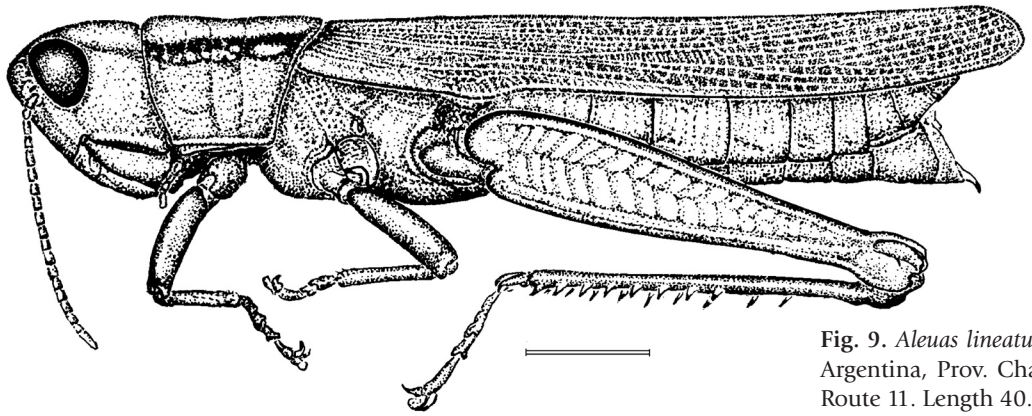

Fig. 9. *Aleuas lineatus* Stål 1878, habitus. Female from Argentina, Prov. Chaco, Arroyo Palometa at National Route 11. Length 40.3 mm. Scale line 5 mm.

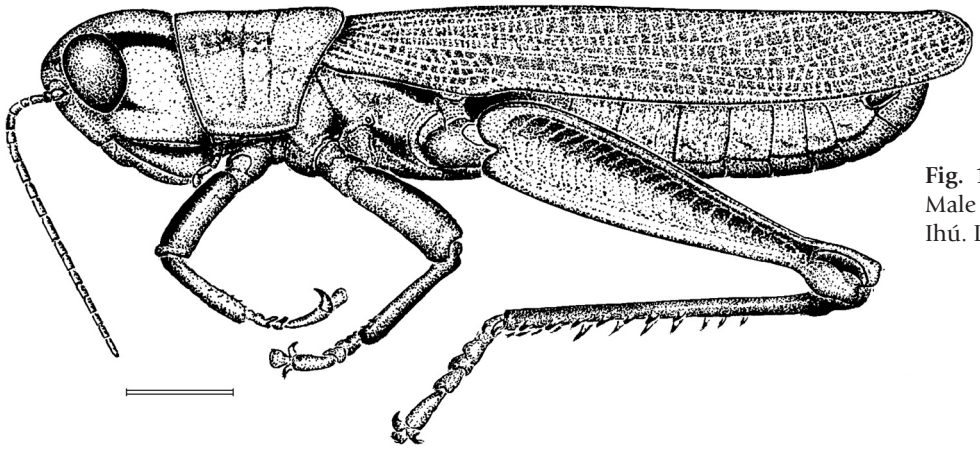

Fig. 10. *Aleuas paraguayensis* n. sp. habitus. Male from Paraguay, Dept. Caaguazú, near Ihú. Length 25.8 mm. Scale line 5 mm.

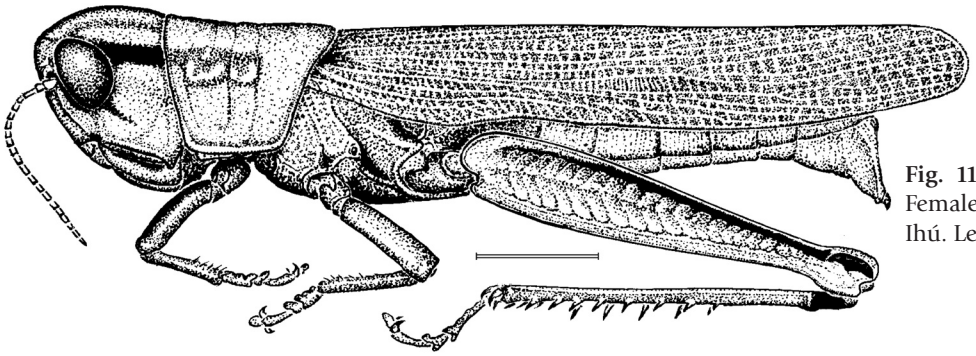

Fig. 11. *Aleuas paraguayensis* n. sp. habitus. Female from Paraguay, Dept. Caaguazú, near Ihú. Length 37.8 mm. Scale line 5 mm.

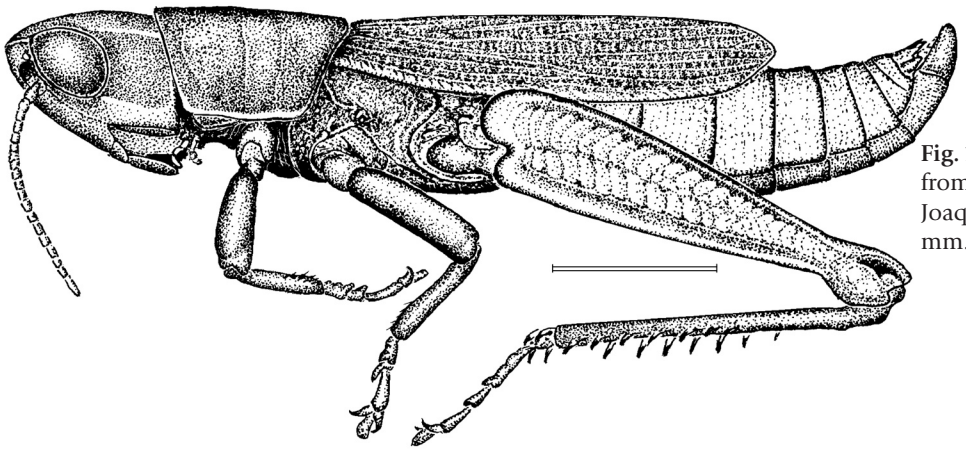

Fig. 12. *Aleuas paranensis* n. sp. habitus. Male from Argentina, Prov. Corrientes, Arroyo San Joaquin at Provincial Route 126. Length 28 mm. Scale line 5 mm.

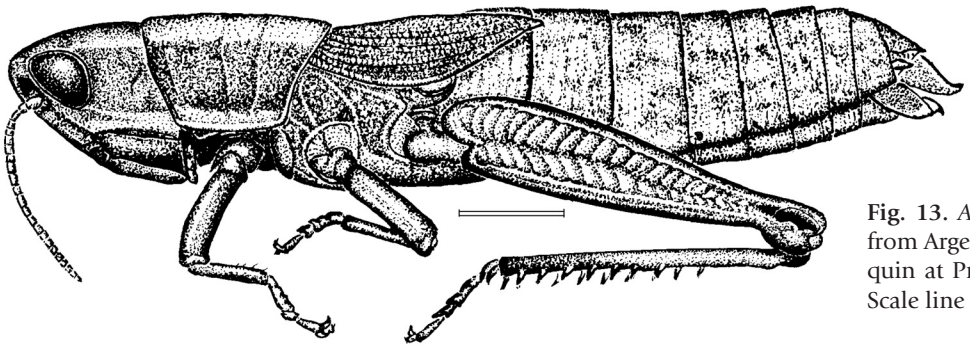

Fig. 13. *Aleuas paranensis* n. sp. habitus. Female from Argentina, Prov. Corrientes, Arroyo San Joaquin at Provincial Route 126. Length 44.5 mm. Scale line 5 mm.

Aleuas paranensis n. sp.
Figs 12, 13, 20, 21, 22, 23, 26C, 32, 37. Table 6

Etymology.— From the name of the Paraná River, that flows in the area where the species was found.

Taxonomy.— A medium-sized species, females much larger than males (Table 6). Head: integument smooth, matte; fastigium in dorsal view triangular, its sides forming a right angle in males, a slightly acute one in females (Figs 21, 22). Pronotum: integument impressopunctate; front edge of pronotal disk slightly curved, almost straight, caudal one more definitely curved, in both sexes (Figs 21, 22) Tegmina and wings: reduced, reaching first third of abdomen in females, a little over half of it in males. Abdominal end in males (Fig. 26) with triangular furculae placed close together, epiproct triangular with slightly curved sides, cerci simple, conical, not reaching end of epiproct. Stridulatory mechanism with two modified pre-apical spines on hind tibiae, the stridulatory cross veins very prominent, covering a much larger area of the tegmina of males than in any other species. The known females are short-winged and without stridulatory crossveins. Phallic complex (Fig. 32) seems close to that of *A. vitticollis*.

Chromatic characters.— General coloration cinnamon (39), russet (34) in parts. Head: in front view russet (34), with black areas above antennal sockets (Fig. 20); dorsally with median longitudinal russet area that turns gradually cinnamon (39) to the sides; in lateral view, very wide postocular bands that take up most of genae, with narrow light cinnamon (39) bands above and below it. This wide russet band continues on pronotal lateral lobes, and so does the narrow light-colored band on lower edges of genae, that on inferior edge of pronotal lobes becoming almost white. The rest of the body, tegmina and most of legs are light cinnamon (39); hind tibiae and tarsi in males are red; in females almost black internally on the apical third, turning light cinnamon (39) towards femoral articulation. Inner pagina of femora light cinnamon (39) in males, mostly black (Fig. 23) in females.

Affinities.— Not clear, but probably closer to *A. vitticollis* than to any other species of the genus.

Habitat.— The place where the species was collected is mostly grassland.

Known distribution.— Argentina: South of the Province of Corrientes. Brasil: State of Rio Grande do Sul (Fig. 37).

Aleuas uruguayensis n. sp.
Figs 14, 15, 20, 21, 22, 24, 25D, 33, 37. Table 7

Etymology.— Refers to the country where it was found.

Taxonomy.— A small species, particularly the males (Table 7). Head: integument smooth, matte; fastigium in dorsal view projected forwards in a slightly obtuse angle (Figs 21, 22), a distinct median carina running from fastigium to occiput. Pronotum: integument strongly rugose, a well-marked, prominent median carina on pro- and metazona; anterior margin of pronotal disk strongly curved, posterior one obtuse-angulate (Figs 21, 22). Tegmina and wings much reduced in female, reaching end of 2nd abdominal segment; well developed and reaching end of abdomen in males. Abdominal male terminalia (Fig. 25): furculae triangular, acute, placed close together; epiproct subtriangular, with curved sides; cerci conical, tips incurved, reaching end of epiproct. Stridulatory mechanism absent. Phallic complex does not show any close relationship with any of the other species, and its cingulum (Fig. 33E) has a peculiar shape.

Chromatic characters.— The only specimens at hand are rather teneral, so their colors may not correspond to those in mature specimens. General coloration buff (24); eyes, posterior part of

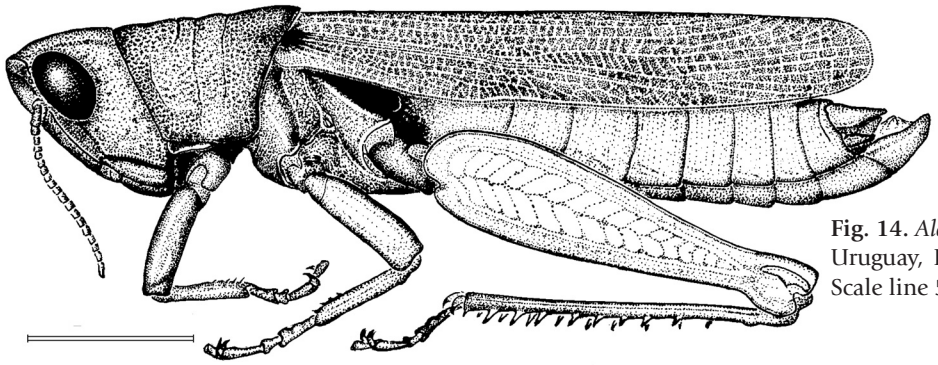

Fig. 14. *Aleuas uruguayensis* n. sp. Habitus. Male from Uruguay, Dept. Rivera, Lunarejo. Length 27.3 mm. Scale line 5 mm.

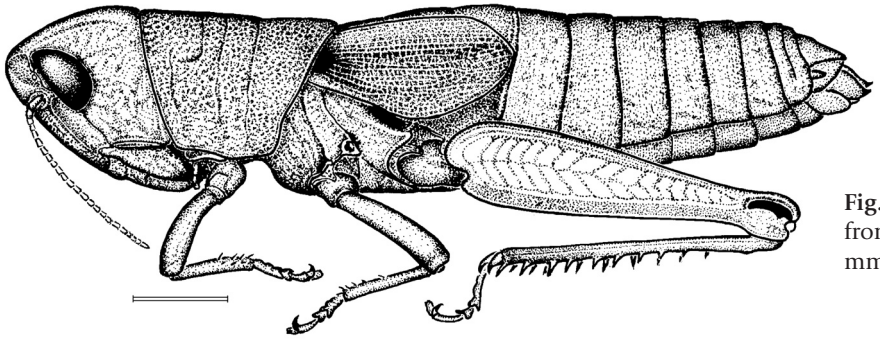

Fig. 15. *Aleuas uruguayensis* n. sp. Habitus. Female from Uruguay, Dept. Rivera, Lunarejo. Length 44.7 mm. Scale line 5 mm.

