

***Ameletus asiaecentralis* sp. n. from Uzbekistan,  
with notes on *A. alexandrae* (Ephemeroptera, Siphonuridae)**

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**Taxonomy, adult, larva, Palaearctic**

**Abstract.** *Ameletus asiaecentralis* sp. n. (larva, subimago male) is described from Uzbekistan, USSR. The little known larva and subimago of *A. alexandrae* BRODSKY are redescribed and figured. A key is given to larvae and adults of species of the genus *Ameletus* occurring in the western and central parts of the Palaearctic region.

During 1977 I had the opportunity of studying mayfly material collected at several localities in the Central Asian mountains. Most of this material belongs to the genus *Ameletus* EATON (Siphonuridae) including a new species and the previously little known and inadequately described larva of *Ameletus alexandrae* BRODSKY. A description of the larva of *A. alexandrae* was not included in the original description by BRODSKY (1930) and had hitherto only been mentioned by UÉNO (1966). Study of the larva and subimago now enables the clarification of the taxonomic position of this species. The relationships of the two species known from Central Asia to their European allies are apparent from the keys.

*Ameletus asiaecentralis* sp. n.

(Plate I, Figs. 1, 4, 6, 7; Pl. II, Figs. 10, 12—14, 16)\*

Larva (holotype): Head brownish, eyes dark grey, ocelli paler. Antennae light brown, scapus and pedicellus slightly darker. Pronotum yellowish brown with two pairs of elongated dark brown spots on the sides. Meso- and metanotum light brown; wing pads with inconspicuous pale strips. Abdominal terga I, II, III, V, VI yellowish brown with a pair of diffuse light spots, terga IV, VIII, IX dark brown with pale smudges. The posterior margins of terga with a row of broad, asymmetric teeth which alternate with 2—3 smaller ones. The surface of terga evenly covered with spines. Ventral side of thorax pale. Abdominal sternum I yellowish; sternum II brown; sterna VI—IX dark brown without markings. The posterior margin of sterna with only a few small spines. Labrum approximately as long as wide, with branched setae on the anterior margin. Outer incisors of maxillae with 4 teeth and a row of fine teeth on the outer margin. Inner incisor slightly shorter than outer one. Superlinguae of hypopharynx with a band of sharp spines. The apex of maxilla with 20 spatulate scrapes and a group of long setae. Maxillary palps long and slender, distal segment pointed, shorter

\* Plates I—II can be found at the end of this issue.

by  $\frac{1}{3}$  than segment 2. Glossae and paraglossae nearly equal in length with setae or spatulate spines round the margins. Legs yellowish brown; apex of tarsi dark brown; claws slightly bent, without teeth. Gill 1 rounded, without marginal costa. Gills 3—7 with both teeth and spines on the margins; gills 1—7 twice as long as wide or shorter. Cerci yellowish brown with dark brown cilia and an inconspicuous transversal dark strip.

Body length: 11.5 mm; length of cerci: 5.0 mm.

Subimago (dissected from mature larva): Head yellowish, eyes grey, ocelli whitish. Thorax brownish without markings. Abdominal terga yellowish brown with a pair of diverged short dark strips in the middle and pale smudges. Sterna yellowish, unicolorous, transparent. Hyaline brownish nerve ganglia apparent. Wings dark grey; pterostigma with forked transversal veins; both longitudinal and transversal veins of forewings black bordered. Legs whitish; middle and hind tarsi with spines. Cerci pale with black cilia.

Bionomy: Larvae of *A. asiaecentralis* sp. n. live in large mountain streams with rich permanent water and a stony bottom. Taking into consideration the bionomy of related species (GLEDHILL, 1959) this is probably a summer species with only one generation a year, quickly developing in the summer months.

Holotype (mature larva): USSR, Uzbekaya SSR, Tashkentskaya oblast, mountain stream, Su-Kok, 1600 m, 28. v. 1976 leg. P. Starý, coll. T. Soldán, Institute of Entomology, Czechoslovak Academy of Sciences, Praha.

