

First record of the genus *Anomalempis* Melander (Diptera: Empidoidea: Brachystomatidae) from the Palaearctic region (Russia)

Первая находка рода *Anomalempis* Melander (Diptera: Empidoidea: Brachystomatidae) из Палеарктического региона (Россия)

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КЛЮЧЕВЫЕ СЛОВА. Diptera, Empidoidea, Brachystomatidae, *Anomalempis*, новый вид, Россия.

ABSTRACT. A new species of the genus *Anomalempis* Melander, 1928 (Diptera: Empidoidea: Brachystomatidae) is described from Yakutia (Russia) — *A. yakutica* Shamshev **sp.n.** One more possible new species from Eastern Siberia (Krasnoyarskiy Territory?) was retained as unnamed due to insufficient material. Up to now, *Anomalempis* was known only from two western North America species and it is recorded herein for the first time from the Palaearctic region.

РЕЗЮМЕ. Новый вид рода *Anomalempis* Melander, 1928 (Diptera: Empidoidea: Brachystomatidae) описан из Якутии (Россия) — *A. yakutica* Шамшев **sp.n.** Ещё один возможный новый вид из Восточной Сибири (Красноярский край?) оставлен неназванным из-за недостаточного материала. До настоящего времени *Anomalempis* включал только два вида из западной части Северной Америки и, тем самым, он указывается впервые для Палеарктического региона.

Introduction

The Brachystomatidae are a small family of Empidoidea, comprising about 155 extant species and 22 genera worldwide [Sinclair, 2017]. The group has some relict features, including rather high levels of generic endemism and the presence of many genera with uncertain phylogenetic relationships. The Brachystomatidae are classified in three subfamilies — Brachystomatinae, Ceratomerinae and Trichopezinae [Sinclair, Cumming, 2006].

Up to now, the Brachystomatidae were known in the Palaearctic by two subfamilies and five genera: Brachy-

stomatinae — *Brachystoma* Meigen, 1822 (four species); Trichopezinae — *Gloma* Meigen, 1822 (two described and two undescribed species [Sinclair et al., 2019]), *Heleodromia* Haliday, 1833 (about 25 species), *Pseudheleodromia* Wagner, 2001 (one species), and *Trichopeza* Rondani, 1856 (two species) [Yang et al., 2007]. This paper includes the description of a new species of the genus *Anomalempis* Melander, 1928 from Yakutia (Russia), which represents the first record of this group from the Palaearctic region. An additional possible undescribed species is also known from a single female specimen from Eastern Siberia.

Melander [1928] erected the genus *Anomalempis* to include a single species (*A. tacomae* Melander, 1928) taken from western North America (Washington). Later, Melander [1945] added to this group a second species (*A. archon* Melander, 1945) collected from Katmai (USA, Alaska). Up to now, only these North American species have been known in the genus.

Material and methods

This study is based on material deposited in Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZISP) and Zoological Museum of Moscow University, Moscow (ZMMU). Terms used for adult structures follow those of Cumming and Wood [2017]. The habitus photograph was taken using a Canon EOS 11 40D camera using a Canon MP-E 65 mm objective, with multiple layers combined using the Helicon Focus 5.3.14 software. To facilitate observations, the terminalia were macerated in cold 10% KOH, then

immersed for a short period in 85% lactic acid and viewed in glycerine. Holotype label data is cited verbatim, with data from each label placed in quotation marks and separated from data on other labels by a semicolon. Lines on labels are delimited by a slash (/). Additional information is included in square [] brackets. The repository of each type is given in parentheses. Secondary type data are abridged.

Taxonomic account

Class Insecta Linnaeus, 1758
 Order Diptera Linnaeus, 1758
 Suborder Brachycera Macquart, 1834
 Superfamily Empidoidea Latreille, 1804
 Family Brachystomatidae Melander, 1908
 Subfamily Brachystomatinae Melander, 1908
 Genus *Anomalempis* Melander, 1928

Anomalempis yakutica Shamshev, **sp.n.**
 Figs 1–5.

TYPE MATERIAL. Holotype, ♂, [Russia] Nizhnie Kresty [now Chersky, 68°46'N 161°20'E] / Kolyma, Yakutia/ Gorodkov 25.vi.[1]963; shore of Kolyma River; *Anomalempis/ yakutica/* Shamshev sp.n. [red label] (INS_DIP_0000622, ZISP).

