

## A New Species of *Metretopus* Eaton, 1901 (Ephemeroptera: Metretopodidae) from the Far East of Russia

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### ABSTRACT

A new species *Metretopus tertius* sp.n. is described, based on a male imago and a reared male subimago.

KEYWORDS: Asia, taxonomy, Ephemeroptera, new species, *Metretopus*.

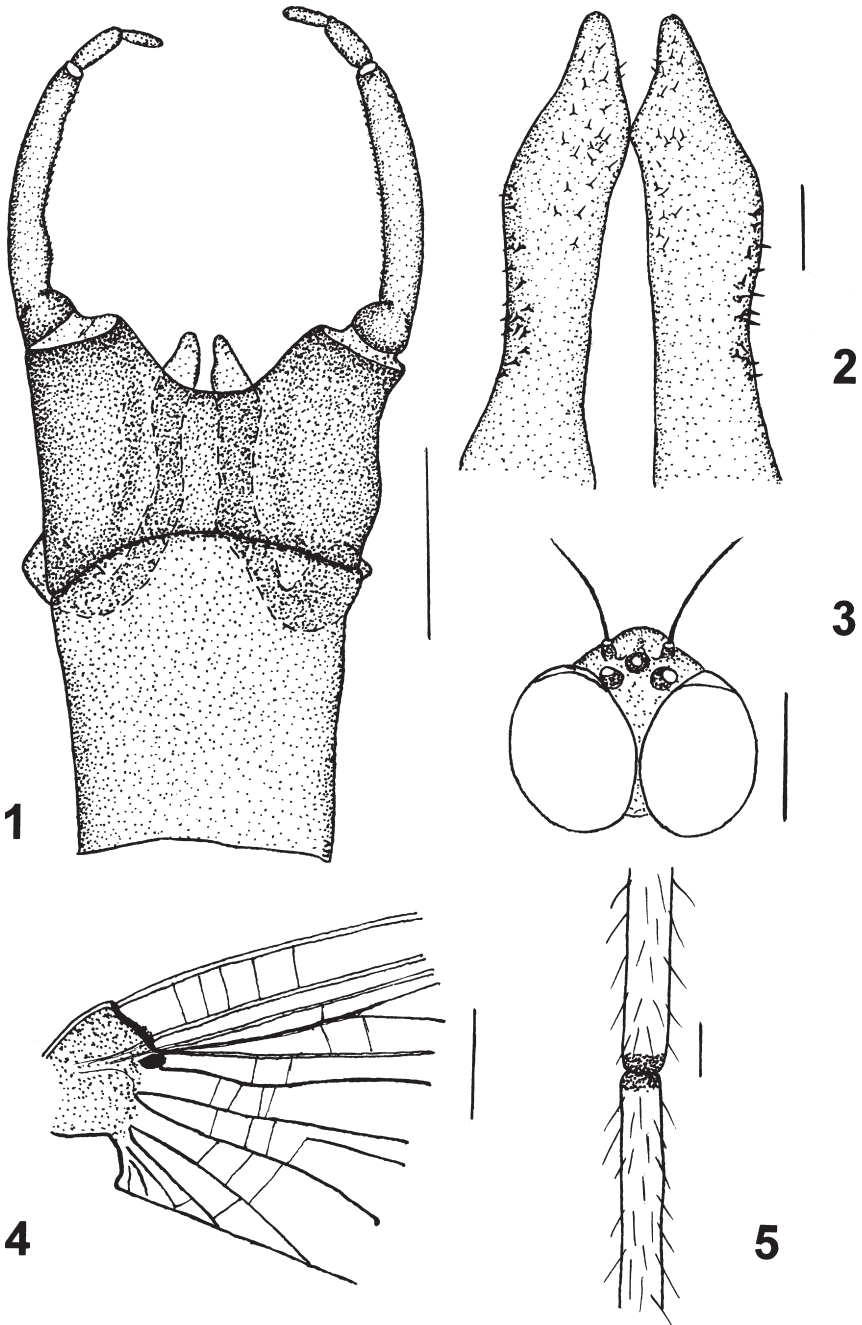
### INTRODUCTION

*Metretopus* Eaton is a small Holarctic genus with two species (Berner, 1978). *Metretopus* was established by Eaton (1901) for specimens taken at Aal, Norway. The type species *Metretopus norvegicus* Eaton, was synonymized with *M. borealis* (Eaton) by Brekke (1938). The second species, *Metretopus alter* Bengtsson, 1930, was described from northern Norway; however, Ulfstrand (1968) considered *M. alter* to be a synonym of *M. borealis*, but gave no supporting evidence. Berner (1978) cited the status of this species as doubtful and this view was later supported by Olsson (1983). Engblom et al. (1993) studied Fennoscandian material and found morphological differences between *M. alter* and *M. borealis* in nymphs and imagines; they also recognized the specimens cited by Berner from Alaska as *M. alter*, a record later confirmed by McCafferty (1994).

