

A NEW SPECIES OF THE PLANTHOPPER GENUS *POLYCHORNUM*
GNEZDILOV, 2021 (HEMIPTERA: CALISCELIDAE:
OMMATIDIOTINAE) EXTENDS THE DISTRIBUTION
OF THE GENUS AND TRIBE AUGILINI BAKER TO AFRICA

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The caliscelid tribe Augilini Baker is recorded for the first time from African continent after *Polychorum centroafricanum* sp. n. described and illustrated from the Democratic Republic of Congo, collected in 1948. This is first representative of the genus *Polychorum* Gnezdilov, 2021 from the Afrotropical Region. Global distribution and host plants of the species of the tribe Augilini are discussed.

Key words: Afrotropical Region, bamboo, key, morphology, new record, new species, Ommatidiotinae, taxonomy.

INTRODUCTION

The tribe Augilini belongs to the subfamily Ommatidiotinae of the plant-hopper family Caliscelidae. The members of this tribe are characterized by well-developed fore and hind wings as well as by long and narrow general shape of the body including head and forewings. World fauna of Augilini currently comprises nearly 40 species in 17 genera (Bourgoin 2023) known to live on bamboo. Most of the Augilini taxa are known from the Oriental Region, with two genera and species, *Signoreta victorina* Gnezdilov et Bourgoin, 2009 and *Cano merinus* Gnezdilov, 2011, described from Madagascar (GNEZDILOV & BOURGOIN 2009, GNEZDILOV 2011) and one fossil genus and species, *Quizqueiplana alexbrowni* Bourgoin et Gnezdilov, 2016, known from the Early Miocene Dominican amber (BOURGOIN *et al.* 2016).

Below a new species of the genus *Polychorum* Gnezdilov, 2021 is described from the Democratic Republic of Congo which is the first record of the genus and tribe Augilini from continental Africa. A key to species of the genus is given.

MATERIAL AND METHODS

Morphological terminology follows ANUFRIEV and EMELJANOV (1988) for head (metope – frons, coryphe – vertex) and GNEZDILOV (2021) – for male genitalia.

Photographs were taken using a Canon EOS 5D Mark IV camera with the lens Canon-MP-E 65 mm f/2.8 1-5X Macro and a flash Canon Macro Twin Lite MT-26EX-RT. Images were produced using Helicon Focus v. 6.7.1 and Adobe Photoshop software. The genital segments of the examined specimen were macerated in 10% KOH and figured in glycerine jelly (Brunel Micro Ltd, UK) using a Leica MZ9.5 stereomicroscope with camera lucida.

The holotype of a new species described is deposited in the Musée royal de l'Afrique centrale, Tervuren, Belgique.

TAXONOMY

Family Caliscelidae Amyot et Audinet-Serville, 1843

Subfamily Ommatidiotinae Fieber, 1875

Tribe Augilini Baker, 1915

Genus *Polychorum* Gnezdilov, 2021

Polychorum GNEZDILOV 2021: 697.

Type species: *Augilina namboina* Gnezdilov, 2013 by original designation.

Key to species

1. Coryphe narrow, nearly five times as long as basal width medially in dorsal view, apical part of coryphe strongly turned up (in lateral view) (GNEZDILOV 2013, Figs 4, 5). Hind margins of pygofer without processes. Metope and abdominal sternites black. Southern Vietnam
P. namboinum (Gnezdilov, 2013)
- Coryphe wider, three times as long as basal width medially in dorsal view (Figs 1, 8), apical part of coryphe slightly turned up in lateral view (Figs 2, 7). Hind margins of male pygofer with large triangular processes below anal tube (Fig. 11). Metope and abdominal sternites light yellowish green 2
2. Penis S-shaped (Fig. 17) 3
- Penis curved (ZHANG *et al.* 2020, Fig. 41, GONG *et al.* 2021, Fig. 27). Southern China
P. bilobum (Meng, Qin et Wang, 2020)
3. Male anal tube distinctly narrowed basally in dorsal view. Apex of penis shaft turned from penis basement. Style with one long and two short processes (GONG *et al.* 2021, Figs 8–13). Southern China
P. tetraimum (Chen et Gong, 2021)

