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Aerotegmina, a new genus of African Listroscelidinae (Orthoptera: Tettigoniidae, Listroscelidinae, Hexacentrini)

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Abstract

A new genus, *Aerotegmina* is proposed for an East African Listroscelidinae species occurring in the montane forests of Mt. Kilimanjaro, Tanzania. Notes on distribution and habitat are given.

Key words

Orthoptera, Listroscelidinae, *Hexacentrus*, new species, Africa

Introduction

Mt. Kilimanjaro, Tanzania has a variety of ecological zones due to its enormous altitudinal range of about 5000 m and a precipitation which varies with altitude and exposition of the mountain massif. To date 179 Saltatoria species are recorded from this volcano, of which 31 are described from Kilimanjaro localities (Gerstäcker 1869; Karsch 1896; Kevan 1955; Karny 1915; Sjöstedt 1909, 1923; Ramme 1929, 1931; Weidner 1941; Hemp, C., forthcoming *a*,*b*). Twelve Saltatoria species are endemic to the Mt. Kilimanjaro massif, 10 species to both Mt. Kilimanjaro and Mt. Meru and only four species are known restricted to the Mt. Meru/ Monduli complex (Sjöstedt 1909; Johnston 1956, 1968; Dirsh 1965; Hemp C., forthcoming *a*).

Although the montane forest belt of Mt. Kilimanjaro is relatively poor in Saltatoria species, its share of endemic species is relatively high. Endemic species restricted to the montane forest include the phaneropterine *Monticolaria kilimandjarica* Sjöstedt (Sjöstedt 1909), occurring in small clearings and shady forest edges, two canopy-dwelling conocephalines, *Anthracites kilimandjaricus* Sjöstedt (Sjöstedt 1909) and *A. montium* Sjöstedt (Sjöstedt 1909) as well as the tiny eumastacid *Chromothericles kanga* (Sjöstedt) (Sjöstedt 1923), the latter preferring clearings with *Rubus steudneri*. Restricted to the drier *Olea africana* forests of the western slopes, the phaneropterine *Horatosphaga montivaga* (Sjöstedt) (Sjöstedt 1909), can be found in clearings within stands of *Isoglossa laxa*, and is recorded as well for Mt. Meru (Sjöstedt 1909). Living in shady localities and restricted to Mt. Meru and Mt. Kilimanjaro, the coptacridine *Parepistaurus deses deses* Karsch (Karsch 1896; Green 1998) lives in the plantation belt and the forests of the submontane and montane zone, while *P. lindneri* Kevan is known only from Kilimanjaro localities on the western slopes at 1400 m (Kevan 1955) and the submontane forest of Mt. Meru. A species found on the forest floor is the catantopine *Ixalidium sjöstedti* Kevan (Kevan 1950) which also survived in the submontane zone of the southern slopes when, in the last centuries, the forests were replaced by plantations, the so-called Chagga home gardens. On the western slopes, where the last relicts of the former *Olea africana* – *Croton megalocarpus* - forests still reach down to about 1300 m, this species inhabits its original habitat (Hemp, C. forthcoming *b*).

Species of more open places at moderate altitudes in the submontane zone, requiring higher humidity, include flightless conocephalines of which the endemic *Conocephalus (Xiphidion) kilimandjaricus* Sjöstedt (Sjöstedt 1909) is the one most frequently found. In higher altitudes it is replaced by the more darkly colored *Conocephalus (X.) kibonotense* which prefers lush vegetation along the forest edge. *C. (X.) kibonotense* Sjöstedt (Sjöstedt 1909) also inhabits grassy paths and clearings in the montane rain forest to altitudes of over 2000 m.

The new genus and species, described here, *Aerotegmina kilimandjarica*, is another tettigoniid with narrow habitat requirements, restricted to the submontane and montane forest belt of Mt. Kilimanjaro.

The tribes Phlugidini and Phisidini are regarded here as Meconematinae following Jin & Kevan (1992) though in Otte (1997) they are listed as Listroscelidinae. Among 56 known Listroscelidinae of which the genus *Hexacentrus* is largest (21 species), only one species, *Hexacentrus karnyi* Griffini (Griffini 1909) is described from East Africa. For the whole of the African continent, the only known listroscelidines are another three species from the genus *Hexacentrus* occurring in West Africa.