Paratypes. Russia (Republic of Sakha (Yakutia)): 1 ♂, Indigirka River, lower flow of Ystan-Yuryakh River, Momskiy District,

29.vi.1976, V. Kovalev [terminalia dissected, in microvial pinned with specimen]; 1 ♀, same locality, 1.vii.1976, V. Kovalev; slope of hill larch forest with steppe areas (both paratypes in ZMMU).

DIAGNOSIS. Mid-sized (body about 4 mm), greyish, pale setose flies; mesonotum and abdomen greyish pruinose; wings whitish in male and hyaline in female, with inconspicuous pterostigma.

DESCRIPTION. **Male** (Fig. 1). Body 4.0 mm, wing 4.0 mm (holotype). Head dark brown in ground-colour, with pale setation, occiput densely greyish pruinose. Eyes holoptic, with upper ommatidia enlarged, border between larger and smaller ommatidia distinct. Frons represented by small triangular space just below ocellar triangle and somewhat larger space above antennae, bare, greyish pruinose. Face parallel-sided, bare, densely greyish pruinose. Ocellar triangle prominent, with 2 pairs of long setae. Upper postocular setae nearly as long as ocellar setae; postvertical setae much shorter than upper postocular setae, fine; otherwise occiput covered with numerous similar fine setae (except above neck). Antenna with scape and pedicel brownish, postpedicel and stylus black; scape short, slightly shorter than globular pedicel, both with short setae; postpedicel conical, nearly 2.5 times longer than basal width; stylus slightly shorter than postpedicel, apex bare, peg-like. Proboscis short; length of labrum nearly half of eye height; palpus dirty yellow, with moderately long, fine pale setae.

Thorax dark in ground-colour, densely greyish pruinose on prothoracic sclerites and mesopleuron, sparser pruinose on mesonotum, mesoscutum without vittae (greyish viewed anteriorly; faintly pruinose, subshiny viewed dorsally); with