*M. borealis* is transcontinental in North America south to Michigan and Maine (Berner, 1978; Harper & Harper, 1981). In Eurasia it is known from Fennoscandia to Siberia and the Far East of Russia (Tshernova et al., 1986; Engblom et al., 1993; Kluge, 1996, 1997). *M. alter* is known in Fennoscandia, northern European Russia, Siberia, Mongolia, and Alaska (Engblom et al., 1993; Kluge, 1996, 1997; McCafferty, 1994).

According to Engblom et al. (1993), *M. borealis* has a strong preference for meandering rivers with sandy bottoms and an abundance of submerged fallen trees. *M. alter* is found in smaller streams with stony or sandy bottoms. Both *Metretopus* species are often found in microhabitats with a deposition of iron.

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Figs. 1–5. *Metretopus tertius* sp. nov., male holotype: 1, genitalia, ventral view; 2, penis lobes, ventral view; 3, head, dorsal view; 4, base of right fore wing, dorsal view; 5, segments of caudal filaments, lateral. Scales are 0.1 mm (2, 5) and 0.5 mm (1, 3–4).

*Metretopus tertius* sp. n., is the second species from the Far East of Russia. The holotype is deposited in the collection of the Institute of Biology and Soil Sciences, Far Eastern Branch, Russian Academy of Sciences (Vladivostok).

*Metretopus tertius* sp. n. (Figs. 1–16)

*Material: male holotype* (light trap), RUSSIA, Primorye Territory, Bikin River, Zvenjevoi village, July 22, 1996 (T. Tiunova). *Paratype*: 1 male subimago (reared from nymph), collected with holotype.

*Male imago* (in alcohol). Length (mm): body, 11.7; fore wings, 11.2; caudal filaments, 19.6. Fore legs missing.

Head light brown. Eyes dark gray, globe-shaped, contiguous (Fig. 3). Prothorax and mesothorax dark brown. All legs light brown with dark joints. Length of segments in middle legs (mm): femora 1.7, tibiae 1.5, tarsal segments 0.5, 0.3, 0.2, 0.2, 0.3. Wings hyaline, stigmatic area opaque. Longitudinal veins of fore wings yellow with brownish tinge, crossveins light; base of fore wings brown, a small dark brown spot near base of Rs and MA (Fig. 4). Longitudinal veins of hind wings light brown; crossveins colorless.

Thorax and terga 1–2 dark brown, terga 9–10 lighter dark brown. Other segments light brown, semihyaline; terga 3 and 8 darker than tergites 4 and 7; posterior margin of terga 4–6 with more intense brown coloration; brown border extends anteriorly near lateral margins and medially on terga 5 and 6. Tergum 7 with pair of submedian white spots in middle. Abdominal sterna pale. Caudal filaments with darkened annulations (Fig. 5).

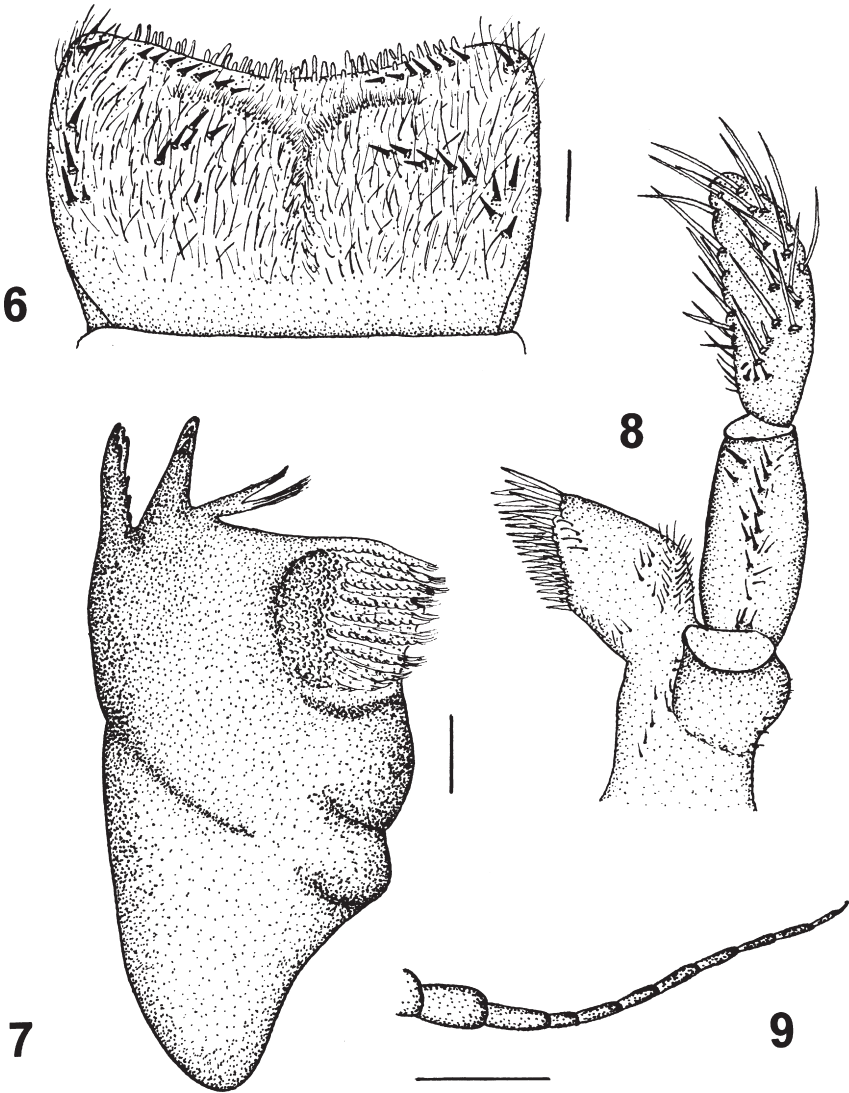
Genitalia (Figs. 1, 2): subgenital plate brown. Penes and forceps segments lighter, well contrasted with brown color of subgenital plate. Penes short, lateral margins rounded in distal half. Apical lobes long and tapered. Penis lobes with subapical thin light spines and group of stout spines in distal half of margins (Fig. 2).