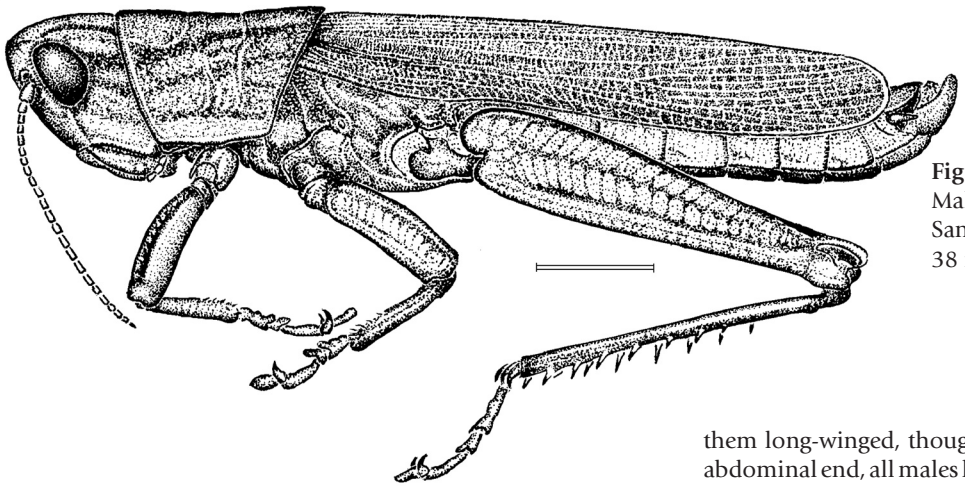

Fig. 16. *Aleuas vitticollis* Stål 1878, habitus. Male from Argentina, Prov. Corrientes Arroyo San Joaquin at Provincial Route 126. Length 38 mm. Scale line 5 mm.

pronotal metazona and tegmina tawny (38); ends of hind tibiae in male reddish, in female dark brown. In both sexes, a distinct black area at limit of metathoracic epimeron-episternum, and in females the dorsal parts of metanotum and first abdominal terga, as seen between the bases of the tegmina, and also a median band on epiproct, are black.

Affinities.—Seems close to *A. curtipennis*, with which it shares the absence of a stridulatory mechanism.

Habitat.— Herbaceous vegetation near a small stream.

Known distribution.— Has been found only in northern Uruguay, in the east of the Department of Rivera (Fig. 37).

Aleuas vitticollis Stål 1878
(= A. brachypterus Bruner 1906)
Figs 16, 17, 18, 19, 20, 21, 22, 23, 26A, 34, 37. Table 8

Etymology.— From Latin *vitta* a band or ribbon and *collum*, the neck, referring to the dark bands on the pronotum.

Taxonomy.— A rather large species, especially the females (Table 8). Head (Figs 20, 21, 22): integument smooth, matte; fastigium in dorsal view short, rather rounded or slightly angulated forwards in a very obtuse angle. Pronotum (Figs 21, 22), integument markedly pitted throughout, in dorsal view the anterior margin very slightly curved, almost straight; posterior one curved or very obtusely angulate; most females short-winged, their tegmina reaching the hind margin of the third abdominal tergite; about 1% of them long-winged, though their tegminae do not quite reach the abdominal end, all males long-winged, tegmina not or barely reaching abdominal end. Stridulatory mechanism: only two subterminal spines on hind tibiae slightly modified; in males and long-winged females, very few (5-7) crossveins adapted for this function. Male abdominal terminalia (Fig. 26) with very acute triangular furculae, placed close together, subtriangular epiproct, cerci simple, acute, slightly outcurved at apices.

Chromatic characters.— Females of this species have two color forms, one pale apple-green (61), the other pale cinnamon (39). All long-winged specimens found are of the green form. All specimens of both forms have fuscous (21) postocular bands continued on the sides of the pronotum and on the tegmina; reaching almost the end of the tegmina in short-winged specimens of the cinnamon form; marked only on their bases and gradually fading away on first half of the tegmina in short and long-winged specimens of the green form; another fuscous band runs along median longitudinal prothoracic carina and continues on dorsum of abdominal segments I and II, visible between bases of tegmina.

While in the green form genae and lateral lobes of the pronotum are apple-green, the latter narrowly fringed with white on their lower margin, in the cinnamon form, genae and lateral lobes of pronotum are marked with two or more tenuous longitudinal fuscous bands, not seen in green specimens; the lower part of the genae in these cinnamon specimens is cream-color (54); of this same color are wide bands along lower parts of lateral lobes, that continue on mesothoracic episterna. Fore and middle legs are of the prevalent body color; in the cinnamon form they are brownish, including the tarsi: hind femora are colored like the body, hind tibiae in all specimens have black bases, the rest of the tibiae and the tarsi are purple (101). No different color forms found in the males. Vertex of head mostly fuscous (21); yellow (157) bands begin on upper part of eyes and reach occiput above the fuscous post-ocular bands.

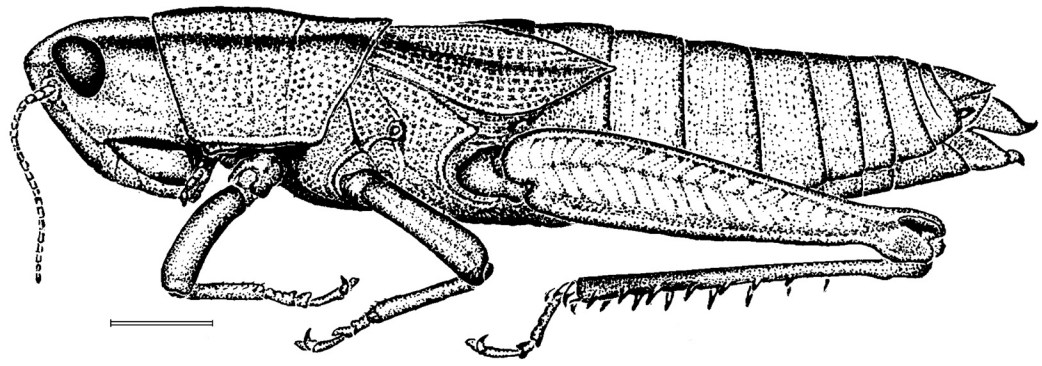

Fig. 17. *Aleuas vitticollis* Stål 1878, habitus. Brachypterous female from Uruguay, Dept. Flores, Arroyo Pinto. Length 50.6 mm. Scale line 5 mm.

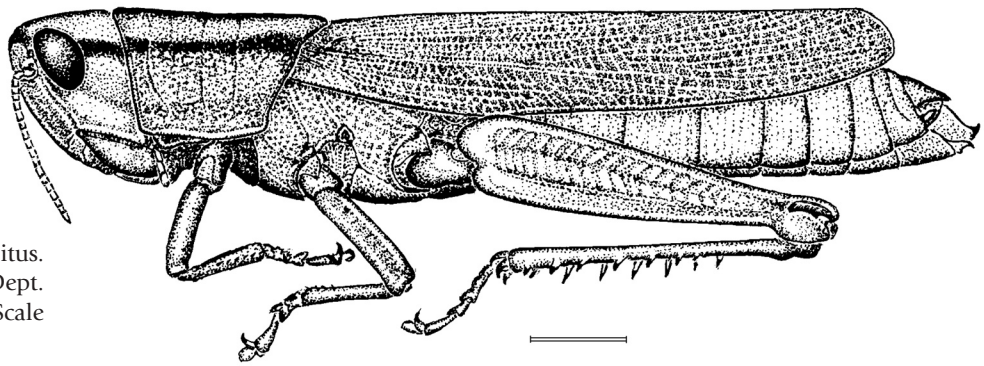

Fig. 18. *Aleuas vitticollis* Stål 1878, habitus. Macropterous female from Uruguay, Dept. Rivera, Tranqueras. Length 52.2 mm. Scale line 5 mm.

Pronotal disk and upper (vannal) areas of tegmina light apple-green (61), rest of tegmina of a very pale hue of this color; lateral lobes of pronotum with same longitudinal fuscous bands as described for the female, a cream-color (54) wide band begins on lower parts of cephalic genae, covers the lower part of pronotal lateral lobes and continues on mesosterna and mesepimera; on pronotal lobes, above the mentioned cream-color band is a tenuous citrine (51) band, and between this and the upper piceous band the surfaces are mostly sulphur-yellow (57), with some irregular tenuous spots of citrine or cinnamon color. All legs buff-yellow (53), the fore and middle ones with indistinct cinnamon-rufous bands on upper parts of femora; hind tibiae buff-yellow (53) on external sides; interior and upper surfaces, and tarsi mostly scarlet; tibial spines white with black apices.

As indicated in the second part of this work, Stål's type of this species is a long-winged female, while in Bruner's type series according to his description, there is a short-winged one of the same species, hence the specific name (*brachypterus*) given to it by Bruner.

Known distribution.— Brasil: Mato Grosso, Mato Grosso do Sul (probably from this state south to Rio Grande do Sul). Paraguay (east). Uruguay: whole country. Argentina: from Formosa and Misiones south to Buenos Aires and La Pampa (Fig. 37).

Affinities.— Closer to *A. paranensis* than to any other species.

Habitat.— The habitat and ethology of this species have been described by Carbonell (1956). It has been found only in a particular habitat, formed by dense associations of tall grasses (about 1 m high) in low and humid places near water. The species was rare in collections, until the discovery that it is active only at night; in the daytime the insects are hidden at the base of the dense grass formations. At night the insects climb to the upper parts of the vegetation to feed and to mate. In the same places where it was very difficult to find one specimen in the daytime, they could be collected by the hundred at night. The grasses on which this species live are *Panicum grumosum* and *Paspalum exaltatum*. Another grass species that forms dense associations in low places is *Cortaderia selloana*, but *A. vitticollis* was not found in this habitat. *Aleuas albinae* shares this particular habitat with *A. vitticollis*, but is considerably scarcer. Both species are, in Uruguay at least, late developing ones; the first adults are usually found late in January or in the first days of February.

It is worth mentioning here that a species of the related genus *Zygoclystron* (*Z. trachystictum* Rehn 1905) also has nocturnal habits. It does not live on grasses but in patches of the composite plant, *Vernonia nodiflora*. Like *A. vitticollis*, it stays hidden during the day, and becomes active at night, when it climbs the *Vernonia* plants and can be easily found (Carbonell 1969).

Discussion on the taxonomy of the genus and its species

As already mentioned in the introduction of this work, the genus *Aleuas* is very closely related to *Zygoclistron*. The species of these genera look different, and cannot be confused. However, when trying to define their differences, one finds they are not so great as they seem at first sight; they look different mainly because of their different colors and color patterns. The most important differences are given in the following table; some are shown in Fig. 1.

