

# The Palaearctic Metretopodidae, with description of a new genus and species from Siberia (Ephemeroptera)

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Male and female larvae, subimagos and imago of *Metreplecton macronyx* gen. et sp. n., a species widely distributed in Siberia, are described. The genus *Metreplecton* shares some features with *Metretopus* and some with *Siphloplecton*. Data on distribution of *Metretopus borealis* and *M. alter* are given.

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The family Metretopodidae (sometimes united with the family Siphonuridae) belongs to the North Hemisphere group of families of the superfamily Siphonuroidea of the infraorder Pisciforma (Kluge & al., 1995).

## Family METRETOPODIDAE

*Larvae.* Body of siphonuroid (i. e. primary swimming) type (Engblom & al., 1993: Figs 9, 10). Labrum truncate (Fig. 9). Maxilla with 2 apical canines (instead 3 initial canines), with 3 dentisetae (as in majority of Pisciforma), without apical setae, with a peculiar regular row of stout setae running on ventral side from apical margin parallel to inner margin (Fig. 10). Maxillary palp 3-segmented, segment 2 very short, fused with segment 3. Hypopharynx (lingua) truncate. Labium with glossae and paraglossae curved ventrally, labial palp 2-segmented, segment 2 of peculiar shape (Figs 12-17). Tibio-patellar suture developed on middle and hind legs, absent on fore legs (as in majority of Ephemeroptera). Tarsi longer than patello-tibiae. Claws of fore legs bifurcate (in contrast to all other Ephemeroptera), claws of middle and hind legs very long, slender, without denticles. Abdominal segments with postero-lateral spines. Tergaliae movable (capable of rapid rhythmical respiratory movements). Tergaliae I-III without fore and hind costae; tergaliae IV-VII with fore costa on fore margin, without hind costa (Figs 1-7). Each paraproct with spine on inner mar-

gin near apex (as in the genus *Siphonurus*). Caudal filaments with well developed primary and without secondary swimming setae.

*Imago and subimago.* Features of mesonotum (Fig. 25; for terminology see Kluge, 1994): mesonotal suture (MNs) transverse, not produced backward in middle; lateroparapsidal suture (LPs) elongate (as in Ameletidae); in subimago, lateral sclerotized pigmented area long, though not reaching posterior end of lateroparapsidal suture. Paracoxal suture of mesothorax running across ventral side of episternum, completely dividing it into anepisternum and katepisternum. Furcasternal protuberances of mesothorax contiguous over their entire length (as in other North Hemisphere siphonuroid families). Cubital field of fore wing with intercalaries. Tarsal segmentation as in other Siphonuroidea. Claws of each leg dissimilar: one hooked and pointed, another blunt. In female, subgenital plate (projection of sternum VII) developed, internal sclerotized copulatory pouch absent. Subanal plate of female (projection of sternum IX) truncate or slightly convex. Paracercus abortive.

*Composition.* The family Metretopodidae includes the Holarctic genus *Metretopus* Eaton, 1901 with the Holarctic species *M. borealis* (Eaton, 1871) and the Palaearctic species *M. alter* Bengtsson, 1930; the Nearctic genus *Siphloplecton* Clemens, 1915 with 7 species; and the monotypic genus *Metreplecton* gen. n. described herein. A revision of Nearctic Metretopodidae with generic diagnoses of *Metre-*

*topus* and *Siphloplecton* was published by Berner (1978); the species of *Metretopus* are recently revised by Engblom & al. (1993).

### Genus *Metreplecton* gen. n.

Type species *Metreplecton macronyx* sp. n.

**Larva.** Terminal segment of labial palp (Fig. 13) widest near its apex, truncate (as in *Siphloplecton*, in contrast to *Metretopus*, where it is widest near its middle – Figs 15, 17). Claws of fore legs (Fig. 11) with long spines (as in *Siphloplecton*, in contrast to *Metretopus*). No spine-like setae on abdominal terga (as in *Metretopus*, in contrast to *Siphloplecton*). Tergaliae I-III (Figs 1-3) without recurved flaps on anterior margin (as in *Metretopus*, in contrast to some species of *Siphloplecton*). Tergaliae IV-VII (Fig. 5) with spines on anterior margin (as in *Metretopus*, in contrast to *Siphloplecton*, in which only spine-like setae can be present).

**Imago and subimago.** Fore wing (Figs 18, 20, 21) with single long constant intercalary vein (ICu) in cubital field (in contrast to *Metretopus*, in which a pair of long constant intercalaries is present, and in contrast to *Siphloplecton*, in which two pairs of intercalaries are present). In imago, wings without brown colour on crossveins or on membrane (in contrast to majority of *Siphloplecton*).