#### *Ameletus alexandrae* BRODSKY, 1930

(Plate I, Figs. 2, 3, 5, 8, 9; Pl. II, Figs. 11, 15, 17, 18)

BRODSKY, 1930 : 697.

Larva: Head ferruginous brown, eyes black, ocelli grey. Antennae light brown. Pronotum brown with a pair of whitish spots on the sides and narrow pale strip in the middle. Mesonotum brown with numerous pale smudges and a pair of ferruginous spots in the middle; wing pads brownish with broad whitish strips. Abdominal terga ferruginous brown with two pairs of diffuse whitish spots and one short triangular strip in the middle. The posterior margins of terga with the row of broad, symmetric teeth. The surface of terga evenly covered with spines and hairs. Ventral side of thorax as well as abdominal sternum I whitish. Conspicuous hyaline black nerve ganglia distinct below sterna I—VII; sterna II and III brownish with a pair of large diffuse white spots; terga IV—IX dark brown with a pair of small yellowish spots. The posterior margins of abdominal sterna with long and stout spines; the surface of sterna covered with spines and hairs. Labrum broader than long, with branched setae round the margin. Outer and inner incisors of maxillae equal in length; outer incisor with 3—4 teeth and fringe of spines on the outer margin. The apex of maxilla with 22—24 spatulate scrapes and a group of long setae. Distal segment of maxillary palps pointed, shorter by  $\frac{1}{5}$  than segment 2. Femora brownish, tibiae and tarsi paler. The apex of tarsi dark brown; claws long and slender without teeth. Cerci yellowish with cilia of the same colour, without transversal dark strip.

Body length: 8.5 (7.9—9.0) mm; length of cerci 4.5 (4.2—5.1) mm.

Subimago: Head brownish or ferruginous brownish, eyes black, ocelli grey. Pronotum yellow whitish with dark brown posterior margin. Meso- and metanotum brownish or brownish grey without markings. Abdominal tergum I yellowish; terga II—X with conspicuous dark brown longitudinal strip and dark brown posterior margins. Ventral side of thorax yellowish. Abdominal sterna yellowish brown with dark margins. Conspicuous hyaline black or ferruginous brown nerve ganglia as in larvae. Wings greyish with slightly darker veins; pterostigma with bent or s-curved but not forked transversal veins. Legs brownish with dark brown spots at the apex of femora. Cerci pale with dark cilia.

Body length: 9.0 (9.0—9.4) mm; length of cerci: 7.0 (6.3—7.4) mm.

Bionomy: Summer species with one generation a year. Older larvae (larvae from about the 10th instar with all larval characters developed) from late May to July. Adults fly at the end of July and in early August. Subimagoes moult at midday. Larvae live in high mountain streams and lakes with stony bottoms together with larvae of *Epeorus* (*Iron*) and *Bactis* spp. Abundant or very abundant where it occurs.

Distribution: This species is moderately abundant in the Central Asian mountains at altitudes of 2500—4000 m. According to BRODSKY (1930) it occurs at several localities near Tashkent, Issyk-Kul Lake, Kazakhstan and Uzbekistan. UÉNO (1966) records specimens from the Pamir and Hindukush.

Material examined: 32 larvae, 3 subimagoes: USSR, Kirgizian SSR, Pamir, Alay valley, tributary of Ačik-Taš (Kisilsu riv., Amudarya basin), 20. vii. 1977 leg. M. Hlináková, coll. T. Soldán, Institute of Entomology, Czechoslovak Academy of Sciences, Praha.