The relationships among the species of *Aleuas* are difficult to interpret. *A. albinae* and *A. lineatus* are so much alike, that the first seems to be a larger version of the second. The most important morphological difference lies in the abdominal terminalia of the

Aleuas	*Zygoclistron*
Frontal carinae	
Converging from epistoma to fastigium, where they may come together	Converging but uniting in a single one above insertion of antennae.
Median dorsal carina of pronotum	
Absent or represented only by a very low ridge	Well-marked, ridge-like, especially in females
Tegument of pronotum	
Smooth or impressopunctate	Rugose to tuberculate
Tegmina and wings, males	
Reaching or surpassing middle or end of abdomen	Always reaching or surpassing end of abdomen
Tegmina and wings, females	
Usually reduced. Rarely reaching or surpassing end of abdomen	Always reaching or surpassing end of abdomen
Coloration	
Very frequently green or buff to cinnamon	All known species in shades of brown to umber

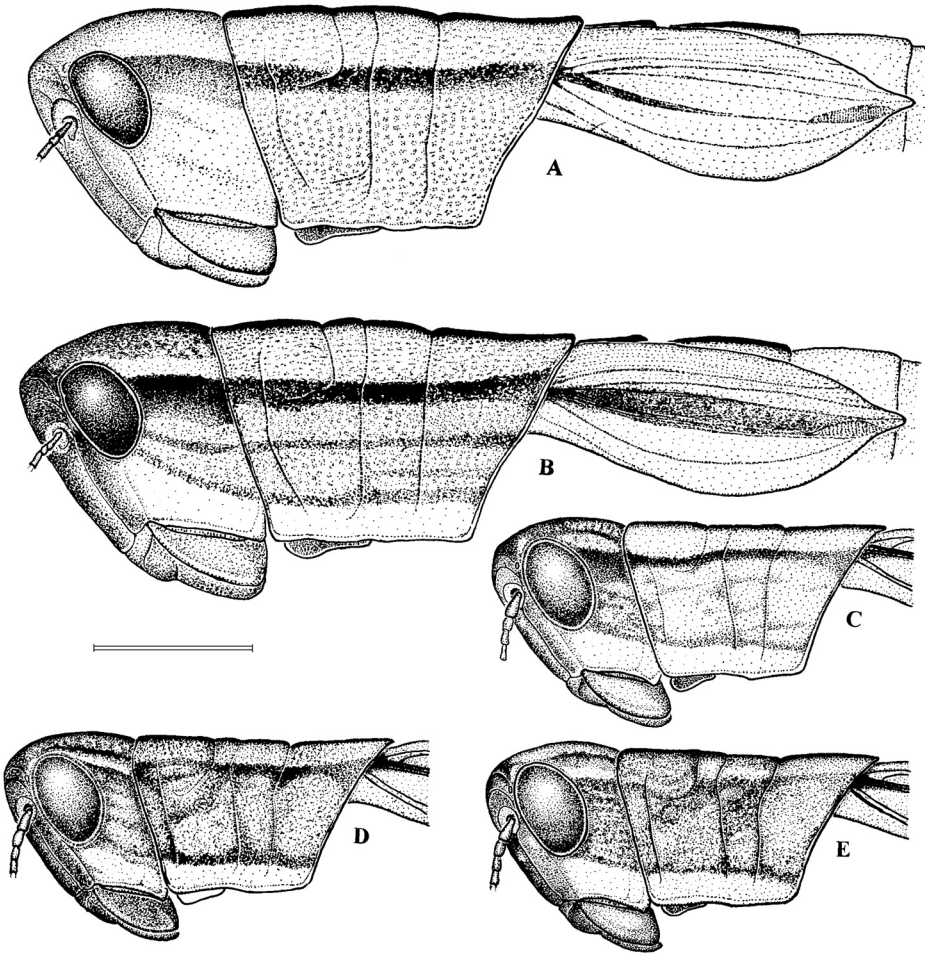

Fig. 19. *Aleuas vitticollis* Stål 1878. Variability of pattern on head and pronotum in males and females. A, female, green form, from Uruguay, Dept. Flores, Arroyo Pinto. B, female, brown form, from Argentina, Prov. Corrientes, Arroyo San Joaquin; C, male from Argentina, Chaco, Arroyo Palometa; D, male from Uruguay, Rivera, Tranqueras; E, male from Paraguay, Paraguarí, Sapucay. Scale line 5 mm.

males, (Figs 25, A, B) but even these are small. On the other hand, these male terminalia are different from those of the rest of the species of the genus, and similar to those of the genus *Zygoclistron*. The females, except for their different sizes, are so much alike that the most visible difference lies in the colors of their hind tibiae. *A. gracilis*, *A. paranensis* and *A. vitticollis* show clear affinities. *A. paraguayensis* seems rather isolated; its male terminalia have an epiproct like that in *A. albinae* and *A. lineatus*, but the cerci are different, shaped as in the rest of the species. Its chromatic characters are also peculiar. *A. curtipennis* and *A. uruguayensis* are different from the rest of the species of the genus, and the males of both species lack the stridulatory mechanism present in all the others.

Acknowledgements

Preliminary work related to this paper was carried on in the museums where the types of the studied species are kept. The last stage was done in the Universidad de la República, Uruguay, under the auspices of the "Programa para el Desarrollo de las Ciencias básicas" (PEDECIBA). I gratefully acknowledge the help of the curators and collection managers of the museums mentioned in this work for their assistance during my visits and the loan of specimens. Among them particularly to Dr. Daniel Otte of the Academy of Natural Sciences of Philadelphia, and Dr. Miguel A. Monné, of the Museu Nacional of Rio de Janeiro. Dr. Sonia Turk of the Fundación Miguel Lillo in Tucumán gave me data on the distribution of some species in that province. My thanks too, to the reviewers of the text. And, as always, to my wife Albina and other members of my family for their permanent help on the domestic front.

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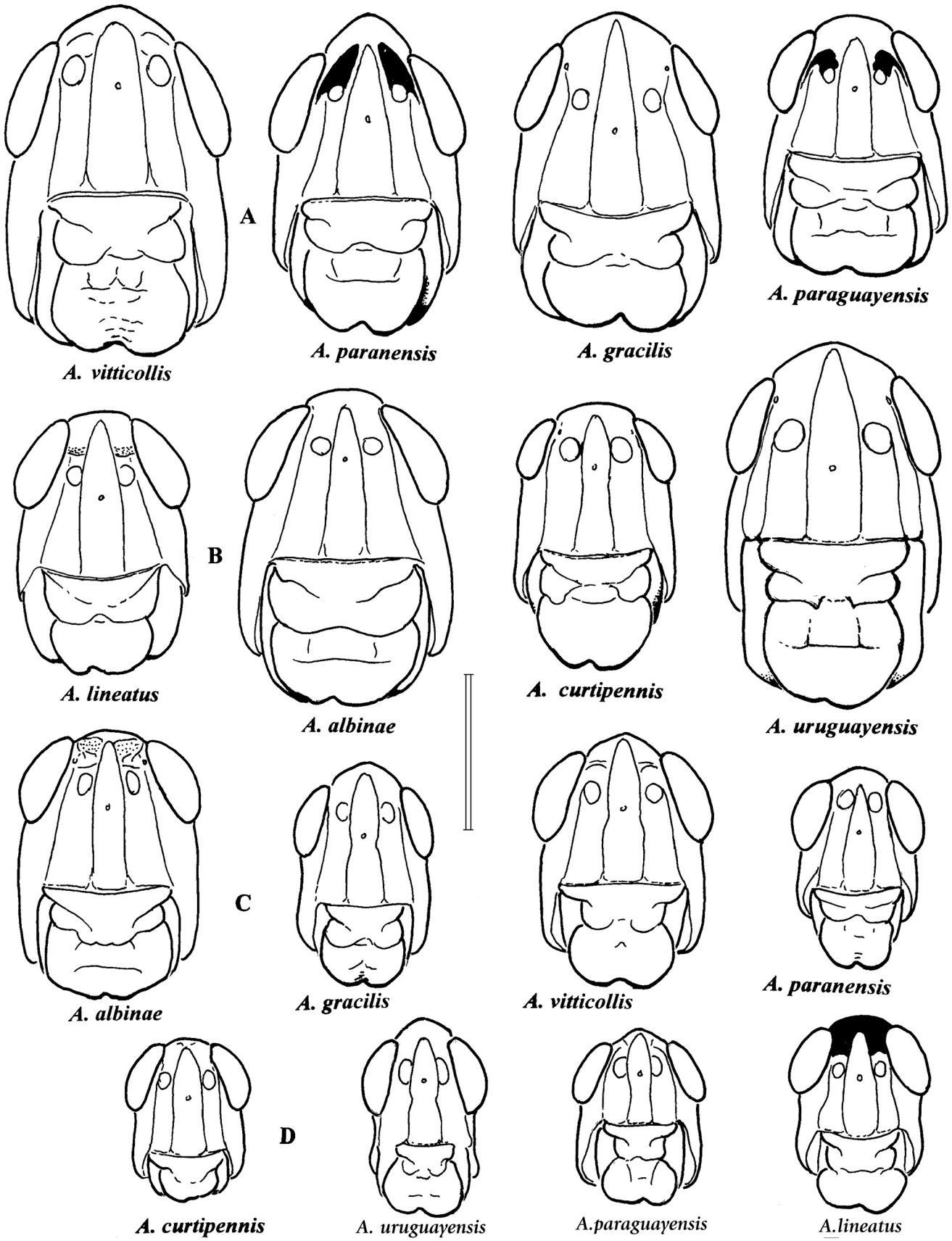

Fig. 20. Genus *Aleuas*, frontal views of head; species as indicated. Rows A, B, females; C, D, males. Scale line 5 mm.

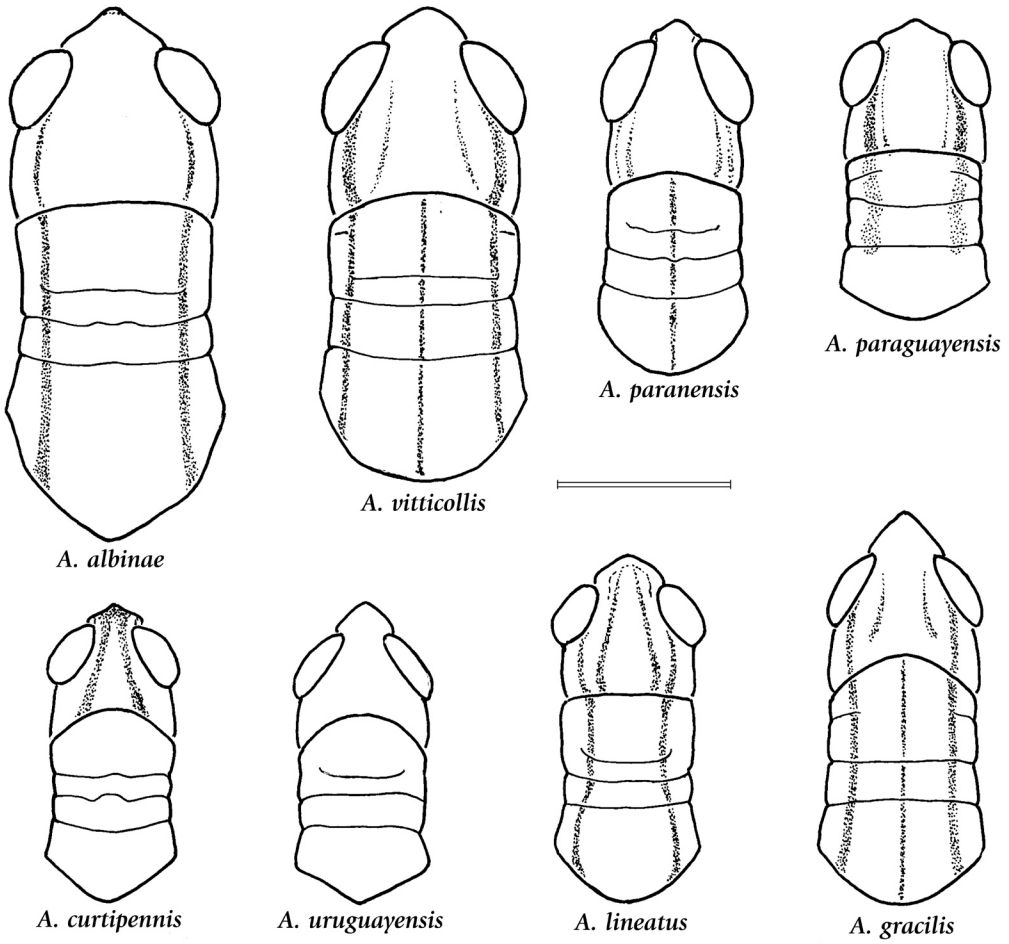

Fig. 21. Genus *Aleuas*, dorsal views of head + pronotum, males, species as indicated. Scale line 5 mm.

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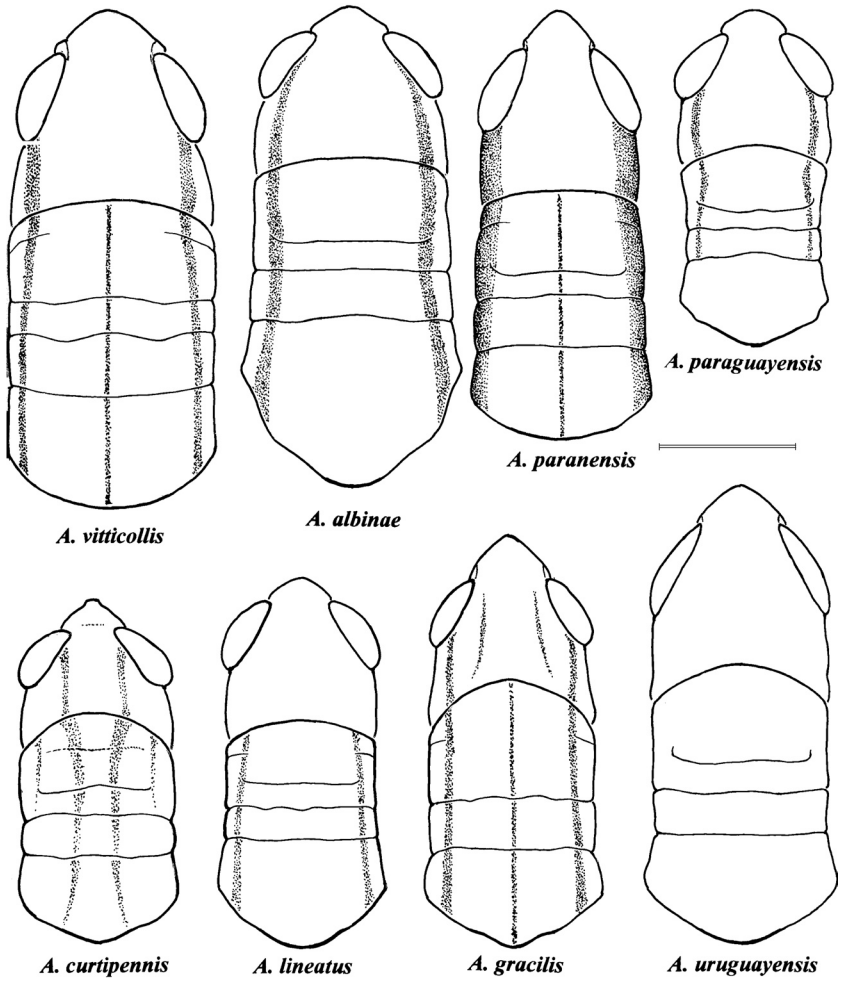

Fig. 22. Genus *Aleuas*, dorsal views of head and pronotum, females, species as indicated. Scale line 5 mm.