- Male anal tube not narrowed basally in dorsal view (Fig. 14). Apex of penis shaft turned to penis basement (Fig. 17). Style with three long processes (Figs 18, 19). The Democratic Republic of Congo

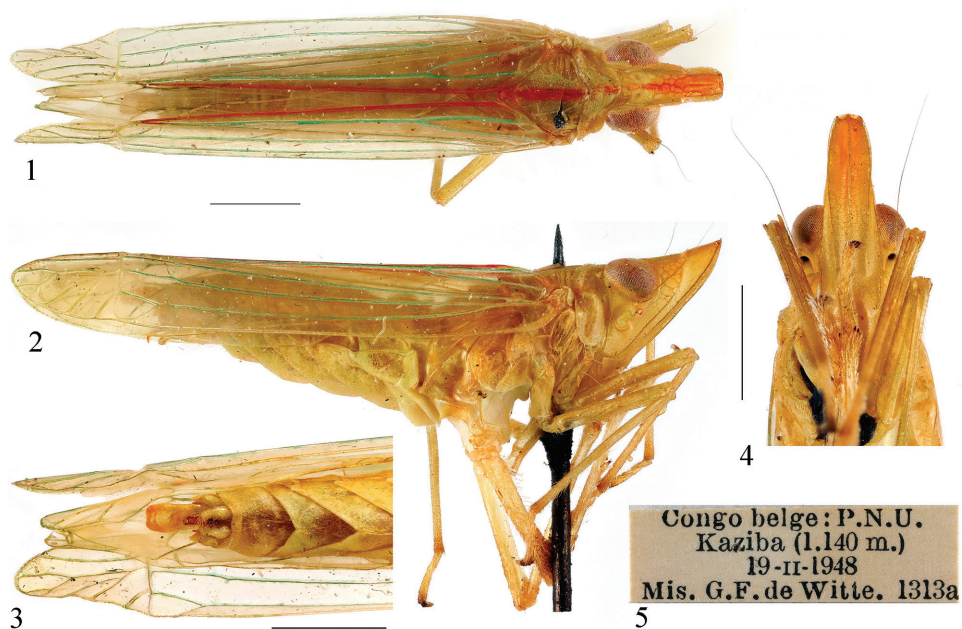
P. centroafricanum sp. n.

***Polychorum centroafricanum* sp. n.**

<https://zoobank.org/F04516D9-E884-4E8F-81C4-85D2F415B955>

(Figs 1–19)

Description – Morphology. Metope narrow, with median carina running from its upper margin throughout postclypeus and with sublateral carinae running from its upper margin, but not reaching metopoclypeal suture (Figs 4, 6). Median and sublateral carinae not joint. Lateral carinae (margins) of metope smoothly bent to lateral margins of coryphe, in lateral view (Figs 2, 7). Coryphe slightly narrowing apically, three times as long as wide medially, with deeply angularly concaved posterior margin and keel-shaped lateral margins, anterior margin slightly convex (Figs 1, 8). Apical part of coryphe slightly turned up in lateral view (Figs 2, 7). Eyes large, each eye nearly as wide as coryphe. Ocelli present. Pedicel elongately barrel-shaped. Antenna with long flagellum. Pronotum with strongly convex anterior margin and concave posterior margin (Fig. 1). Paradiscal fields of pronotum wide behind eyes. Paranotal lobes of pronotum elongate, with rounded lower margins. Mesonotum three times as long as pronotum medially, with lateral carinae. Fore wings long and narrow, narrowing apically, with narrow, elongately oval basal cell and distinct nodal line (Fig. 9). Fore-



