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New and little known taxa of the subtribe *Brevizaclina* (Orthoptera: Gryllidae: Phalangopsinae) from Papua New Guinea

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Abstract. A new material on the genera *Brevizacla* Gorochov, 2003 and *Mikluchomaklaia* Gorochov, 1986 from the subtribe *Brevizaclina* Gorochov, 2014 (Orthoptera: Gryllidae), distributed mainly in the Papuan Region, is considered. Three new species of these taxa from Papua New Guinea are described: *Brevizacla* (*Brevizacla*) *mikhaili* sp. n., *Mikluchomaklaia* (*Phantazacla*) *ivani* sp. n. and *M. (Ph.) alexandri* sp. n. One species from Indonesia, *M. (Mikluchomaklaia) halmahera* (Gorochov, 2014), **comb. n.**, is transferred from the genus *Brevizacla* and the subgenus *Lobulacla* Gorochov, 2014 to the nominotypical subgenus of the genus *Mikluchomaklaia*. Some generic and subgeneric characters in this tribe are briefly discussed.

Key words: Orthoptera, Gryllidae, Phalangopsinae, *Brevizaclina*, *Brevizacla*, *Mikluchomaklaia*, new species, Papua New Guinea.

Новые и малоизвестные таксоны подтрибы *Brevizaclina* (Orthoptera: Gryllidae: Phalangopsinae) из Папуа Новой Гвинеи

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Резюме. Рассмотрен новый материал по родам *Brevizacla* Gorochov, 2003 и *Mikluchomaklaia* Gorochov, 1986 из подтрибы *Brevizaclina* Gorochov, 2014 (Orthoptera: Gryllidae), распространенной главным образом в Папуасской области. Описано три новых вида этих таксонов из Папуа Новой Гвинеи: *Brevizacla* (*Brevizacla*) *mikhaili* sp. n., *Mikluchomaklaia* (*Phantazacla*) *ivani* sp. n. и *M. (Ph.) alexandri* sp. n. Один вид из Индонезии – *M. (Mikluchomaklaia) halmahera* (Gorochov, 2014), **comb. n.** – перенесен из рода *Brevizacla* и подрода *Lobulacla* Gorochov, 2014 в номинативный подрод рода *Mikluchomaklaia*. Кратко обсуждены некоторые родовые и подродовые признаки в этой подтрибе.

Ключевые слова: Orthoptera, Gryllidae, Phalangopsinae, *Brevizaclina*, *Brevizacla*, *Mikluchomaklaia*, новые виды, Папуа Новая Гвинея.

Introduction

The subtribe *Brevizaclina* Gorochov, 2014 was established as one of subtribes of the tribe Paragryllini Desutter, 1987 for the genera *Mikluchomaklaia* Gorochov, 1986 and *Brevizacla* Gorochov, 2003 from the Papuan Region [Gorochov, 2014]. In the same paper, a partly new subgeneric classification of these genera was proposed: *Mikluchomaklaia* s. l. was divided into the subgenera *Mikluchomaklaia* s. str., *Phantazacla* Gorochov, 2003 and *Stridulacla* Gorochov, 2014; *Brevizacla* s. l. (originally described as a subgenus of the previous genus) was divided into the subgenera *Brevizacla* s. str., *Papuzacla* Gorochov, 2014 and *Lobulacla* Gorochov, 2014.

The genera were separated from each other mainly by the tegminal structure: the male tegmina of *Mikluchomaklaia* s. l. are less shortened and with a visible venation in the both tegmina or in one of them, and their tegminal dorsal fields are almost completely covering each other; but in *Brevizacla* s. l., the tegmina are distinctly more shortened (i.e., they are only partly covering each other or not contacting with each other) and without any venation. In *Mikluchomaklaia* s. l., subgenera were separated from each other on the base of the presence or absence of the stridulatory apparatus in the right (upper)

tegmen as well as on the base of the development of a special gland with hairs on this tegmen or on the head dorsum. But in *Brevizacla* s. l., subgenera were diagnosed mainly by the presence of the abdominal gland or the tegminal condition.