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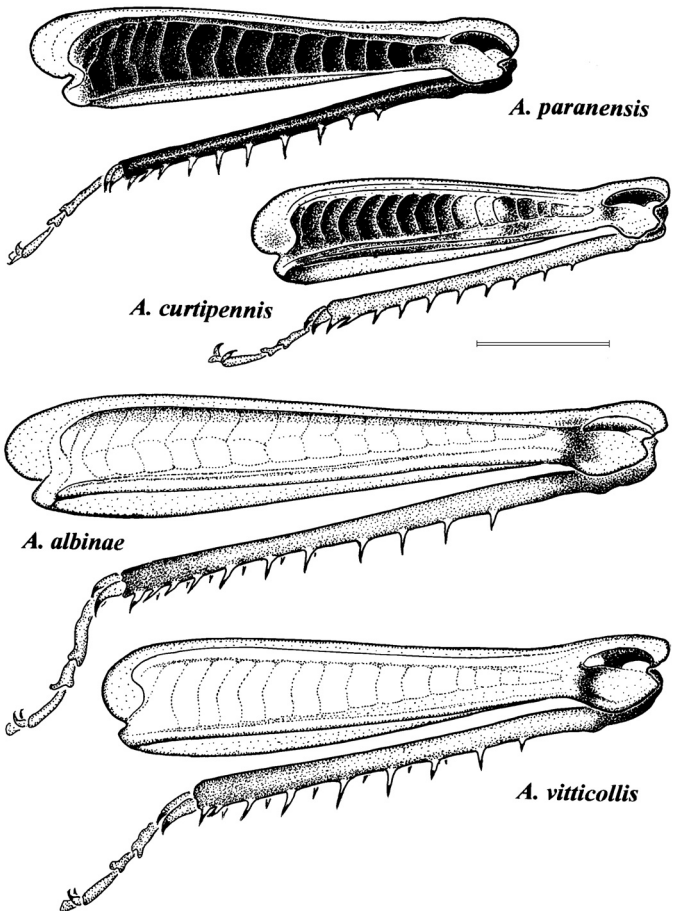

Fig. 23. Genus *Aleuas*, internal view of hind legs, females, species as indicated. Scale line 5 mm.

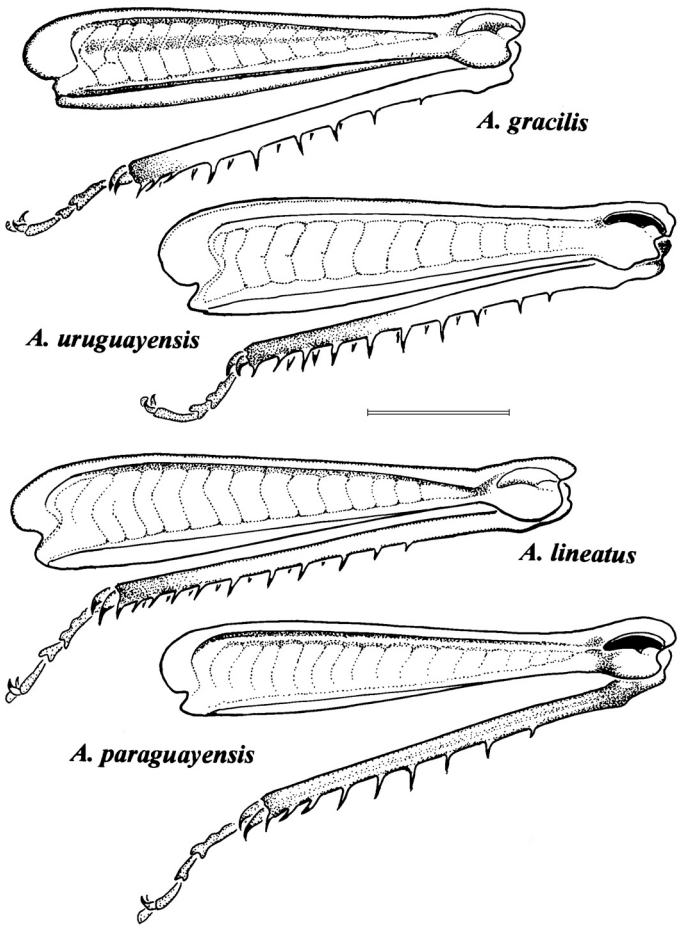

Fig. 24. Genus *Aleuas*, internal view of hind legs, females, species as indicated. Scale line 5 mm.

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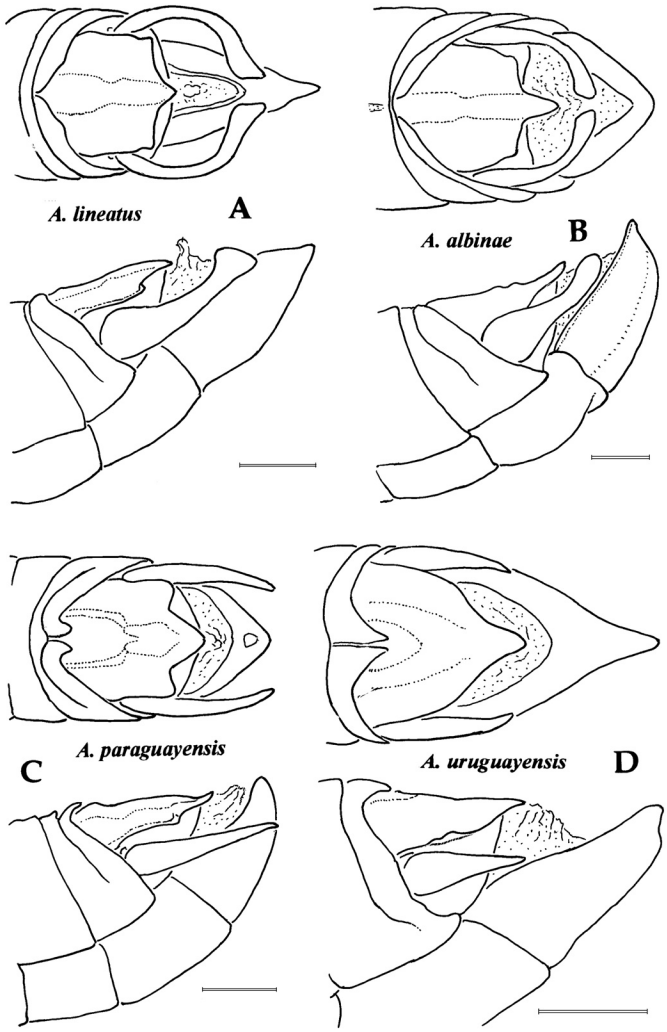

Fig. 25. Genus *Aleuas*, end of male abdomen, dorsal and lateral views, species as indicated. Scale lines 1 mm.

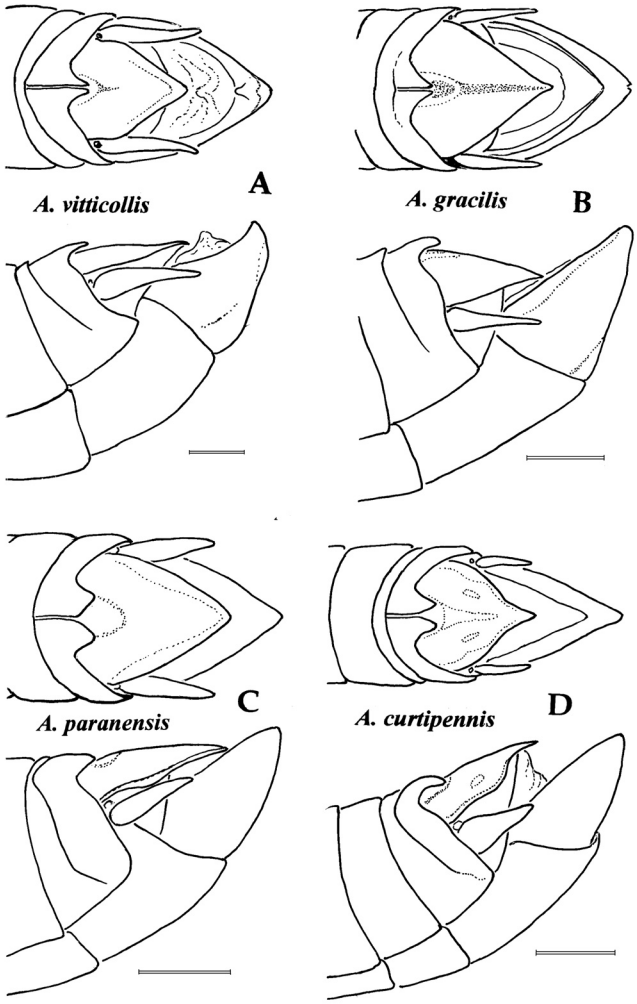

Fig. 26. Genus *Aleuas*, end of male abdomen, dorsal and lateral views, species as indicated. Scale lines 1 mm.

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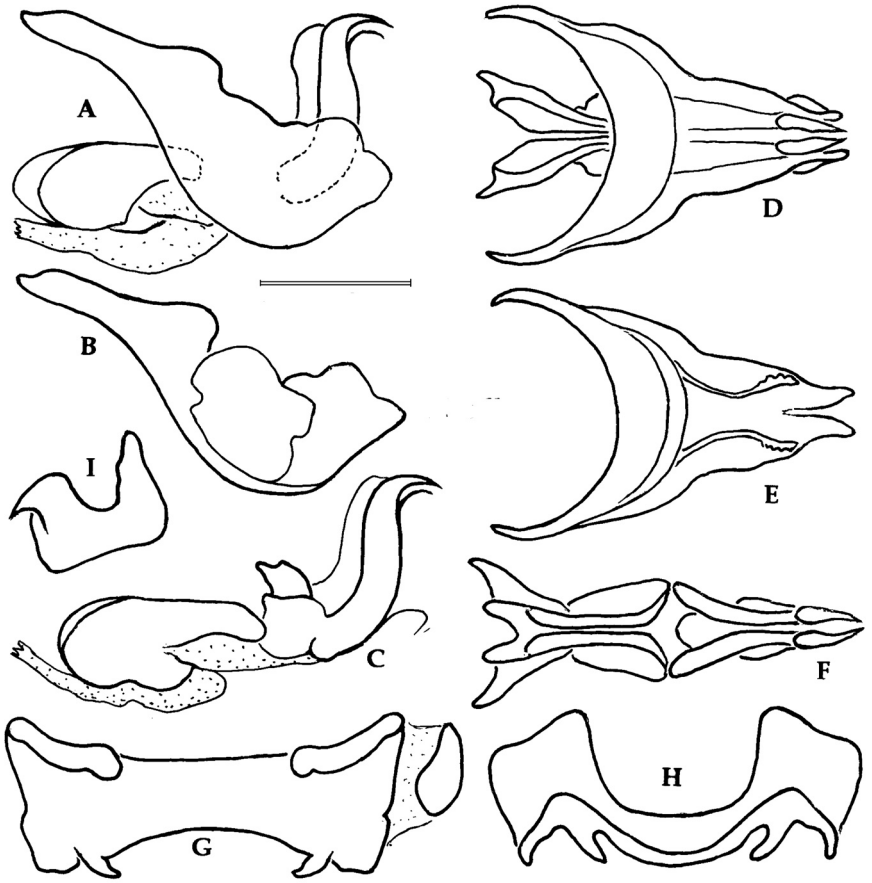

Fig. 27. *Aleuas albinae* n. sp. Phallic complex. Scale line 1 mm. A, lateral view, without epiphallus; B, cingulum, lateral; C endophallus, lateral; D, dorsal view, without epiphallus; E, cingulum, dorsal; F, endophallus, dorsal; G, epiphallus, dorsal; H, same, frontal; I, same, lateral.