### *Metreplecton macronyx* sp. n.

(Figs 1-13, 18-25)

*Metretopus alter*: Tshernova, 1952 (partim: larvae, non imagos).

**Holotype.** ♂ imago (reared from larva), Russia, Tyumen' Prov., Khanty-Mansi Autonomous Distr., river Pim (right tributary of river Ob' below Surgut), 90 km from the mouth, Alekhin oil deposit, 7.VIII.1989 (N. Kluge).

**Paratypes.** Russia, West Siberia (Tyumen' Prov.): 1 ♂, 1 ♀ imago (both reared from larvae), 7 larvae, 1 ♀ subimago, same locality as in holotype, 3-7.VIII.1989 (N. Kluge); 1 larva, environs of Surgut, river Bystrinka near mouth of river Severyanka, 27.VII.1989 (N. Kluge); 3 ♀ imago, 1 ♀ subimago (all reared from larvae), Yamalo-Nenets Autonomous Distr., river Sedeyakha in Novy Urengoy, 25.VIII – 9.IX.1993 (N. Kluge). East Siberia: Buryatia: 1 larva, river Baingol, near road from Romanovka to Isinga, 17.VII.1961 (O. Tshernova); Chita Prov.: 16 larvae, river Shilka, mouth of river Chernaya, 11.VII.1948. Far East: Amur Prov.: 1 larva from intestine of *Chilogobio*, river Amur near Dzhallinda, 25.VII.1946; Khabarovsk Terr.: 1 larval exuvium, Lazo Distr., river Khor, Bichevaya, 1.IX.1984 (N. Kluge); 1 larva, Amursk Distr., river

Elban, 14.VII.1958 (I. Levanodova); 7 larvae, Nikolaevsk Distr., rivers Dzhapi, Ul, Gutykan, 8-20.VIII.1956 (N. Uvarova); Magadan Prov., 1 ♀ subimago (determined presumably), Bilbinsk Distr., river Mil'kera, 18 km above mouth, 4.VIII.1978 (S. Kiselev).

**Description.** Larva. Colour patterns similar to those of *Metretopus borealis* and *M. alter* (Engblom & al., 1993: Figs 9, 10); femora sometimes with dark markings; lateral margins of abdominal segments usually with dark markings; caudal filaments with dark band.

**Subimago.** Cuticle of mesonotum light with contrasting brown patterns. Legs dark brown. Wings uniformly brown. Cuticle of abdomen pale brownish, hind margins of terga darkened; hypodermal abdomen patterns as in imago.

