

NOTES ON OTIOCERINAE WITH DESCRIPTION OF A NEW TRIBE FROM MADAGASCAR AND AFRICA (HEMIPTERA: FULGOROMORPHA: DERBIDAE)

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Abstract.— A key to Derbidae subfamilies and tribes of Otiocerinae is given. A new tribe of Otiocerinae (Derbidae) planthoppers, Aqualiciini trib. nov., is established to comprise a few genera from the African continent and Madagascar. The tribe Patarini Emeljanov, 1994 is redefined and key to the genera is given. New genera: *Ileifea* gen. nov. for *Patara radiata* Synave, 1979, comb. nov., and *Muiravea* gen. nov., for *Patara hargreavesi* Muir, 1930, comb. nov., from Africa are described. Three new genera from Madagascar: *Ravola* gen. nov., *Razanus* gen. nov. and *Vizimum* gen. nov., are described and new species: *Vizimum constanti* sp. nov., *Vizimum lakandavaensis* sp. nov., *Razanus beniowskii* sp. nov. and *Ravola pennyi* sp. nov. are described. An annotated checklists of Aqualiciini and Patarini with data on distribution are given. New localities of *Patara vanduzei* Ball, 1902 from North America are presented.



Key words.— Hemiptera, Fulgoromorpha, Derbidae, Otiocerinae, Aqualiciini, Patarini, planthoppers, Madagascar, Nearctic Region, Afrotropical Region, the Seychelles, classification, taxonomy, new tribe, new genera, new species.

INTRODUCTION

Insects placed in Derbidae constitute a huge and highly differentiated family of planthoppers, housing a large number of species (Hemiptera: Fulgoromorpha: Fulgoroidea). It is one of the largest families within Fulgoroidea. Representatives of the family occur in temperate and tropical zones (mainly in the New World and Australian regions). Nymphs of Derbidae planthoppers seem to be obligatory fungivorous, they have been collected under bark of live trunks and decaying logs (O'Brien 1991, Yang and Yeh 1994, Emeljanov and Fletcher 2004). Imagines occur above the ground, they are usually associated with monocotyledones (particularly palms) and woody dicotyledones, a few species feed on ferns. Most derbids are monophagous or strictly oligophagous (Wilson et al. 1994).

This is the first of a series of papers on the Derbidae of Madagascar and the Seychelles. The tribes: Cenchreini, Phenicini, Sikaianini and Zoraidini have been reported earlier, here the new tribe Aqualiciini is added. In a collection of 10 thousand derbids collected in Madagascar by the team of California Academy of Sciences, the latter

are scarce, although a series of *Aqualicium* was collected in the Seychelles (Distant 1917).

SYSTEMATICS

The most recent classification and evolution schemes of Derbidae were these proposed by Fennah (1952) and Emeljanov (1994), but the distribution of some characters still remains controversial and the available data are not sufficient to substantiate the phylogeny of the group. Numerous taxonomic problems within the group exist, and Derbidae, as well as its subunits, are sometimes believed to be paraphyletic (Emeljanov and Fletcher 2004). A more detailed system based on external morphological characters was presented by Emeljanov (1994). He divided Derbidae into three subfamilies and 18 tribes. The subfamily Cedusinae comprises the tribes Ipsnolini, Goneokarellini, Vinatini, Cedusini, Phrygiini, and recently (Emeljanov and Fletcher 2004) included tribe Breddiniolini Fennah, 1950, formerly placed in Achilidae (Fennah 1950b, Emeljanov 1991, 1992b). Derbinae comprise the tribes Cedochreini,

Dawnarioidini, Derbini, Cenchreini and Nicertini, while Otiocerinae include the tribes: Kamendakini, Rhotanini, Otiocerini, Patarini, Neocyclocarini, Phenicini, Zoraidini and Sikaianini. According to Emeljanov (1994), the taxa placed in the tribe Mysidiini, proposed by Broomfield (1985), are to be placed within Derbini.

The tribe Patarini (Otiocerinae) was erected by Emeljanov in 1994, to comprise four genera: *Anapatara* Emeljanov, 1994, *Aquaelicism* Distant, 1917, *Patara* Westwood, 1840 and *Synavea* Emeljanov, 1994. The main characters of this tribe shown by Emeljanov (1994) are: jugal margin of hindwings with stridulatory plate with convex external margin; tegmen with clavus closed, second claval area with numerous tubercular sensory spots; CuA closed, procubital cell present. However, the genera *Patara* Westw. and *Anapatara* Em. are characteristic of single CuA vein, not branching, not closing anterior cubital area, i.e. procubital cell (exception within Otiocerinae). Thus redefined tribe Patarini comprises genera: *Patara* Westw. (probably paraphyletic genus, known from South and Central America and African continent) and *Anapatara* Em. (known from continental Africa). Genera: *Synavea* Em. and *Aquaelicism* Dist., formerly placed in Patarini, together with new genera described below, are placed in newly erected tribe Aquaeliciini trib. nov.

Key to Subfamilies of Derbidae and tribes of Otiocerinae

1. Jugal margin of hindwing without stridulatory plate **10**
- . Jugal margin of hindwing with stridulatory plate. **Otiocerinae** Muir, 1917
2. Hind wing with stridulatory plate with concave external margin **3**
- . Hind wing with stridulatory plate with convex external margin. **5**
3. Clavus open **Otiocerini** Muir, 1917
- . Clavus closed **4**
4. Tegmen with CuA without sensory pits.
- **Kamendakini** Emeljanov, 1994
- . Tegmen with CuA with stridulatory pits.
- **Rhotanini** Muir, 1917
5. Clavus closed **6**
- . Clavus open **9**
6. Tegmen with CuA not forked, without anterior cubital area **Patarini** Emeljanov, 1994
- . Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area **7**
7. Vein Pcu thickened with numerous sensory pits
- **Aquaeliciini** trib. nov.
- . Vein Pcu with a few or lacking sensory pits **8**
8. Head without sensory pits **Neocyclocarini** Emeljanov, 1994
- . Head with sensory pits . . **Phenicini** Emeljanov, 1994

9. Margin of eyes not close to epistomal suture
- **Zoraidini** Muir, 1918
- . Margin of eyes extending to epistomal suture anterior to antennae in area of lora
- **Sikaianini** Muir, 1917
10. Sensory pits on head and on tegmina absent
- **Cedusinae** Emeljanov, 1992
- . Sensory pits on head and on tegmina present, or only on tegmina **Derbinae** Spinola, 1839

Aquaeliciini trib. nov.

Description. Vertex triangular, sometimes with median carina, without sensory pits. Frons linear, strongly compressed, only with small groove, delimited by the lateral carinae, without sensory pits. Compound eyes with distinct or weak ventral incision, ocelli present or lacking. Occipital area of head capsule visible posteriorly of compound eyes. Antafossa (antennal groove) not elevated above genal disc or elevated in posterior portion, sometimes with additional carination. Second antennal segment enlarged, sometimes robust, tubercular or strongly extended. Subantennal shelf absent or present; if present, then cariniform or lobiform, without or with setae on external margin. Clypeus with or without median carina, clypeal lateral carinae present. Rostrum with apical segment as long as wide.

Pronotum narrow and long with median carina distinct, pronotal funnel present or lacking; if present, formed by anterodorsal carina and/or anteroventral carina. Mesonotum large, diamond-shaped, sometimes distinctly convex, with middle and lateral carinae distinct.

Tegmen with stem of vein Sc+R with sensory pits. Vein CuA bifurcate then anastomosing, closing anterior cubital area. Vein Pcu distinctly convex, densely covered with sensory pits. Secondary veinlets present or absent. Clavus closed.

Hindwing with distinct stridulatory plate, its outer margin convex.

Hindtibia without lateral teeth, apical set of 1+4 or 1+5 teeth.

Female ovipositor reduced, anterior connective lamina of gonapophysis VIII with a few apical teeth.

Key to genera

1. Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area of one cell (Figs 1, 5) **2**
- . Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area of two or more cells **3**
2. Terminal of CuA₁₊₂ joined into margin of tegmen **Synavea** Emeljanov, 1994
- . Terminal of CuA₁ joined into margin of tegmen, terminal CuA₂ blind, short icu present
- **Muiravea** gen. nov.

3. Anterior cubital area with two cells (Figs 37–38, 40) 4
 –. Anterior cubital area with more cells, numerous veinlets present. *Vizimum* gen. nov.
4. Terminal of CuA₁₊₂ joined into posterior branch of M with single vein (Figs 24, 31–32) 5
 –. Terminal of CuA₁₊₂ not joined into posterior branch of M, reaching posterior margin of tegmen (Figs 37–38, 40) 6
5. CuA forked apicad of junction of claval veins; apical anterior cubital cell longer than basal, veinlet *r-m* present. *Ileifea* gen. nov.
 –. CuA forked basad of junction of claval veins; apical anterior cubital cell shorter than basal; veinlet *r-m* absent. *Razanus* gen. nov.
6. Mesonotum in lateral aspect not distinctly convex; basal anterior cubital cell more than twice as long as wide *Aqualicium* Distant, 1917
 –. Mesonotum in lateral aspect distinctly convex; basal anterior cubital cell about twice as long as wide. *Ravola* gen. nov.

Synavea Emeljanov, 1994
 (Figs 1–4)

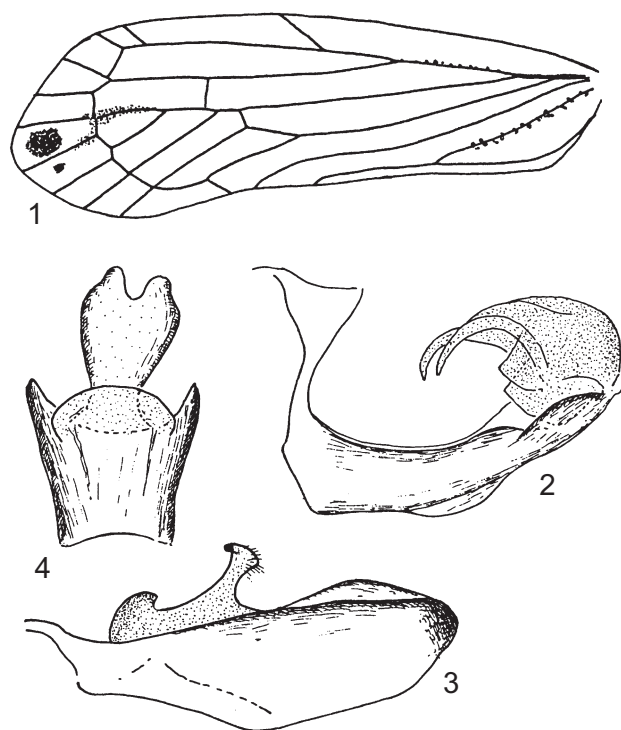
Type species. *Patara apicemaculata* Synave, 1971; by original designation (Emeljanov 1994: 801).

Diagnostic characters. Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area of one cell; terminal of CuA₁₊₂ joined into margin of tegmen.

Vertex short, triangular, its lateral margins converging apicad and continuous on frons. Frons narrow, linear, slightly diverging near frontoclypeal suture, in lateral view rounded, projecting anteriorly of the compound eyes and evenly prolonged to the vertex. Subantennal process present, its length slightly exceeding length of 2nd antennal segment. Second antennal segment ovoid, about twice as long as wide, with pointed apex.

Pronotum with posterior margin distinctly angulately excavated, its border elevated; median and lateral carinae distinct. Mesonotum with three carinae.

Tegmina hyaline; common stem Sc+R+M short; Sc+R with sensory pits, forking at level of 1/3 of tegmen length; ScRA₁, forked at half of tegmen length; RA with two terminals; RP forked close to the apex, at level of apical line, with two terminals; M separated from the common stalk quite close to the basal cell, with 4 terminals; first fork of M at level of apex of clavus; CuA forking slightly apicad of half of length of tegmen, distinctly apicad of Sc+R forking, then anastomosing, anterocubital cell elongate (exception *S. rusticola*); terminal of CuA₁₊₂ joined into margin of tegmen; clavus long with apex distinctly exceeding half of length of tegmen; claval veins Pcu and A₁ joined at about half of clavus length; common vein Pcu+A₁ reaching posterior margin of



Figures 1–4. *Synavea apicemaculata* (Synave, 1971). (1) Tegmen; (2) aedeagus in left, lateral view; (3) left genital style; (4) anal tube in dorsal view (after Synave 1971).

tegmen distinctly before apex of clavus; vein Pcu with sensory pits in basal portion.

