

***Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n., a new species of Limoniidae
(Diptera) from the Taimyr Peninsula, Russia**

***Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n. — новый вид комаров
Limoniidae (Diptera) с полуострова Таймыр**

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Ключевые слова: Diptera, Limoniidae, *Austrolimnophila*, новый вид, полуостров Таймыр.

Abstract. A new species of the short-palped craneflies, *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n. from the Taimyr Peninsula, Russia, is described and illustrated from imagoes of both sexes. The new species differs from all the congeners of the subgenus *Austrolimnophila* (*Archilimnophila*) Alexander, 1934 by its relatively short wings, as well as in the structure of the male hypopygium, especially the shape of tergite 9 and gonapophyses.

Резюме. Приведено иллюстрированное описание нового вида комаров-лимонийд *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n. с полуострова Таймыр по имаго обоих полов. Новый вид отличается от всех видов подрода *Austrolimnophila* (*Archilimnophila*) Alexander, 1934 относительно короткими крыльями, а также строением гипопигия самца, особенно формой тергита 9 и гонапофизов.

The genus *Austrolimnophila* Alexander, 1920, one of the largest in the family Limoniidae, comprises five subgenera and about 190 species. The subgenus *Austrolimnophila* (*Archilimnophila*) Alexander, 1934 is relatively small and contains six species: two Holarctic, three Palaearctic and one non-Arctic [see Oosterbroek, 2024]. The high-latitude representatives include *Austrolimnophila* (*Archilimnophila*) *subpolaris* Savchenko, 1969, originally described from the lower Yenisei River basin, and the Holarctic *Austrolimnophila* (*Archilimnophila*) *harperi* (Alexander, 1926), distributed across northern Eurasia and North America.

In 2012, several specimens of a previously undescribed species were collected in the northwestern Taimyr Peninsula by Dr A.V. Barkalov. The following is a morphological description of the adult male and female of *Austrolimnophila* (*Archilimnophila*) *barkalovi* Devyatkov, sp.n., accompanied by illustrations.

The holotype and paratypes of the new species will be deposited in the collection of the Siberian Zoological Museum, Institute of animal systematics and ecology, Novosibirsk.

The gnats were sampled using coloured plates and the material was fixed in 70% ethanol. Processing was performed with an MBS-10 binocular, drawings were made with an ocular micrometer, and photographs were taken with a TouPCam digital camera mounted on the same dissecting microscope. The terminology is according to E.N. Savchenko [Savchenko, 1986].

Nomenclatural acts introduced in the present work are registered in ZooBank (www.zoobank.org) under urn:lsid:zoobank.org:pub:70A72152-1EC3-49A9-BF98-9FF556122DB5

Austrolimnophila (*Archilimnophila*) *barkalovi*
Devyatkov, sp.n.

Figs 1–14.

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Material. Russia, *Taymyrskii Dolgano-Nenetskii Autonomous Okrug*: holotype, ♂, 12 km SSE of Dixon vill., Lemberova River, N73°24'; E80°39'; h~5 m a.s.l., 12–19.VII.2012, A.V. Barkalov. Paratypes: 7♂♂, 9♀♀, idem.

Description. *Male* (Figs 1–2, 7–13). General body colour black-brown, less commonly brown-black. Body length 7.6–10.8 mm, wing length 5.5–6.4 mm, wing width 1.2–1.5 mm, antennae length 1.8–2.2 mm.

Head black with greyish pruinosity, with small parietal tubercle. Eyes set wide apart, distance between them much longer than the length of the scape. Rostrum dark brown, palpi brown, rarely brownish.

Antennae (Fig. 1). 16-segmented, short, recurved, reaching no further than mid-length of prescutum. Scape dark brown; pedicel and proximal flagellomeres brown; intermediate flagellomeres brownish; distal flagellomeres pale brown. Rarely the flagellum is uniformly coloured (brown or light brown). Scape nearly cylindrical, relatively short, its length 1.5–2.0 times greater than its width; pedicel short, narrowed basally. First flagellomere elongate-oval, slightly shorter than or equal to the scape; subsequent flagellomeres shorter and oval; apical flagellomere about as long as the penultimate one. The flagel-