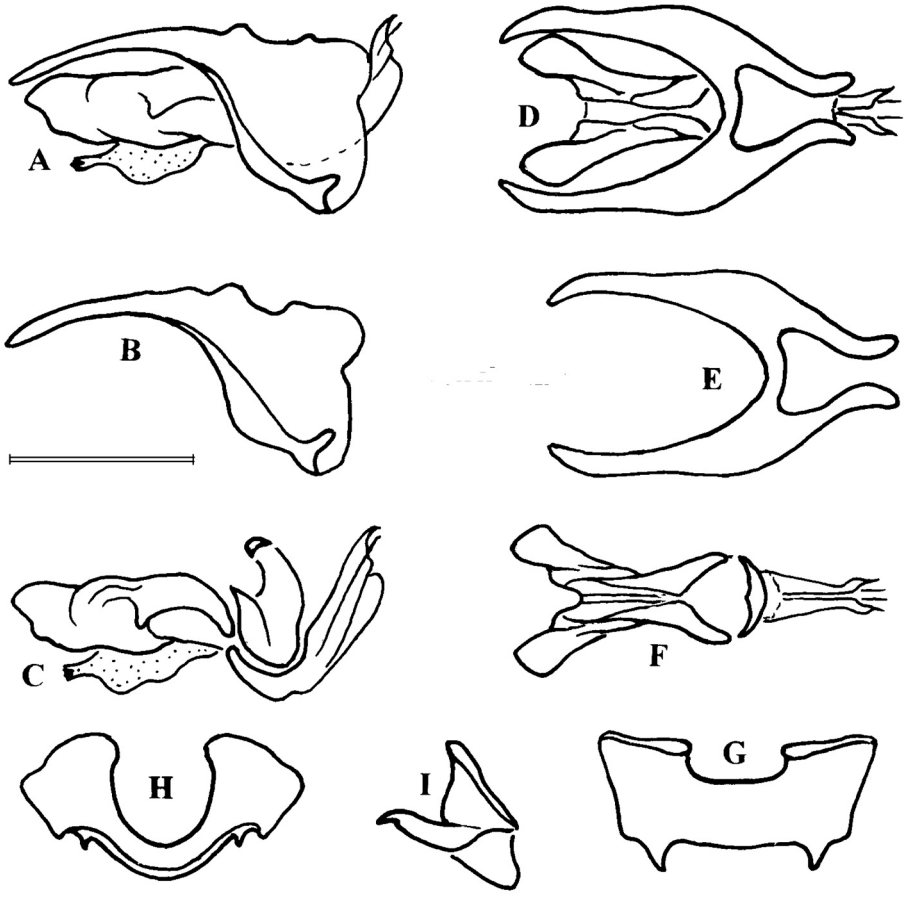

Fig. 28. *Aleuas curtipennis* Bruner. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

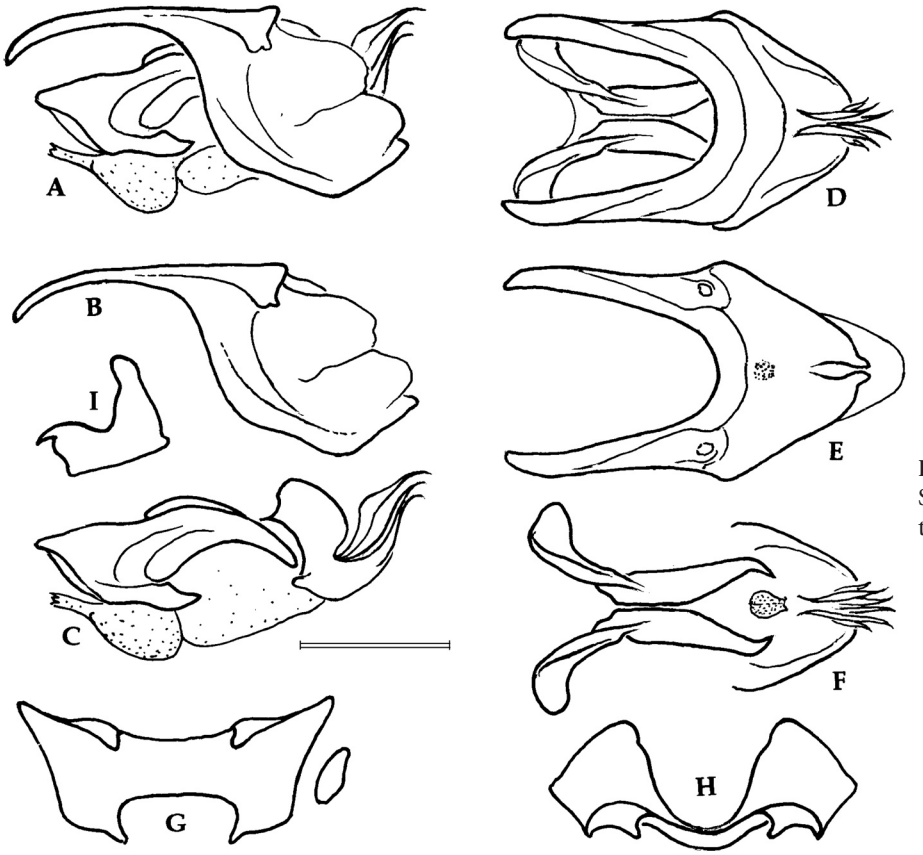

Fig. 29. *Aleuas gracilis* Stål. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

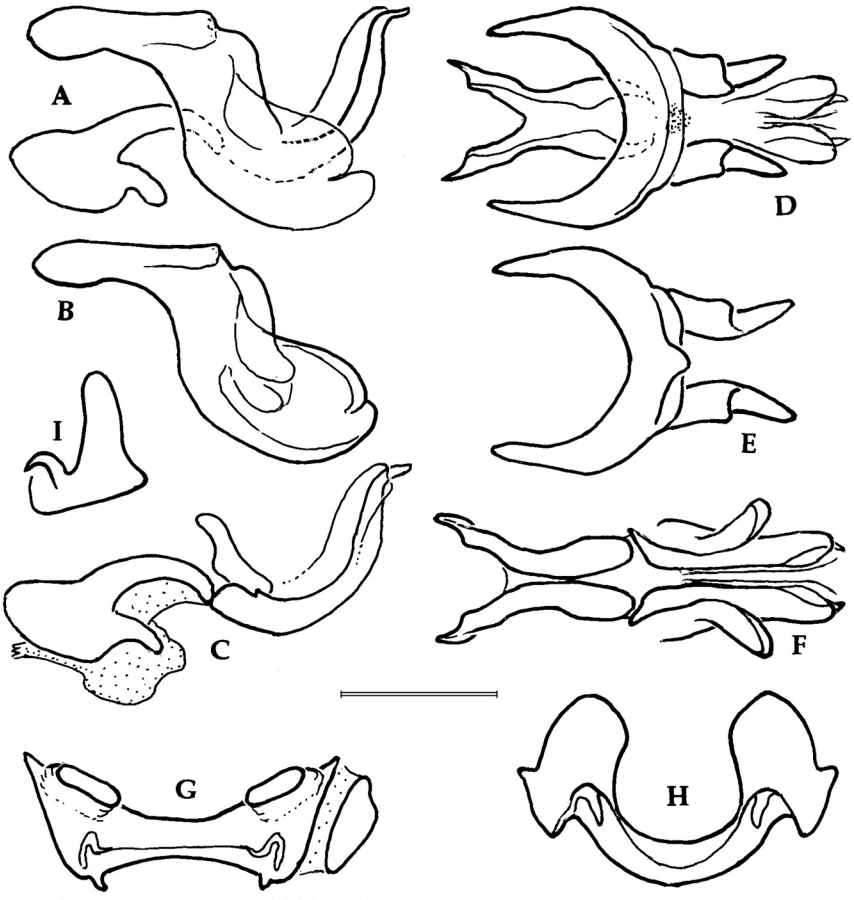

Fig. 30. *Aleuas lineatus* Stål. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

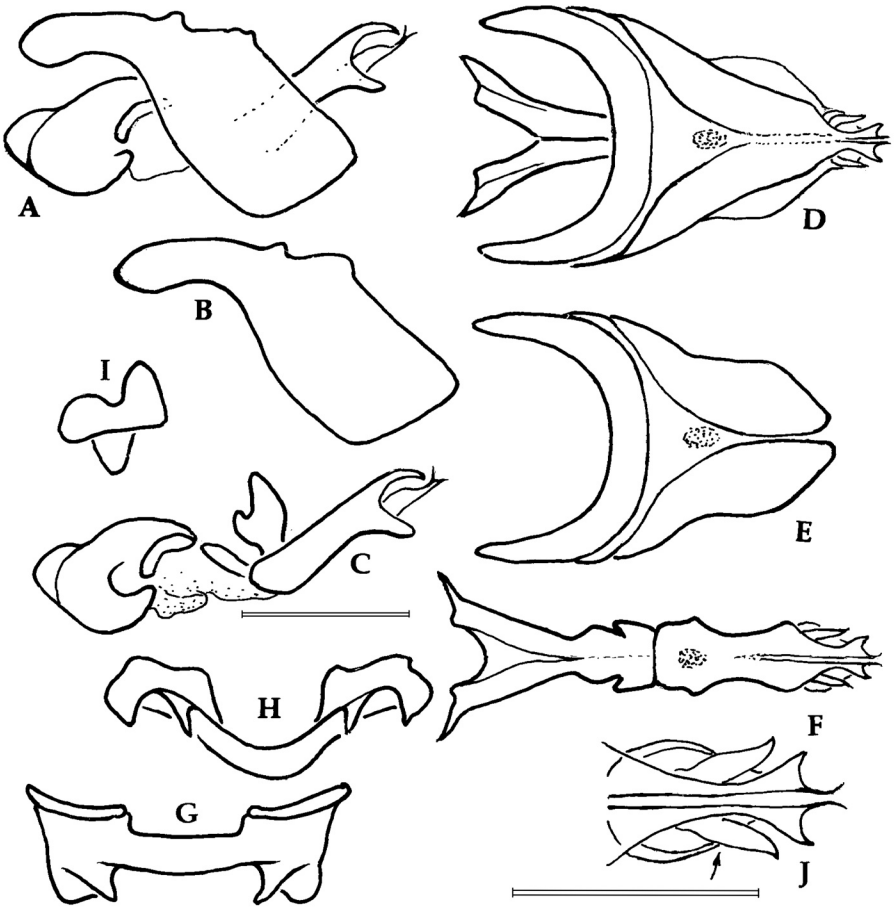

Fig. 31. *Aleuas paraguayensis* n. sp. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

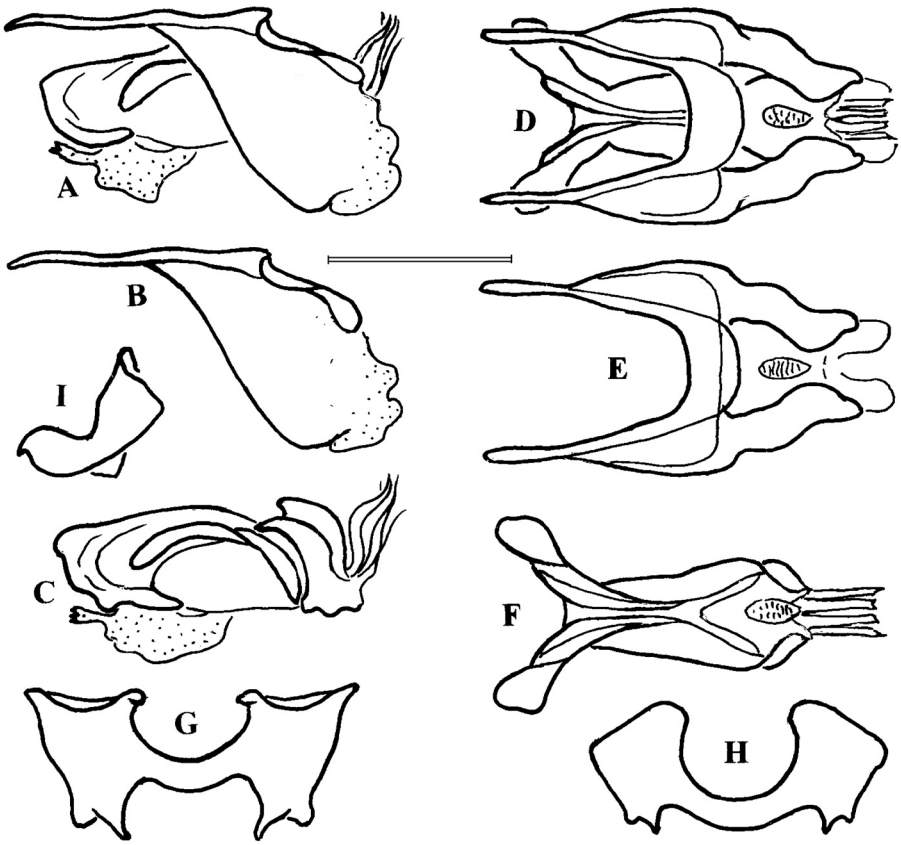

Fig. 32. *Aleuas paranensis* n. sp. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