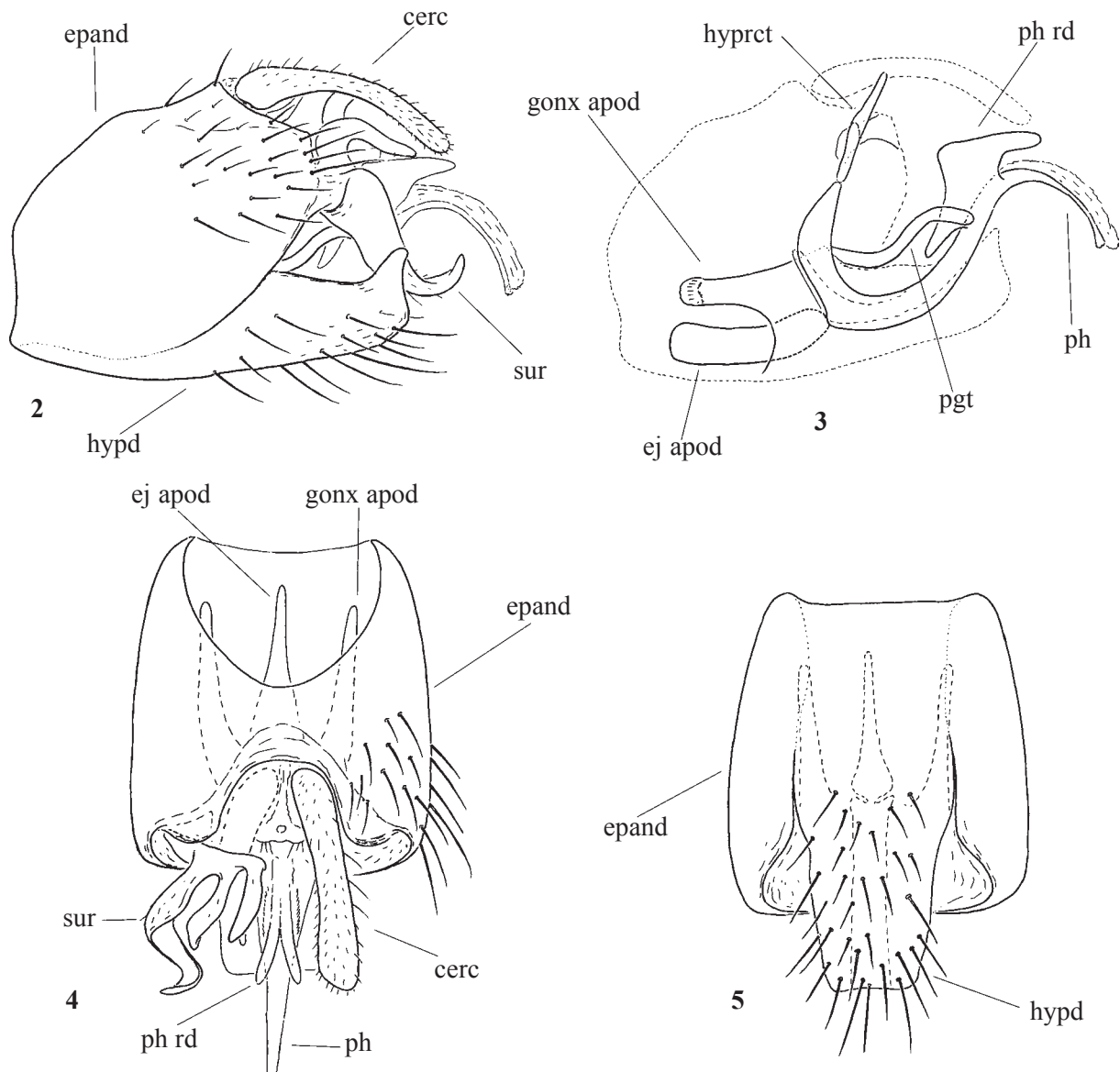


Fig. 1. *Anomalempis yakutica* **sp.n.**, ♂ holotype, lateral view.
 Рис. 1. *Anomalempis yakutica* **sp.n.**, ♂ голотип, вид сбоку.

pale setation (stronger setae rather pale yellowish). Proepisternum with several moderately long, fine setae on lower section; upper proepisternum in front of spiracle with 3–4 short, fine setae. Prosternum bare. Antepronotum with numerous short to moderately long setae. Postpronotal lobe with 3 long and 2 short setae. Mesonotum with rather hardly differentiated setation; numerous short setae on presutural supra-alar area, 3–4 long and some short to moderately long finer setae on postsutural supra-alar area, notopleuron with 4–5 long and several shorter setae, 1 long and 1 short postalars, 8–10 scutellars; dorsocentrals mostly arranged in 2–3 irregular rows, uniserial just before scutellum, of different lengths on presutural space (intermixed short to moderately long setae),

becoming more uniform and longer toward scutellum; acrostichal setae arranged in 2 irregular rows, nearly as long as presutural dorsocentrals, absent on prescutellar depression. Laterotergite bare. Anterior and posterior spiracles dark.

Legs almost uniformly brownish, only extreme apex of coxae and “knees” yellowish to brownish yellow; coxae densely greyish pruinose, remaining parts subshiny; all podomeres only pale setose (some stronger setae somewhat darker), unmodified. Fore femur with complete rows of moderately long anteroventral (somewhat stronger on subapical part) and longer, uniformly fine posteroventral setae. Mid femur with complete rows of short, strong anteroventral and somewhat longer posteroventral setae. Hind femur with complete row of



Figs 2–5. *Anomalempis yakutica* Shamshev **sp.n.**, ♂: 2 — hypopygium, lateral view; 3 — internal structures of hypopygium, lateral view; 4 — hypopygium (left cercus and right surstylus removed, setation of epandrium partly omitted), dorsal view; 5 — epandrium and hypandrium, ventral view (setation of epandrium omitted). Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; goncx apod — gonocoxal apodeme; hypd — hypandrium; hyprct — hypoproct; pgt — postgonite lobe; ph — phallus; ph rd — phallic rod; sur — surstylus.

Рис. 2–5. *Anomalempis yakutica* Shamshev **sp.n.**, ♂: 2 — гипопигий, вид сбоку; 3 — внутренние структуры гипопигия, сбоку; 4 — гипопигий (левый церк и правый сурстиль удалены, щетинки эпандрия частично не показаны), сверху; 5 — эпандрий и гипандрий, снизу (щетинки эпандрия не показаны). Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; goncx apod — гоноксальная аподема; hypd — гипандрий; hyprct — гипопрокт; pgt — лопасть постгонита; ph — фаллус; ph rd — стержень фаллуса; sur — сурстиль.

short, strong anteroventral setae, some longer setae dorsally; all femora with 2–3 short, strong setae near apex anteriorly. Fore tibia with 2–3, mid tibia with 3–4, hind tibia with 5–6 short anterodorsal and posterodorsal setae (number, position and robustness variable). Mid and hind basitarsi with some stronger setae ventrally (longer closer to base), otherwise tarsomeres covered with short, simple setae.