Composition. *Synavea albibaltea* (Van Stalle, 1986), *S. apicemaculata* (Synave, 1971), *S. compaginata* (Van Stalle, 1986), *S. hyalina* (Synave, 1979), *S. pattersoni* (Muir, 1918), *S. pusilla* (Van Stalle, 1986), *S. recurvata* (Van Stalle, 1984), *S. rusticola* (Van Stalle, 1984),

Distribution. Western Africa.

Muiravea gen. nov.

Type species. *Patara hargreavesi* Muir, 1930.

Diagnosis. Tegmen with single terminal of RA, vein CuA bifurcate then anastomosing, closing anterior cubital area of one cell. Terminal of CuA₁ not joined into margin of tegmen, blind, terminal CuA₂ blind, short *i-cu* present. Genital style with distinct apical pointed processes curved mediad. Apex of male anal tube with three small processes, the median one directed downwards. Periandrium without process, endophallus with short, distinctly curved, hook-like process.

Description. Vertex triangular. Frons narrow, its lateral carinae parallel, narrowly diverging basad. Clypeus elongate, shorter than frons. Antenna shorter than frons, with second joint cylindrical, tapered at apex. Subantennal shelf present, shifted posteriorly behind the antenna, with distal margin bearing hairs.

Pronotum with posterior margin angulate, with anterodorsal carinae distinct. Mesonotum 3 carinate, lateral carinae converging posteriad. Mesonotum 3 carinate, lateral carinae converging posteriad.

Tegmen with Sc+R bifurcate apicad of $\frac{1}{3}$ of tegmen base; RA single; RP with two terminals; M with 4 terminals; CuA bifurcate slightly basad of apex of clavus, branch CuA₁ reaching margin, branch CuA₂ blind; short *icu* present. Claval veins Pcu and A₁ joined together about the middle of the clavus, their common stem reached sutural margin little before the apex of the clavus. Wings hyaline.

Female subgenital plate triangular. Male anal tube with three apical processes. Genital style with pointed, directed mediad apical processes. Single process on each style.

Etymology. Named after Frederic Muir, an eminent entomologist, specialist on the Hemiptera. Gender: feminine.

Composition. *Muiravea hargreavesi* (Muir, 1930); a monotypic genus.

***Muiravea hargreavesi* (Muir, 1930) comb. nov.**

(Figs 5–10)

Patara hargreavesi Muir, 1930: 82, Figs 4–5.

Synavea hargreavesi (Muir, 1930): Emeljanov 1994: 801.

Diagnostic characters. General coloration shiny dark brown/blackish. Vertex and frons dark brown; clypeus and rostrum yellow. Pronotum and mesonotum dark brown. Tegmina dark brown, longitudinal veins dark

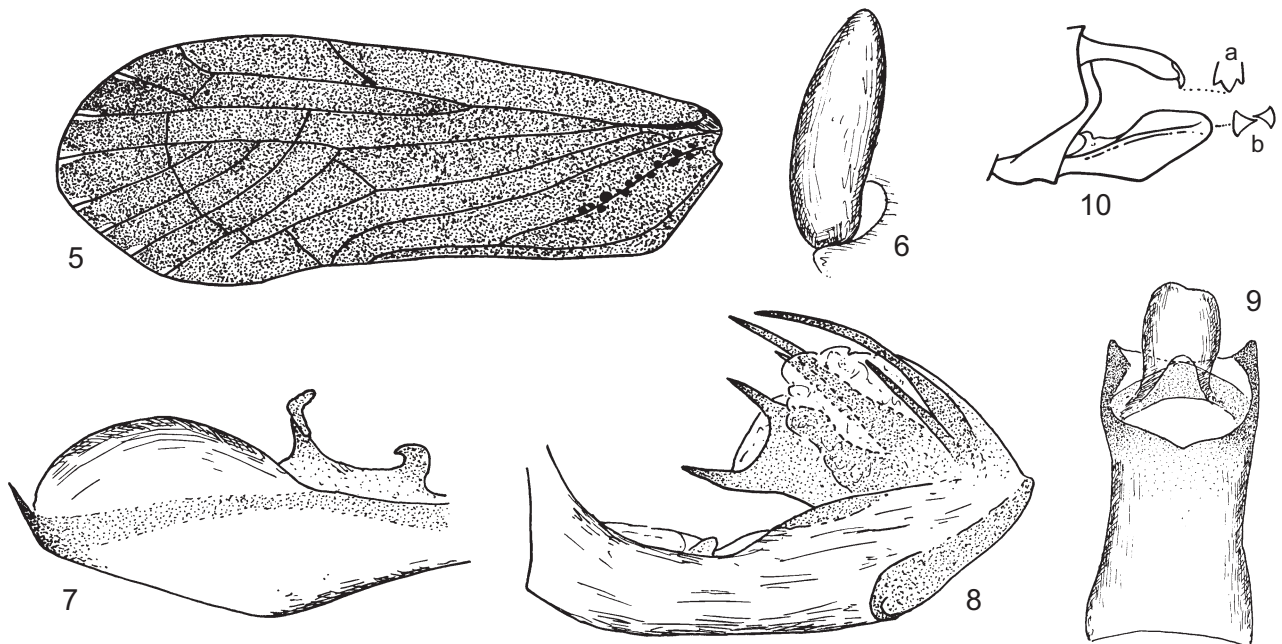
brown-red, becoming reddish on the apical $\frac{1}{3}$; costal margin red to the level of the stigma; apical and sutural margins red; single, whitish, small hyaline spot, on the apex of the each longitudinal vein (absent in female paratypes according to Synave 1973: 154); Wings brown, more brown on the apex and on the anal lobe; with reddish edges and veins. Legs yellowish, tinted with red.

Vertex small, triangular, with lateral margins converging anteriorly where they are prolonged directly by those of the face; longitudinal median carina very distinct. Frons linear, with lateral margins narrowly coupled, parallel until little before the apex where they diverge. Compound eyes elongate, on lower border very deeply and broadly indented. Antenna long, but shorter than frons, 2nd antennal joint cylindrical, with apex pointed, approximately 3 times longer than broad; if directed vertically, reaching almost lower edge of eye; weak subantennal quadrate process present, arising from the head more behind than below the antenna, the distal margin bearing hairs.

Pronotum with posterior margin angulately indented, with anterodorsal carinae projecting anteriorly, Mesonotum with 3 carinae, lateral ones converging posteriad.

Tegmen with thick veins; vein Sc+R bifurcate apicad of $\frac{1}{3}$ of tegmen base; RA single; RP with two terminals; M with 4 terminals (3 terminals on left tegmen of type was reported by Synave 1973: 154); CuA bifurcate slightly basad of apex of clavus, branch CuA₁ reaching margin, branch CuA₂ blind, short *icu* present. Claval veins Pcu and A₁ joined together about the middle of the clavus, their common stem reached sutural margin little before the apex of the clavus, in the middle of tegmen.

Wings hyaline.



Figures 5–10. *Muiravea hargreavesi* (Muir, 1930). (5) Tegmen; (6) antenna; (7) male genital style; (8) aedeagus; (9) anal tube, dorsal view; (10) anal tube, lateral view: a – apex of anal tube in posterior view, b – apices of genital styles in posterior view (5–9 after Synave 1973, 10 after Muir 1930).

Female subgenital plate more or less triangular, angularly produced posteriorly from side to middle, with lateral sides slightly sinuate. Male genital style long, fairly narrow, widest apicad of middle to apical $\frac{1}{3}$, dorsal inner margin angular, dorsal margin with two dorsad processes: hook-like basal and elongate median, apex of style with pointed and curved mediad process, ventral margin angulate. Aedeagus with perianthrium without processes, endosoma with 6 processes, endophallus with hook-like process. Apex of male anal tube produced into three small processes, the middle one curved downwards.

Distribution. Sierra Leone: Kenema.

Vizimum gen. nov.

Type species. *Vizimum constanti* sp. nov.

Diagnosis. Tegmen with apical margin sinuate, vein CuA bifurcate then anastomosing, closing anterior cubital area; joined vein CuA₁₊₂ bifurcate again near apex; secondary veinlets in anterior cubital area present, dividing it several cells. Vein M with 4 terminals, branches of M with sensory tubercles. Veinlet *r-m* present. Terminals of veins slightly widened and weakened, not reaching margin. Disc of mesonotum not elevated above disc of pronotum. Median carina of vertex absent; posterior margin of vertex elevated. Lateral ocelli absent. Antafossa with elevated posterior margin, antennal shelf, small, cariniform. Metatibio-tarsal formula 1+5 : 5 : 4.

Description. Vertex triangular, without median carina and sensory pits, posterior margin elevated. Frons narrow, with lateral margins contiguous then diverging near frontoclypeal suture, without sensory pits, about 4 times as wide at the base as at the apex. Clypeus without median carina, slightly longer than frons. Compound eyes with distinct ventral incision. Subocular area slightly concave. Ocelli lacking. Posterior margin of antafossa elevated. Subantennal shelf small, cariniform, slightly shifted posteriad. Antenna with 2nd segment about twice as long as wide, enlarged, elongately tubercular, with rows of numerous sensillae. Rostrum reaching hind coxae, apical segment about as long as wide.

Pronotum distinctly wider than head with compound eyes, with median carina; pronotal funnel not developed, anterodorsal carina weakly developed.

Mesonotum diamond-shaped, with disc convex, not elevated above disc of pronotum, with median carina distinct, lateral carinae indistinct or obsolete.

Tegmen about 1.9 times as long as wide, posterior margin excavate, clavus length exceeding half of tegmen. Vein Sc+R with row of sensory pits; RA with two terminals; RP with two terminals; M with 4 terminals, first branch of M forked basad of apical line, branches of M with sensory tubercles. Vein CuA bifurcate basad of claval fork, then anastomosing, closing anterior cubital area; anterior cubital area with reticulate veinlets, form-

ing a few polygonal cells, fused vein CuA₁₊₂ anastomosing and forming one or two cells with common terminal reaching margin, or not anastomosing, with blind branch and two terminals reaching margin. Vein Pcu thick, with rows of sensory tubercles.

Wing membranous; RA with single terminal; RP with single terminal; M with four terminals; CuA and CuP single; veinlet *ir* quite long slightly curved apicad, veinlet *r-m* quite long, straight; stridulatory plate elongate, with convex margin.

Hind tibia without lateral spines, slender, metatibio-tarsal formula 1+5 : 5 : 4.

Female sternite VII triangular, distinctly shorter than wide.

Etymology. Named after Vizimba – the spirits who lived on Madagascar before humans came, from Malgascan mythology. Gender: neuter.

Composition. *Vizimum constanti* sp. nov., *V. lakandavaensis* sp. nov.

Distribution. Madagascar.