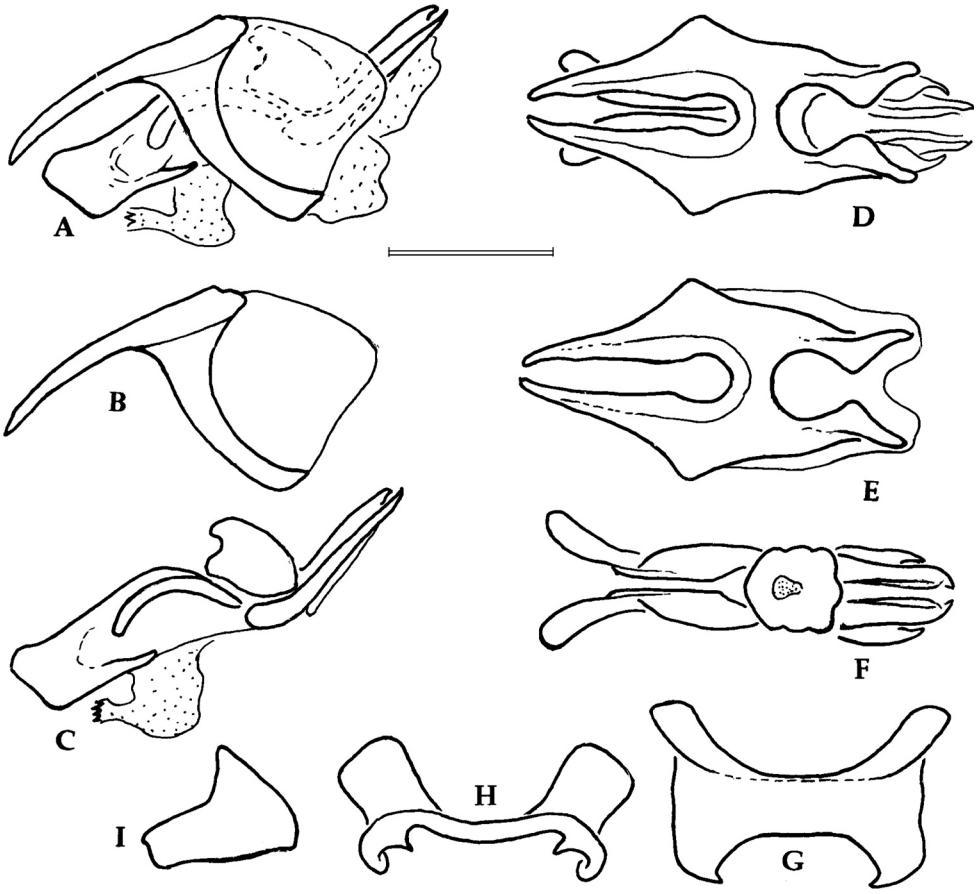

Fig. 33. *Aleuas uruguayensis* n. sp. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

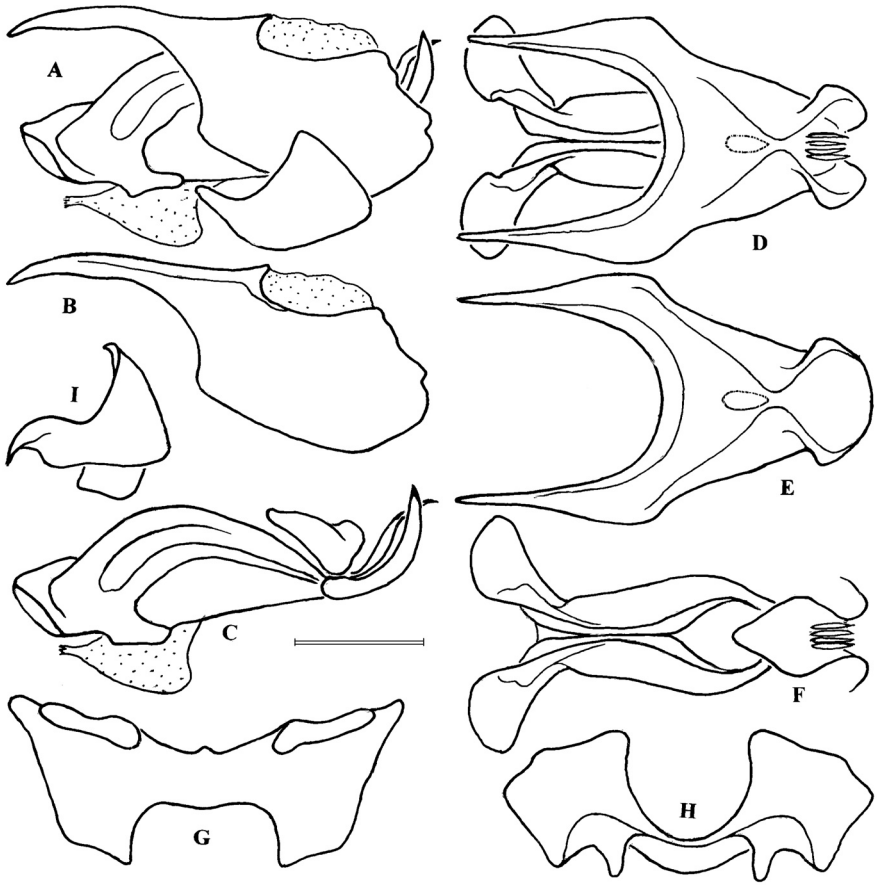

Fig. 34. *Aleuas vitticollis* Stål. Phallic complex. Scale line 1 mm. Letters A to I, see caption to Fig. 27.

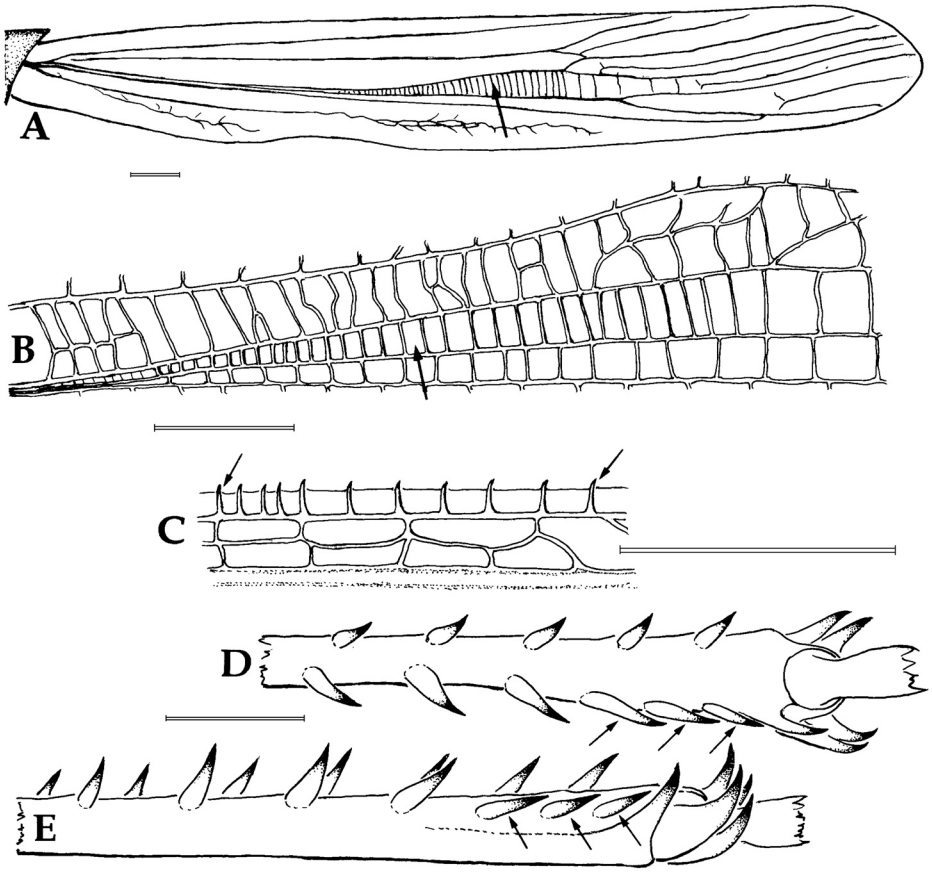

Fig. 35. Stridulatory mechanism in *Aleuas*. A, Left tegmen, arrow indicates area of crossveins which are part of the stridulatory mechanism; B, region of the tegmen where these crossveins are located, arrow indicates the area; C, superior view of this area on right tegmen, arrows indicate the crossveins projecting from tegmen surface; D, apical part of right hind tibia, dorsal; E, same, lateral: arrows indicate the three tibial spines involved in stridulation. The species is *A. paraguayensis*. Scale lines 1 mm.

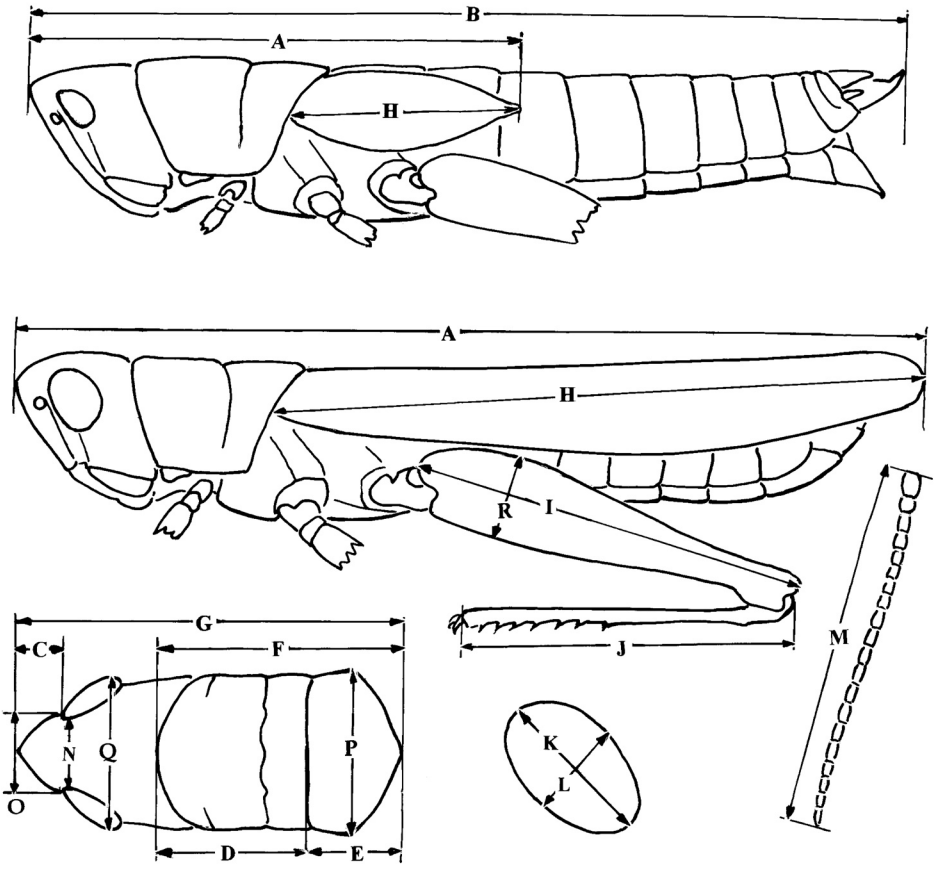

Fig. 36. Measurements taken, as registered in Tables 1 to 8.