Figs 1–5. *Polychorum centroafricanum* sp. n., holotype: 1 = dorsal view; 2 = lateral view; 3 = genital block, ventral view; 4 = frontal view; 5 = label. Scale bar = 1 mm

wings protruding far beyond of abdominal apex (Fig. 3). Forewing margin with small setae apically. Radius and median veins running from basal cell by common stem. Forewing vein sequence (Figs 9, 10): R 2–3 (2 – on left and 3 – on right wing), furcating before nodal line; r-m 1; M 4–5 (4 – on right and 5 – on left wing), furcating after nodal line; m-cua 1; CuA 1–2 (1 – on left and 2 – on right wing); CuP 1. Pcu joint A_1 in basal third of wing; clavus long, 4/5 of wing length, reaching abdominal apex, closed (Pcu + A_1 joint CuP before claval apex). Hind wings nearly as long as forewings. Rostrum reaching hind coxae, with 2nd segment twice longer than 3rd one. Apical segment of rostrum cylindrical, not narrowing apically. Hind tibia with a single lateral spine below its middle, and with six apical spines. First metatarsomere long and narrow, three times longer than second one, without spines. Second metatarsomere without spines. Abdominal sternites with deeply angularly concaved hind margins (Fig. 3).

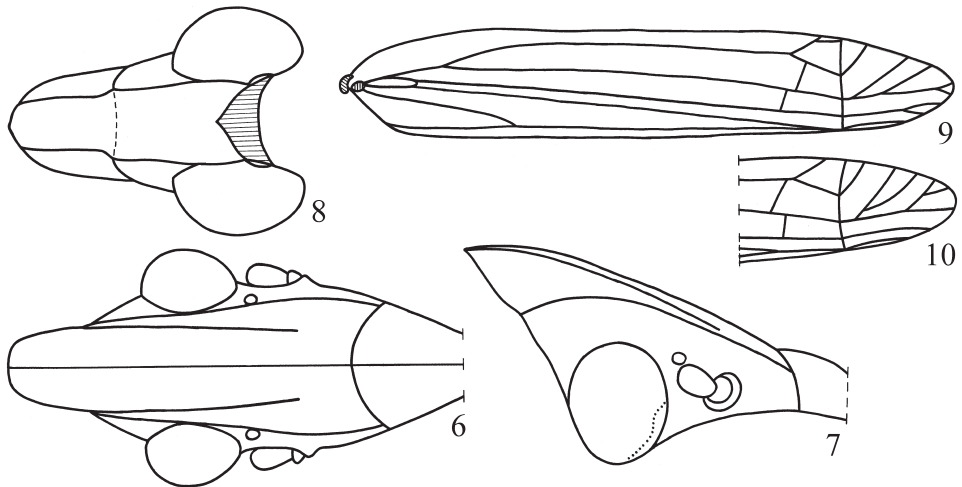
Colouration – General coloration light yellowish green (Fig. 1–4). Coryphe, pro- and mesonotum with wide median red stripe. Each pedicel externally with a round black spot. Forewings with greenish longitudinal veins and red claval margins. Spines of hind tibia with black apices. Claws dark brown.

Male genitalia (Figs 11–19) – Pygofer massive, with large triangular process on its hind margins below anal tube (Fig. 11); its lower margin below styles without processes (Fig. 12). Anal tube twice as long as wide, narrowing apically in lateral view (Fig. 13), almost not narrowed basally, with slightly concave apical margin in dorsal view (Fig. 14). Anal column short. Penis S-shaped, with apex of shaft turned towards its base (Fig. 17); shaft rather wide in ventral and dorsal views, narrowing apically, slightly assymetrical (Figs 15, 16); gonopore subapical (indicated by arrow on Figs 11, 17). Style with three long finger-shaped processes – one rounded apically and two narrowed apically (Figs 18, 19).

Total length (from apex of head to apices of forewings): 7.9 mm.