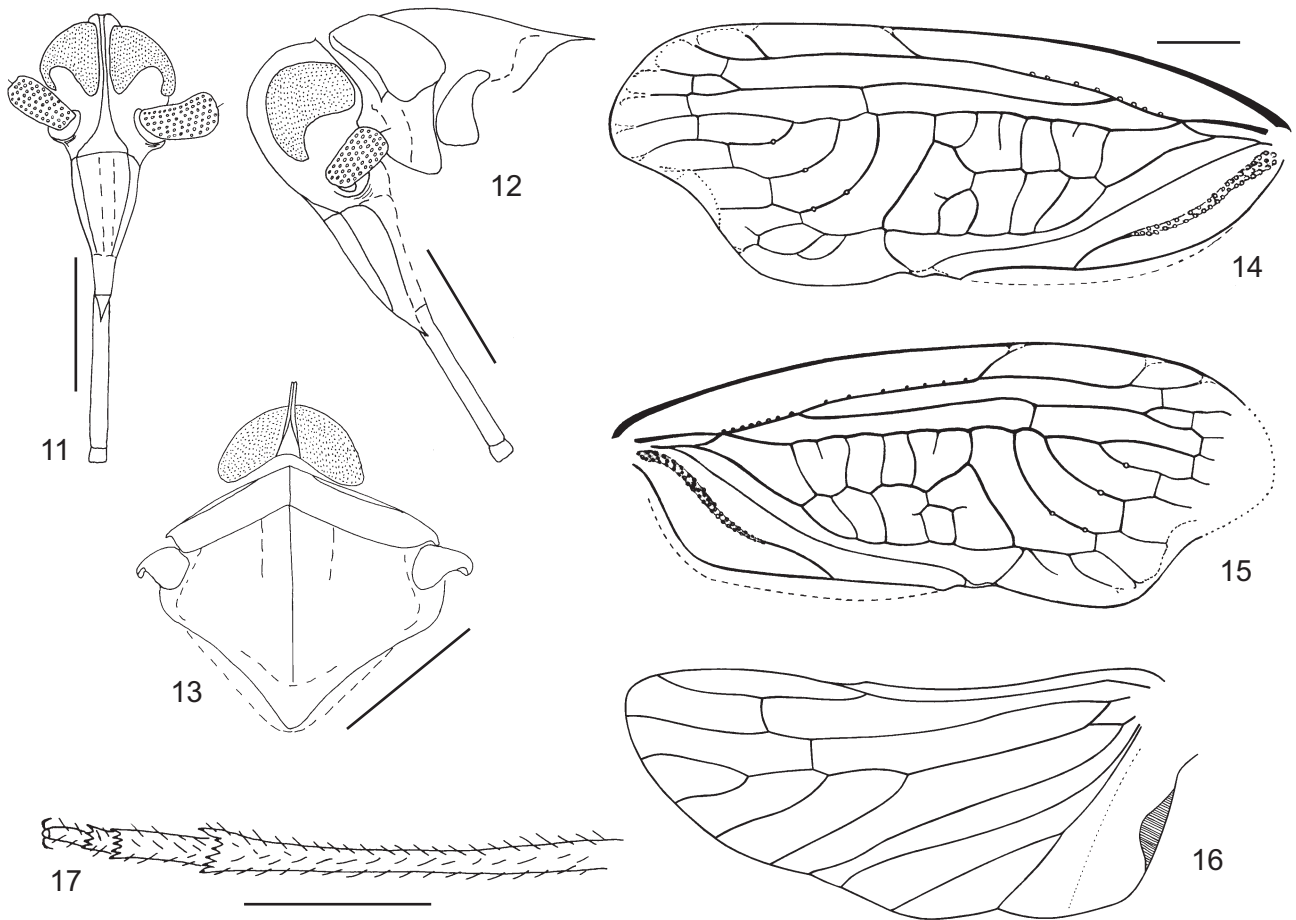
Vizimum constanti sp. nov.

(Figs 11–17)

Diagnosis. Larger than *Vizimum lakandavaensis*. Vertex distinctly longer in mid line than wide at base. Tegmen with forking of CuA more distinct, net of secondary veinlets more regular than in *V. lakandavaensis*. Apex of female sternite VII angulate, anterior connective lamina of gonapophysis VIII with 6 apical teeth and single subapical tooth, female anal tube short, anal style about as long as segment XI.

Description. Total length 9.11 mm, length of body 5 mm. General coloration yellowish-brown, compound eyes red, vertex, pronotum and mesonotum yellowish-brown, pronotum slightly darker, whitish streak along median carinae of pronotum and mesonotum, lateral margins of frons red, clypeus and rostrum yellowish, antennae reddish-brown, legs yellowish, dorsal part of abdomen yellowish-brown, ventral part reddish, tegmina and wings with venation red, tegmina with white markings at terminals of longitudinal veins.

Head with compound eyes 0.85 mm wide. Vertex triangular, 0.28 mm long in mid line, 0.17 mm wide at posterior angles, lateral margins weakly elevated, converging anteriorly and passing into contiguous lateral margins of frons, posterior margin elevated, slightly incised. Frons 0.96 mm long, with lateral margins contiguous, 0.6 mm wide at apex, diverging near frontoclypeal suture, 0.24 mm wide at this point. Clypeus slightly longer than frons (1.06 mm), with weak lateral carinae, median carina lacking. Antenna with 2nd joint 0.53 mm long, 0.23 mm wide, elongately tubercular, covered with numerous sensory pits. Rostrum reaching hind coxae, 1.13 mm long, apical segment 0.14 mm long, 0.18 mm wide.



Figures 11–17. *Vizimbium constanti* gen. et sp. nov. (11) Face; (12) anterior part of body in lateral view; (13) anterior part of body in dorsal view; (14) left tegmen; (15) right tegmen; (16) left hind wing; (17) hind tibia and tarsus.

Pronotum 0.31 mm long in mid line, 1.69 mm wide, with distinct median carina, lateral carinae almost parallel to anterior margin, postocular area of pronotum slightly convex, visible, posterior margin shallowly excavated.

Mesonotum 1.41 mm long in mid line, 1.83 mm wide, almost diamond shaped, with distinct median carina, disc slightly convex.

Tegula large, about half of compound eye length, wider (0.56 mm) than long (0.35 mm).

Tegmen 7.84 mm long, coriaceous, costal margin slightly convex, widened in apical portion, posterior margin slightly excavate, apex of clavus slightly exceeding half of tegmen length. Costa quite thick, basal cell long; veins Sc+R and M start at the same point from basal cell, common branch Sc+R with sensory tubercles to the level of ScRA₁ forking; Sc+R forked slightly basad of CuA fork; ScRA₁ forked at level of first M fork; RA with two terminals; RP with two terminals; vein M with 4 terminals; vein CuA forked slightly basad of junction of claval veins, then branches CuA₁ and CuA₂ fusing again as a short stem, then forking again and reaching posterior margin of tegmen; apical portion of terminals

of veins RA, RP and M weakened and widened near apex, not connected with margin in single point. Veinlet *r-m* present, veinlets *ir* and *im* form apical line; veins M and CuA connected in basal portion of tegmen by transverse veinlets *m-cu*; branches CuA₁ and CuA₂ connected by quasi regular transverse *icu* veinlets; veinlet *icu* connecting CuA and margin of tegmen curved and join margin of tegmen at almost the same point as apex of clavus. Claval vein Pcu thick at base, covered with rows of sensory tubercles, vein A₁ elevated, carina-like, junction of claval veins posteriad of half of claval length.

Venation differs on left and right tegmen: right tegmen with one joined vein CuA₁₊₂ forked near apex and two terminals reaching margin, and blind forking near veinlet *icu* connecting CuA with margin, base of this *icu* veinlet apicad of CuA₁ and CuA₂ junction; left tegmen with joined CuA₁₊₂ forked twice, forming two cells, with single terminal reaching margin, and secondary blind fork near apex, base of veinlet *icu* connecting CuA and margin basad of CuA₁ and CuA₂ junction.

Wing hyaline; RA with single terminal reaching margin slightly basad of apex; RP with single terminal

reaching apex; M with four terminals; CuA and CuP single; veinlet *ir* quite long slightly curved apicad, veinlet *r-m* quite long, straight; stridulatory plate elongate, with convex margin.

Hind tibia 1.83 mm long, slender, without lateral spines, hind tarsus 0.70 mm long, basitarsomere the longest (0.42 mm), mid tarsomere and apical tarsomere subequal in length (0.28 mm), tarsal claws and arolium small.

Abdomen subtriangular in cross section; female genital sternite VII triangular, with apex widely angulate, 0.37 mm long in mid line, 0.98 mm wide. Female anal tube wider (0.56 mm) than long (0.42 mm); segment XI 0.18 mm long; anal style spatulate, about as long as preceding segment. Gonapophysis VIII with anterior lamina with 6 thick apical teeth and single subapical tooth.

Male not known.

Etymology. Named in honour of Jérôme Constant, specialist on Hemiptera: Fulgoromorpha and curator of the Hemiptera collection in KBIN/IRScN, Brussels.

Distribution. Madagascar, Antsiranana Province, Nosy Komba Island.

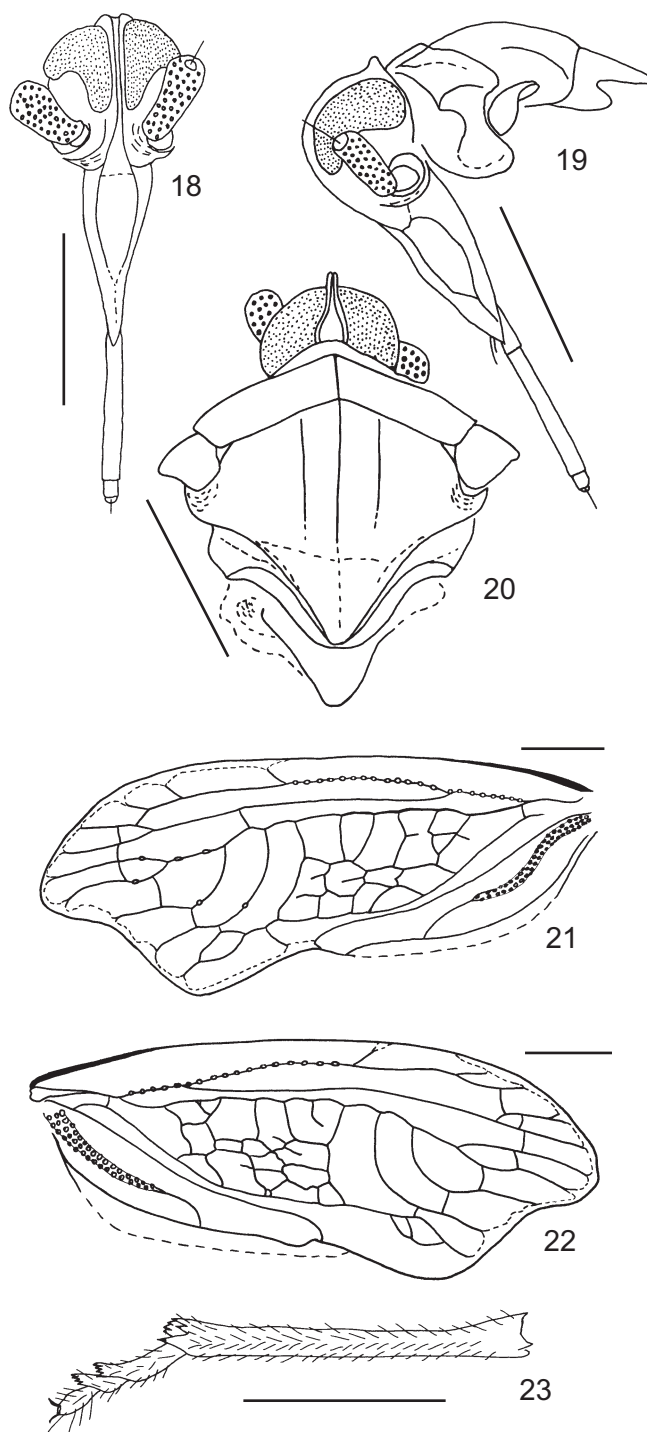
Type material. Holotype, female. Labelled: red label [Holotype ♀]; bluish label [INSTITUT / SCIENTIFIQUE / MADAGASCAR], [NOSY - KOMBA / Sommet / 5/56 A.R.]; blue label [Coll. R.I.Sc.N.B. / Madagascar]; [*Vizimum / constanti* / Banasz. et Szw. 2005]. Deposited in Royal Belgian Institute of Natural Sciences, Brussels.

Vizimum lakandavaensis sp. nov.
(Figs 18–23)

Diagnosis. Smaller than *Vizimum constanti*. Vertex about as long in mid line as wide at base. Tegmen with forking of CuA indistinct, net of secondary veinlets irregular (less regular than than in *V. constanti*). Apex of female sternite VII acute, anterior connective lamina of gonapophysis VIII with 7 apical teeth and single subapical tooth, female anal tube short, anal style shorter than segment XI.