Two monotypic listroscelidine genera occur on Madagascar. Comparatively rich in Listroscelidinae species is the Indo-Malaysian region (12 species, Table 1). The American continents contribute 26 listroscelidinae species, with a high diversity in South and Central America (Otte 1997).

Table 1. Numbers of listroscelidine species worldwide by genus and region; Sn: number of species.

Region (Sn)	Genus (Sn)
Africa (4)	*Hexacentrus* (4)
North America (1)	*Neobarrettia* (1)
Central America (11)	*Arachnoscelis* (3) *Neobarrettia* (8)
South America (14)	*Arachnoscelis* (1) *Carliella* (1) *Cerberodon* (3) *Isocarliella* (1) *Liostethomimus* (1) *Listroscelis* (4) *Macrometopon* (1) *Moncerophora* (2)
Australasia (2)	*Hexacentrus* (1) *Parahexacentrus* (1)
Australia (5)	*Chlorobalius* (1) *Requena* (1) *Terpandrus* (2) *Yorkiella* (1)
Eurasia (4)	*Hexacentrus* (4)
Indo-Malaysia (12)	*Euhexacentus* (1) *Hexacentrus* (11)
Madagascar (2)	*Paralistroscelis* (1) *Poecilomerus* (1)
Pacific Islands (1)	*Hexacentrus* (1)

Specimens are deposited in the Natural History Museum (London, UK) [NHM], in the Entomological Department of the National Museums of Kenya (Nairobi) [NMK] and in the personal collection of the author [CCH].

Results

Aerotegmina n. g.

Type species.— *Aerotegmina kilimandjarica* here designated.

Distribution.— Tanzania, Mt. Kilimanjaro.

Description.— **Male**: auditory foramina of fore tibiae oval openings (Fig. 5). Fastigium of vertex narrower than scapus, frontal fastigium conical, compressed laterally. Eyes circular, prominent. Fore coxae dorsally with anteriorad directed long spine. Sterna bispinose. Spines of prosternum long and slim, of mesosternum shorter, more stout, of metasternum short and blunt. Mid and hind coxae ventrally with short spine. Femora armed, tibiae armed. Femora apically with a pair of spurs. Fore and mid tibiae apically with a pair of ventrally oriented spurs. Hind tibia dorsally with a pair, ventrally with two pairs, of spurs, followed by 4 rows of numerous small spines ventrally and dorsally along the tibiae. Fore and mid tibiae with 5 pairs of predatory spines. Pronotum saddle-shaped, without lateral carinae. Anterior rim upcurved, slightly incised. Posterior rim upcurved, almost straight. Lateral lobes also rimmed (Fig. 1). Surface of pronotum rugose, cuticle shiny.

Tegmina strongly balloon-like inflated, functioning, together with modified wings projecting below, for acoustic emission (Figs 1, 6, 8). Stridulatory area very broad, covering anterior third of whole tegminal area (Fig. 9), venation of anterior two thirds almost obsolete. Right tegmen, translucent in its covered portion, overlapped about 1/2 by left. Speculum of right tegmen nearly circular, very large with small crater-like impression on right rim. Radius (vena radialis posterior) strongly curved, u-shaped. From the radius the ramus radialis branches off, deeply cut into the tegmen, running to the outer rim (Fig. 1). Region in which the ramus radialis runs not covered by left tegmen and of light greenish color as typical for the whole insect. These parts of both sides of the tegmina form the lateral wall of the acoustic chamber. On the ventral side both tegmina become translucent and are folded into a v-shaped emargination in the costal area, the outer rims, forming with the translucent alae which are correspondingly v-shaped folded along the coastal area, the acoustic chamber (Fig. 8). Surface of tegmina reticulate.

Subgenital plate symmetrical, deeply divided into two elongated tapered processes (Fig. 3). Cerci of the male very broad at the base, inflated, with tuberculate surface, each tubercle with a fine hair; at inner base toothed, toward apex suddenly narrowing and strongly incurved, sclerotized. Ratio of length to width about 1.2-1.3 (Fig. 3).