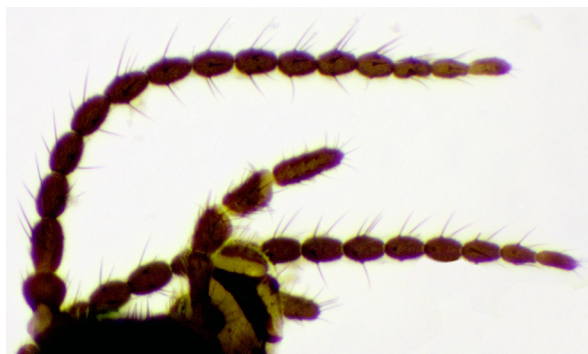
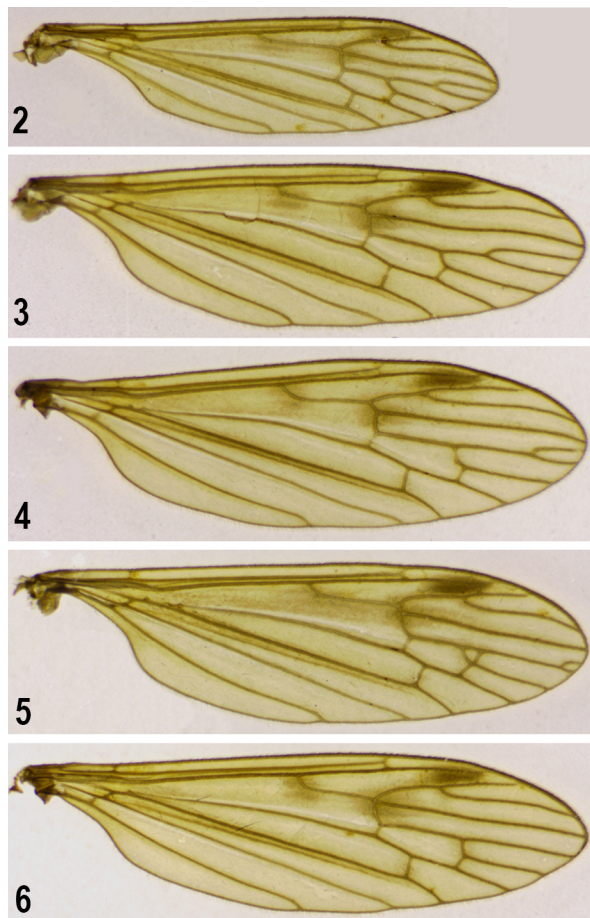


Fig. 1. Male antennae of *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n., paratype.

Рис. 1. Усики самца *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n., паратип.

lum bears very short, light pubescence; the longest verticils on flagellomeres 2–14 are approximately equal in length to respective segments.

Thorax brownish-black to blackish-brown, with grey pruinosity. Prescutum brownish-black or black, covered with sparse reddish-grey or grey pruinosity, with three semi-glossy longitudinal stripes. These stripes show intraspecific variation:



Figs 2–6. Wings of *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n. 2 — male; 3–6 — females.

Рис. 2–6. Крылья *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n.: 2 — самец; 3–6 — самки.

in some specimens they are very slightly glossy (almost matt), in others slightly to moderately glossy, and in others distinctly glossy. The median stripe is long, broad and more glossy than the lateral stripes; posteriorly it occasionally merges with the lateral stripes. Medially, a thin longitudinal median stripe of the underlying dull background may be present. Scutal lobes brownish black, moderately shiny in the centre, laterally bordered by a dull black-grey margin.

Legs short and stout; femora apically thickened; hind legs distinctly longer than fore and middle legs; tibiae slightly shorter than femora and not extending beyond the apex of the abdomen. Coxae blackish-brown or brownish-black. Trochanters brown to dark brown. Femora brown or dark brown, occasionally light brown basally, brown medially and dark brown apically. Tibiae and tarsi brown to dark brown, except one or two distal tarsal segments which are brownish-black.

Wings (Fig. 2). Narrow, with a wing width-length ratio of 0.21–0.25 (mean 0.24); relatively short, reaching the anterior margin of tergite 7 or at most the midpoint of the hypopygium length. Brownish to light brown, with a dark brown oblong stigma, a fairly large but diffuse brown spot at the fork of radial sector (*rs*) and *r-m* crossvein, and a brown spot at the base of *rs*. The latter spot is occasionally very faint, smoky or almost absent.

Wing venation (Figs 3–6). Venation is typical of the subgenus. Veins *sc*₁ and *sc*₂ terminate at approximately the same level, opposite or slightly distal to the bifurcation of the long *rs*. Vein *r*₂₊₃ is generally shorter than, or rarely equal to, vein *r*₅. The length of cell *M*₁ is highly variable in both males and females, ranging from large (where *M*₁ exceeds the length of its stem, Fig. 3) to subequal to the stem length (Figs 2, 4), very small (Fig. 5), or absent (Fig. 6). Cell *D* is elongate-pentagonal, widening from base to apex; its apical width is 1.5–2.5 times greater than its basal width. Vein *m-cu* is located slightly proximal to or approximately opposite the midpoint of cell *D*. Veins brown; anterior arcus absent. Halteres short, brown with a light brown base and knob, or brownish with a brownish-yellowish base and knob.