Description. Total length 6.82 mm, length of body 4.51 mm. General coloration reddish-brown, lateral margins of frons red, clypeus and rostrum yellowish, compound eyes reddish-brown, antennae reddish-brown, pronotum brownish its posterior margin edged with red, mesonotum brownish, venation of tegmina and wings red, legs yellowish, dorsal and ventral portions of abdomen reddish, genital portion yellowish-brown.

Head with compound eyes 0.79 mm wide. Vertex triangular, as long (0.18 mm) as wide at posterior angles; lateral margins elevated, converging anteriorly and passing into lateral margins of frons, without sensory pits, posterior margin elevated; disc concave without median carina. Frons 0.85 mm long, narrow, linear, with median groove; lateral margins without sensory pits, contigu-



Figures 18–23. *Vizimum lakandavaensis* gen. et sp. nov. (18) Face; (19) anterior part of body in lateral view; (20) anterior part of body in dorsal view; (21) left tegmen; (22) right tegmen; (23) hind tibia and tarsus.

ous, diverging near frontoclypeal suture, 0.17 mm wide at frontoclypeal suture, 0.04 mm wide at apex. Clypeus slightly longer than frons (0.92 mm), with weak lateral carinae, median carina lacking. Antenna with 2nd joint 0.49 mm long, 0.24 mm wide, elongately tubercular,

covered with numerous sensory pits. Rostrum reaching hind coxae, 1.06 mm long, apical segment as long as wide (0.14 mm).

Pronotum 0.23 mm long in mid line, 1.55 mm wide, with distinct median carina, lateral carinae almost parallel to anterior margin; postocular area of pronotum slightly convex, visible; posterior margin shallowly excavated.

Mesonotum 1.27 mm long in mid line, 1.62 mm wide, almost diamond shaped, with distinct median carina, and less distinct lateral carinae; disc slightly convex.

Tegula large, about half of compound eye length, wider (0.41 mm) than long (0.21 mm).

Tegmen 5.88 mm long, coriaceous; costal margin slightly convex, widened in apical portion, posterior margin excavate; apex of clavus slightly exceeding half of tegmen length. Costa quite thick, basal cell long; veins Sc+R and M start at the same point from basal cell, common branch Sc+R with sensory tubercles to the level of ScRA₁ fork; Sc+R forked slightly basad of CuA fork, ScRA₁ basad of first M fork; RA with two terminals; RP with two terminals; M with 4 terminals; vein CuA forked basad of junction of claval veins then branches CuA₁ and CuA₂ fused again as a short stem, then forked and united again and reaching posterior margin as a single terminal; apical portion of terminals of veins RA, RP and M weakened and widened near apex, not connected with margin. Veinlet *r-m* present, veinlets *ir* and *im* form apical line; veins M and CuA connected in basal portion of tegmen by veinlets *m-cu*; branches CuA₁ and CuA₂ connected by irregular net of *icu* veinlets, forming numerous polygonal cells; veinlet *icu* connecting CuA and margin of tegmen curved and joining margin of tegmen near apex of clavus. Claval vein Pcu thick at base, covered with rows of sensory tubercles, vein A₁ distinctly elevated, carina-like, joining of claval veins distinctly posteriorly of half of length of clavus.

Venation differs on left and right tegmen, right tegmen with joined vein CuA₁₊₂ forked near apex then fused again forming two cells; left tegmen with joined CuA₁₊₂ forked, forming single cell.

Wing hyaline; RA with single terminal reaching margin slightly basad of apex; RP with single terminal reaching apex; M with four terminals; CuA and CuP single; veinlet *ir* quite long slightly curved apicad, veinlet *r-m* quite long, straight; stridulatory plate elongate, with convex margin.

Hind femur 0.86 mm long, hind tibia 1.69 mm long, slender, without lateral spines, hind tarsus 0.63 mm long, basitarsomere the longest (0.39 mm), mid tarsomere and apical tarsomere subequal in length (0.24 mm), tarsal claws and arolium small.

Abdomen subtriangular in cross section, female genital plate triangular with apex acute, 0.46 mm long in mid line, 1.12 mm wide. Ovipositor 0.54 mm long. Female anal tube wider (0.56 mm) than long (0.35 mm); segment

XI 0.14 mm long; anal style shorter than preceding segment. Gonapophysis VIII with anterior connective lamina with 7 thick apical teeth and single subapical tooth.

Male not known.

Etymology. Named after locality – Lakandava.

Distribution. Madagascar: Toliara Province, Lakandava ad Tôlañaro.

Type material. Holotype, female. Labelled: red label: [HOLOTYPE ♀]; bluish label [Institut Scientifique / Madagascar]; [Lakandava / Fort Dauphin]; blue label [Coll. R.I.Sc.N. B. / Madagascar]; [Vizimum / lakandavaensis / Banasz. et Szw. 2005]. Deposited in Royal Belgian Institute of Natural Sciences, Brussels.

Ileifea gen. nov.

Type species. *Patara radiata* Synave, 1979

Diagnosis. Tegmen with two terminals of vein RA, vein CuA bifurcate, then anastomosing, closing anterior cubital area of one cell; vein CuA₁₊₂ joined into branch of M as single vein. Apex of male genital style wedge-like, without apical process. Apex of anal tube with two processes, divided by a deep groove.

Etymology. Named after locality Ile-Ife. Gender: feminine.

Composition. *Ileifea radiata* (Synave, 1979); a monotypic genus.

Ileifea radiata (Synave, 1979) comb. nov. (Figs 24–27)

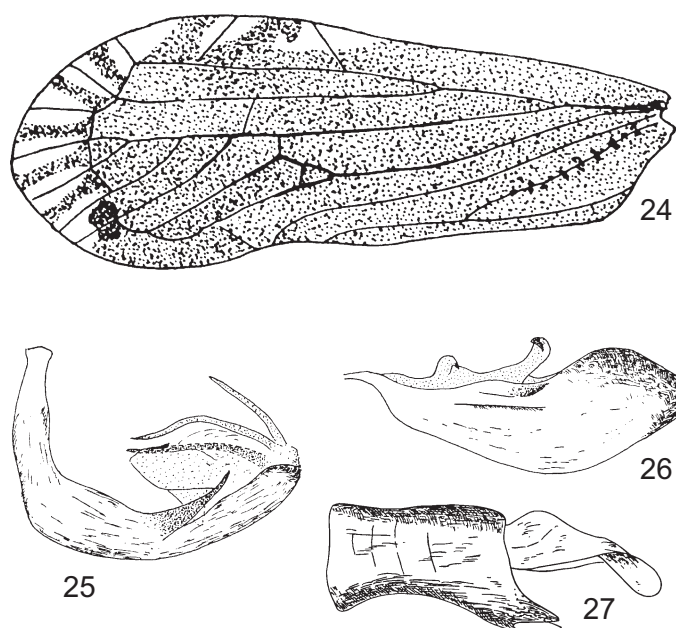
Patara radiata Synave, 1979: 24, Figs 73–76.

Synavea radiata (Synave, 1979): Emeljanov 1994: 801.

Diagnostic characters. General coloration of the body yellowish except brownish pronotal carinae. Tegmina dark brown, except the apical cells which are white with a brown longitudinal scratch on their medium. Two white spots in the costal cell and a small brown spot in the apex of apical line. Legs white.

Antenna with 2nd joint about 2 times as long as wide. Vein Sc+R bifurcate at level of 1/3 of tegmen; ScRA₁ forked at the level of half of tegmen length; RA with two terminals; RP with two terminals; M with 4 terminals; CuA bifurcate slightly basad of apex of clavus, cubital cell with secondary veinlet *icu*, branch CuA₁ joining branch CuA₂ near the apex and joined CuA₁₊₂ falls to the terminal branch of M. Veinlets *r-m* and *m-cu* present. Claval veins Pcu and A₁ joined together about the middle of the clavus, their common stem reaching sutural margin just before the apex of the clavus, at the level of half of tegmen length.

Male genital style long, widest about the middle, with inner margin bisinuate, dorsal margin with two dorsad



Figures 24–27. *Ileifea radiata* (Synave, 1979). (24) left tegmen; (25) aedeagus; (26) left stylus; (27) anal tube in lateral view (after Synave 1979).

processes: hook-like basal and elongate median, apex of stylus without any of spines; Apex of male anal tube with two processes, divided by a deep groove, epiproct (segment XI) elongate. Aedeagus with distinct posteriad process of periandrium, endophallus without processes, endosoma with long dorso-cephalad processes.

Distribution. Nigeria: Oyo State, Ile-Ife.

Razanus gen. nov.

Type species. *Razanus beniowskii* sp. nov.

Diagnosis. Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area with two cells; terminal of CuA₁₊₂ joined into posterior branch of M. Vein M with 4 terminal branches, veinlet *r-m* lacking. Disc of mesonotum elevated above level of pronotal disc, strongly declivent at anterior margin. Median carina of vertex incomplete, not reaching apex of vertex. Lateral ocelli absent. Antafossa with elevated posterior margin; subantennal shelf distinct, lobiform with a few setae at its apical margin. Metatibio-tarsal formula 1+5 : 5 : 5. Gonapophysis VIII with anterior connective lamina with 9 apical teeth and single subapical tooth.

Description. Vertex triangular, about as long in mid line as wide at posterior angles, with incomplete median carina; lateral margins of vertex elevated, without sensory pits; posterior margin of vertex in lateral view slightly elevated. Frons linear, with lateral margins without sensory pits, parallel, diverging near frontoclypeal suture, width of frons at base about 3 times as width at apex. Clypeus about as long as frons, with indis-

tinct lateral carinae and median carina. Compound eye with distinct ventral incision. Lateral ocelli absent. Antafossa with posterior margin elevated. Subantennal shelf distinct, lobiform, arising from the head more behind than below the antenna, the distal margin bearing a few hairs. Antenna with 2nd antennal joint suboval, slightly longer than wide, with numerous sensory pits. Rostrum reaching hind coxae, with apical segment slightly wider than long.

Pronotum about 5 times as wide as long in mid line, with median carina; anterodorsal carinae distinct, almost parallel to anterior margin of pronotum. Anterior margin of pronotum only slightly protruded anteriorly, posterior margin almost straight, subparallel to anterior. Complete pronotal funnel not developed, its lower margin (anteroventral carina) slightly folded.

Mesonotum subtriangular, distinctly shorter than wide, with weak median carina. Disc of mesonotum elevated above disc of pronotum, anterior margin strongly declivent anteriorly.

Tegulae distinctly wider than long.

Tegmen 3.2 times as long as wide, with distal portion widened, with apex of clavus posteriad of half of tegmen. Costal margin slightly curved, anterior apical angle widely angular, posterior margin almost straight. Basal cell elongate, common vein Sc+R and vein M begin at almost the same point; vein Sc+R forked slightly apicad of CuA forking; Sc+R and Sc+RA with sensory pits; single terminal RA₂ widening to apex; RP with two terminals, forked slightly before apex of tegmen, at level of apical line; M with 4 terminals, first forking at level of ScRA₁ terminal; CuA bifurcate basad of ScR forking, then anastomosing, closing anterior cubital area with two cells; CuA₁ and CuA₂ fused together at level of apex of clavus, terminal of CuA₁₊₂ joined into terminal M₄. Veinlet *r-m* lacking; veins RP and M close to each other at level of M first fork; veinlet *m-cu* slightly basad of ScRA fork; veinlet *icu* distinctly oblique. Clavus long, with apex at 2/3 of tegmen; claval veins elevated, vein Pcu thick at base with rows of sensory tubercles, junction of veins Pcu and A₁ slightly basad of CuA fork.

Wing hyaline, with quite long veinlet *ir* near apex; M with three terminals; veinlet *r-m* short, not oblique; anal field wide with distinct stridulatory plate, with external margin convex.

Hind coxa with distinct, long and thin meracanthal spine; hind femur slender; hind tibia slender, without lateral spines, hind tibia slender, without lateral spines, apical teeth in formula 1+5; hind basitarsomere as long as combined length of mid and apical tarsomeres, basitarsomere with row of 5 apical teeth, mid tarsomere with row of 5 apical teeth, tarsal claws delicate, pulvillus small; Metatibio-tarsal formula 1+5 : 5 : 5.