Female: spination of legs and pronotum of female as in male. Tegmina and wings shortened, unmodified, not inflated, reaching to about half the length of ovipositor, reticulate (Figs 2, 10). Alae translucent, shortened with rounded tips, covered by tegmina. Ovipositor with broad base, slightly upcurved, smooth. Cerci almost straight only slightly inwardly curved (Fig. 4). Subgenital plate rectangular with lateral margins narrowing posteriorly.

Diagnosis.— In its general habitus *Aerotegmina* resembles the genus *Hexacentrus*, which occurs in Africa with four species and has many Indo-Malayan representatives. As does *Aerotegmina*, many *Hexacentrus* species possess 5 pairs of predatory spines on the fore and mid tibiae that serve to clasp and hold prey (Kästner 1933). Redtenbacher in his revision (1891) gives 6 pairs of predatory spines on the fore tibiae for all eight species. A subgenital plate, dividing in males into two longish processes, and stout, inwardly curved, cerci are features found in *Hexacentrus* species as well (Kästner 1933; Redtenbacher 1891). Main differences occur in the shape of the pronotum, which in *Hexacentrus* spp.is longer

Table 2. Characters distinguishing the genus *Aerotegmina* from *Hexacentrus*.

	Aerotegmina	*Hexacentrus*
Pronotum	saddle-shaped posterior rim almost straight surface rugose	not saddle-shaped anterior rim angular surface smooth
Tegmina	strongly balloon-like inflated, almost spherical	of normal shape or only moderately inflated
Wings	wings modified to close acoustic chamber	unmodified or shortened
Ovipositor	almost half length of ovipositor strongly inflated	inflated near the base
Ratio of body length / ovipositor length	2.1-2.6	1.5-1.7 [1]

[1] 7 species measured by Redtenbacher (1891)

proportionally, its posterior margin rounded and mostly shows a dark brown-black marking of the disk. The pronotum of *Aerotegmina* is broadly upcurved (saddle-shaped) with the posterior margin straight and without any dark coloration. The surface of the pronotum is typically smooth in *Hexacentrus*: it is strongly rugose in *Aerotegmina* (Table 2). The most obvious departure from *Hexacentrus* and all other Listroscelidinae is the modified tegmina of the male which are strongly inflated and the wings, which are modified to form, with the tegmina, an almost spherical chamber (Table 2, Fig. 8). Most *Hexacentrus* have greenish tegmina of a more typical tettigoniid shape and fully developed alae.

Shortened alae in both male and female are reported for *Hexacentrus pusillus,* a species occurring on Java, which is also different in other respects from other *Hexacentrus*: its thoracic sterna are without spines and the tegmina of the female are just shorter than the forewings and rounded apically (lobiform).

Inflated tegmina are reported for *Hexacentrus fruhstorferi* Dohrn (Dohrn 1905), which occurs in Vietnam (Kästner 1933) and also for the Tanzanian *H. karnyi* Griffini (Griffini 1909). But these forewings are far from the extreme inflation seen in *Aerotegmina*. *H. karnyi* is simliar in size (19 mm) to *A. kilimandjarica* (14-18 mm) but the armature of the legs differs. The pronotum is longish with an angular posterior rim and at 8 mm about double the length of that of *Aerotegmina*; furthermore it has the typical pronotal color pattern of *Hexacentrus* (Griffini 1909). The female is not known.

The West African *H. inflatus* Redtenbacher (1891) has shortened and curved tegmina as well (Kästner 1933). It has the typical pronotum of *Hexacentrus* with dark coloration dorsally and has fully developed wings. The tibiae are armed with 6 spines and the body size, at 28 mm (Redtenbacher 1891), exceeds by far that of *A. kilimandjarica*. This species was described from a single male, the female is not known. Kästner (1933) gives the measurements of another three specimens. Their body length is 23-25 mm, the pronota at 7.5-8.2 mm are about twice as long as that of *Aerotegmina*. The fore femora are armed on the inner and outer sides with 4-5 stout spines and 1-2 smaller ones (in *Aerotegmina* in most specimens these are four on each side).

The other West African species *H. dorsatus* Redtenbacher, described from Gabon, shows dark brown-black coloration reaching from the pronotum, including the dorsal part of the tegmina, which are not inflated, to beyond the hind femora. In this species as well the alae are fully developed. The fore tibiae bear 6 spines (Redtenbacher 1891).