*Male subimago* (in alcohol). Length (mm): body, 11.5; fore wings 10.8; caudal filaments, 11.0.

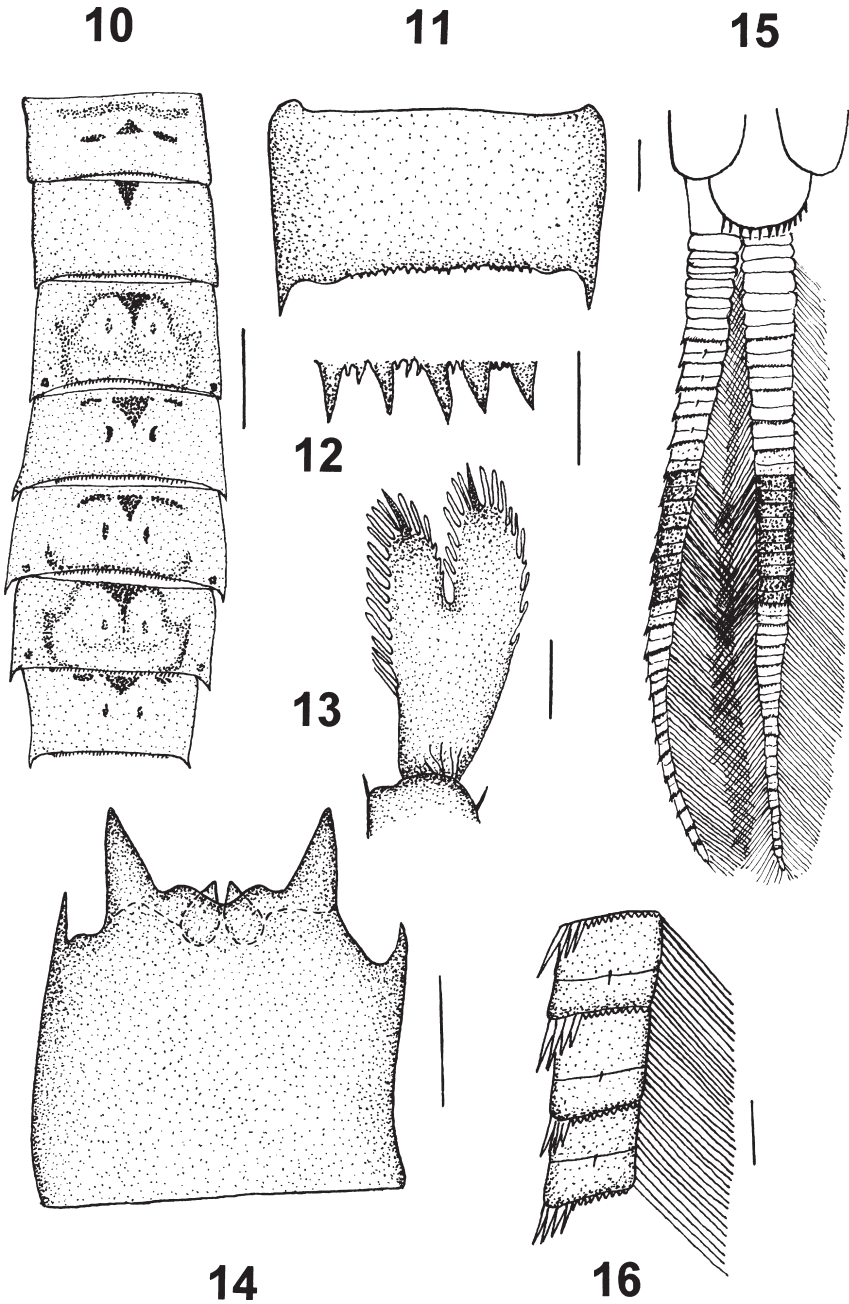
Head light yellow, eyes dull gray, antennae brown. Body brownish. Wings light yellow, semihyaline. Longitudinal veins darker, crossveins hyaline. Last two terga slightly darker than others. Caudal filaments light yellow with darkened annulations.

