

A new katydid genus of unclear systematic position from Ecuador (Orthoptera: Tettigoniidae)

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Ecuaneduba aequatorialis gen. et sp. n. from the eastern slope of the Andes is clearly distinguished from representatives of Tettigoniinae and Nedubinae by the characteristic shape of the head rostrum, long lower spines of fore tibiae, presence of 2 processes on middle and hind coxae, and small ventral plantulae on proximal part of hind metatarsi. From representatives of Listrosclidinae and Conocephalinae, the new genus differs in the presence of upper spines on fore tibiae and some other characters, and from Saginae, it differs in the structure of metatarsi (not widened in basal half).

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Genus *Ecuaneduba* gen. n.

Type species: *Ecuaneduba aequatorialis* sp. n.

Diagnosis. Body medium-sized for Tettigoniidae. Head high, with rather long mouthparts, slightly oblique frontal surface in profile, and smoothly tuberculate upper surface; upper projection of rostral apex lobe-like in profile, narrow from above, divided by shallow transverse sulculus into two parts; lower projection of rostral apex distinctly smaller and more sloping, not contacting with upper one (Figs 1, 2, 9, 10); antennal cavities much wider than rostrum between them. Pronotum smoothly tuberculate, with hind part elongate in female and strongly elongate in male; borders between pronotal disc and lateral lobes almost keel-like; fore part of disc narrow, hind part widened and almost flat; fore edge of disc distinctly concave, hind edge convex; pronotal lobes covering only small part of first thoracic stigmata (Figs 1, 2, 9, 10). Each sternite of thorax with a pair of spine-like processes. Legs rather long; fore coxa with long upper spine and shorter spine-like lower process; middle and hind coxae each with two lower spine-like processes; all femora with short unarticulated spines on both ventral keels and a pair of small acute projections at apex; all tibiae with articulated spines; fore tibiae with deep longitudinal concavity on each side (inner and outer) near distal part of tympanum, rather numerous and long paired lower spines, and shorter and sparse upper spines; middle and hind tibiae with less long lower spines and more numerous upper ones (but hind tibiae provided with a pair of longer upper subapical

spines and two pairs of not long apical spines or spurs); all tarsi with well developed pulvillar lobes and small proximal plantulae on ventral surface of metatarsi (Fig. 1). Tegmina of male somewhat shortened, reaching hind part of abdomen, strongly inflated, partly covered by pronotum; stridulatory apparatus well developed, completely covered by pronotum; mirror large, transverse; other parts of male tegmina with reticulate and very irregular venation (Figs 1, 2, 7, 8). Tegmina of female very small, almost lobule-like (figs 9, 10). Hind wings strongly reduced in both sexes. Abdominal tergites with small hind median projection. 10th tergite of male abdomen with concave hind edge, provided with a pair of groups of rather long hairs; male paraprocts with distinct processes; male cerci short, with spine-like proximal and lobe-like distal processes on ventromedial surface (Fig. 3); male genital plate with rather narrow and bifurcate hind part bearing long and thin styli (Fig. 4); male genitalia with unpaired sclerite consisting of hind hook-like process and a pair of lateral processes directed aside (Figs 5, 6). Female genital plate partly membranous, narrowing to apex, and with rather narrow apical notch (Fig. 11); ovipositor not long, rather high, moderately curved upwards, and with acute apex (Fig. 12).

Included species. Type species only.

Comparison. The new genus is distantly similar to the genus *Neduba* Walk. (Nedubinae, possibly the tribe Nedubini in Tettigoniinae) from North America and *Psorodonotus* Br.-W. (Tettigoniinae) from Palaearctic Eurasia in the general appearance (size; general shape of body, espe-