The fourth African species *H. alluaudi* Bolivar (Bolivar 1906), described from the Ivory Coast with a body size of 21 mm, has slightly inflated tegmina, fully expressed alae and a longish pronotum (7.5 mm) with a dark brown-black disk pattern. The fore femora bear on the outer sides 4-5 spines, on the inner side minute spines are present. The mid femora are armed with 5 spines while the hind femora bear 9-10 small spinules. The styles of the subgenital plate of the male are long and curved. The female is not known (Bolivar 1906). *H. alluaudi* differs from *A. kilimandjarica* in bigger body size, long pronotum with the typical *Hexacentrus* dark disk color pattern, the spination of all legs and in the genitalia.

The females of *A. kilimandjarica* have unmodified shortened tegmina and reduced wings which do not surpass the body (Fig. 2). The ovipositor is generally longer and thinner in *Hexacentrus* species, while in *Aerotegmina* it is inflated for about half its length and rather stout. A comparision of *Hexacentrus* females in species with inflated tegmina would be most interesting, but since for *H. inflatus* and *H. karnyi* only single males were described, this is not possible.

A. kilimandjarica differs from the Madagascan species *Paralistroscelis listrosceloides* (Karny) (Karny 1907) widely in the structure of the male genitalia (elongate entire subgenital

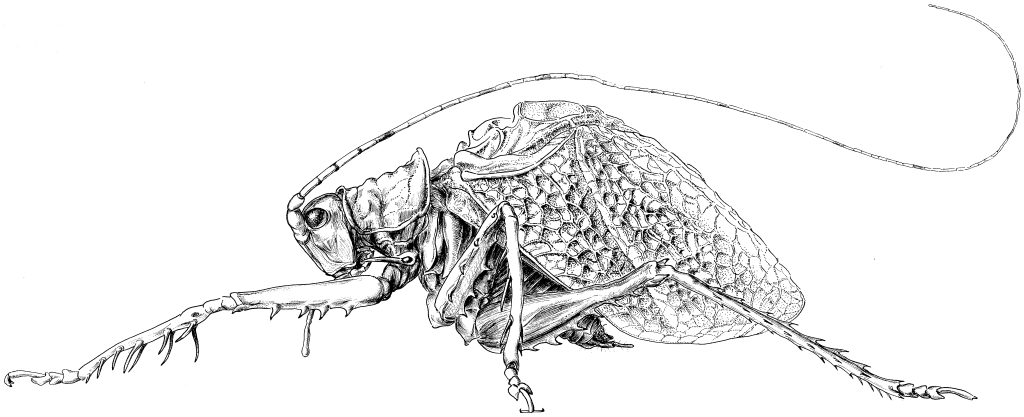

Fig. 1. Habitus of male *Aerotegmina kilimandjarica* (drawn by Andreas Hemp).

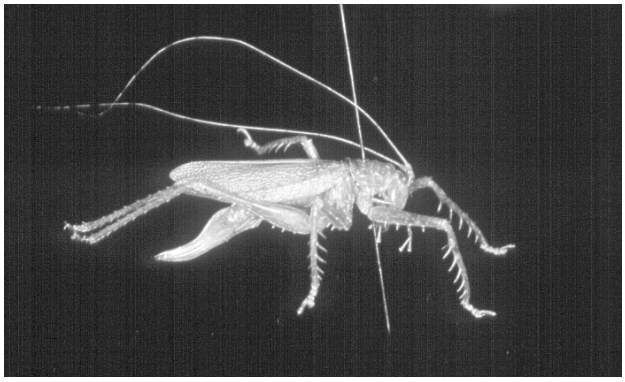

Fig. 2. Habitus of female *Aerotegmina kilimandjarica*.