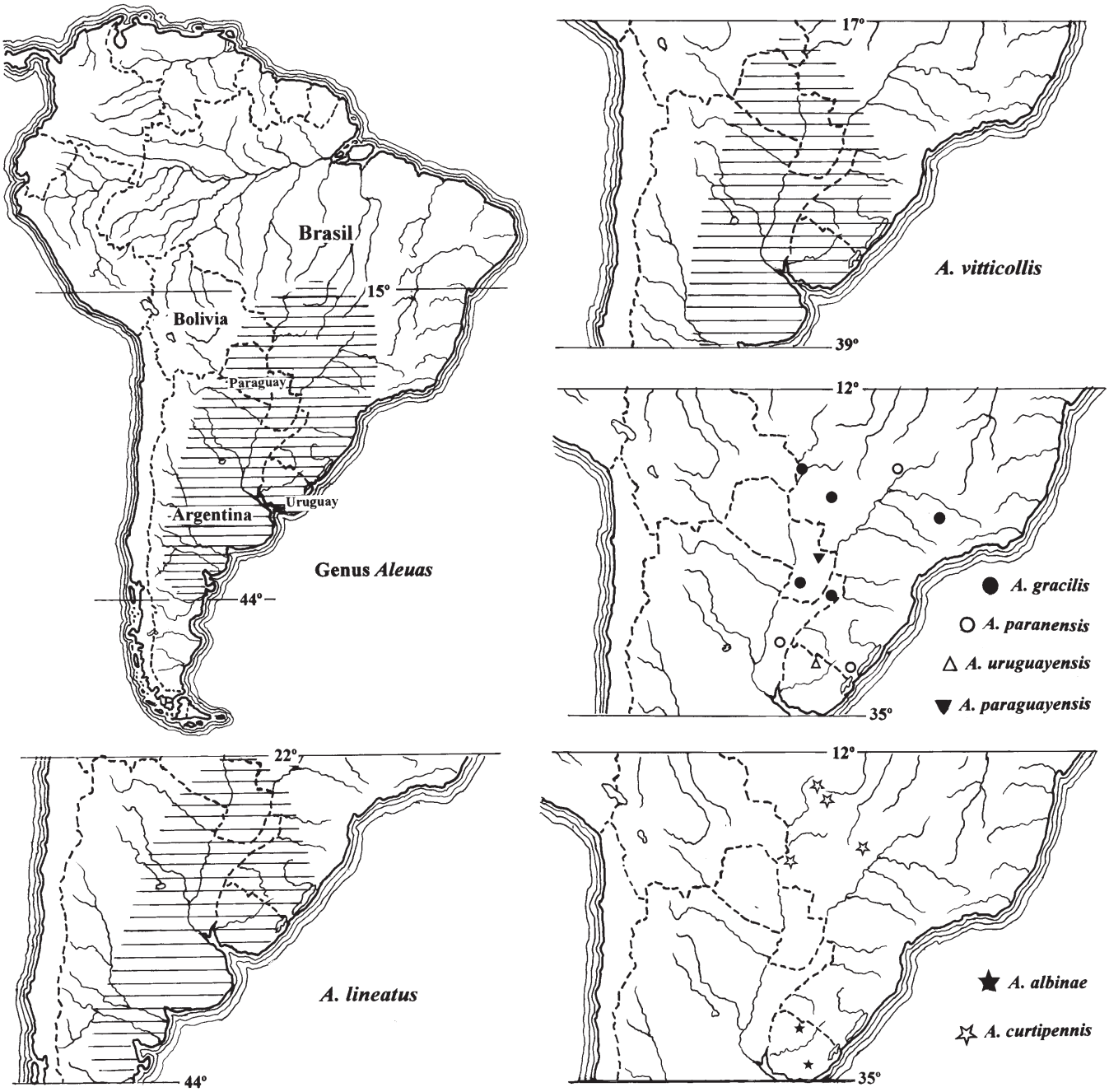

Fig. 37. Genus *Aleuas* Stål. Geographical distribution of genus and species.

Appendix I.

The genus *Aleuas* and its species: taxonomy, synonymy, localities of collection, repositories, references

Repositories of the specimens are designated in the text as follows: ANN ARBOR / Museum of Zoology of the University of Michigan, USA. LA PLATA / Facultad de Ciencias Naturales y Museo, La Plata, Argentina. MONTEVIDEO / Facultad de Ciencias, Universidad de la República, Uruguay. PARIS / Museum National d'Histoire Naturelle, Paris, France. PHILADELPHIA / Academy of Natural Sciences of Philadelphia, USA. RIO DE JANEIRO / Museu Nacional, Rio de Janeiro, Brasil. VIENNA / Naturhistorisches Museum Wien, Vienna, Austria.

Genus ***ALEUAS*** Stål 1878

Typus generis: *Aleuas vitticollis* Stål 1878, as selected by Rehn 1907

Stål 1878: 25 (in key of genera), 69. Brunner von Wattenwyl 1893 (in key of genera). Giglio-Tos 1898: 47 (in key). Rehn 1905: 39 (relationship with *Zygoclistron* Rehn 1905). 1907: 184 (type selection). Bruner 1906: 667 (key to species), 1911: 100 (key to species). Liebermann 1939: 83. Dirsh 1956:256, 1961: 397. Ronderos 1964: 55, 96 (phallic complex). Carbonell 1956: 49-55 (habitat, ecology), 1969: 575 (comparison with *Zygoclistron* Rehn). Descamps 1976: 203 (ecol. of spp.). Ferreira, Mesa & Carbonell 1979: 53-54 (relationship with *Zygoclistron*).

Species of the genus *Aleuas* (in alphabetical order)

***Aleuas albinae* n.sp.**

Carbonell 1956: 50 (as *Aleuas* sp.). Mesa *et al*. 1982 (as n. sp. Nº 1).

Holotype.— A male labeled "Uruguay, Florida, Casupá, 9 Mar. 1961, C.S. Carbonell and A. Mesa", in MONTEVIDEO.

Paratypes.— Same data as holotype, 5 males and 14 females. "Uruguay, Rivera, Sierra de la Aurora, 14 Mar. 1961, 2 males, 1 female."Uruguay, Rivera, Tranqueras, Bañado de Zanja Honda, 14 Mar. 1961, C.S.Carbonell", 2 females. "Uruguay, Paysandú, Puerto Pepeají, Carbonell, Morey, Monné", 2 females. Distributed in MONTEVIDEO, LA PLATA, RIO DE JANEIRO, ANN ARBOR, PARIS, PHILADELPHIA.

Aleuas curtipennis Bruner 1911

Bruner 1911: 101 (descr.). Liebermann 1955: 341 (distr.). Otte 1978: 28 (location of type).

Hololectotype.— A male in PHILADELPHIA , from Brasil, Mato Grosso, Chapada dos Guimaraes, labeled "*Aleuas curtipennis*, Type, Bruner" "Chapada, April, H.H. Smith" marked as lectotype by J. Liebermann, here selected as such. Paratype (marked as allotype by Liebermann) a female from same locality as above male, also marked as "type" by Bruner, "Chapada, May, H.H. Smith".

Other specimens examined.— 2 males and 2 females from Brasil, Mato Grosso, Chapada dos Guimaraes, Mar 1979, O. Roppa & B. Silva: 1 male from Brasil, Mato Grosso, BR 364, km. 349, Feb 1978, B. Silva: 1 male, 2 females from Brasil, Goias, Mineiros, Feb 1979, O. Roppa & B. Silva. In MONTEVIDEO and RIO DE JANEIRO.

Aleuas gracilis Stål 1878

Stål 1878: 70 (descr.). Rehn 1905: 39 (distr.), 1907: 184 (distr.), 1915: 285 (distr). Bruner 1906: 668 (distr.), 1911: 101(distr.). Kirby 1910: 427. Sjöstedt 1933: 63 (type, illustr.). Liebermann 1939: 195 (distr.), 1955: 341 (distr.). Dirsh 1956: 279, pl. 50, Fig. 9 (epiphallus). Ferreira 1975: 427 (caryology, illustr. chromosomes), 1978: 36-39 (caryology). Mesa *et al*. 1982: 520 (caryology).

Holotype.— A male in VIENNA, labeled "*A. gracilis* Stål" "1270 Brasil" "Coll. Br. v. W. Brasilien" "76-1270". This specimen, (like all the other types of Stål in the Vienna collection) was not marked as type. In 1966 I marked it as holotype of the species.

Other specimens examined.— 1 male, 1 female, "Paraguay, Sapucay, 11 Mar 1905 A. Foster" in PHILADELPHIA. 3 males, Brasil, Mato Grosso do Sul, Corguinho, 2 Feb 1969, H. Ferreira" in MONTEVIDEO.

This species seems to be rather uncommon. It has been found so far in: Argentina: Misiones. Brasil: Mato Grosso do Sul. Paraguay: eastern part.

Aleuas lineatus Stål 1878

Stål 1878: 70 (descr.). Bruner 1900: 66 (distr. illustr.), 1906: 668 (distr. illustr.). Kirby 1910: 427. Rehn 1913: 338 (distr). Liebermann 1928: 153 (distr.), 1939: 195 (distr.), 1941a: 33 (distr.), 1948: 88 (distr.), 1949a: 144 (distr.), 1949b: 5 (distr.), 1950: 10 (distr.), 1951a: 26 (distr.), 1951b: 46 (distr.), 1958a: 13 (distr.), 1958b: 39 (distr), 1960: 38 (distr.) 1963: 7 (distr.), 1967: 109 (distr.), 1968: 48 (distr), 1972a: 7 (distr.) 1972b: 194 (distr. econ.). Sjöstedt 1933: 36 pl.7, Fig. 9 (type, illustr.). Liebermann-Piran 1941: 11 (distr.). Liebermann-Ruffinelli 1946: 13 (distr.). Baucke 1954: 2 (distr., illustr.). Ruffinelli-Carbonell 1954: 39 (distr.). Carbonell 1956: 49-53 (habitat, ecol.). Mesa 1956: 36 (caryology). Silveira *et al*. 1958: 386 (ecol. econ.). Ronderos 1959: 18 (in key), 1964: 64 (redescr., phallic complex). Greathead 1963: 495 (insect enemies). Ferreira 1975: 432 (caryology). Campodonico-Santoro 1971: 66,68, Fig. 17 (eggs). Gangwere-Ronderos 1975: 178 (food selection). Ferreira 1975: 432 (caryol.) Santoro 1976: 2 (antennae, ontogeny). Luna *et al*. 1981: 245 (pathol.). Ronderos *et al*. 1981: 74 (biol. ecol.). Sanchez 1981: 228 (biol. ecol.). Mesa *et al*. 1982: 520 (caryology). COPR 1982: 180 (distr, ecol. econ. Illustr.). Lange 1992: 65-74 (pathol.), 1996: 108 (pathol.). Sanchez-De Wysiecki 1993: 31-39 (distr. ecol.). Bentos Pereira-Lorier 1995: 191, 195, Fig. 40 (anat. stomodeum) Cigliano *et al*. 1995: 41 (ecol.). Lange-De Wysiecki 1996: 24-39 (pathol.). Costa-Jantsch 1999: 145 (distr.). De Wysiecki *et al*. 2000: 212 (ethol. distr). Cigliano *et al*. 2000: 88 (ethol.). Lorier *et al*. 2002: 71 (ethol. stridulation, anat.). Cigliano *et al*. 2002: 215 (ecol.).

Type-series.— A male and a female in STOCKHOLM, labeled as this species and also "Buen. Ayr." "Berg" [Buenos Aires, Argentina] of which the male may be considered as the holotype. Paratypes: the above-mentioned female, and 1 male with the same data as the holotype, and 1 male labeled "Banda Oriental, C.Berg", (Banda Oriental is an old name for Uruguay). There is also another female labeled "Buen. Ayr." "Kinb." that is probably also a paratype. This last female must have been collected by Kinberg, the physician on board the frigate "Eugenie", who collected the insects during its trip.

These paratypes are conspecific with the specimens mentioned in the first place but, except for the female mentioned, do not have identification labels.

This is the most common and widespread species of the genus. It would be of little use and a waste of space to give full information of the specimens examined. It has been found in Argentina: Provinces of Santa Fe, Buenos Aires, La Pampa, Formosa, Chaco, Tucumán, Corrientes, San Juan, Entre Rios, Mendoza, Rio Negro, Chubut. Brasil: Rio Grande do Sul. Paraguay: eastern part. Uruguay: whole country.

***Aleuas paraguayensis* n. sp**.
Mesa *et al.* 1982 (as n. sp. Nº 2).

Holotype.— A male from Paraguay, Dpto. Caaguazú. 40 km N. of town of Caaguazú, near Ihú. 13 Mar 1965, Carbonell, Mesa & Monné, in MONTEVIDEO. Paratypes: 3 males and 7 females, same data as holotype. In MONTEVIDEO; LA PLATA; RIO DE JANEIRO; PARIS; PHILADELPHIA.

Aleuas paranensis n. sp.
Mesa *et al.* 1982 (as n. sp. Nº 3).

Holotype.— A male from Argentina: Prov. Corrientes, Ruta Provincial 126, Arroyo San Joaquín, 20 Mar 1965, Carbonell, Mesa & Monné, in LA PLATA. Paratypes: 3 males and 5 females, same data as holotype: 1 female Argentina, Corrientes, 30 km N. of Paso de los Libres, 20 Mar 1965, Carbonell, Mesa & Monné: From Brasil: Rio Grande do Sul, Pelotas; 1 female 21 Apr 1967, G. Toques; 1 female 13 Mar 1961, B. Silva; 2 males 15 May 1960, C. Biezanko, 1 female 7 May 1962, C. Biezanko; 1 female 7 Apr. 1966, Pierubum; 1 female 3 Apr 1967, Germano. In MONTEVIDEO, RIO DE JANEIRO, PARIS, PHILADELPHIA

Aleuas uruguayensis n. sp.

Holotype.— A male from Uruguay, Dpto. Rivera, Lunarejo, Cañada Las Yeguas, 30.X. 1995, M.E. Martínez. Paratypes: 1 male, 1 female, same data as holotype, All in MONTEVIDEO.