However, in the original description of “*Brevizacla* (*Lobulacla*) *halmahera*”, Gorochov [2014] indicated that inclusion of this species in *Lobulacla* and *Brevizacla* is problematic, as this species have similarity to *M. (M.) papuana* Gorochov, 1986 (type species of *Mikluchomaklaia*) in the genitalia of male. Later, this author [Gorochov, 2024] described two additional new species from this region, and these species have the male tegmina similar to those of *Mikluchomaklaia* s. str. but distinctly shorter. Finally, a new material on *Mikluchomaklaia* s. l., considered here, obviously supports the idea that the tegmina may be rapidly reduced up to their complete absence inside one subgenus of this genus. Thus, the previously proposed classification of *Brevizaclina* must be considered only as preliminary one, and we probably must search new generic and subgeneric characters in the structure of the male glands and of the male genitalia. Also, the above-mentioned species from Halmahera Island must be treated as *Mikluchomaklaia* (*Mikluchomaklaia*) *halmahera* (Gorochov, 2014), **comb. n.**

Material and methods

The study is based on the material (including type specimens of new taxa) deposited at the Zoological Institute of the Russian Academy of Sciences (ZIN, Saint Petersburg, Russia). This material is dry and pinned. The illustrations were made with help of a Leica MZ16 stereomicroscope and DCF290 camera.

Tribe Paragryllini Desutter, 1987

Subtribe Brevizaclina Gorochov, 2014

Genus *Brevizacla* Gorochov, 2003

Brevizacla (*Brevizacla*) *mikhaili* Gorochov, **sp. n.**

(Figs 1, 2, 7, 9, 13, 17, 19, 22, 25, 26, 36–38)

Material. Holotype, ♂ (ZIN): Papua New Guinea, New Guinea I., about 15 km E of Port Moresby City, environs of Varirata National Park, 9.43–47° S, 147.33–37° E, 500–800 m, primary forest, on trunk of dead tree at night, 18–31.08.2025 (A.V. Gorochov, M.M. Omelko, I.V. Naumenko, A.A. Fomichev). Paratypes: 5♂, 4♀ (ZIN), same data as for holotype.

Description. Male (holotype). General appearance very similar to that of *B. (B.) curta* (Gorochov, 2003): body colouration (Figs 1, 2, 9, 13, 17, 19, 22, 26) dark brown with black most part of epicranium under eyes and rather large posteromedian spot on third abdominal tergite, yellowish ocelli and a pair of transverse stripes on epicranium along dorsal edges of antennal cavities as well as a pair of vertical marks on rostrum along medial edges of antennal cavities, light brown labrum and most part of each scape as well as 4 longitudinal lines on epicranial dorsum and small stripes on maxillary palpi, light greyish brown tegmina as well as marks on pronotal disc and on some abdominal tergites, almost whitish spots on legs and bases of cerci as well as on thoracic sternites, and light greyish to light brown abdominal sternites; head without any gland on epicranial dorsum, with very convex and high (vertical) eyes, moderately narrow rostrum (scape approximately 1.3 times as wide as rostrum between antennal cavities (Figs 9, 13)) and rather short maxillary palpi (apical segment of these palpi barely shorter than eye height); pronotum somewhat transverse, slightly narrowed in anterior part and with strongly oblique ventral edges of lateral lobes (Figs 1, 2); tegmina small (barely projecting behind mesonotum), rounded, without venation, widely separated from each other, with dorsal concavity in proximal part of each tegmen as well as with rather long and dense hairs in distolateral part of tegmen (Figs 1, 2, 17); hind wings absent; legs moderately long and thin (but with rather thick hind femora), without tympana and distinct dorsal denticles on hind basitarsus (except for a pair of apical spurs), with 4 outer and 3 inner rather short dorsal spines in distal part of each hind tibia; third abdominal tergite with low, transverse and shining (black) median convexity (abdominal gland) near posterior edge, but fourth abdominal tergite practically without such convexity (Fig. 1); anal plate more or less flat and triangular but with roundly truncate apex (Fig. 22); genital plate almost 1.5 times as long as anal plate, slightly elongate, with almost parallel lateral sides and with more or less roundly notched apex (Fig. 26). Genitalia distinguished from those of *B. (B.) curta* only by following characters (compare Figs 36–38 and 39–41): epiphallus with distinct anteromedian notch and clearly longer posteromedian spine; each ectoparamere somewhat shorter, straighter in profile, with short angular dorsomedial projection (instead longer rounded dorsomedial lobe) and with rather small and more or less similar denticles on proximal part of ventromedial edge (vs: this edge in proximal part with one very large angular projection between much smaller denticles); endoparameres together with their apodemes clearly shorter than rami (but in *B. curta*, almost as long as rami).