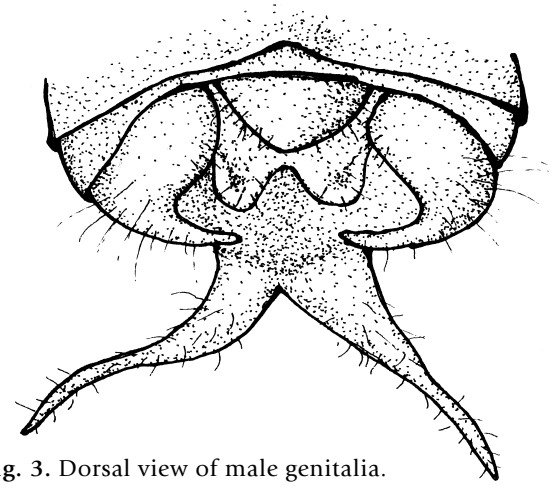

Fig. 3. Dorsal view of male genitalia.

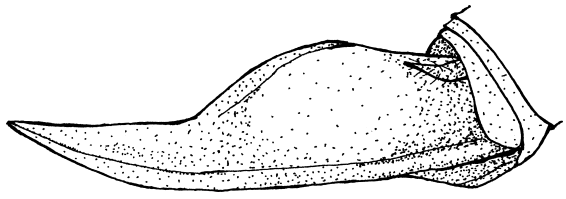

Fig. 4. Lateral view of ovipositor.

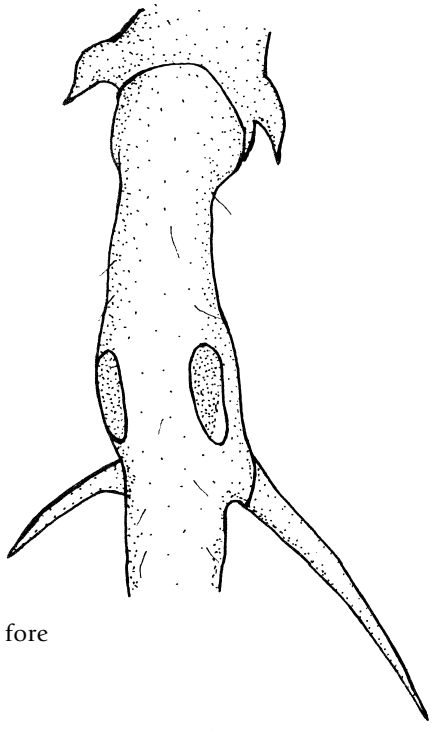

Fig. 5. Dorsal view of left fore tibia of male.

Fig. 6. Male *Aerotegmina kilimandjarica*.

Fig. 7. Nymph of *Aerotegmina kilimandjarica*.

Fig. 8. Ventral view of tegmen and alae of male.

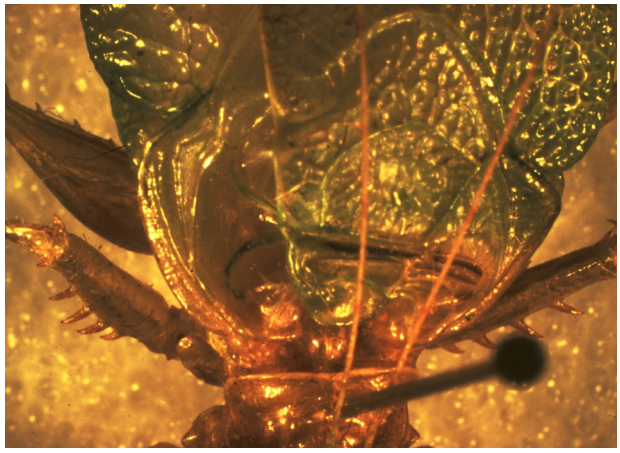

Fig. 9. Stridulatory area of male.

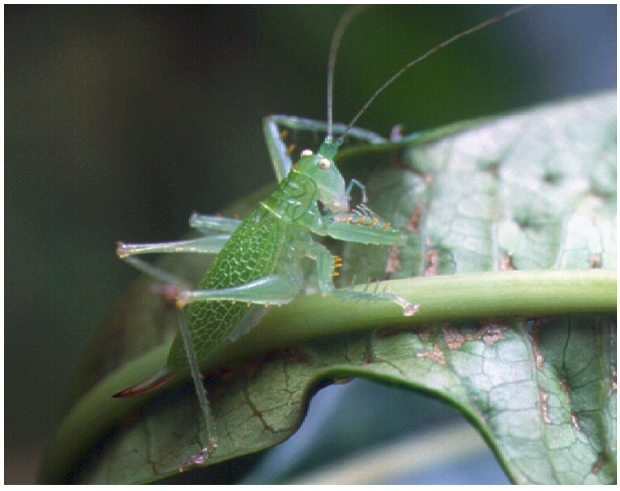

Fig. 10. Adult female of *Aerotegmina kilimandjarica*.