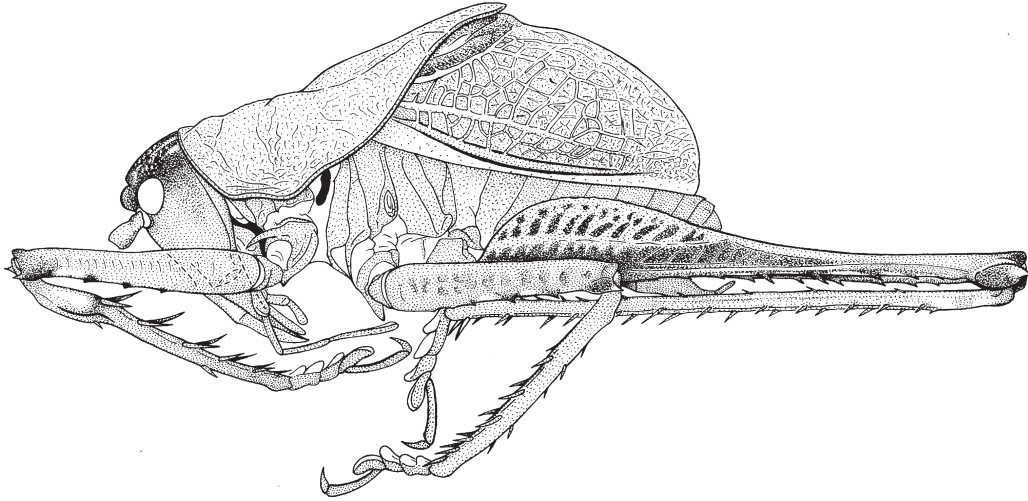


Fig. 1. *Ecuaneduba aequatorialis* sp. n., male (holotype), general view (without antennal flagellum) from side.

cially of pronotum; shortened wings), but *Ecuaneduba* is clearly distinguished from them by the distinctly longer mouthparts and legs, as well as the shape of rostral apex, armament of thoracic sternites and legs, size of proximal plantulae of metatarsi, structure of the male tegmina, and the shape of copulatory structures. The new genus is somewhat similar also to the tribe Arytrotteridini (possible Tettigoniinae) from South Africa in the structure of legs (including the size of proximal metatarsal plantulae) and wings, but it differs from this tribe in the characteristic shape of rostral apex, presence of lateral longitudinal keels on pronotum, number of processes on lower part of middle and hind coxae, and structure of the male cerci and male genitalia. There is also a certain similarity of *Ecuaneduba* to representatives of Listroscolidinae, Saginae, and Hexacentrini (possible Conocephalinae) in some adaptations to predatory mode of life and characters usually correlated with them: almost raptorial fore tibiae (rather long and with long spines); presence of a pair of acute projections at the apex of femora, two processes on lower part of middle and hind coxae, and paired processes on all thoracic sternites. Moreover, all these taxa have small proximal plantulae on hind metatarsi. However, Listroscolidinae are more specialized predators with much longer mouthparts and lower spines on fore tibiae as well as without upper spines on these tibiae; their pronotum is very different from that of *Ecuaneduba* in the shape, and first thoracic stigmatae are completely open (not partly covered by pronotal lobes). From Saginae and Hexacentrini, *Ecuaneduba* is clearly distin-