Variability. Some males (paratypes) with light brown dorsum of head rostrum, or with brown narrow transverse stripes crossing

wider yellowish stripes on epicranium (these yellowish stripes located along dorsal edges of antennal cavities).

Female. Colouration and structure of body as in males, but wings and abdominal gland completely absent, genital plate almost as long as anal plate (approximately as long as wide) and distinctly narrowing to more or less narrowly truncate apex (Fig. 25); ovipositor rather long, with distal part laterally compressed and looking in profile as in Fig. 7.

Length (in mm). Body: male 7–8, female 8–8.5; pronotum: male 1.6–1.8, female 1.8–1.9; tegmina, male 0.4–0.5; hind femora: male 7.2–7.5, female 8–8.2; ovipositor 5.7–6.

Comparison. The new species differs from *B. (B.) curta* (type and previously the only species in the nominotypical subgenus) [Gorochov, 2003] mainly in the characters of the male genitalia listed above.

Etymology. This species is named in honour of one of its collector, Mikhail M. Omelko.

Mikluchomaklaia (*Phantazacla*) *ivani* Gorochov, **sp. n.**

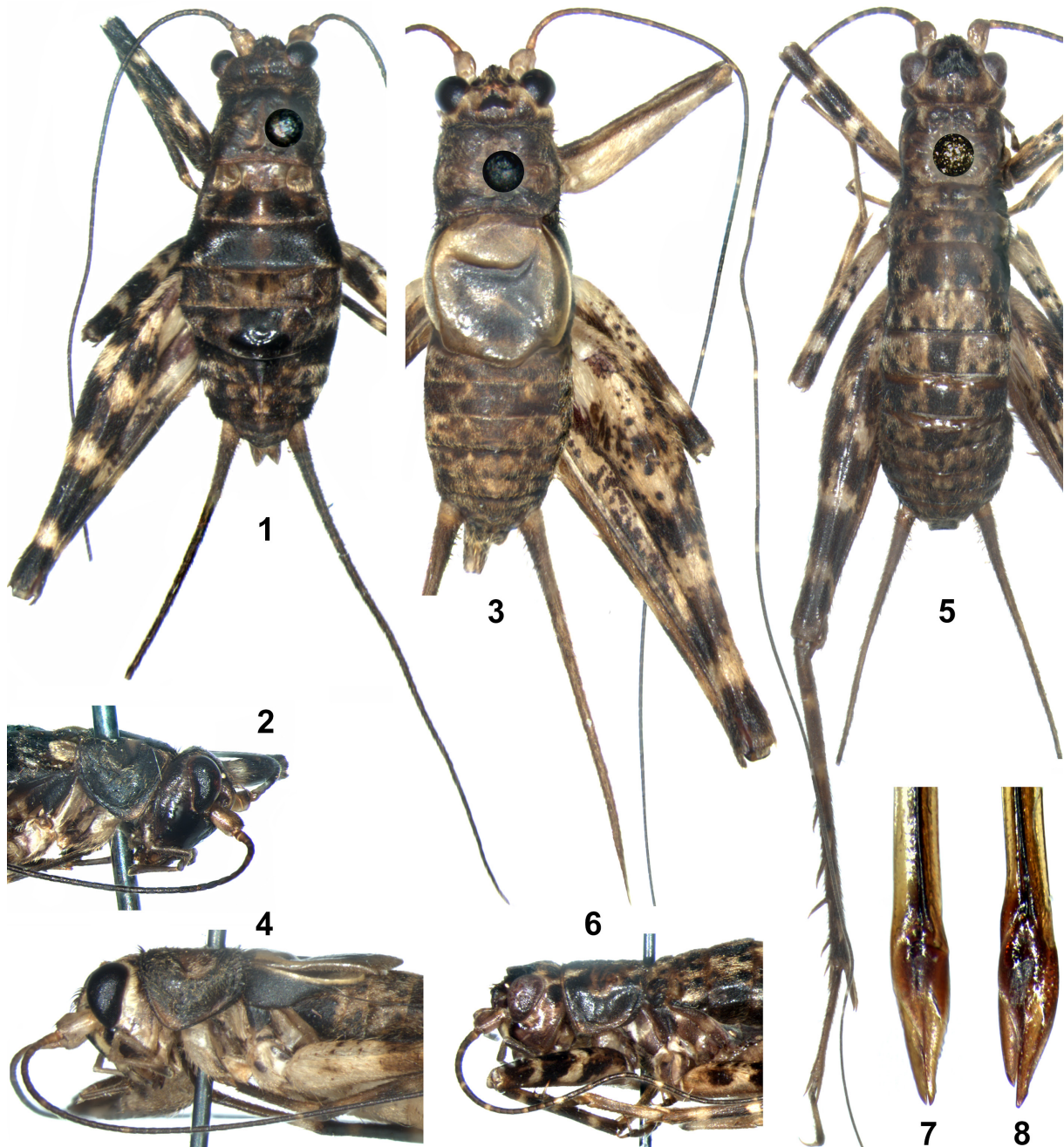
(Figs 3, 4, 8, 10, 11, 14, 15, 18, 20, 23, 27, 29–32)