Wing membrane somewhat whitish; basal costal seta absent, veins brownish yellow to yellowish, bare (except costa); pterostigma inconspicuous; anal lobe well developed, axillary incision slightly more than 90°. Costa circumambient; Sc complete; R_{4+5} unbranched; cell dm moderately long, produced apically; cell cua long, about third of wing length, rounded apically, CuA+CuP absent; cell bm long, only slightly shorter than cell cua. Squama pale coloured and fringed. Halter pale.

Abdomen dark brown in ground-colour, densely uniformly light grey pruinose; covered with numerous, long, pale fine setae; segment 8 with tergite and sternite separated; tergite 8 very short, about 5X shorter than tergite 7, entire, posterior margin slightly concave mid-dorsally; sternite 8 about 1.5X longer than tergite 8, entire.

Terminalia (Figs 2–5) with epandrium and hypandrium brown and subshiny, remaining sclerites pale brown; epandrium, hypandrium and cerci pale setose. Epandrium with broad epandrial bridge, fused with hypandrium anteriorly; with numerous moderately long to long setae apically. Surstylus present, trilobate, lobes hook-like, fused at base, bare; upper and middle lobes of subequal lengths, lower lobe longer. Hypandrium extended beyond apex of epandrium, with numerous long setae; upcurved apically, with rounded and truncate apex; gonocoxal apodeme long, narrow. Postgonite slender, digitiform, sinuate. Phallus slender, arched beyond epandrium, with pair of short dorsal rods near middle, evenly arched and partly membranous subapically; ejaculatory apodeme narrow, mostly flattened, articulated at base of phallus. Cerci articulated with epandrium; cercus long, digitiform, rounded apically, covered with short fine setae.

Female. Body 4.1 mm, wing 4.0 mm. Similar to male, except as follows: eyes dichoptic, ommatidia equally small; frons narrow on upper part (nearly as broad as anterior ocellus), broadened toward antennae, bare, mostly densely greyish pruinose, narrowly shiny laterally; generally shorter setose, especially on occiput, mesonotum and abdomen; wing membrane rather hyaline; abdomen truncate (terminalia not dissected), segments 8, 9+10 and cerci retracted into segment 7; tergite 7 subshiny posteriorly, with fringe of short, fine, dense yellowish setae along posterior margin.

DIFFERENTIAL DIAGNOSIS. The new species differs from both North American species primarily by pale mesonotal setae (*vs.* black). In addition, *A. yakutica* **sp.n.** can be distinguished from *A. archon* by the inconspicuous pterostigma (*vs.* pale brown), densely pruinose abdomen (*vs.* subshiny) as well as by some distinctive details of the male terminalia, including primarily trilobate surstylus (*vs.* bilobate) [Melander, 1945; Sinclair, Cumming, 2006: 160, figs 332, 333; B.J. Sinclair, personal communication]. *Anomalempis tacomae* (known after a female only) is smaller (body length 2.5 mm), has black antennae and polished abdomen [Melander, 1928].

ETYMOLOGY. The specific epithet refers to the region of origin of the new species, Republic of Sakha (Yakutia).

DISTRIBUTION. Palaearctic: Russia (Yakutia).

Anomalempis sp.

MATERIAL EXAMINED. Russia: Eastern Siberia (Krasnoyarskiy Territory?): 1 ♀, above mountain Lavrusha, river Nizhnyaya Tunguska, 26.vi.1873, Czekanowski (ZISP).

REMARKS. This female probably represents an undescribed species of *Anomalempis*. It differs from *A. yakutica* **sp.n.** by the following characters: body size smaller (3.3 mm *vs.* 4 mm, respectively), legs with femora yellowish on apical 1/4–1/5, tibiae yellowish to brownish yellow, without outstanding stronger setae; wing membrane faintly infuscate, very short CuA+CuP present; abdominal tergites subshiny. The North American *A. archon* and *A. tacomae* share black mesonotal setae and legs as well as hyaline wings.

Discussion

Among Palaearctic empidoids, *Anomalempis* can be compared only with *Brachystoma*, primarily because these Holarctic genera share the wing with unusually long cell cua that is slightly longer than cell bm. *Anomalempis* differs from *Brachystoma* primarily by the unbranched or simple R_{4+5} (*vs.* R_{4+5} forked) [Steyskal, Knutson, 1981; Sinclair, Cumming, 2006]. The species of *Anomalempis* are most probably predators based on mouthparts, but nothing is known about their biology. *Anomalempis* may be one more example of Asia-Nearctic disjunct distribution that is quite well documented in empidoids [Sinclair et al., 2019].

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