Etymology. Named after Razana – the ancestors who have become gods, from Malgascan mythology. Gender: masculine.

Composition. *Razanus beniowskii* sp. nov., a monotypic genus.

Razanus beniowskii sp. nov.
(Figs 28–33)

Diagnosis. See diagnosis of the genus *Razanus*.

Description. Total length 6.96 mm, length of body 4.22 mm. General colour of the body reddish-brown; compound eyes red; face orange-reddish; clypeus and rostrum yellowish; antennae reddish-brown; femora,

tibia and tarsi yellowish; vertex, pronotum and mesonotum brownish; tegmina and wing with venation red; abdomen orange-reddish.

Head with compound eyes 0.70 mm wide. Vertex triangular, about as long (0.22 mm) as wide at base (0.21 mm), with lateral margins slightly elevated, converging anteriorad and contiguous on face as lateral margins of frons, posterior margin slightly incised and elevated; disc with incomplete median carina not reaching to anterior angle of vertex. Occipital part of head distinct, narrow postocular field visible. Frons 0.85 mm long, 0.06 mm wide at apex, 0.18 mm wide at frontoclypeal suture, strongly compressed, linear, with lateral margins parallel, with distinct groove, only slightly diverging near frontoclypeal suture, margin of frons in lateral aspect rounded. Postclypeus 0.58 mm long, with lateral carinae, anteclypeus 0.17 mm long, median carina of clypeus indistinct. Compound eye with distinct, deep ventral incision, subocular area flat. Antennal area slightly convex; antafossa with elevated posterior margin. Subantennal shelf distinct, lobiform, arising from the head more behind than below the antenna, the distal margin bearing a few hairs. Antenna with 2nd antennal joint 0.39 mm long, 0.28 mm wide, suboval, with rows of sensory pits, antennal seta short. Rostrum 0.82 mm long, subapical segment 0.7 mm, apical segment 0.11 mm long, 0.14 mm wide, reaching hind coxae.

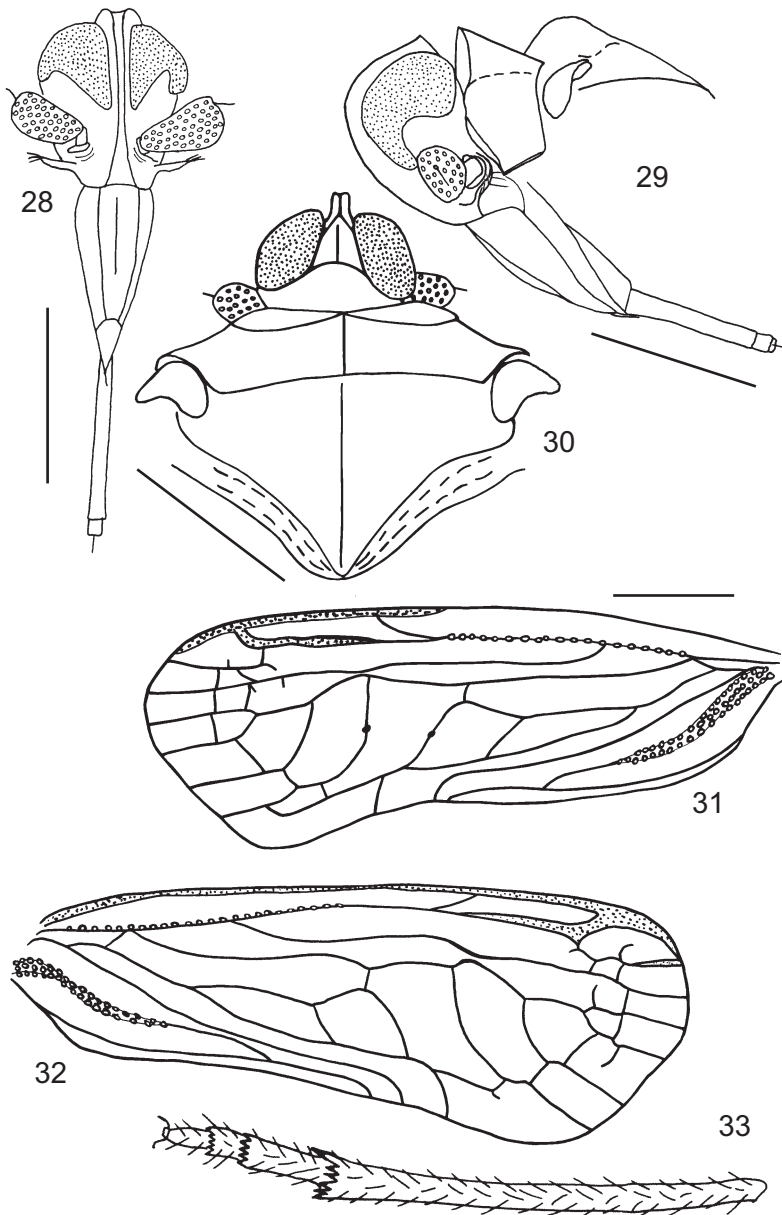
Pronotum narrow, 0.31 mm long in mid line, 1.52 mm wide, with distinct median carina, lateral carinae almost parallel to anterior margin; postocular area of pronotum slightly convex, visible.

Mesonotum 0.92 mm long in mid line, 1.63 mm wide, median carina reaching to its posterior apex; disc flat, its anterior margin strongly declivent anteriorad.

Tegmen 5.78 mm long, 1.97 mm wide, coriaceous, with distinct venation, wide area of vein RA₂ and posterior portion of costal margin covered with granules.

Hind femur 0.7 mm long; hind tibia 1.61 mm long; hind tarsus 0.59 mm long, length of hind basitarsomere 0.35 mm, mid tarsomere 0.24 mm, apical tarsomere with tarsal claws 0.22 mm.

Female abdomen 1.97 mm long, about as long as wide. Female genital plate 0.49 mm long in mid line, 1.13 mm wide, triangular with widely angular apex. Ovipositor about 0.56 mm long. Gonapophysis VIII with anterior connective lamina with 9 apical teeth and single subapical tooth. Female



Figures 28–33. *Razanus beniowskii* gen. et sp. nov. (28) Face; (29) anterior part of body in lateral view; (30) anterior part of body in dorsal view; (31) left tegmen; (32) right tegmen; (33) hind tibia and tarsus.

anal tube segment X 0.56 mm long, 0.85 mm wide, without additional processes, segment XI 0.42 mm long, about as long as wide, tubular, without processes, anal style 0.08 mm long, round.

Egg elongate, with apical tapered beak, chorion with distinct hexagonal sculpture.

Male not known.

Etymology. Named after Maurycy August Beniowski, Polish 18th century traveller, author of the first reports on Malgascan fauna, flora and people, king (*ampan-sakebe*) of the island.

Distribution. Madagascar: Toamasina Province, Maroansetra, Aroroantsetra ad Ambodivoangy.

Type species. Holotype, female. Labelled: red label [Holotype ♀]; bluish label [INSTITUT / SCIENTIFIQUE / MADAGASCAR]; handwritten: [Ambodivoangy]; handwritten: [Aroroantsetra]; handwritten: [III. SR / (R.P.)], blue label [Coll. R.I.Sc.N.B. / Madagascar]; [*Razanus / beniowskii* / Banasz. et. Szw. 2005]. Deposited in Royal Belgian Institute of Natural Sciences, Brussels.

Ravola gen. nov.

Type species. *Ravola pennyi* sp. nov.

Diagnosis. Frons narrow, linear, in lateral aspect round. Lateral carinae of clypeus weakened. Posterior margin of vertex elevated. Vertex with incomplete median carina. Subantennal shelf very weakly developed, in form of carina. Mesonotum in lateral aspect distinctly convex, subconical, with three indistinct carinae. Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area with two cells, cells of anterior cubital area with similar length; basal anterior cubital cell about twice as long as wide; joined stem CuA₁₊₂ long, reaching posterior margin of tegmen at posterior angle; clavus reaching half of tegmen; veins ScR with sensory tubercles, claval vein Pcu thickened, with rows of sensory tubercles. Metatibio-tarsal formula 1+4 : 4 : 4. Gonapophysis VIII with anterior connective lamina with 5 apical teeth.

Description. Vertex triangular, about as long in mid line as wide at posterior angles, lateral margins slightly elevated, converging anteriorly, passing into lateral margins of frons, without sensory pits, posterior margin slightly concave, elevated; disc of vertex concave, with incomplete median carina. Frons narrow, linear, without sensory pits, its lateral carinae contiguous, diverging near frontoclypeal suture, frons at this level about 4 times as wide as at apex. Clypeus slightly longer than frons, with lateral carinae weakened and median carina absent. Compound eyes with distinct ventral incision, occipital portion of head capsule visible. Lateral ocelli present. Posterior margin of antafossa distinctly elevated. Antennal shelf very weakly developed, in form of indistinct carina. Second antennal segment cylindrical, about 3 times as long as wide, covered with rows of sen-

sory pits. Rostrum slightly exceeding hind coxae, apical segment slightly wider than long.

Pronotum narrow, in mid line shorter than vertex, with posterior margin distinctly excavated, median carina distinct, lateral carinae present, diverging distinctly laterad. Pronotal funnel not developed, anteroventral carina slightly folded.

Mesonotum diamond-shaped, about as long as wide, with three indistinct and incomplete carinae, disc strongly convex, subconical, its posterior portion strongly declivent posteriorly.

Tegulae large, about twice as wide as long.

Tegmen coriaceous, about 2.7 times as long as wide at widest point, costal margin almost straight, anterior angle rounded, posterior margin excavated, claval apex slightly exceeding half of tegmen length. Basal cell elongate; common vein Sc+R and vein M begin at almost the same point; Sc+R forked apically of CuA forking, Sc+R and Sc+RA with sensory pits, ScRA₁ forked at level of apex of clavus; RA with two terminals, terminal RA₂ angled anteriorly; RP with two terminals, forked slightly before apex of tegmen, slightly basad of apical line; M with 4 terminals, first forking slightly apically of apex of clavus; CuA bifurcate basad of ScR forking, then anastomosing, closing anterior cubital area with two cells; CuA₁ and CuA₂ fused together at level of apex of clavus, terminal of CuA₁₊₂ joined into margin of tegmen near its posterior angle. Veinlet *r-m* present, at level of first forking of M, veinlet *ir* oblique, veinlets *im* and *m-cu* form apical line; first veinlet *m-cu* at level of claval apex. Claval veins Pcu and A₁ joined at about half of length of clavus, vein Pcu thickened, with rows of sensory tubercles, vein A₁ elevated, carina-like.

Hind wing hyaline, with single terminal RA, single terminal RP and three terminals of M; stridulatory plate with convex margin.

Hind coxa with distinct, long and thin meracanthal spine; hind femur slender; hind tibia slender, without lateral spines, apical teeth in formula 1+4; hind basitarsomere as long as combined length of mid and apical tarsomeres, basitarsomere with row of 4 apical teeth, mid tarsomere with row of 4 apical teeth, tarsal claws delicate, pulvillus small; metatibio-tarsal formula 1+4 : 4 : 4.

Etymology. Named after Ravola – the goddess of tame animals and of cattle-rising, from Malgascan mythology. Gender: feminine.