Aleuas vitticollis Stål 1878
(=*Aleuas brachypterus* Bruner 1906)

Stål 1878: 69 (descr.). Rehn 1905: 39 (distr.), 1907: 184 (design. as *typus generis*) 1909: 144 (distr.), 1913: 338 (distr.). Bruner 1906: 667 (distr.), 1911: 101 (distr.), 1919: 74 (distr.). Kirby 1910: 427. Sjöstedt 1933: 36, pl.17, Fig. 8 (type, illustr.). Liebermann 1939: 195 (distr.), 1955: 341 (distr.). Liebermann-Piran 1941: 11 (distr.). Liebermann-Ruffinelli 1946: 13 (distr.). Ronderos 1964: 67 (phallic complex). Mesa *et al*. 1982: 520 (caryology). Carbonell 1956: 50 (habitat, ethol.). Ferreira 1975: 432 (caryol.). Gangwere-Ronderos 1975: 178 (food selection). Sanchez 1981: 228 (bionom. ecol.). Ronderos *et al*. 1981: 74 (bionom. ecol.). Costa-Jantsch 1999: 145 (distr.) Lorier *et al*. 2002: 71 (ethol. anat.).

Aleuas brachypterus Bruner 1906

Bruner 1906: 667 (descr.). Rehn 1907: 184 (distr.), 1913: 338 (distr., prob. syn. of *A. vitticollis*). Kirby 1910: 427. Liebermann 1939: 196 (distr.), 1941a: 33 (distr.), 1941b: 157 (distr.), 1948: 89 (distr.), 1957: 19 (distr., descr. male), 1968: 48, 1972a: 7. Liebermann-Piran 1941: 11 (distr.). Liebermann-Ruffinelli 1946: 13 (distr.). Carbonell 1956: 50 (habitat, ecol.). Mesa 1956: 36 (caryology). Saez 1956: 24 (caryology). Ferreira 1975: 432 (caryology). Costa-Jantsch 1999: 145 (distr.). Cigliano *et al*. 2000: 88 (distr, ecol.).

Holotype of A. vitticollis.— A male in STOCKHOLM, labeled "Sao Leopoldo" Stahl". Sao Leopoldo is a town in the Brazilian State of Rio Grande do Sul. There is a long-winged female of the species in VIENNA, that might be a paratype, from "Montevideo", labeled as *Aleuas vitticollis*. Holotype of *Aleuas brachypterus*: a male in WASHINGTON, with Bruner's label with the name of the species and the word "Cotype". Also another label "Sapucay, Paraguay, WTF, March, 85" [WTF stands for W.T. Foster]. Bruner (1906: 668) mentions a female specimen in his collection, and 3 males and 3 females in the U.S. Nat. Museum. I have been unable to find the mentioned female specimens. However, to these short-winged females is due the specific name. Long-winged specimens (like the type of *A.vitticollis*) were rare in the populations I have examined and collected, while the short-winged ones made up the bulk of the population.

This species has been collected in Argentina: Misiones, Santa Fe, Entre Ríos, Buenos Aires. Brasil: Mato Grosso, Mato Grosso do Sul, Rio Grande do Sul. Paraguay: (east). Uruguay: (whole country). Distribution in Argentina and Brasil must be far larger than that indicated above.

Appendix II. Tables of measurements.

Table 1. *Aleuas albinae* n. sp. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
mh	976	410	348	9	37	36	73	116	310	165	135	28	19	126	12	20	50	49	31	12	9
mp	977	387	327	8	37	32	69	110	278	165	128	27	18	129	12	19	49	45	31	9	7
mp	978	402	338	9	36	37	73	110	308	171	135	29	20	129	11	20	52	48	33	12	8
mp	979	385	321	8	36	34	70	108	291	149	134	26	19	111	12	18	49	44	28	11	8
fp	980	582	520	13	56	62	118	182	420	253	204	37	23	130	23	30	83	69	46	12	8
fp	981	588	540	12	58	62	120	186	426	259	203	38	24	135	24	33	88	70	46	11	8
fp	982	560	484	11	54	56	110	169	415	243	198	34	21	--	23	28	84	64	45	10	8
fp	983	600	522	11	55	56	111	173	446	257	210	36	21	143	24	30	84	67	47	11	8

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. h, holotype. p, paratype. 976, 977, 978, 980, 981, 982, 983 from Uruguay, Florida, Casupá. 979 from Uruguay, Rivera, Sierra de la Aurora.

Table 2. *Aleuas curtipennis* Bruner. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
m	1006	162	232	6	33	21	54	87	86	116	92	24	16	74	9	17	36	40	28	10	7
m	1007	160	235	6	32	20	52	88	83	119	95	24	16	70	9	17	36	39	27	10	7
m	1008	155	220	5	30	19	49	78	87	110	89	24	16	71	8	13	32	39	25	10	7
m	1009	164	226	6	32	20	52	88	86	115	96	25	17	72	8	15	36	40	27	10	7
m	1010	160	231	6	37	21	58	89	85	116	92	25	16	73	8	14	36	40	27	10	8
f	1011	215	321	10	55	34	89	135	100	162	131	31	19	101	17	26	60	56	36	10	8
f	1012	220	343	10	58	32	90	131	101	155	130	32	21	95	16	26	60	55	36	10	7
f	1013	215	330	10	50	30	80	125	105	160	132	30	18	94	17	25	57	54	35	10	7

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. 1006, 1013, from Brasil, Goias, Mineiros. 1008 from Brasil, Mato Grosso, Diamantino. 1009, 1010, 1011 from Brasil, Mato Grosso, Chapada dos Guimaraes.

Table 3. *Aleuas gracilis* Stål. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
m	1000	300	333	11	43	28	71	114	200	137	107	27	16	--	15	20	44	45	28	9	8
m	1001	247	300	10	38	28	66	101	186	126	101	25	15	--	14	17	40	41	26	9	7
m	1002	296	310	10	40	28	68	105	196	133	108	25	16	--	16	19	43	43	28	9	8
m	1003	301	320	11	40	27	67	116	194	141	112	26	16	105	15	20	46	45	30	9	7
f	1004	241	449	16	62	36	98	160	96	180	146	33	20	110	29	34	62	60	36	9	7

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. 1000, 1001, 1002 from Brasil, Mato Grosso, Corginhos. 1003, 1004 from Paraguay, Paraguarí, Sapucay.

Table 4. *Aleuas lineatus* Stål. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
m	984	280	250	6	27	22	49	84	181	120	98	25	16	76	8	15	38	40	24	10	8
m	985	290	270	8	29	30	56	92	191	135	105	26	17	82	10	16	39	40	28	11	8
m	986	285	285	7	28	24	52	91	203	130	102	26	18	--	9	14	39	42	26	10	10
m	987	304	293	8	31	29	60	100	227	138	106	27	18	94	11	18	43	44	28	11	8
f	988	447	422	6	47	44	91	152	314	211	173	33	23	114	18	26	68	61	38	11	9
f	989	392	388	9	40	36	76	130	282	183	152	34	20	91	16	25	57	55	34	11	9
f	990	385	376	10	40	36	76	122	278	180	148	32	21	87	17	28	56	53	32	11	9
f	991	430	412	11	46	40	86	144	311	202	159	35	20	92	18	25	63	58	40	11	9

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. 984 from Uruguay, Artigas, Arroyo Tres Cruces. 985 from Uruguay, Flores, Arroyo Pinto. 986, 987, 989 from Argentina, Chaco, Arroyo Palometa. 988, 991 from Argentina, Chaco, Resistencia. 990 from Uruguay, Flores, Gruta del Palacio.

Table 5. *Aleuas paraguayensis* n. sp. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
mh	961	252	242	6	28	21	49	88	176	119	99	26	17	89	11	17	35	44	25	10	7
mp	958	259	220	7	27	19	46	86	182	118	95	25	19	82	11	17	37	42	25	10	7
mp	959	265	259	6	28	21	49	86	183	123	99	25	17	82	12	17	36	42	26	9	6
mp	960	264	264	6	27	21	48	90	182	123	98	27	19	84	13	18	37	43	26	10	7
fp	972	364	364	9	35	30	65	122	260	171	140	33	22	--	22	28	56	58	33	10	8
fp	973	390	392	10	40	33	73	127	274	183	148	33	22	94	23	29	56	60	34	10	7
fp	974	380	381	10	37	33	70	125	261	176	148	32	22	94	22	28	57	59	33	10	8
fp	975	377	350	10	36	29	65	121	264	170	141	32	22	85	23	29	55	57	31	10	8

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. h, holotype. p, paratype. All specimens from Paraguay, Caaguazu, near Ihu.

Table 6. *Aleuas paranensis* n. sp. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
mh	992	207	285	7	35	19	54	98	114	121	92	29	18	65	11	16	37	42	29	12	7
mp	993	218	280	8	35	21	56	100	125	129	97	29	17	73	11	15	40	43	28	10	7
mp	994	214	254	7	35	20	55	95	127	125	97	26	16	67	11	15	38	39	28	10	8
mp	995	213	277	9	33	19	52	93	93	128	97	27	16	78	10	14	37	38	27	10	7
fp	996	249	421	10	59	29	88	150	105	181	141	36	22	93	22	26	64	61	40	10	8
fp	997	255	444	12	59	33	92	157	106	185	145	37	23	83	25	28	66	63	43	10	8
fp	998	213	334	12	48	27	75	130	87	161	124	32	19	78	19	24	56	51	37	9	7
fp	999	247	379	11	54	31	85	140	115	182	137	35	20	100	21	25	62	54	40	10	7
fa	970	255	462	17	62	40	102	161	110	181	145	30	18	116	27	32	65	58	35	8	8

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. h, holotype. p, paratype. 992, 993, 994, 997 from Argentina, Corrientes, Arroyo San Joaquin at Route 126. 996 from Argentina, Corrientes, North of Paso de los Libres. 995, 998, 999 from Brasil, Rio Grande do Sul, Pelotas.

Table 7. *Aleuas uruguayensis* n. sp. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
mh	1014	266	273	9	32	23	55	93	183	125	102	27	18	65	12	16	38	41	30	10	9
mp	1015	250	258	8	33	22	55	92	170	124	99	29	19	--	13	17	41	42	26	10	9
fp	1016	263	447	18	59	40	99	176	103	184	145	40	23	90	31	37	88	69	43	10	9

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. h, holotype. p, paratype. 1014,1015, 1016 from Uruguay, Rivera, Lunarejo, Cañada de las Yeguas.

Table 8. *Aleuas vitticollis* Stål. Measurements in tenths of a mm.

Sx	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
m	963	317	334	8	40	28	68	111	219	152	121	29	19	102	16	23	52	49	33	9	7
m	964	340	353	10	46	33	79	121	232	160	130	30	20	99	16	23	52	49	33	9	7
m	965	340	358	9	44	29	73	120	228	162	124	31	21	108	16	21	51	52	35	9	7
m	966	290	313	11	41	29	70	114	192	137	103	26	17	90	16	20	51	44	29	8	6
f	967	300	528	15	69	50	119	187	128	219	180	40	22	120	30	38	80	72	45	9	6
f	968	314	558	16	75	53	128	195	145	235	187	36	24	--	32	37	85	71	48	9	7
f	969	294	566	14	69	43	112	185	125	213	167	40	25	117	31	39	81	73	49	8	7
f	971	329	598	15	75	46	121	195	143	237	189	41	24	122	36	40	86	78	51	8	7
fl	1005	510	543	16	66	50	116	185	351	225	174	37	22	112	31	35	85	70	46	9	8
hfl	fot	490	530	20	70	45	115	170	345	235	195	40	20	100	30	40	80	70	45	--	--

Letters A to R, see Fig. 36. S, number of internal spines of hind tibia; T, same, external spines. Sx, sex. #, specimen number. m, male. f, female. fl, long-winged female. h, holotype. fot, measurements taken from a photograph of the type, in which a millimeter ruler was included. 963, 967, 1005 from Uruguay, Florida, Casupá. 964, 968 from Uruguay, Rivera, Tranqueras, Bañado de Zanja Honda. 965, 969 from Argentina, Corrientes, Arroyo San Joaquin, at provincial route 126. 966 from Brazil, Minas Gerais, between Uberaba and Araxa. 971 from Paraguay, Paraguarí, Sapucay. Holotype is from Brazil, Rio Grande do Sul, Sao Leopoldo.

Appendix III. Geographical coordinates of localities of collection.

	Latitude	**Longitude**
Argentina.		
Prov. Chaco		
Arroyo Palometa		
at Nac. Rte. 11	27° 41′S	59° 13′W
Resistencia	27° 27′S	59° 00′W
Prov. Corrientes		
Arroyo San Joaqin		
at Prov. Route 126 (approx.)	30° 00′S	59° 00′W
Brasil.		
State Goias.		
Betw. Sao Simao and Jatai	18° 30′S	51° 00′W
State Mato Grosso		
Chapada dos Guimaraes	15° 27′S	55° 44′W
Diamantino	14° 24′S	56° 27′W
State Rio Grande do Sul		
Pelotas	31° 45′S	52° 22′W
Sao Leopoldo	29° 46′S	51° 09′W
Paraguay.		
Ihú	25° 03′S	55° 56′W
Sapucay	25° 40′S	56° 57′W
Uruguay.		
Dpto. Florida		
Casupa	34° 02′S	55° 39′W
Dpto. Paysandu		
Pepeaji	32° 02′S	58° 08′W
Dpto. Rivera		
Sierra de la Aurora	31° 00′S	56° 20′W
Tranqueras	31° 11′S	55° 46′W