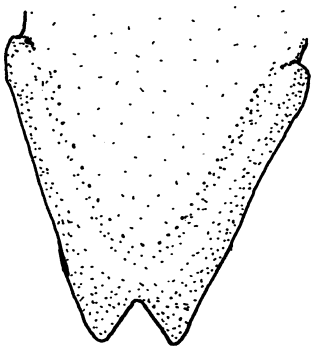

Fig. 11. Subgenital plate of female.

plate with short styli, long cerci with inner hooks), the shape of the pronotum (elongate pronotum with angular posterior rim) and the tegmina and wings (fully developed). The other Madagascan species *Poecilomerus saga* Karny, (Karny 1907) has tegmina reduced to small lobes, the pronotum is of different shape than in *Aerotegmina* and the female ovipositor is long, slim and straight.

A. kilimandjarica n. sp.

Holotype.— **Male**: Tanzania, Mt. Kilimanjaro southern slope, montane forest above Kidia / Old Moshi 1710 m, 3.12.1999 (C. Hemp coll.) [NHM].

Paratype.— **Female**: Tanzania, Mt. Kilimanjaro southern slope, submontane forest Mrusunga Valley 1600 m, 16.12.1999 (C. Hemp coll.) [NHM].

Paratypes.— All Tanzania, Mt. Kilimanjaro; 1 ♂, southwestern slope, montane forest above Lerongo 2550 m, 18.2.2000 (C. Hemp coll.) [NMK]; 1♀, southern slope, submontane forest Mrusunga Valley 1600 m, 16.12.1999 (C. Hemp coll.) [NMK].

Further material (all C. Hemp coll.) [CCH]: 9 ♂♂, 2 ♀♀ 2 nymphs, southern slopes of Mt. Kilimanjaro, collected from *Rourea thomsonii* and other shrubs and lianas in disturbed montane forest above Kidia 1710 m, 11.1999, 12.1999, 3.2001, 4.2001; 4 ♂♂, 4 nymphs, southern slopes of Mt. Kilimanjaro, from bushes and small trees of disturbed submontane forest Mrusunga valley 1600 m, 12.1999, 1.2000; 1 ♂, northern slopes of Mt. Kilimanjaro, collected from small tree of *Teclea simplicifolia* above Ikasua village 1900 m, 4.2001.

Description.— Color light green. Head and antennae: antenna more than twice as long as length of body, whitish with annulate dark markings (Figs 1, 6). Cuticle of head smooth. Conical laterally compressed fastigium of vertex slightly exceeding antennal sockets; with forwardly stretched antennae, first antennal segment projecting about 2.5-2.8 times beyond fastigium; with backward-directed antennae, fastigium about the diameter of first antennal segment or slightly wider as seen from above. Space between eyes 2.7 times as wide as diameter of eye. Eyes almost circular, prominent, of whitish or brown-reddish color. Thorax: light green in the preserved insect, rugulose callosities marked darker green in the living insect. Pronotum with small rim, dorsally of yellowish color, rims of lateral lobes of darker green. Abdomen: abdomen ventrally milky white, dorsally greenish, often with yellowish-red marking as seen in the nymphs (Fig. 7). Tegmina and wings: rim of right tegmen bordered yellowish. Acoustical chamber closed completely by costal areas of tegmina and alae. Tympanum about 3.5 mm in diameter. Wings lanceolate, surpassing the body, with reduced venation. Legs: fore and mid femora with four pairs (mid femur sometimes with 4 outer and 3 inner) of stout spines on the inner and outer side, of yellowish color. Apically with a pair of short spurs, also of yellowish color. Hind femur with 6(7) outer and 4 (in a few specimens 5 spines or without spines at all) inner short spines, distally two pairs of ventrally oriented spurs, dorsally with one pair of spurs. Fore and mid tibiae with five pairs of light green predatory spines on each side, apically with a pair of spurs. Hind tibiae with four rows of minute brownish spines, dorsally 6-8 inner and 7-9 outer black-tipped spines, ventrally 10-12 black-tipped spines on each row. With well developed tarsal arolium. Genitalia: subgenital plate symmetrical, of the same milky white color as the ventral abdomen, with smooth surface, flattened ventrally, lobes with scattered hairs. Cerci in the living specimen projecting from the body, of greenish color.