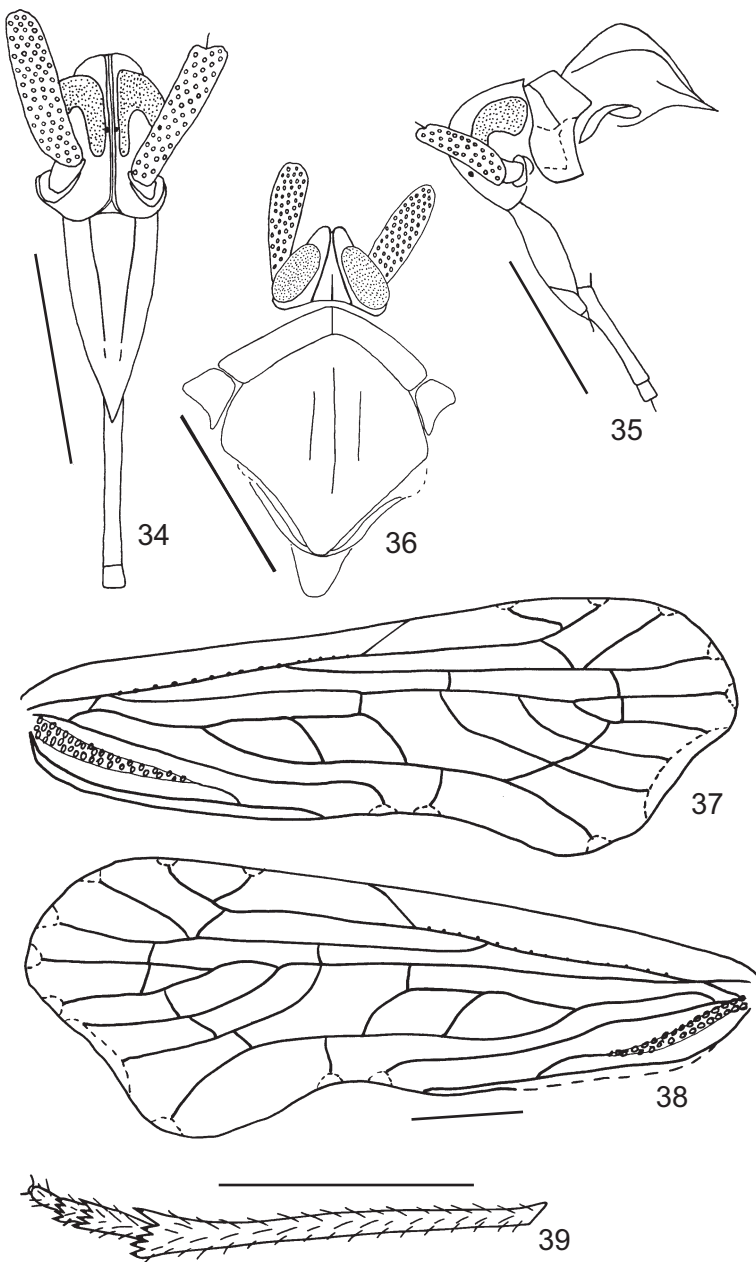
Composition. *Ravola pennyi* sp. nov., a monotypic genus.

Ravola pennyi sp. nov.

(Figs 34–39)

Diagnosis. See diagnosis of the genus *Ravola*.

Description. Total length 6.1 mm, length of body 3.33 mm. General coloration ochraceous; clypeus and



Figures 34–39. *Ravola pennyi* gen. et sp. nov. (34) Face; (35) anterior part of body in lateral view; (36) anterior part of body in dorsal view; (37) left tegmen; (38) right tegmen; (39) hind tibia and tarsus.

rostrum ivory white; antennae ochraceous; compound eyes reddish-brown; vertex, pronotum and mesonotum with median ivory white streak; legs ivory white; tegmina ochraceous, with whitish spots at posterior margin, three round spots at terminals of RP and M₁, crescent marking (avenation) at terminals M₂ to M₄, whitish; abdomen with genital structures ochraceous.

Head with compound eyes 0.55 mm wide. Vertex triangular, as long in mid line as wide (0.24 mm), with incomplete median carina not reaching to anterior angle

of vertex; lateral margins slightly elevated, converging anteriorly and contiguous on face as lateral margins of frons; posterior margin slightly incised, elevated. Occipital part of head distinct, narrow postocular field visible. Frons 0.73 mm long, 0.04 mm wide at apex, 0.17 mm wide at frontoclypeal suture; strongly compressed, linear, with lateral margins parallel, with distinct groove, distinctly diverging near frontoclypeal suture; margin of frons in lateral aspect rounded. Clypeus 0.76 mm long with lateral carinae indistinct and median carina lacking. Compound eye with distinct, deep ventral incision; subocular area flat. Ocellus at level of lower angle of compound eye. Antennal area slightly convex; antafossa with elevated posterior margin. Subantennal shelf indistinct, cariniform. Antenna with 2nd antennal joint 0.68 mm long, 0.18 mm wide, cylindrical, with rows of sensory pits, antennal seta short. Rostrum 0.7 mm long, subapical segment 0.62 mm, apical segment 0.11 mm long, 0.12 mm wide, slightly exceeding hind coxae.

Pronotum narrow, 0.14 mm long in mid line, 1.04 mm wide, with distinct median carina; lateral carinae almost parallel to anterior margin; postocular area of pronotum slightly convex, visible.

Mesonotum 0.99 mm long in mid line, 1.11 mm wide; median carina distinct, reaching to its posterior apex, lateral carinae indistinct, not reaching to posterior margin; disc distinctly convex, subconical, anterior margin strongly declivent anteriorly, distinctly declivent posteriorly from the middle, posterior portion slightly concave.

Tegmen 5.19 mm long, 1.96 mm wide, coriaceous, with distinct venation; anterocubital cells about twice as long as wide.

Hind tibia 1.11 mm long; hind tarsus 0.51 mm long, length of hind basitarsomere 0.28 mm, mid tarsomere and apical tarsomere subequal in length (0.14 mm).

Female abdomen 1.56 mm long, with small dorsal crista. Female genital plate 0.3 mm long in mid line, 0.7 mm wide, triangular with widely rounded apex and lateral margins concave. Ovipositor about 0.28 mm long. Gonapophysis VIII with anterior connective lamina with 5 apical teeth. Female anal tube segment X 0.21 mm long, 0.38 mm wide, without additional processes; segment XI 0.18 mm long, about as long as wide; anal style 0.14 mm long, spatulate.

Male not known.

Etymology. Species named in honour of Norman D. Penny, an eminent entomologist.

Distribution. Madagascar: Antsiranana Province, Montagne d'Ambre National Parc.

Type material. Holotype, female. Labelled: red label [Holotype ♀]; [Madagascar: Province / d'Antsiranana, Park National / Montagne d'Ambre / elev. 975 m]; [4–19 Mar. 2001 / 12°31' S, 49°11' E / M.E Irwin, E.I. Schlinger / and R. Harin'Hala collectors / malaise trap]; [MA-01-01B-06 / CASLOT 006550]; [*Ravola / pennyi* / Banasz. et. Szw. 2005]. Preserved in California Academy of Sciences, San Francisco, U.S.A.

Aquaelicism Distant, 1917
(Fig. 40)

Type species. *Aquaelicism typicum* Distant, 1917

Diagnostic characters. Tegmen with CuA bifurcate then anastomosing, closing anterior cubital area of two cells; cells of anterior cubital area elongate, more than twice as long as wide; terminal of joined CuA₁₊₂ into margin of tegmen.

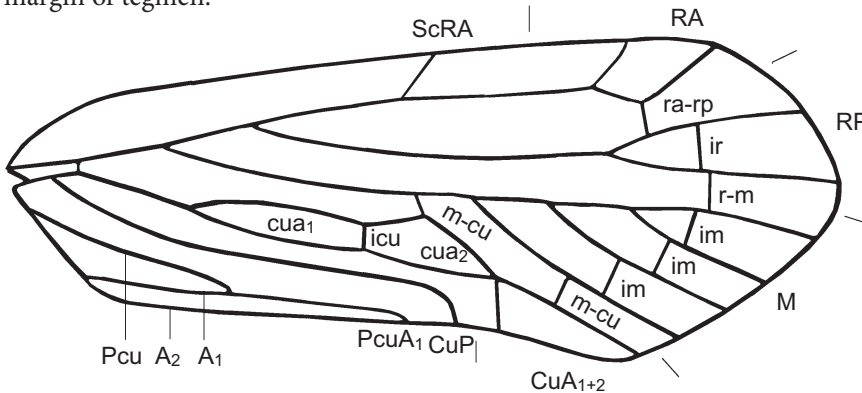


Figure 40. *Aquaelicism typicum* Distant, 1917. (40) Tegmen (redrawn after Distant 1917).

(Based on original descriptions and drawings). General coloration brownish. Vertex long, narrow, and slender projecting beyond the eyes. Compound eyes large, reaching base of the head. Antennae long, first and second joints strongly incrassate, basal segment short, second long. Second segment of rostrum twice as long as the first. Apical joint minute.

Pronotum short, anteriorly subconically produced, posteriorly moderately concave. The lateral angles a little angularly produced.

Mesonotum with disc flat; sublateral carinae oblique, short and more or less obscure.

Tegmen 2.5–3.0 times as long as wide, slightly widened in apical portion, apex of clavus slightly exceeding half of tegmen length. Costal margin straight, posterior margin acutely rounded and/or shallowly excavated; longitudinal veins Sc+R+M begin from basal cell by quite long common stem; ScR forked apicad of CuA forking, ScRA₁ forked slightly basad of apex of clavus; RA with two terminals; RP forked basad of apical line,

with two terminals; M forked from common stem basad of CuA forking, first forking of M apicad of apex of clavus, with four terminals; CuA forked basad of junction of claval veins, then fused again apicad of apex of clavus; antero-cubital cells elongate, more than twice as long as wide; claval veins Pcu and A₁ joined at about half of length of clavus; transverse veinlets form apical line.

Wings about as wide as tegmen and little shorter than tegmen.

Hind tibia without lateral spines.

Composition. *A. brunescens* Dist., 1917, *A. elegantulum* Dist., 1917 and *Aquaelicism typicum* Dist., 1917.

Distribution. The Seychelles: Silhouette Island, Mahé Island, Félicité Island.

Patarini Emeljanov, 1994

Diagnostic characters. Frons linear, strongly bilaterally compressed, its lateral crests shifted together and divided only by groove. Frons and vertex without sensory pits. Vertex triangular. Antennae with enlarged 2nd segment, often robust and strongly extended, larger in males. Compound eyes with distinctly concave ventral margin, against bases of antennae. Ocelli present or absent. Subantennal shelf present in different forms or absent. Postclypeus convex, with weak lateral crests, but without any specific structures. Pronotum short, with indistinct median and humeral carinae, but without specific structures, i.e. pronotal funnel not developed.

Mesonotum large, usually convex, without distinct carinae. Tegmen with clavus closed; stem of ScR with a few sensory tubercular spots; RP with 2 terminals; M with 4 terminals; CuA not forked, without anterior cubital area, reaching posterior margin of tegmen or falling to posterior branch of M; Pcu completely densely covered with tubercular sensory spots. Wings without nodal vein; stridulatory plate developed, with convex outer margin. Hind tibia without lateral teeth, apex with even row of 6 teeth, apices of hind tarsomeres 1st and 2nd with 5–6 teeth each.

Key to genera

- 1(2). Tegmen with first branching of vein M beginning more distally than adjacent submarginal transverse veinlet *r-m*; transverse veinlet *m-cu* usually connecting both stems, basad of M first branching *Patara* Westwood, 1840 [**Type species.** *Patara guttata* Westwood, 1840; by original designation]

2(1). Tegmen with first branching of vein M beginning more proximally than adjacent submarginal transverse veinlet *r-m* . . . *Anapatara* Emeljanov, 1994 [*Type species*. *Patara nigeriensis* Synave, 1971; by original designation (Emeljanov 1994: 801)]

AN ANNOTATED CHECKLISTS

Aquaeliciini trib. nov.

The tribe Aquaeliciini comprises 7 genera. The genera: *Synavea* Em. (Fig. 46), *Ileifea* gen. nov. and *Muiravea* gen. nov. (Fig. 47) are known only from continental Africa. The genera: *Ravola* gen. nov., *Razanus* gen. nov. and *Vizimum* gen. nov. are known from Madagascar (Fig. 49) and genus *Aquaelicism* Dist. is limited in distribution to the Seychelles (Fig. 48).

Aquaelicism Distant, 1917

1. *brunescens* Distant, 1917

Aquaelicism brunescens Distant, 1917: 290; Pl. 51, Figs. 7, 7a.
The Seychelles: Silhouette Island, near Mount Pot-à-eau; Mahé Island, near Morne Blanc, Cascade Estate, 800 ft a.s.l.