Material. Holotype, ♂ (ZIN): Papua New Guinea, New Guinea I., about 15 km E of Port Moresby City, environs of Varirata National Park, 9.43–47° S, 147.33–37° E, 500–800 m, primary forest, on trunk of living tree at night, 18–31.08.2025 (A.V. Gorochov, M.M. Omelko, I.V. Naumenko, A.A. Fomichev). Paratypes: 11♂, 6♀ (ZIN), same data as for holotype.

Description. Male (holotype). Body distinctly larger than in *Brevizacla* (*B.*) *mikhaili* **sp. n.** and with following colouration: head with dark brown transverse band on epicranial dorsum along anterior edge of pronotal disc and large bunch of dense shining hairs on middle part of this dorsum (these hairs posteriorly located on dark area fused with previous dark band in middle part), brown to dark brown dorsal part of rostrum and transverse stripe running from posterior part of rostrum to eyes before above-mentioned bunch, yellowish ocelli and rest of epicranial dorsum as well as areas on lateral parts of rostrum and on genae (except for brown to light brown vertical band in posterior part of upper half of each gena), almost blackish eyes and 3 longitudinal bands on epicranium under rostral apex and under eyes, brown (but with yellowish lateral parts) clypeus, yellowish to light brown labrum, light brown scape and rest of mouthparts (including palpi), light reddish brown base of each antennal flagellum, and greyish brown to dark brown rest of this flagellum (Figs 10, 14); pronotum dark brown with large transverse light brown to brown spot on disc (as in Figs 3, 4); tegmina with dark brown lateral fields, yellowish dorsal field of right tegmen (this field also with brown to light brown area in middle part, as in Figs 3, 4) and transparent dorsal field of left tegmen (but this field light greyish with brownish tinge in distal part, whitish venation in proximal part and yellowish marginal vein laterally (Fig. 18)); legs yellowish with numerous brown to dark brown spots (Fig. 20); abdominal tergites light brown with less distinct but similar spots (as in Fig. 3); anal plate and paraprocts from brown to dark brown; sternites and genital plate light brown; cerci brown with lighter bases (Figs 23, 27). Head similar to that of *B. (B.) mikhaili* **sp. n.** and of all other species of *Mikluchomaklaia* s. l. but characterized by following features: middle part of epicranial dorsum with special gland consisting of rather large unpaired concavity (which clearly less deep than in two other species of *Phantazacla*) and of smaller posteromedian convexity having unpaired bunch of dense hairs (these hairs directed forwards and barely upwards (Figs 10, 14)); maxillary palpi slightly longer than in *B. (B.) mikhaili* **sp. n.** (apical segment of these palpi practically as long as height of eye, as in Fig. 4). Pronotum similar to that of latter species (as in Figs 3, 4); tegmina larger, reaching apex of second abdominal tergite, with dorsal fields completely covering one other and different in structure (dorsal field of right tegmen as in Fig. 3, located above, semisclerotized and with only stridulatory vein developed, but this vein without distinct stridulatory teeth; dorsal field of left tegmen as in Fig. 18, located

under previous field and mainly membranous with sparse venation only in proximial and distal parts), and with lateral fields of both tegmina identical (rather narrow and lacking venation, as in Fig. 4); legs slightly longer than in this species, with hind femur somewhat more slender, with fore tibia having only inner tympanum (this tympanum small and oval), with hind tibia having 4 outer and 3 inner dorsal spines (these spines moderately short and located in distal part of tibia), and with a few dorsal denticles on hind basitarsus. Abdomen without any gland on tergites, with anal plate

distinguished from that of *B. (B.) mikhaili* sp. n. by only presence of small posteromedian notch, and with genital plate distinguished from that of this species by only almost truncate apex (Figs 23, 27); genitalia more similar to those of other *Phantazacla* congeners but distinctly narrower, with more spinose epiphallic posteromedian process in profile, slightly notched apices of ectoparameres, and much longer formula consisting of a pair of thin longitudinal ribbons near each other (anteriorly, these ribbons somewhat widened and fused with each other) (Figs 30–32).