Measurements.— (in mm). Males (n = 16)
Total length of body: 14.0-18.0 (mean 15.5)
Median length of pronotum: 3.2-4.7 (mean 3.7)
Length of hind femur: 10.0-11.5 (mean 11.0)
Length of tegmina (as seen from above): 15.5-18.0 (mean 16.4)

Female: General facies: color pattern similar to the male, of greenish color (Fig. 10). Abdomen: ventrally milky white, dorsally greenish without abdominal yellow-red pattern. Tegmina: shortened reticulate lobes with reduced venation, of greenish color, alae translucent lobes, reduced venation, covered by tegmina. Legs: as in male. Genitalia: ovipositor of greenish color in the inflated part, proximally whitish with dark sclerotization along the rims. Cerci slim and only slightly inwardly curved, greenish with scattered hairs. Subgenital plate posteriorly medially incised thus forming two short lobes (Fig. 11).

Measurements.— (in mm). Females (n = 4)
Total length: 21.0-27.0 (mean 25.1)
Median length of pronotum: 3.5-4.1 (mean 3.7)
Length of hind femur: 11.0-12.5 (mean 11.4)
Length of tegmina: 12.1-17.6 (mean 14.5)
Length of ovipositor: 9.8-10.5 (mean 10.1)

Nymphs.— Nymphs similar to adults with red-yellow pattern dorsally on head, pronotum and abdomen (Fig. 7). Sexual dimorphism in the last instar: male immature wings standing vertically away while the wings of the females cling to the body.

Distribution and habitat.— *A. kilimandjarica* was collected at various localities in the submontane and montane forest belt of Mt. Kilimanjaro at altitudes of 1300 to 2550 m. It is restricted to closed forest communities and disappears when the forest is too disturbed. On the southwestern slopes it occurs in the (sub)montane *Olea africana - Croton megalocarpus* and *Cassipourea malosana* forests from 1300 m to about 2300 m (Lerongo, Siha). On the southern slopes it was collected in relicts of submontane forest in steep gorges (Mrusunga valley). On the southern slopes the montane *Ocotea* forest generally starts at 1800-1900 m due to human agriculture at lower altitudes. The former submontane forests have now been replaced by banana-coffee plantations. Relicts of submontane forest can be found here only in steep gorges. Thus the lower border of occurrence of *A. kilimandjarica* cannot be determined.

In the evening and night hours in the lower montane forest, along the southern slopes up to altitudes of about 2000 m, the species was detected mostly by its conspicuous loud song. Highest densities were noted in the submontane to middle montane forests of the central southern slopes where precipitation reaches its maximum and accordingly the most luxuriant forests are developed (Hemp A., forthcoming *a, b*). In a disturbed patch of forest at 1710 m above Kidia on the southern slopes, males were measured at distances of <5 m of each other. Some individuals were heard singing on the same shrubs only 1-2 m apart.

The occurrence of *A. kilimandjarica* was noted by song in the evening hours along a transect (UTM zone 37, lower forest border at: 03/00/726 latitude 96/83/731 longitude, upper occurrence at: 03/01/153 latitude 96/78/309 longitude) on the northern slopes (Ol Molog, Lerangwa village, Kilimanjaro Timbers). It was heard throughout the montane forest, from *Olea africana* forest at the lower forest border 1825-2000 m, where this forest community changes to *Cassipourea malosana* forest and ranging to about 2450 m. At around 2450 m the *Cassipourea* forest is replaced by *Podocarpus latifolius* forest and *A. kilimandjarica* here reached its upper border of occurrence. Only a few individuals could be found by their song in the evening hours at altitudes of 2300-2450 m. From the lower border of the forest to about 2200 m the population density was highest as registered by singing males, single males being noted at distances from 15-20 m apart in suitable habitats.