2. *elegantulum* Distant, 1917

Aquaelicism elegantulum Distant, 1917: 289; Pl. 51, Figs. 9, 9a.
The Seychelles: Silhouette Island, Mare aux Cochons; Mahé Island, Morne Blanc and Pilot, above Cascade Estate; Félicité Island.

3. *typicum* Distant, 1917

Aquaelicism typicum Distant, 1917: 289; Pl. 49, Figs. 11, 11a.
The Seychelles: Silhouette Island, Mare aux Cochons; Mahé Island, near Morne Blanc; above Port Glaud, 500–1000 ft a.s.l.; Cascade Estate, Mount Sebert, 2000 ft a.s.l.

Synavea Emeljanov, 1994

1. *albibaltea* (Van Stalle, 1986)

Synavea albibaltea (Van Stalle, 1986): Emeljanov 1994: 801.
Patara albibaltea Van Stalle, 1986: 245, Figs. 16–19.
Ivory Coast: Taï National Park.

2. *apicemaculata* (Synave, 1971)

Synavea apicemaculata (Synave, 1971): Emeljanov 1994: 801.
Patara apicemaculata Synave, 1971: 14, Figs. 25–28.
Nigeria: Ondo State, Idanre.

3. *compaginata* (Van Stalle, 1986)

Synavea compaginata (Van Stalle, 1986): Emeljanov 1994: 801.
Patara compaginata Van Stalle, 1986: 245; Figs. 20–22.
Ivory Coast: Taï National Park.

4. *hyalina* (Synave, 1979)

Synavea hyalina (Synave, 1979): Emeljanov 1994: 801.
Patara hyalina Synave, 1979: 24, Figs. 77–81.
Nigeria: Oyo State, Ile-Ife.

5. *pattersoni* (Muir, 1918)

Synavea pattersoni (Muir, 1918): Emeljanov 1994: 801.
Patara pattersoni Muir, 1918: 233.
Ghana: Gold Coast.

6. *pusilla* (Van Stalle, 1983)

Synavea pusilla (Van Stalle, 1983): Emeljanov 1994: 801.
Patara pusilla Van Stalle, 1983: 33; Figs. 85–87.
Nigeria: Oyo State, Ile-Ife.

7. *recurvata* (Van Stalle, 1983)

Synavea recurvata (Van Stalle, 1983): Emeljanov 1994: 801.
Patara recurvata Van Stalle, 1983: 36; Figs. 92–93.
Nigeria: Cross River State, Obudu Cattle Ranch.

8. *rusticola* (Van Stalle, 1983)

Synavea rusticola (Van Stalle, 1983): Emeljanov 1994: 801.
Patara rusticola Van Stalle, 1983: 36; Figs. 94–96.
Nigeria: Cross River State, Obudu Cattle Ranch.

Muiravea gen. nov.

1. *hargreavesi* (Muir, 1930)

Muiravea hargreavesi (Muir, 1930) comb. nov.
Patara hargreavesi Muir, 1930: 82, Figs. 4–5.
Synavea hargreavesi (Muir, 1930): Emeljanov 1994: 801.
Sierra Leone: Kenema.

Ileifea gen. nov.

1. *radiata* (Synave, 1979)

Ileifea radiata (Synave, 1979), comb. nov.
Patara radiata Synave, 1979: 24; Figs. 73–76.
Synavea radiata (Synave, 1979): Emeljanov 1994: 801.
Nigeria: Oyo State, Ile-Ife.

Razanus gen. nov.

1. *beniowskii* sp. nov.

Razanus beniowskii sp. nov.
Madagascar: Ambodivoangy, Aroroantsetra.

Vizimum gen. nov.

1. *constantii* sp. nov.

Vizimum constantii sp. nov.
Madagascar: Nosy – Komba, Sommet.

2. *lakandavaensis* sp. nov.

Vizimum lakandavaensis sp. nov.
Madagascar: Lakandava, Fort Dauphin.

Ravola gen. nov.1. *pennyi* sp. nov.*Ravola pennyi* sp. nov.

Madagascar: Province d'Antsiranana, Park National, Montagne d'Ambre, elev. 975 m.

Patarini Emeljanov, 1994

The tribe Patarini Em. comprises two formerly known genera *Patara* Westw. and *Anapatara* Em. Genus *Patara* include 23 species: 10 species known from Afrotropical Region (Fig. 44), and 12 species from Neotropical Region (Figs 42, 43), and one species known from localities in Nearctic Region (Fig. 41). Genus *Anapatara* include 7 species known only from Afrotropical Region (Fig. 45).

Patara Westwood, 18401. *albida* Westwood, 1840*Patara albida* Westwood, 1840: 14, Pl. 2, Fig. 7.

Saint Vincent and the Grenadines: St. Vincent Island.

2. *appendiculata* Van Stalle, 1982*Patara appendiculata* Van Stalle, 1982: 7, Figs. 16–22.

Cameroon: Mount Cameroon, 1500 m a.s.l.

3. *armata* Van Stalle, 1983*Patara armata* Van Stalle, 1983: 32, Figs. 79–81.

Nigeria: Cross River State, Obudu Cattle Ranch.

4. *complanata* Van Stalle, 1986*Patara complanata* Van Stalle, 1986: 247, Figs. 27–30.

Ivory Coast: Taï National Parc, Guleako village environs.

5. *cyanea* Fennah, 1952*Patara cyanea* Fennah, 1952: 147; Figs. 23A, B.

Commonwealth of Dominica: Dominica Island, near Saltoun, 1000 ft a.s.l.

6. *fumipennis* Fennah, 1952*Patara fumipennis* Fennah, 1952: 148; Fig. 22E.

Saint Lucia: St. Lucia Island, near Castries, 800 ft. a.s.l.

7. *gausapata* Fennah, 1952*Patara gausapata* Fennah, 1952: 149; Figs. 26A–G.

Saint Vincent and the Grenadines: St. Vincent Island, near Three Rivers Settlement, 1000 ft a.s.l.

8. *guttata* Westwood, 1840*Patara guttata* Westwood, 1840: 14; Pl. 2. Figs. 6a–d.

Saint Vincent and the Grenadines: St. Vincent Island, Morne Garu.

9. *inermis* Fennah, 1952*Patara inermis* Fennah, 1952: 149; Figs. 24A–C.

Saint Lucia: St. Lucia Island, Castres, Morne Fortunée.

10. *leopoldi* Van Stalle, 1982*Patara leopoldi* Van Stalle, 1982: 7; Figs. 23–27.

Cameroon: Mount Cameroon, vhf-track 1400 m a.s.l.

11. *mambilae* Van Stalle, 1983*Patara mambilae* Van Stalle, 1983: 33; Figs. 82–84.

Nigeria: Gongola State, Mambila.

12. *marmorata* Fowler, 1895*Patara marmorata* Fowler, 1895: 79; Pl. IX, Figs. 9, 9a.

Guatemala: Cerro Zunil, 4000–5000 ft a.s.l.

13. *mimula* Fennah, 1952*Patara mimula mimula* Fennah, 1952: 148; Figs. 23C–F, 24D.

Commonwealth of Dominica: Dominica Island, near Mornegay, 1660 ft. a.s.l., Saltoun, 100 ft a.s.l.; Federation of Saint Christopher and Nevis: St. Kitts Island, Ottley's Level, Brimstone Hill; Nevis Island: Nevis Mountain; United Kingdom: Montserrat Island, Chance's Mountain.

14. *ovata* Van Stalle, 1983*Patara ovata* Van Stalle, 1983: 35; Figs. 90–91.

Nigeria: Oyo State, Ile-Ife.

15. *pakaraima* Fennah, 1952*Patara pakaraima* Fennah, 1952: 150; Figs. 25A–G.

Guiana: Pakaraima Mountains, near head of river Mazaruni.

16. *poeciloptera* Fennah, 1945*Patara poeciloptera* Fennah, 1945: 448; Pl. 10, Figs. 202–207.

Republic of Trinidad and Tobago: Trinidad, St. John's Valley.

17. *quadriscopiosa* Synave, 1979*Patara quadriscopiosa* Synave, 1979: 22; Figs. 65–68.

Nigeria: Oyo State, Ile-Ife.

18. *taiensis* Van Stalle, 1986*Patara taiensis* Van Stalle, 1986: 245; Figs. 23–26.

Ivory Coast: Taï National Park.

19. *trigona* Fennah, 1945*Patara trigona* Fennah, 1945: 447; Pl. 10, Figs. 195–2–1.

Republic of Trinidad and Tobago: Trinidad, St. John's Valley.

20. *tuberculata* Van Stalle, 1983*Patara tuberculata* Van Stalle, 1983: 35; Figs. 88–89.

Nigeria: Imo State, Umuahia.

21. *unicornis* Fennah, 1952*Patara mimula unicornis* Fennah, 1952: 148.

Saint Lucia: St. Lucia Island, Quillesse, 1000 ft a.s.l.

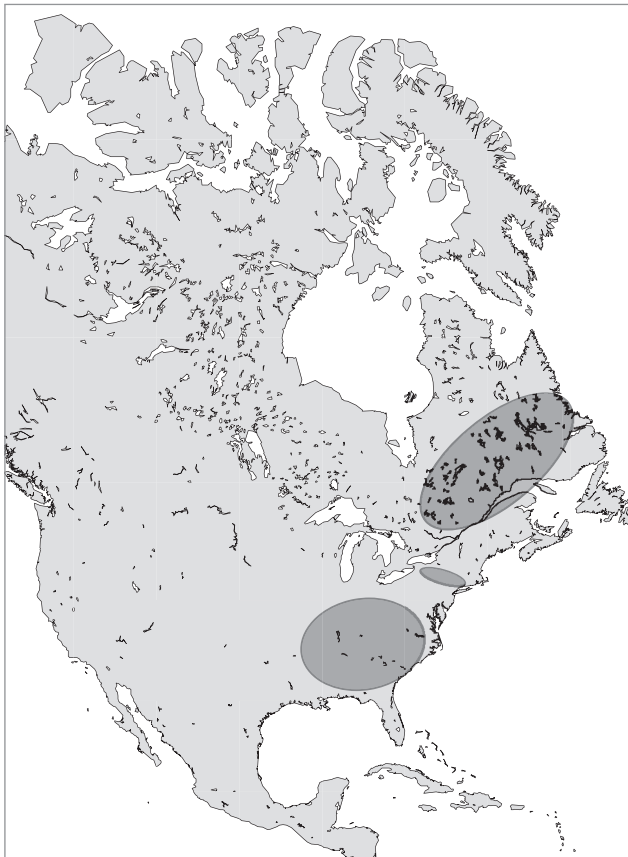


Figure 41. Distribution of *Patara vanduzeei* Ball, 1902 in Nearctic Region.

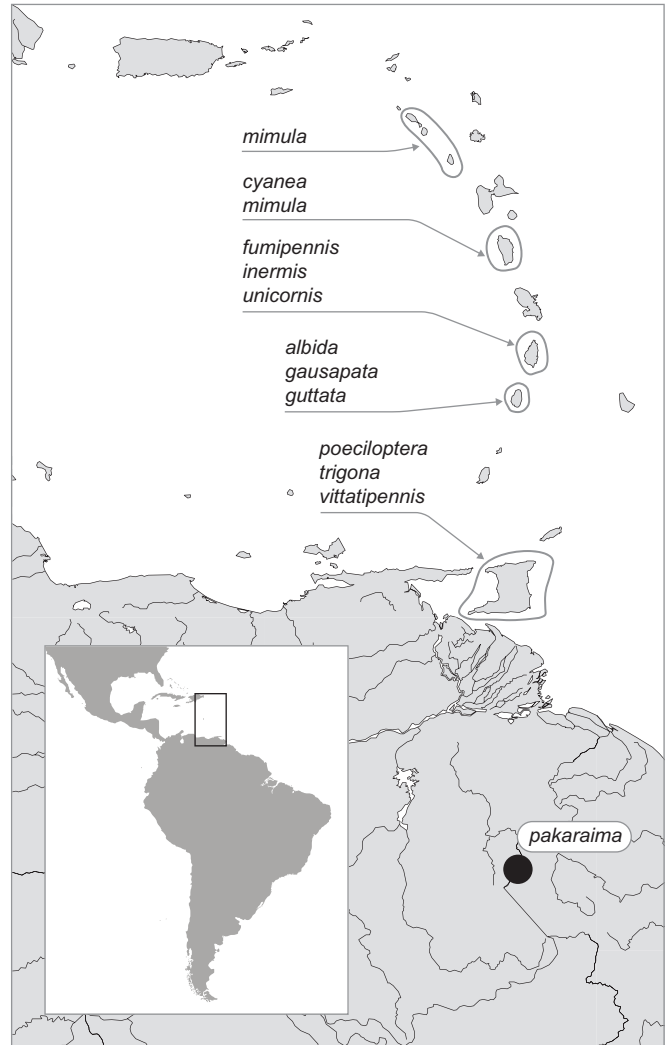


Figure 43. Distribution of *Patara* Westwood, 1840 species in Neotropical Region.