Abdomen blackish-brown to brownish-black; posterior margin of segments 2–4 narrowly and segments 5–8 broadly bordered with greyish-yellow; rarely posterior margin of segments lacking margination.

Hypopygium (Figs 7–8). Dark brown, with numerous moderately long setae; tergite 9 and sternite 9 fused to form a complete genital ring. Tergite 9 transverse, apically bearing a broad and deep emargination, flanked by two pointed projections (Fig. 9); margins of emargination narrowly darkened, with minute protuberances. Alternatively, tergite 9 apically bears a broad and moderately deep emargination with more extensively darkened margins (Fig. 10). Sternite 9 apically almost straight. Gonocoxites robust, apically “split” into two lobes (Fig. 8), and bearing large, broad ventromesal protrusion.

Inner (lower) gonostylus (Fig. 11). A small, darkened plate, bearing a long, curved, and slightly pointed finger-like projection at approximately mid-length of its inner margin, directed mesally and anteriorly. Outer (upper) gonostylus (Fig. 12). Similarly a small, darkened plate, with a large claw-like projection along its inner margin, directed mesally and posteriorly; anterior margin featuring a light-coloured semicircular prominence, and posterior semicircular margin with moderately long setae.

Gonapophyses (Fig. 13). Comprising two nearly parallel, slightly sinuous, elongated plates, connected basally by a light-coloured bridge. Apically, each plate bears a relatively long, acute spine curved downward and slightly inward. Proximally light-coloured, distally strongly sclerotized and darkened. At

Figs 7–8. Male hypopygium of *Austrolimnophila (Archilimnophila) barkalovi* sp.n., paratype. 7 — dorsal view (right gonostyles removed); 8 — ventral view.

Рис. 7–8. Гипопигий самца *Austrolimnophila (Archilimnophila) barkalovi* sp.n., паратип. 7 — вид сверху (правые гоностили удалены); 8 — вид снизу.

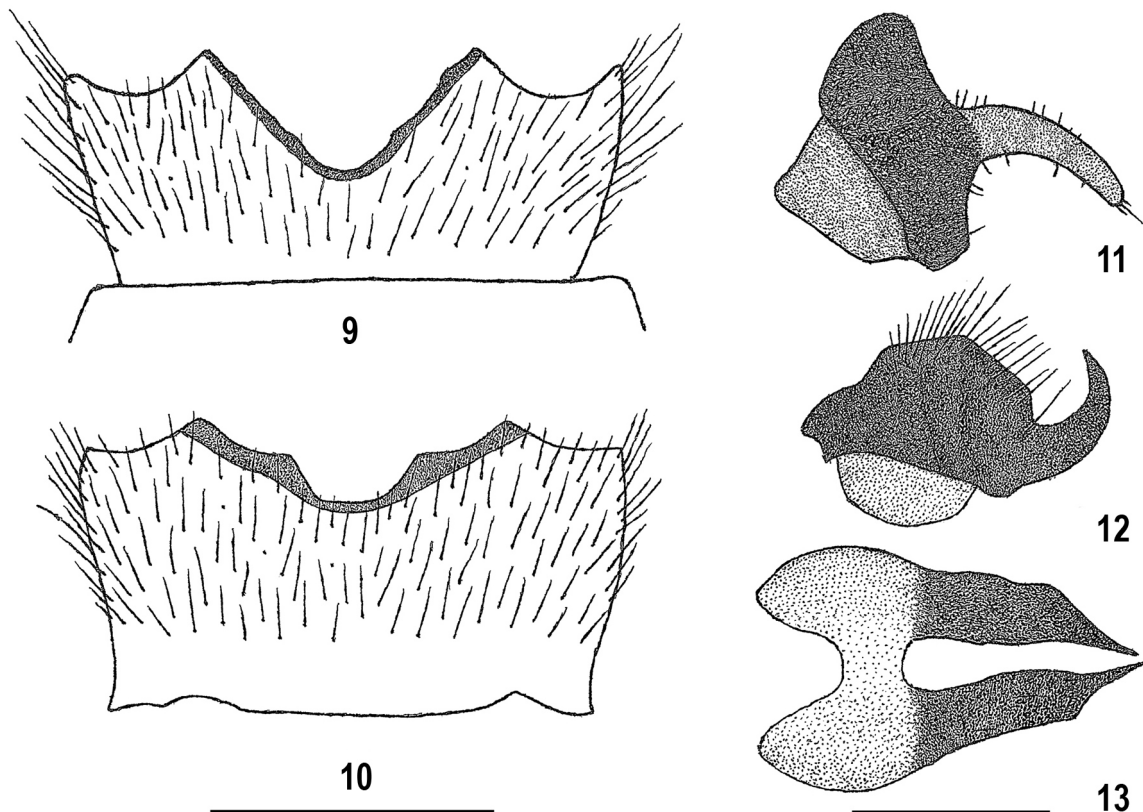
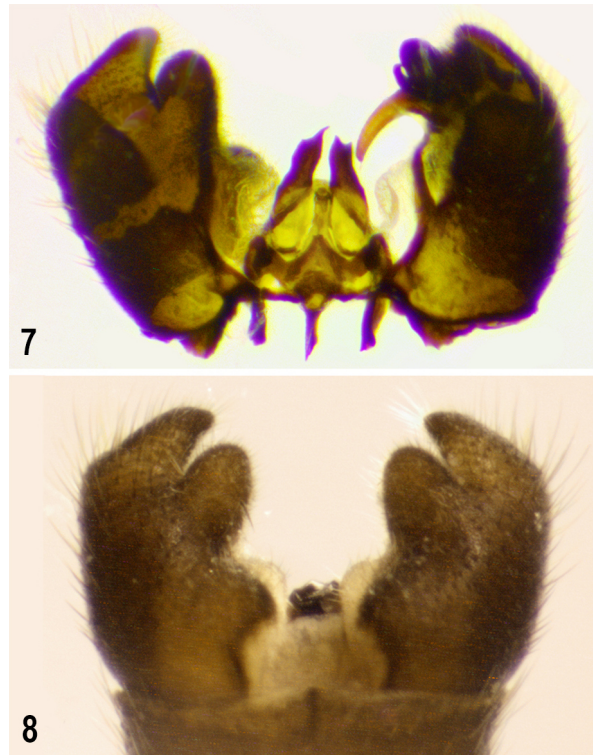
the base of the gonapophyses, a transverse plate is present, bearing three subequal triangularly pointed projections.