Differential diagnosis. Critical adult characters of West and Central Palaearctic species of the genus *Ameletus* EATON are apparent from this key:

- 1 (2) Pterostigma with not forked, bent or s-curved cross veins. Conspicuous wide longitudinal strip on abdominal terga. Anterior margin of pronotum dark brown; pronotum yellowish (Central Asian mountains) . . . . . *A. alexandrae* BRODSKY, 1930
- 2 (1) Pterostigma with forked cross veins. Abdominal terga unicolorous or with a pair of short strips. Anterior margin of pronotum yellowish or brownish; pronotum of the same colour.
- 3 (4) Abdominal sterna translucent. Hyaline brownish nerve ganglia conspicuous. Segments of hind tarsi with 3—4 pairs of spines. Wings of subimago grey; all veins black bordered (Uzbekistan) . . . . . *A. asiacentralis* sp. n.
- 4 (3) Abdominal sterna without apparent nerve ganglia. Segments of hind tarsi with only one pair of spines. Wings of subimago brownish; veins of the same colour.
- 5 (6) Segment 1 of hind tarsi longer than segment 5 (European mountains, Scandinavia, Ural and Ob basins) . . . . . *A. inopinatus* EATON, 1887
- 6 (5) Segment 1 of hind tarsi shorter than segment 5 (Scandinavia) . . . . . *A. alpinus* BENGTTSSON, 1930

Critical characters of larvae are apparent from the following key:

- 1 (4) Abdominal terga unicolorous without markings. Distal segment of maxillary palps rounded. Segments 2 and 3 of labial palps approximately equal in width. Gills 1 and 2 with marginal costa.
- 2 (3) Teeth of maxillary scrapes as long as the width of scrape. Apex of segment 2 of labial palps distinctly enlarged (European mountains, Scandinavia, Ural and Ob basins) . . . . . *A. inopinatus* EATON, 1887
- 3 (2) Teeth of maxillary scrapes longer than the width of scrape. Apex of segment 2 of labial palps slightly enlarged (Scandinavia). . . . . *A. alpinus* BENGTTSSON, 1930
- 4 (1) Abdominal terga with diffuse pale spots or smudges. Distal segment of maxillary palps pointed. Segment 2 of labial palps distinctly broader than distal segment. Gills 1 and 2 without marginal costa.

- 5 (6) Gills 1—7 twice as long as wide; gills 3—7 with both teeth and spines on the margins. Segment 3 of maxillary palps shorter by 1/3 than segment 2. Abdominal sterna with only a few small spines on the posterior margin (Uzbekistan) . . . . . *A. asiaecentralis* sp. n.
- 6 (5) Gills 1—7 three times as long as wide; gills 3—7 with spines only. Segment 3 maxillary palps shorter by 1/5 than segment 2. Abdominal sterna with row of stout spines on the posterior margin. (Central Asian mountains) . . . . . *A. alexandrae* BRODSKY, 1930

According to BENGSSON (1930) there are very slight differences between *Ameletus inopinatus* and *A. alpinus*. Similar differences were observed in specimens of *A. inopinatus* from isolated mountain ranges, i.e. from Hercynian and Carpathian mountain systems in Czechoslovakia. Taking into account the distribution of *A. inopinatus* (boreoalpine disjunction), with different populations living in other Central and South European mountains, these differences are not considered to be of specific importance. According to LANDA (1969) *Ameletus alpinus* might be conspecific with *A. inopinatus*. Comparison of type material has not been done so far.

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### *Ameletus asiaecentralis* sp. n. из Узбекистана и примечания о *A. alexandrae* (Ephemeroptera, Siphonuridae)

Таксономия, имаго, личинка, Палеаркт

Резюме. Описание нового вида *Ameletus asiaecentralis* sp. n. (личинка, субимаго самца) из Узбекистана и дополнительное описание ранее недостаточно известных личинок и субимаго обоих полов вида *A. alexandrae* Brodsky. Дана определительная таблица для личинок и имаго видов рода *Ameletus* из западного и среднего Палеаркта.