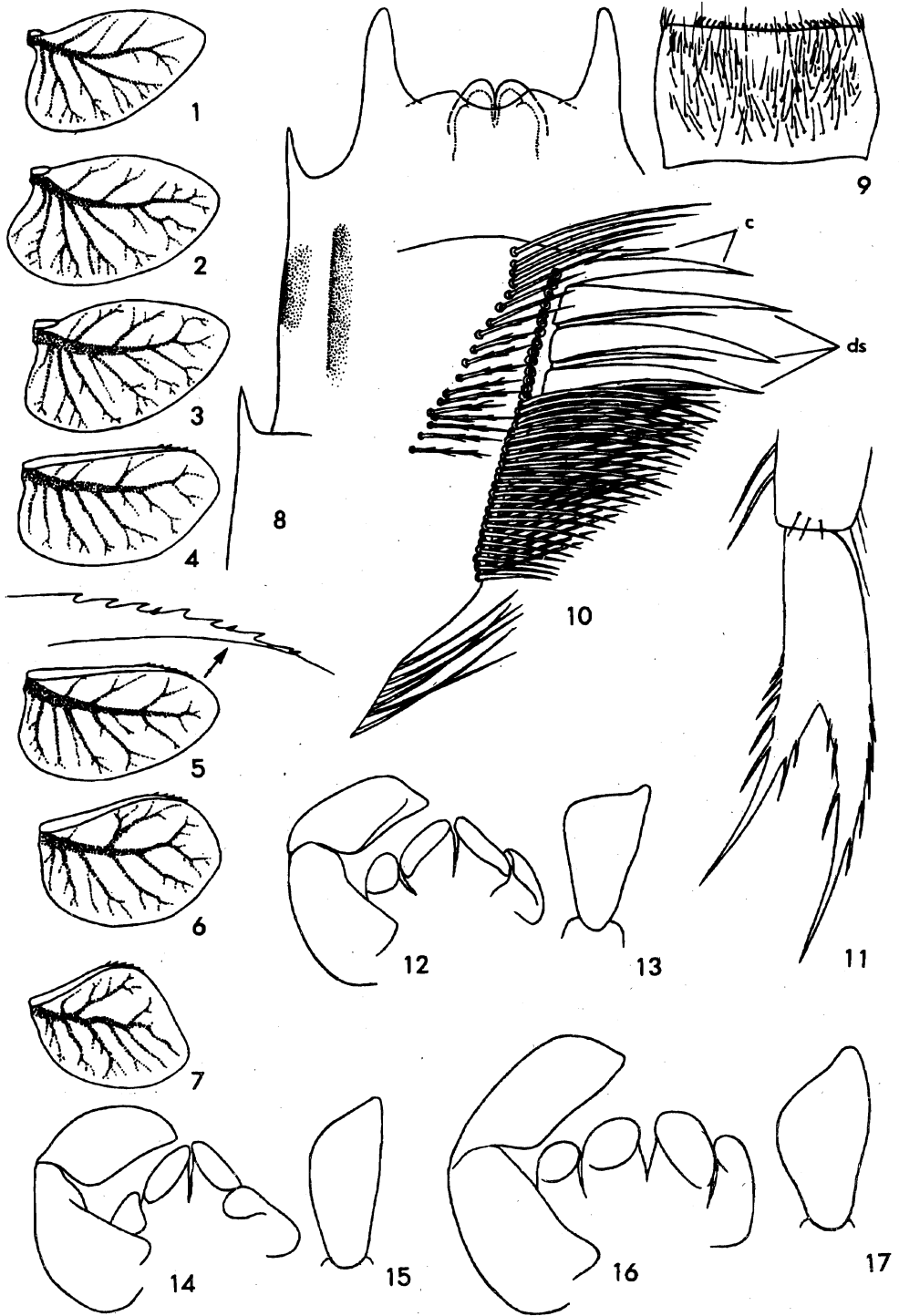
**Male imago.** Eyes grey, contiguous or nearly contiguous. Head and prothorax in most part dark. Mesothorax largely brownish-ochraceous, with sutures and concavities widely embrowned; thus, on lighter ochraceous background, mesonotum has 3 distinct dark brown longitudinal lines (one unpaired median and pair of medioparapsidal sutures). Wings colourless; longitudinal veins pale brownish and yellowish; crossveins whitish; pterostigma whitish. Legs pale, only knee slightly brownish. Proportion of leg segments (their ratio to length of fore wing) in holotype: in fore leg: 0.26 : 0.22 : 0.13 : 0.13 : 0.13 : 0.11 : 0.06; in hind leg: 0.18 : 0.09 : 0.04 : 0.03 : 0.02 : 0.015 : 0.025. Abdominal sterna pale, terga with brown pattern similar to that of *Metretopus*. Styliiger plate with angulate incision; each forceps base with prominent plate on medial side. First segment of forceps smoothly continuing to second segment, without apical angle. Penis with median and lateral sclerites rounded and separated by distinct incisions; median sclerites produced apically. Rudiment of paracercus relatively long, nearly as long as tergum X (in contrast to *Metretopus borealis* and *M. alter*, where it is shorter). Cerci whitish with dark brown annulation.