Female (Figs 3–6, 14). Similar to the male. Body length (including ovipositor) 8.0–11.0 mm; wing length 6.1–7.7 mm; wing width 1.8–2.3 mm; antennal length 1.7–1.9 mm.

Antennae. Curved backward, not reaching the midpoint of the prescutum length.

Wings (Figs 3–6). Broader than in males, with a wing width-to-length ratio of 0.26–0.31 (mean 0.29); relatively short, slightly surpassing the anterior margin of tergite 7 and reaching the midpoint of the cerci length at most. Halteres. Lighter than in males, light brownish with a greyish-yellowish base and a greyish-yellowish or yellowish-brownish knob.

Ovipositor (Fig. 14). Yellowish-brown. Tergite 10 brownish-yellow with four dark brown longitudinal stripes, the median pair approximately twice as long as the lateral ones; rarely, the stripes coalesce into a single large dark brown spot. Cerci. Moderately elongated, apically pointed and gently curved upward; brownish-yellow, with a dark brown dorsal margin along the proximal and medial regions. Valvae. Long and straight, pointed apically, reaching or slightly exceeding



Figs 9–13. Details of male hypopygium *Austrolimnophila (Archilimnophila) barkalovi* sp.n., paratype: 9–10 — tergite 9, dorsal view; 11 — inner gonostylus, dorsal view; 12 — outer gonostylus, dorsal view; 13 — gonapophyses, dorsal view. Scale bars: 9–10 — 0.5 mm, 11–13 — 0.2 mm.

Рис. 9–13. Детали гипопигия самца *Austrolimnophila (Archilimnophila) barkalovi* sp.n., паратипы: 9–10 — тергит 9, вид сверху; 11 — внутренний гоностиль, вид сверху; 12 — внешний гоностиль, вид сверху; 13 — гонапофизы, вид сверху. Масштабные линейки: 9–10 — 0,5 мм, 11–13 — 0,2 мм.



Fig. 14. Ovipositor *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n., lateral view.

Рис. 14. Яйцесклад *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n., вид сбоку.

the midpoint of the cerci length; brownish-yellow with a brown base.

Etymology. The species is named in honour of the eminent Siberian entomologist, Dr A. V. Barkalov, Head of the Laboratory of Invertebrate Systematics at the Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences, Novosibirsk. He has collected extensive and significant material on the fauna of tipuloid mosquitoes from various regions of Siberia and Tajikistan, including male and female specimens of the new species.