Figure 42. Distribution of *Patara marmorata* Fowler, 1895 in Neotropical Region.

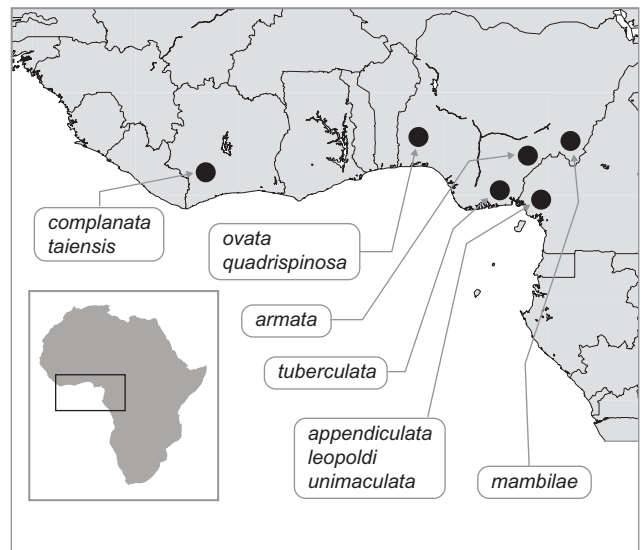


Figure 44. Distribution of *Patara* Westwood, 1840 species in Afrotropical Region.

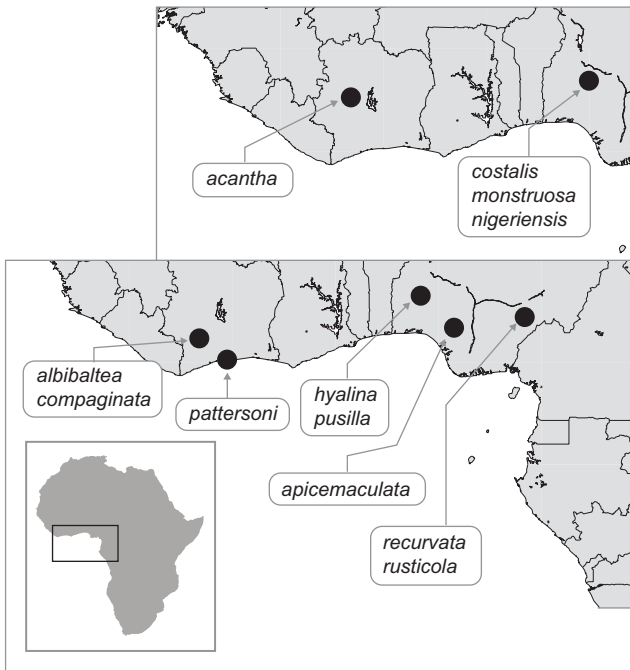


Figure 46. Distribution of *Synavea* Emeljanov, 1994 species in Afrotropical Region.

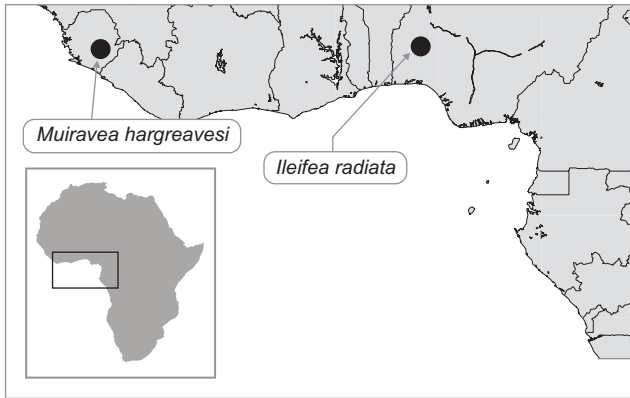


Figure 47. Distribution of genera *Muiravea* gen. nov. and *Ileifea* gen. nov. in Afrotropical Region.

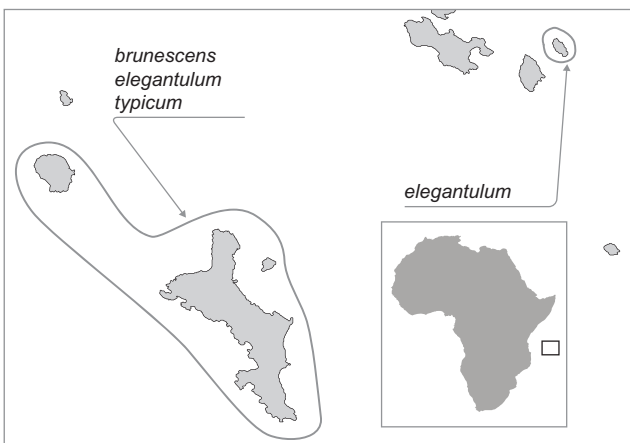


Figure 48. Distribution of *Aqualicium* Distant, 1917 species in the Seychelles.

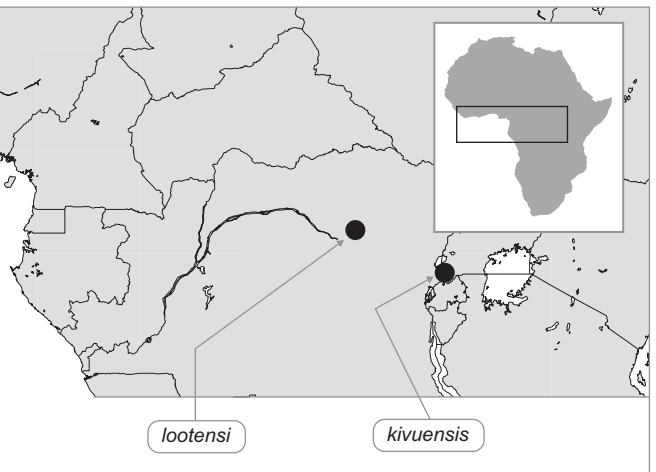


Figure 45. Distribution of *Anapatara* Emeljanov 1994 species in Afrotropical Region.

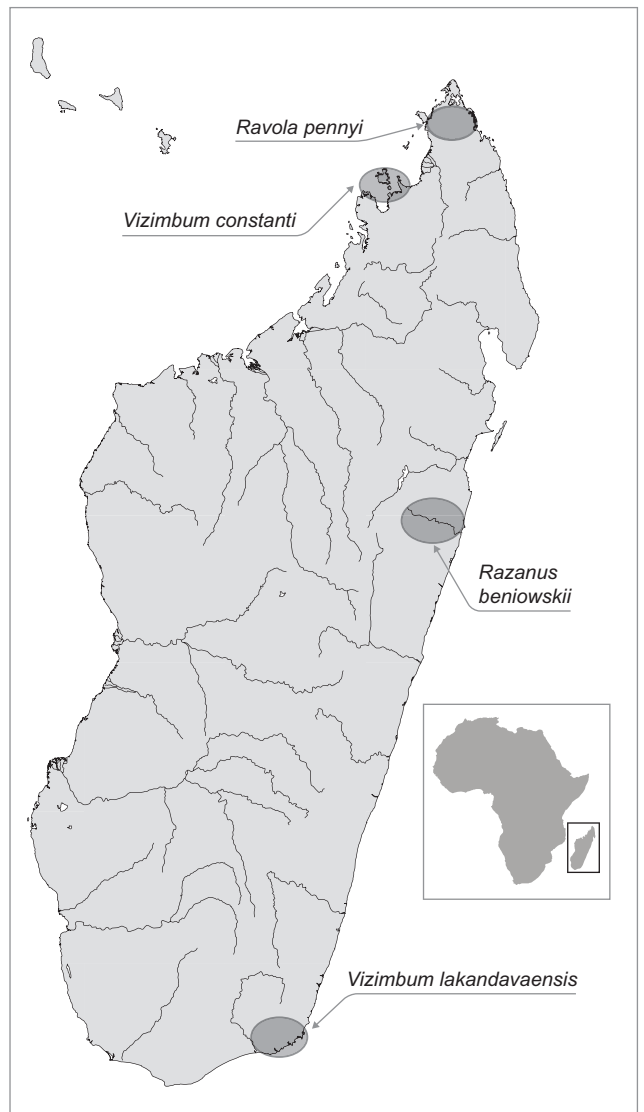


Figure 49. Distribution of genera *Ravola* gen. nov., *Razanus* gen. nov., *Vizimum* gen. nov. in Madagascar.

22. *unimaculata* Van Stalle, 1982
Patara unimaculata Van Stalle, 1982: 10; Figs. 28–33.
 Cameroon: Mount Cameroon, 1600 m a.s.l.
23. *vanduzei* Ball, 1902
Patara vanduzei Ball, 1902: 260.
 U.S.A.: New York State; Delaware: New Castle County, Newark; North Carolina: Anson County, Pee Dee National Wildlife Refuge; Haywood County, Cabarrus County, Coddle Creek, reserve; Tennessee: Sever County, Great Smokey Mountain National Park, Twin Creeks; Sevier County; Cocke County, Illinois: Jackson County, Carbondale; Missouri: Boone County, Ashland Wildlife Area; Kentucky: Crittenden; Mississippi: Clermont Harbor Hancock County; Georgia: Clarke County; Canada: Quebec, Gatineau Park, Whitehall Forest.
24. *vittatipennis* Fennah, 1945
Patara vittatipennis Fennah, 1945: 448, Pl. 10, Figs. 208–213, Pl. 11, Fig. 214.
 Republic of Trinidad and Tobago: Trinidad, St. John's Valley.

Anapatara Emeljanov, 1994

1. *acantha* (Van Stalle, 1986)
Anapatara acantha (Van Stalle, 1986): Emeljanov 1994: 801.
Patara acantha Van Stalle, 1986: 244, Figs. 10–15.
 Ivory Coast: Taï National Park.
2. *costalis* (Synave, 1979)
Anapatara costalis (Synave, 1979): Emeljanov 1994: 801.
Patara costalis Synave, 1979: 22; Figs. 69–72.
 Nigeria: Oyo State, Ile-Ife.
3. *kivuensis* (Synave, 1973)
Anapatara kivuensis (Synave, 1973): Emeljanov 1994: 801.
Patara kivuensis Synave, 1973: 156; Figs. 367–371.
 Congo D.R.: Kivu, near Rumanbago.
4. *lootensi* (Synave, 1973)
Anapatara lootensi (Synave, 1973): Emeljanov 1994: 801.
Patara lootensi Synave, 1973: 152; Figs. 352–355.
 Congo D. R.: Tschuapa, Ikela.
5. *monstruosa* (Synave, 1979)
Anapatara monstruosa (Synave, 1979): Emeljanov 1994: 801.
Patara monstruosa Synave, 1979: 20, Figs. 59–64.
 Nigeria: Oyo State, Ile-Ife.
6. *nigeriensis* (Synave, 1971)
Anapatara nigeriensis (Synave, 1971): Emeljanov 1994: 801.
Patara nigeriensis Synave, 1971: 15, Figs. 29–32.
 Nigeria: Oyo State, Ile-Ife.
7. *trispinosa* (Synave, 1979)
Anapatara trispinosa (Synave, 1979): Emeljanov 1994: 801.
Patara trispinosa Synave, 1979: 26; Figs. 82–86.
 Nigeria: Oyo State, Ile-Ife.

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