**Female imago.** Colour as in male. Subanal plate convex.

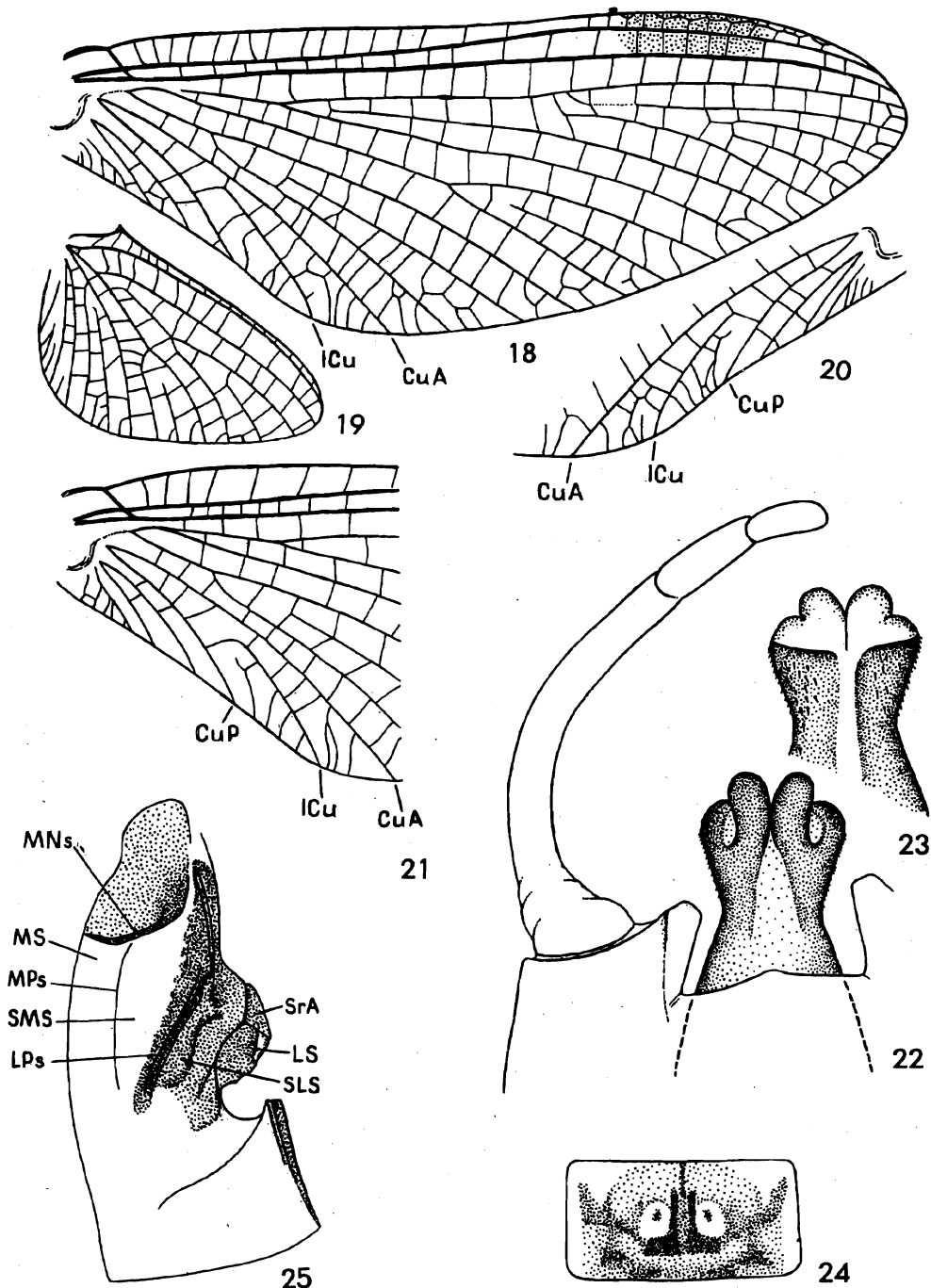
**Eggs.** Oval, length 0.2-0.25 mm, width 0.15-0.2 mm. Surface of chorion similar to that of *Metretopus borealis* and *M. alter*, with deep reticulation and papillae inside some cells of this reticulation.

**Dimensions:** length of fore wing (and length of body) 11-13 mm.

**Biology.** Larvae of *M. macronyx* are found in rivers, among aquatic plants, together with



Figs 1-17. Larvae of *Metretopodidae*. 1-13. *Metreplecton macronyx* gen. et sp. n.: 1-7, tergites I-VII (exuvium from Khabarovsk Terr.); 8, abdominal sternum IX of mature male larva (penis of subimago shown by dotted line); 9, labrum (holotype); 10, apex of right maxilla, ventrally, some setae of the ventro-median row not shown; 11, fore claw; 12, labium, ventral view, without right palp; 13, right labial palp, latero-apical view. 14-15. *Metretopos borealis*, labium (same position as in 12, 13). 16-17. *M. alter*, the same.



Figs 18-25. *Metreplecton macronyx* gen. et sp. n., winged stages. 18-20, female imago, wings of one specimen. 21-24, male imago (21, 24, holotype): 21, proximal part of fore wing; 22, genitalia ventrally; 23, penis dorsally; 24, abdominal tergum IV. 25, right half of mesonotum of subimaginal exuvium (LPs, lateroparapsidal suture; LS, lateroscutum; MNs, mesonotal suture; MPs, medioparapsidal suture; MS, medioscutum; SLS, sublateroscutum; SMS, submedioscutum; SrA, suralare).

larvae of *Metretopus borealis*, to which they are very similar.

### Genus *Metretopus* Eaton, 1891

#### *Metretopus borealis* (Eaton, 1871)

(Figs 14, 15)

= *M. norvegicus* Eaton, 1871.