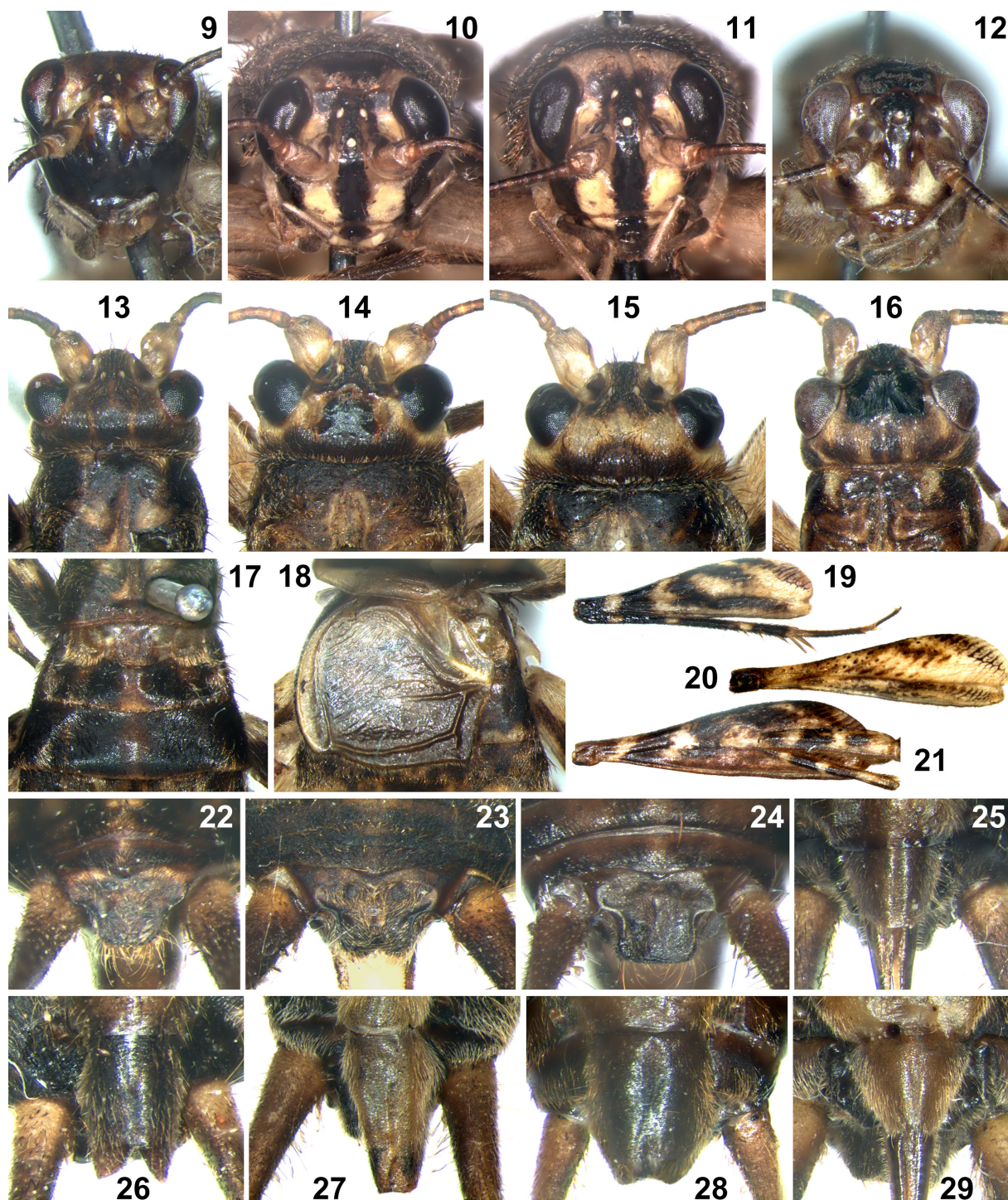


Figs 1–8. *Brevizacla* and *Mikluhomaklaia*, external structure.