Diagnosis. Black-brown medium-sized species. Male antenna short, reaching midlength of prescutum when bent posteriorly; scape relatively short, dark brown, rest of antenna segments brown or light brown. Prescutum with three brownish-black, semi-glossy longitudinal stripes. Legs short and thick, femora thickened at the apex, hind legs clearly longer than fore and middle legs. Wings narrow and short, not reach-

ing the top of the abdomen, with dark brown stigma and brown spots at the base and on the fork of the *rs*; length of M_1 cell very variable: M_1 longer or shorter than its stem, very small or absent. Halteres short. Abdomen blackish-brown or brownish-black. Tergite 9 with a wide and deep medial notch at the apex, bordered by two pointed projections of variable shape. Inner (lower) gonostylus rounded at apex, without darkly pigmented spine or hook. Outer (upper) gonostylus with large, claw-like, blackened projection at apex. Gonapophyses in the form of a pair of elongate plates with a sharp spine at the apex, joined by a bridge distal to the base.

Comparison with closely related species. The new species is most closely allied to the high-latitude *Austrolimnophila* (*Archilimnophila*) *subpolaris* Savchenko, 1969, from which it differs in its larger size, relatively shorter wings with distinct dark spots, and the structure of certain male hypopygial features, especially the morphology of tergite 9 and gonapophyses. Males of *A. (A.) barkalovi* sp.n. are on average nearly twice as long as male of *A. (A.) subpolaris*. In both sexes of *A. (A.) barkalovi* sp.n., the wings are 1.4–1.5 times shorter than the body length, whereas in the known male of *A. (A.) subpolaris*, the wings are 1.2 times longer than the body [Savchenko, 1969]. The wings of *A. (A.) barkalovi* sp.n. exhibit a dark brown stigma and distinct brown spots at the base and fork of the radial sector (Figs 2–6), while in *A. (A.) subpolaris* the wings bear only a faint brownish stigma. The male tergite 9 of *A. (A.) barkalovi* sp.n. is apically characterised by a deep emargination flanked by two pointed projections (Figs 9–10), whereas in *A. (A.) subpolaris* tergite 9 has a shallow emargination bordered by two rounded projections. The gonapophyses of *A. (A.) barkalovi* sp.n. terminate in a relatively long, acute spine (Fig. 13), contrasting with the blunt apex and absence of sharp spines in *A. (A.) subpolaris* [Savchenko, 1969].

The new species is distinguished from the eastern Palaearctic *Austrolimnophila* (*Archilimnophila*) *subunicoides* (Al-



Fig. 15. Habitat of *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n.

Рис. 15. Местообитание *Austrolimnophila* (*Archilimnophila*) *barkalovi* sp.n.

exander, 1950) by its shorter wings and differences in male hypopygial structures, notably the morphology of tergite 9 and gonapophyses. In males of *A. (A.) subunicoides*, the posterior margin of tergite 9 bears four rounded projections (lobes) [Podenas et al., 2020], whereas in *A. (A.) barkalovi* sp.n., it features two pronounced pointed projections. The gonapophyses of *A. (A.) subunicoides* are long, thin, and strongly curved asymmetrical darkened rods [Alexander, 1950; Podenas et al., 2020], while those of the new species are elongated, slightly sinuous plates, light-coloured proximally and darkened distally.

From *Austrolimnophila (Archilimnophila) arborea* Savchenko, 1978, described from Buryatia, the new species differs in its narrower wings, blackish-brown abdomen (vs. brownish-yellow in *A. (A.) arborea*), the structure of tergite 9 (in *A. (A.) arborea*, tergite 9 apically bears a small U-shaped emargination flanked by two obliquely truncated projections), and gonapophyses (in *A. (A.) arborea*, these are slightly curved, dark-pigmented spines) [Savchenko, 1978].

The new species is readily distinguished from the Holarctically widespread *Austrolimnophila (Archilimnophila) unica* (Osten Sacken, 1869) and the northern Holarctic *Austrolimnophila (Archilimnophila) harperi* (Alexander, 1926) by its gonapophyseal structure: in both *A. (A.) unica* and *A. (A.) harperi*, these sclerites are represented by two pairs of curved, dark-pigmented, elongated spines [Alexander, 1943; Savchenko, 1978; Mendl, 1979; Podenas et al., 2020].

Habitat. Northern tundra, southern exposure of a diverse herb meadow on the shore of the Yenisei Bay (Fig. 15).

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