*Mature nymph, exuviae* (in alcohol). Length (mm): body, 12.9; caudal filaments, 4.0.

Head brown. Basal segments of antennae large and brown, apical segments small and sharp (Fig. 9). Distal margin of labrum moderately emarginate with row of apical blunt spines and subapical incomplete row of stout spines. Lateral margins rounded; distal half with irregular groups of stout spines (Fig. 6). Dorsal surface of labrum densely covered with long hairs.



Figs. 6-9. *Metretopus tertius*, structural details of the nymph, dorsal views: 6, labrum; 7, left mandible; 8, right maxilla; 9, antennae, lateral. Scales are 0.1 mm (6-8) and 0.5 mm (9).



Figs. 10-16. *Metretopus tertius*, structural details of the nymph: 10, abdominal tergita I-VII, dorsal view; 11-12, hind margin of abdominal tergum VIII, dorsal view; 13, tarsal claw; 14, penis lobe rudiments, ventral view; 15, caudal filaments, ventral view; 16, middle of the left cercus, lateral. Scales are 0.1 mm (12-13, 16), 0.5 mm (11, 14-15) and 1.0 mm (10).

Incisors of mandibles long and strong. Margins of first tooth notched (Fig. 7). Maxillae with 3 palpal segments; 1 st one shortest; 2 nd with a row of median spines; 3 rd segment rounded at its inner margin (Fig. 8). Ratio of segment lengths 2:5:6.

Thorax light brown. Legs without dark marks, unicolorous. Dorsal and ventral margins of all legs without spines. Ratio of femora to tibiae and tarsi of fore legs 2.7:2.0:0.3; hind legs 1.7:1.5:0.6.

Abdominal terga 1–8 with brown markings (Fig. 10). Terga 2–8 with small triangular brown spot on middle line of anterior margin. Tergum 1 pale with long narrow brown stripe along anterior margin and small triangular mark and a pair of oval brown spots in middle part; tergum 2 pale; terga 3 and 6 brown with white lateral margins and a small dark spot in corners of posterior margins; a pair of large white spots in center enclosing a small oval brown spot; terga 4–5 pale with paired brown spots; a narrow dark brown stripe along anterior margin; terga 7–8 pale with a pair of long brown spots; tergum 9 brown, with indistinct white marks on posterior margin. All terga with posterior short spines (Figs. 11, 12). Abdominal sterna white. Caudal filaments dark in middle (Fig. 15). Cerci with long hairs on interior side; external side of each segment with a row of short spines at apex (Fig. 16). Terminal filament fringed with long hairs on both sides.

*Comparison.* *M. tertius* can be distinguished from *M. borealis* and *M. alter* by the unique male genitalia. Among described imagines, the male of *M. tertius* most closely resembles *M. alter*. *M. tertius* can be distinguished by the long and tapered penis lobes (Figs. 1, 2); in *M. alter* the penis lobes are rounded and strongly convex in distal half. The nymph of *M. tertius* most closely resembles *M. borealis* in the distinct body color markings but can be distinguished from *M. borealis* by: (a) the absence of a dark lateral mark on abdominal segments 1–8; and (b) the absence of dark markings on femora. The nymph of *M. tertius* most closely resembles *M. alter* in the absence of dark lateral markings on abdominal segments 1–8 and dark markings on the femora, but can be distinguished from *M. alter* by: (a) distinct body color; in *M. alter* the body color marks are diffuse. Mature nymphs of *M. tertius* can be distinguished from *M. borealis* and *M. alter* by the form of the penis lobe rudiments. *M. tertius* has tapered apices of the penis lobe rudiments (Fig. 14). In *M. borealis* the penis lobe rudiments have a groove on apices while those of *M. alter* are apically rounded.

#### ACKNOWLEDGEMENTS

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