1–2, 7 – *B. (Brevizacla) mikhaili* sp. n. (1–2 – holotype); 3–4, 8 – *M. (Phantazacla) ivani* sp. n.; 5–6 – *M. (Ph.) alexandri* sp. n., holotype. 1–6 – male body: 1, 3, 5 – without some legs, from above, 2, 4, 6 – without posterior part, from side; 7–8 – distal part of ovipositor, from side.

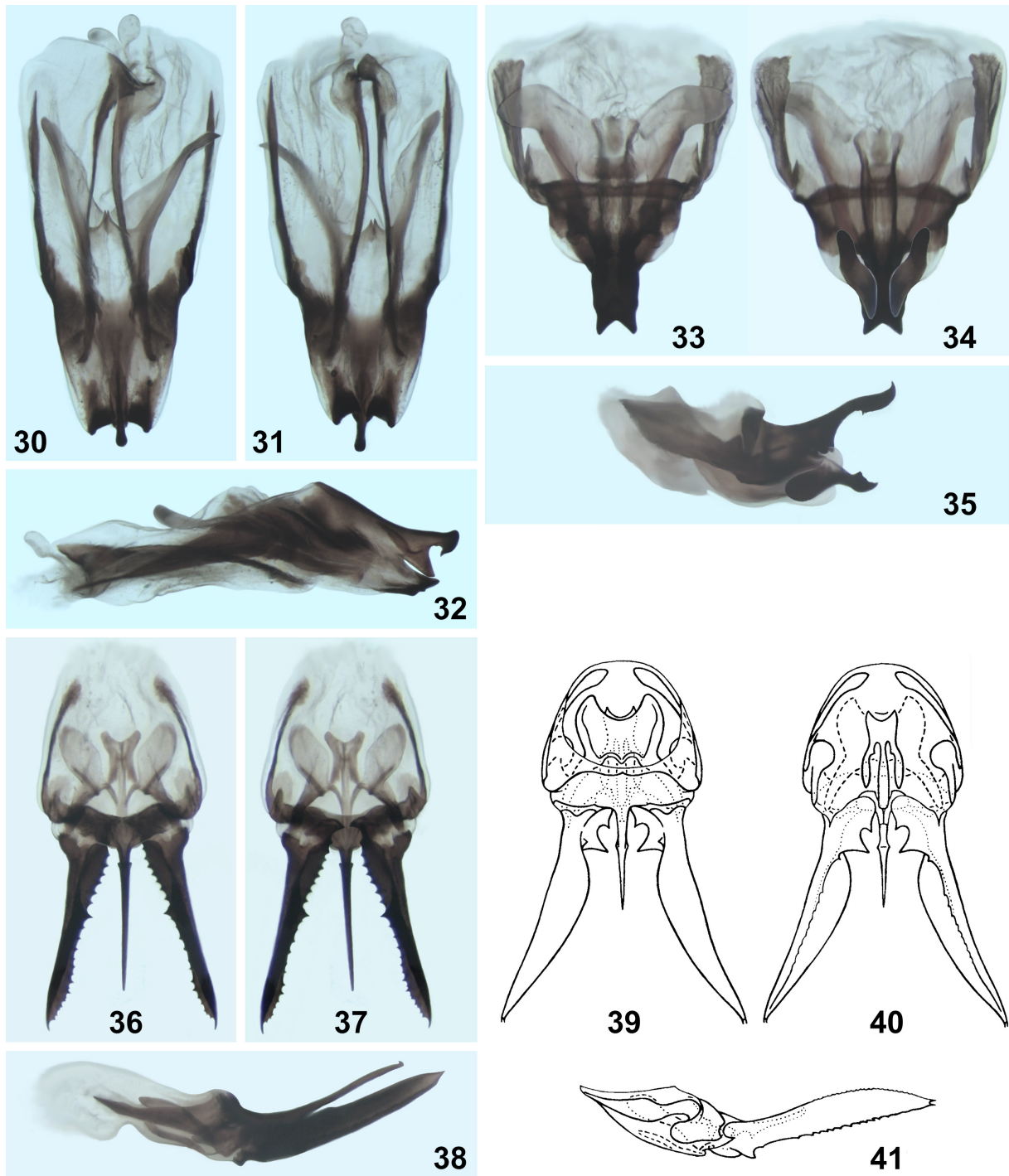
Рис. 1–8. *Brevizacla* и *Mikluhomaklaia*, наружное строение.