Another transect was laid on the central northern slopes, near the so-called "corridor" of Mt. Kilimanjaro. The lower forest border is situated here at about 1900 m (UTM zone 37 03/12/899 latitude, 96/80/932 longitude). The upper forest border reaches, at this location, to 3750 m. Above this altitude *Erica* bush and forest succeeds due to frequent fires (Hemp & Beck, forthcoming). *A. kilimandjarica* was detected along this route by song to an altitude of about 2400 m (UTM zone 37, 03/12/200 latitude 96/77/300 longitude). At this altitude the upper montane zone starts with a change of tree species from *Cassipourea malosana*-dominated forest communities (broad leaved species like *Teclea simplicifolia*, *Teclea nobilis*, *Fagaropsis angolensis*) to *Podocarpus latifolius* forest communities with the name-giving species and few others like *Hagenia abyssinica* and *Juniperus procera*. Small broad leaved under-canopy trees are getting scarce here, which, together with the altitude, may be a reason for the limit of upper occurence of *A. kilimandjarica*.

Individuals of *A. kilimandjarica* prefer medium heights in the shrub and tree layer of forest. During daytime males are heard occasionally from heights of about 15-25 m, while after sunset many males are noted from heights of 0.5-15 m. In forest communities, such as in *Ocotea* forests where undergrowth trees are sparse, no downward movement at night was noted. Males prefer to perform their courtship songs sitting beneath bigger leaves. Thus *A. kilimandjarica* was often found in trees and bushes of *Rourea thomsonii*, *Agauria salicifolia* or the introduced tree *Cinnamomum camphora* above Kidia, or on the northern slopes in young trees like *Teclea simplicifolia*, *Teclea nobilis*, *Syzygium guineense* and *Fagaropsis angolensis*.

A. kilimandjarica occurs syntopically with *Anthracites montium* Sjöstedt, 1909, *Melidia kenyensis* Chopard, 1954, *Amytta kilimandjarica* (Hemp C. 2001) and *Eurycorypha* sp. on the southern and northern slopes of Mt. Kilimanjaro.

Song.— Male *A. kilimandjarica* rarely stridulate in the daytime, only brief sounds were occasionally noted. In the late afternoon single males start stridulation for short intervals. However, the very loud calling song, consisting of rapid single chirp-sounds, performed continuously over long intervals, starts immediately after sunset, ceasing towards the early morning hours. When stridulating the left fore wing moves overtop the right one, one closing movement per chirp, with the acoustical chamber being expanded quickly between each chirp.

Phenological notes.— Singing males were noted throughout the research periods ranging from October to April and nymphs were also collected throughout this period. As this species is restricted to closed forest communities, it may be assumed that it is present throughout the year.

Discussion

A tendency to flightlessness and wing reduction in connection with the development of effective acoustic communication is noted in the Hexacentrini. Some species within *Hexacentrus* show various degrees of wing reduction in males, together with modest inflation of the male tegmina. But nothing is known of the females of these species. Abbreviated tegmina in a female *Hexacentrus* are known only for *H. pusillus* from Java. The resemblance to the acoustical chamber expressed in *Aerotegmina* is highest in *H. inflatus*; it would be of great interest to study the female of the species when it is discovered.

A. kilimandjarica is a species adapted to montane forest. Reduction of tegmina and alae connected with the requirements of an forest ecosystem seems a general tendency in species restricted to forests (Jago 1973). Canopy dwellers in dense canopy foliage may be subject to selection for more intense calling songs in order to more effectively attract females. *Aerotegmina* males possess a very effective sound generator: the calling song is heard by human ears over

distances of more than 200 m.

Another adaption to forest habitats may be the diurnal movement of this species. Such movement is noted for other flightless forest endemics such as *Aresceutica subnuda* Karsch, (Karsch 1896.) *A. subnuda* descends from night roosts after an interval of early morning sunning. At night it returns to saplings where feeding occurs (Jago 1973). At least in males of *Aerotegmina*, a diurnal movement was noted as well. During the day individuals may seek shelter at heights of 15-25 m in the canopy, and this may be connected with basking. In the evening, after sunset, males descend to perform their calling song at heights of 0.5-15 m. This behaviour might facilitate mating as searching females have shorter distances to travel when males call at lower heights. This behavior was also noted in two *Aerotegmina* species occurring in the Pare Mts. (Hemp, unpublished data).

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