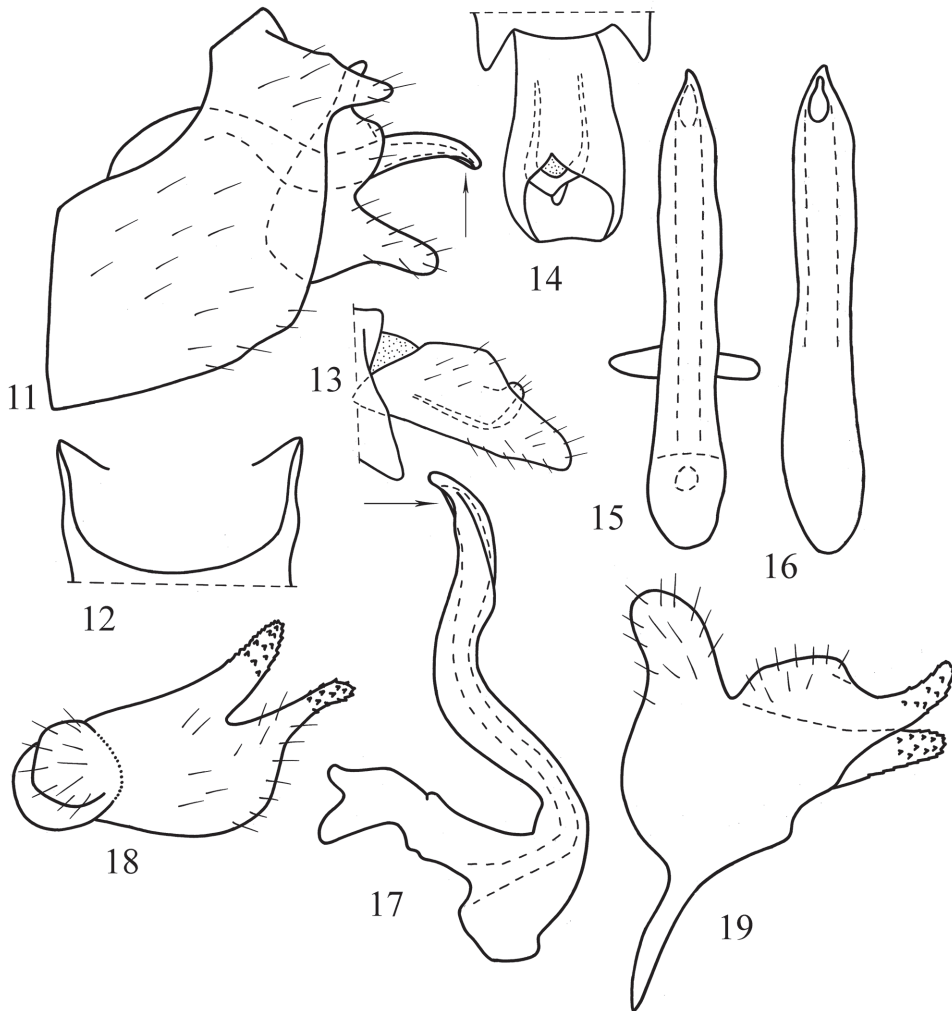
Etymology – Species name is derived from the type locality, Parc national de l'Upemba, which is in the center of Africa.

Type material – Holotype, male, "Congo belge: P.N.U. / Kaziba (1.140 m.) / 19.II.1948 / Mis. G. F. de Witte. 1313a".



Figs 6–10. *Polychornum centroafricanum* sp. n., holotype: 6 = head, frontal view; 7 = head, lateral view; 8 = head, dorsal view; 9 = right forewing; 10 = apex of left forewing. Not to scale

Comparison – The new species is closely related to *Polychorum tetraium* (Chen et Gong, 2021 (in GONG *et al.* 2021)) from southern China by the shape and carination of the head as well as by S-shaped penis and hind margins of pygofer with horn-shaped processes (see GONG *et al.* 2021, Figs 1–14), however, it differs well by the anal tube not narrowed basally and by the long processes of the style.



Figs 11–19. *Polychorum centroafricanum* sp. n., holotype, male genitalia: 11 = genital block, lateral view; 12 = lower margin of pygofer, ventral view; 13 = anal tube, lateral view; 14 = anal tube, dorsal view; 15 = penis, dorsal view; 16 = penis, ventral view; 17 = penis, lateral view; 18 = style, dorsal view; 19 = style, lateral view. Not to scale