1–2, 7 – *B. (Brevizacla) mikhaili* sp. n. (1–2 – голотип); 3–4, 8 – *M. (Phantazacla) ivani* sp. n.; 5–6 – *M. (Ph.) alexandri* sp. n., голотип. 1–6 – тело самца: 1, 3, 5 – без некоторых ног, вид сверху, 2, 4, 6 – без задней части, вид сбоку; 7–8 – дистальная часть яйцеклада, вид сбоку.



9, 13, 17, 19, 22, 25–26 – *B. (Brevizacla) mikhaili* sp. n. (9, 13, 17, 19, 22, 26 – holotype); 10–11, 14–15, 18, 20, 23, 27, 29 – *M. (Phantazacla) ivani* sp. n. (10, 14, 18, 20, 23, 27 – holotype); 12, 16, 21, 24, 28 – *M. (Ph.) alexandri* sp. n., holotype. 9–12 – head in front: 9–10, 12 – male, 11 – female; 13–16 – head from above: 13–14, 16 – male, 15 – female; 17 – male pterothorax with tegmina and abdominal base from above; 18 – dorsal field of male left (lower) tegmen; 19–21 – male hind femur from side: 19 – with tibia and tarsus, 20 – without them, 21 – only with middle leg; 22–24 – male anal plate from above/behind; 25–29 – genital plate from below: 25, 29 – female, 26–28 – male.

9, 13, 17, 19, 22, 25–26 – *B. (Brevizacla) mikhaili* sp. n. (9, 13, 17, 19, 22, 26 – голотип); 10–11, 14–15, 18, 20, 23, 27, 29 – *M. (Phantazacla) ivani* sp. n. (10, 14, 18, 20, 23, 27 – голотип); 12, 16, 21, 24, 28 – *M. (Ph.) alexandri* sp. n., голотип. 9–12 – голова, вид спереди: 9–10, 12 – самец, 11 – самка; 13–16 – голова, вид сверху: 13–14, 16 – самец, 15 – самка; 17 – птероторакс самца с надкрыльями и основанием брюшка, вид сверху; 18 – спинная плоскость левого (нижнего) надкрылья самца; 19–21 – заднее бедро самца, вид сбоку: 19 – с голенью и лапкой, 20 – без них, 21 – только со средней ногой; 22–24 – анальная пластинка самца, вид сверху/сзади; 25–29 – генитальная пластинка, вид снизу: 25, 29 – самка, 26–28 – самец.



Figs 30–41. *Mikluhomaklaia* and *Brevizacla*, male genitalia.

30–32 – *M. (Phantazacla) ivani* sp. n., holotype; 33–35 – *M. (Ph.) alexandri* sp. n., holotype; 36–38 – *B. (Brevizacla) mikhaili* sp. n., holotype; 39–41 – *B. (B.) curta*, holotype, after Gorochoy [2003]. 30, 33, 36, 39 – from above; 31, 34, 37, 40 – from below; 32, 35, 38, 41 – from side.

Рис. 30–41. *Mikluhomaklaia* и *Brevizacla*, гениталии самца.

30–32 – *M. (Phantazacla) ivani* sp. n., голотип; 33–35 – *M. (Ph.) alexandri* sp. n., голотип; 36–38 – *B. (Brevizacla) mikhaili* sp. n., голотип; 39–41 – *B. (B.) curta*, голотип, по Горохову [2003]. 30, 33, 36, 39 – вид сверху; 31, 34, 37, 40 – вид снизу; 32, 35, 38, 41 – вид сбоку.

Variability. Some male paratypes lighter (with almost light brown bunch of hairs on head dorsum, larger and lighter spot on pronotum, smaller darkened part of dorsal field in right tegmen, and almost yellowish most part of abdominal tergites) or darker (with almost blackish dorsal part of head rostrum and larger dark brown area on dorsal field of right tegmen).