**Material.** Estonia: 1 ♂ imago (dry coll.), Peedi, 25.VI.1951 (Stackelberg). Russia: East-European Plane: *Leningrad Prov.*, Luga Distr.: 1 ♂, 1 ♀ imago (dry coll.), Tolmachevo, 1.VII.1935 (Stackelberg); 1 ♂ (dry coll.), Yashchera, 7.VII.1959 (Stackelberg); *Kola Peninsula*: 9 larvae, river Sukhaya, 24.VII.1982 (B. Martynov); 1 ♂ imago (dry coll.), Murmansk, 3.VII.1924 (Kapushtin); 2 ♂ imago (dry coll.), river Kuni-yok, 10.VIII.1931 (Fridolin); 1 ♂ imago (dry coll.), lake Paikun'yavr, 4.VIII.1931 (Fridolin); 1 ♂ imago (dry coll.), lakes Vid-Yavr, 12.VIII.1936 (Fridolin); the Urals: *Sykt'yvkar, river Tsov-Yu*, V.1989 (O. Tsember); *West Siberia (Tyumen' Prov.)*: 1 larva, river Malaya Sos'va, VII.1985 (T. Zaguzova); 2 larvae, larval exuvium, river Pim (right tributary of Ob' below Surgut), Alekhin oil deposit, 7.VIII.1989 (N. Kluge); 15 ♂ and 11 ♀ imagos, 4 ♂ and 7 ♀ subimagos (all reared from larvae), many larvae, Yamalo-Nenets Autonomous Distr., river Syagoykhadutte (left tributary of river Pur, 70 km NNE of Novy Urengoy), 16-21.VIII.1993 (N. Kluge); 3 larvae, river Sedeyakha in Novy Urengoy, 25.VIII.1993 (N. Kluge); *East Siberia: Krasnoyarsk Terr.: Evenk Autonomous Distr.*, numerous imagos, river Taymura near mouth of Neptene, 17-27.VII.1982 (N. Sinitshenkova, V. Zherichin); 2 ♂, 1 ♀ imagos, river Taymura near meteost. Kerbo, 19.VIII.1982 (N. Sinitshenkova); *Taimyr Autonomous Distr.*, 6 larvae, river Kotuy, VIII.1979 (N. Kluge); 1 ♂, river Zhdanikha near Zhdanikha, 5.IX.1971 (V. Zherichin); *Buryatia*: 1 ♂ imago, Baysa, 5.VIII.1979; *Yakutia*: 2 larvae, river Markoka (basin of Viluy), 14.VII.1986; *Kamchatka*: 6 larvae, river Kamchatka, 27-28.VII.1969 (I. Levanidova).

**Notes.** This species is easily recognizable by its genital structure of male imagos, subimagos and larvae, even when the larvae are immature (Engblom & al., 1993: Figs 3, 4, 16), but female adults and larvae cannot be reliably separated from those of *M. alter*. Engblom & al. (1993: 215) suggested distinguishing larvae of *M. bo-*

*realis* by the presence of peculiar distinct colour patterns (markings on femora and lateral margins of abdominal segments, extensive pattern on abdominal sternum IX). But among larvae of *M. borealis* (including exuvia, from which male imagos have emerged) some specimens are relatively light and lack those patterns. It is stated that mature larvae of *M. borealis* and *M. alter* differ in the shape of anterior claws (Engblom & al., 1993: Fig. 11, 12), but this seems rather an individual than specific difference. Thus the list of material includes only the samples which contain males (adults or larvae) and therefore can be definitely determined.

#### *Metretopus alter* Bengtsson, 1930

(Figs 16, 17)

**Material.** Russia: *the Polar Urals*: 1 ♂, 4 ♀ imagos, 1 ♂ subimago, river Shchuch'ya (tributary of Ob'), 25.VIII.9.IX.1949 (G. Tshernov); *Chita Prov.*: 3 ♂ and 1 ♀ imagos, 1 ♂ and 2 ♀ subimagos (all reared from larvae), many larvae, River Amodova-Narymka, 5 km from Elizavetino (40 km S of Chita): 29.VII - 2.VIII.1994 (N. Kluge); many male imagos, same locality, 17.VII - 25.VIII.1981 (N. Sinitshenkova, V. Zherichin); 1 larva, river Ingoda below Makkaveevo, 21.VIII.1947; 1 ♂ imago, river Shargoldzhin (left tributary of river Chita), 11.VIII.1947 (A. Zhelochovtsev). *Mongolia*: 1 ♂ subimago, 2 larvae, river Khankh (tributary of lake Khubsugul), 13.VII.1984 (K. Varychanova).

The distribution of this species in Fennoscandia is indicated in Engblom & al. (1993). Larvae of this species from Siberia and Mongolia agree with the description given by Engblom & al. (1993).

### References

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