DISCUSSION

The new species described above is placed in the genus *Polychorum* Gnezdilov, 2021 according to the structure of style bearing three processes. Currently the genus *Polychorum* includes four species – *P. namboinum* (Gnezdilov, 2013) from southern Vietnam, *P. bilobum* (Meng, Qin et Wang, 2020 (in ZHANG *et al.* 2020)) and *P. tetraimum* (Chen et Gong, 2021 (in GONG *et al.* 2021)) from southern China, and *P. centroafricanum* sp. n. from the Democratic Republic of Congo. According to forewing shape and venation *Polychorum* is close to the Madagascan genus *Cano* Gnezdilov, 2011. The latter genus differs well from *Polychorum* by the median and sublateral carinae of metope joining at one point at its upper margin and median carina not reaching its upper margin (GNEZDILOV 2011, Fig. 7). Within the genus *Polychorum* the species *P. bilobum*, *P. tetraimum*, and *P. centroafricanum* sp. n. are closely related according to the shape of head (see the above key). A similar shaped head is also found in *Symplana vieta* Gnezdilov, 2022 from southern Vietnam (see GNEZDILOV 2022, Figs 39–42). In male genitalia structure (S-shaped penis and hind margins of pygofer with horn-shaped processes) *P. centroafricanum* sp. n. is closely related to *P. tetraimum*. An S-shaped penis is also known for *Symplanella brevicephala* (Chou, Yuan et Wang, 1994) and *S. yokdona* Gnezdilov, 2020 (see CHEN *et al.* 2014, Figs 2-101M, GNEZDILOV 2020, Fig. 2).

Apparently, the center of origin and speciation of Augilini is located in the Oriental Region as most of genera and species are known from this area. A single Neotropical species, *Quizqueiplana alexbrowni* Bourgoin et Gnezdilov, 2016, is externally similar (long coryphe) to the species of Oriental genus *Symplana* Kirby, 1891 (BOURGOIN *et al.* 2016) while Madagascan *Signoreta victorina* Gnezdilov et Bourgoin, 2009 is close to Indian *Symplanodes conjunctor* Fennah, 1987 by forewings without nodal line and first and second metatarsomeres with latero-apical spines (GNEZDILOV 2011, 2015).

Potential presence of Augilini in continental Africa was expected after the description of Madagascan species (GNEZDILOV 2015). Thus, *Polychorum centroafricanum* sp. n. collected in the mountains (1140 m a.s.l.) in the Parc national de l'Upemba in the southeast of the Democratic Republic of Congo in Kaziba (9°8'55"S, 26°57'14"E) (Fig. 5), which, as it is far from the coastal areas, may be treated as a native and relict distribution. This finding connects the Madagascan taxa with Oriental ones while the close relationships of Oriental *P. tetraimum* and African *P. centroafricanum* sp. n. indicates a recent diversification from a common ancestor of these two species.

In Asia Augilini species are feeding on bamboo and accordingly *P. centroafricanum* sp. n. may occurring on the African bamboo species, *Oldeania alpina* (K. Schum.) Stapleton, known from across tropical Africa from Cameroon in

the west to Ethiopia and Tanzania in the east (STAPLETON 2013). Several bamboo species are also known from Madagascar (DRANSFIELD 1998, STAPLETON 2013) and may be counted as potential host plant for *Signoreta victorina* Gnezdilov et Bourgoïn, 2009 and *Cano merinus* Gnezdilov, 2011.

According to Hodkinson *et al.* (2010) “woody bamboos are considered to have evolved originally in Gondwandland rather than in Eastern Asia”. The only two African temperate bamboo species, *Bergbambos tessellatus* (Nees) Stapleton and *Oldeania alpina* (K. Schum.) Stapleton, “are nested within the northern temperate clade, the tribe Arundinarieae, with a largely Asian distribution” and “it seems more likely that temperate bamboos radiated from India to Asia, Africa and North America” (STAPLETON 2013). This idea is confirmed by close relationships of the Madagascan *Signoreta victorina* and Indian *Symplanodes conjunctor* mentioned above and treated as the most primitive taxa of the tribe Augilini (GNEZDILOV 2011).

Apparently Augilini were widely distributed in Old and New World, at least since Miocene and it is very possible to expect them also in the modern fauna of South America on bamboo of the genus *Guadua* Kunth.

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