Female. General appearance as in males, but head dorsum without gland and with distinct transverse yellowish band between darker anterior and posterior parts of this dorsum (Figs 11, 15), pronotal lateral lobes with small light spot in each antroventral corner, wings completely absent, anal plate with more or less rounded apex, and genital plate (Fig. 29) almost as in *B. (B.) mikhaili* sp. n.; ovipositor somewhat longer than in this species but with distal part very similar to that of this species (Fig. 8).

Length (in mm). Body: male 11.5–13, female 13.5–14.5; pronotum: male 2.2–2.6, female 2.9–3.1; tegmina, male 3.4–3.9; hind femora: male 11.5–12.5, female 14.3–14.6; ovipositor 14.4–14.8.

Comparison. The new species is clearly distinguished from *M. (Ph.) phantastica* Gorochov 1998 and *M. (Ph.) mystica* Gorochov 2003 by a less deep concavity of the male head gland, the presence of a distinct stridulatory vein on the dorsal field of the male right (upper) tegmen, and the above-mentioned differences in the male genitalia structure.

Etymology. This species is named in honour of one of its collector, Ivan V. Naumenko.

Mikluchomaklaia (Phantazacla) alexandri

Gorochov, sp. n.

(Figs 5, 6, 12, 16, 21, 24, 28, 33–35)

Material. Holotype, ♂ (ZIN): Papua New Guinea, New Guinea I., about 30 km NWW of Mount Hagen Town, environs of Kumul Lodge, 5.74–78 S, 143.94–98 E, 2700–2900 m, primary forest, on trunk of tree at night, 6–16.08.2025 (A.V. Gorochov, A.A. Fomichev, M.M. Omelko).

Description. Male (holotype). Body slightly smaller than in *M. (Ph.) ivani* sp. n. and somewhat darker: head light brown with greyish brown eyes, dark brown dorsal part of rostrum and a few longitudinal spots on epicranial dorsum along anterior edge of pronotal disc as well as a pair of areas in upper parts of genae (behind eyes), 3 brown vertical bands on epicranium under eyes and under rostral apex, yellowish ocelli and areas on epicranium under antennal cavities (between previous vertical bands), brown to greyish brown antennal flagellum (but this flagellum with almost whitish small and sparse spots), and blackish bunch of hairs in middle part of head dorsum (Figs 5, 6, 12, 16); pronotum dark brown with a pair of whitish spots on disc along its anterior edge as well as with yellowish to light brown large area in posterior two thirds of this disc (Figs 5, 6); legs spotted (almost as in *M. ivani* sp. n. (Figs 5, 21)); pterothoracic and abdominal tergites also spotted (brown with light brown and dark brown marks (Figs 5, 6)); sternites yellowish to light brown; cerci greyish brown with slightly lighter bases; anal plate, paraprocts and genital plate almost dark brown (Figs 24, 28). Head very similar

to that of this species in structure, but special gland on middle part of epicranial dorsum with shallower (less distinct) concavity having smaller (shorter) posteromedian convexity and longer bunch of dense hairs (this bunch directed forwards and with apices of hairs curved downwards (Figs 12, 16)); pronotum slightly less transverse, with almost parallel lateral sides of disc and with lateral lobes similar to those of *M. (Ph.) ivani* sp. n.; wings and tympana completely absent; legs somewhat shorter than in this species, but structure of hind tibia and of hind basitarsus as in this species (Figs 5, 6); abdomen also similar to that of this species (abdominal gland absent, and genital plate with almost truncate apex), but anal plate with distinctly rectangular apical part (Figs 24, 28), and genitalia clearly different: epiphallus shorter and wider, with longer posteromedian lobe having angular notch at apex; ectoparameres with narrowly rounded apices; endoparameral apodemes wider; formula much shorter, consisting of a pair of less thin longitudinal ribbons (not fused with each other anteriorly) and of some semimembranous structures between them (Figs 33–35).

Length (in mm). Body 11.2; pronotum 1.9; hind femora 8.8.

Female unknown.

Comparison. The new species is most similar (and probably related) to *M. (Ph.) ivani* sp. n. in the structure of the male head gland, but it is distinguished from the latter species by the complete absence of wings and tympana in male as well as by the above-listed characters of the male genitalia. From all other species of this subgenus, the new species differs in a much less deep concavity of the head gland, the absence of wings in male, and some other features (including the male genitalia structure).

Etymology. This species is named in honour of one of its collector, Alexandr A. Fomichev.

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