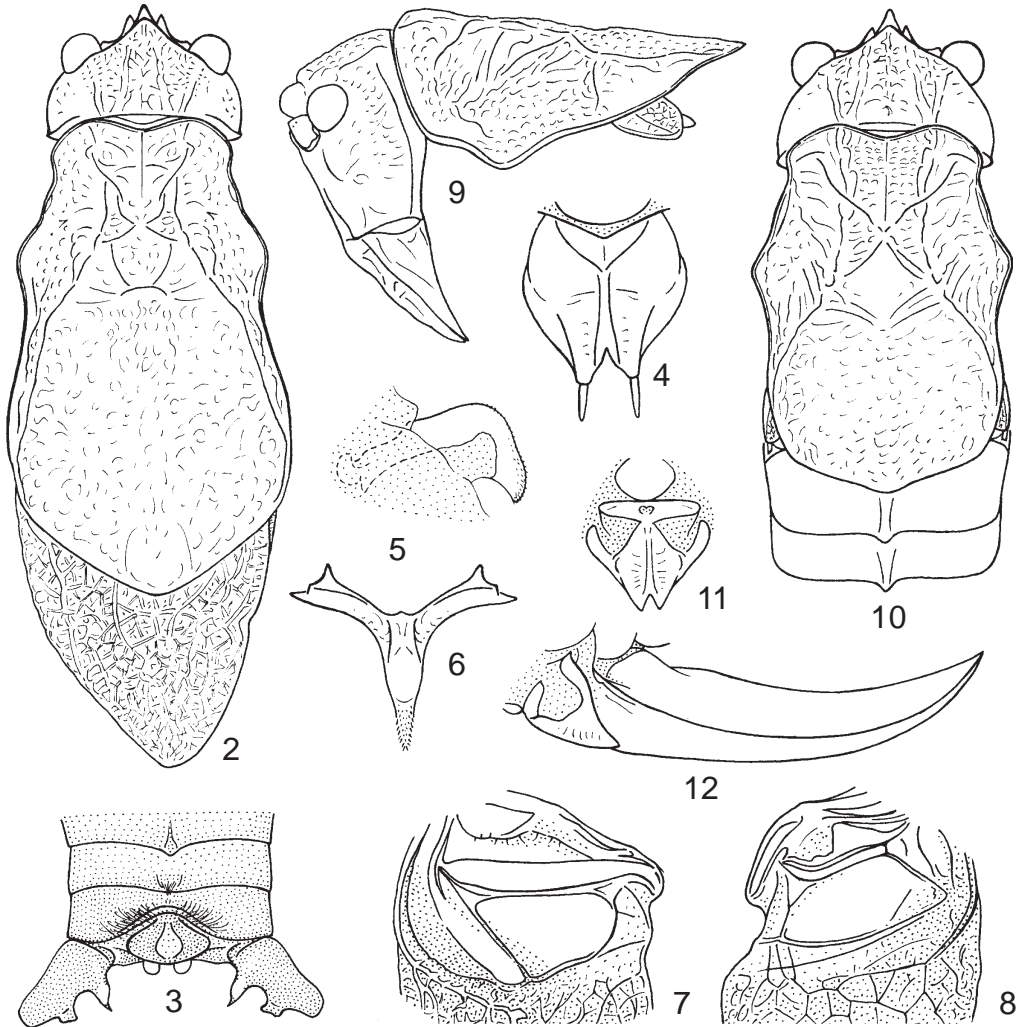
guished by the stridulatory apparatus of the male tegmina covered by pronotum and the differing structure of the male copulatory organs, from only Saginae, by the narrow proximal part of all metatarsi, and from only Hexacentrini, by the presence of upper spines on fore tibiae.

Note. There is also additional similarity between *Ecuaneduba* and *Hexacentrus* Serv. in the shape of pronotal disc and presence of finger-like processes on male paraprocts. But inclusion of the new genus in Hexacentrini is problematic, as the absence of upper spines on fore tibiae is characteristic of Hexacentrini as well as of majority of Conocephalinae, and one must suppose parallel loss of these spines in different branches of Conocephalinae or independent restoration of them in *Ecuaneduba* (or absence of close relationship between Conocephalinae and Hexacentrini). All the subfamilies mentioned above (except for some possible Conocephalinae: enigmatic Australian Microtettigoniini and Madagascan Euanthropini) can be more or less reliably separated from each other on the basis of the hind wing venation (Gorochov, 1988, 1995), but hind wings are strongly reduced in *Ecuaneduba*.

Ecuaneduba aequatorialis sp. n.

Holotype. ♂, **Ecuador**, eastern slope of the Andes, 75 km SSE of Quito city, environs of El Chaco vill. on Rio Quijos, 1500 m, forest, at night, on leaf of bush near small river, 18-22.XI.2005, A. Gorochov & A. Ovtshinnikov.

Paratypes. **Ecuador**, eastern slope of the Andes: 3 ♂, 4 ♀, same data as in holotype; 4 ♂, 4 ♀, 95 km E of Quito city, environs of San Rafael waterfall on Rio Coca, 1300 m, primary forest, at night, on leaves of bushes, 23-26.XI.2005, A. Gorochov & A. Ovtshinnikov.



Figs 2-12. *Ecuaneduba aequatorialis* sp. n. **2-8,** male (2-6, holotype); **9-12,** female. Head, pronotum, and wings from above (2) and from side (9); abdominal apex (without genital plate) from above (3); genital plate from below (4, 11); genital sclerite from side (5) and from above (6); stridulatory apparatus of upper (7) and lower (8) tegmina; head, thorax, and two fore abdominal tergites from above (10); ovipositor and genital plate from side (12).

All type specimens are deposited at Zoological Institute, St.Petersburg.

Description. Male (holotype). Coloration reddish brown, more or less uniform, but with following marks: dark brown upper part of head, lower parts of two proximal segments of antennae, proximal part of antennal flagellum, mandibles, all coxae, distal part of fore femora, bases of femoral spines and spots near them fused with coloration of these bases, row of spots along outer surface of each fore and middle femur and along upper part of outer surface of hind femur, fore and middle tibiae except for distal half of their

spines, upper basal spot and apical part of hind tibiae, tarsi excepting ventral surface, and distal part of cerci; almost blackish lower half of hind femora; yellow ornament on upper surface of head, more or less distinct longitudinal stripes between bases of femoral spines, spot on tympanal part of fore tibia (Fig. 1), tegminal veins excepting veinlets near costal edge, and proximal process of cerci excepting its apex (Fig. 3); light brown upper parts of two proximal antennal segments and membranes between tegminal veins and veinlets; whitish apex of palpi, sparse small spots on antennal flagellum, ventral sur-

face of tarsi, dense net of very numerous thin veinlets near costal edge of tegmina (Fig. 1), and distal part of paraproctal processes (Fig. 3); almost transparent stridulatory areas of tegmina (Figs 7, 8). Shape of head and pronotum as well as structure of legs and exposed part of tegmina as in Figs 1, 2. Fore femur with 5-6 outer spines (2-3 proximal ones very small) and 4 inner spines (proximal one very small); middle femur with 4-5 outer and 6 inner spines; hind femur with 10-11 outer spines (1-2 proximal ones very small) and 9-11 inner spines (1-3 proximal ones very small); fore tibia with 6 pairs of lower spines (including apical ones) and 2 upper spines (one near tympana and one in distal half); middle tibia with 6-7 outer and 6 inner lower spines as well as 2 outer upper spines and 4 inner ones (including an apical spine); hind tibia with 12 outer and 11 inner lower spines (including apical ones) as well as 11-12 outer and 12-13 inner upper spines (including a pair of subapical ones). Tegminal stridulatory apparatus rather large; upper tegmen with 2 thick veins (straight stridulatory one and arched longitudinal vein near base of stridulatory vein and lateral edge of mirror), short (reduced) plectrum, and characteristic mirror (its proximal part much wider than its distal part) (Fig. 7); lower tegmen without thick veins, with long plectrum and strongly transverse mirror, which is wider than mirror in upper tegmen and different in shape (its distal part much wider than proximal one) (Fig. 8). Abdominal apex with finger-like process directed downwards on each of paraprocts; epiproct, cerci, genital plate, and sclerite of genitalia as in Figs 3-6.

Variation. Sometimes coloration slightly darker or slightly lighter. Some of paratypes with most of tegminal veins brown or light brown and mem-

branes between them dark brown or brown. Number of spines on femora and tibiae insignificantly variable.

Female. Structure of body and coloration similar to those of male, but pronotum and tegmina as in Figs 9, 10, coloration of abdominal apex more uniform, brown or almost dark brown. Upper part of abdominal apex unspecialized (10th tergite with almost not concave hind edge and without long hairs; epiproct with rounded hind part; paraprocts without processes; cerci rather short, conical, and with narrow and more or less acute apex); genital plate and ovipositor as in Figs 11, 12.

Length (mm). Body: ♂ 18-21, ♀ 20-23; pronotum: ♂ 11-12, ♀ 8.5-9.5; tegmina: ♂ 9-11, ♀ 1.4-1.7; hind femora: ♂ 17-18.5, ♀ 20-22; ovipositor 9.5-10.5.

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