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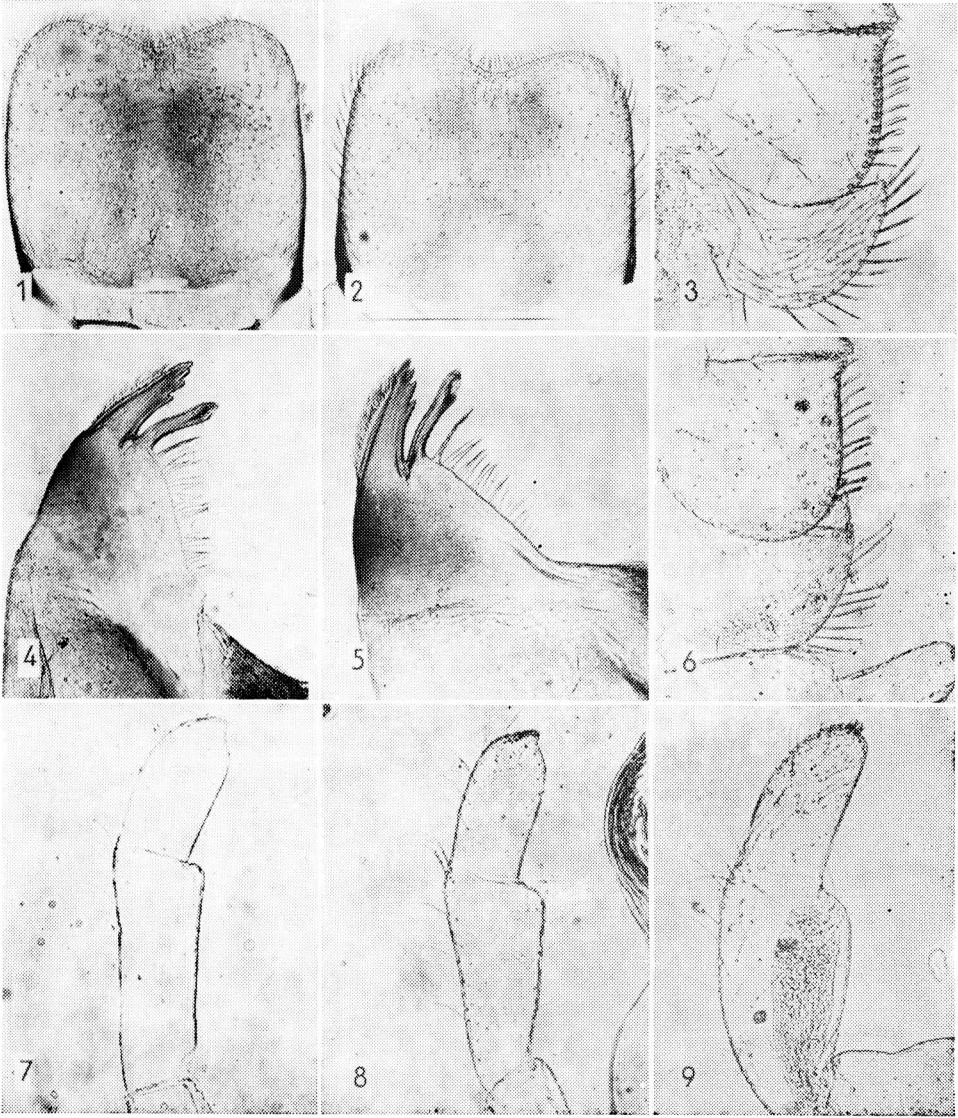


Plate I, 1, 4, 6, 7: *Ameletus asiaecentralis* sp. n., larva (holotype). Figs. 2, 3, 5, 8, 9. *Ameletus alexandrae*, larva. Figs. 1, 2 — labrum. Figs. 3, 6 — glossa and paraglossa. Figs. 4, 5 — outer and inner incisors of left mandibula. Figs. 7, 8 — segments 2 and 3 of maxillary palps. Fig. 9 — segments 2 and 3 of labial palps. Figs. 1—9 — objective 10, projection 8.

SOLDÁN T., 1978: *Ameletus asiaecentralis* sp. n. from Uzbekistan, with notes on *A. alexandrae* (Ephemeroptera, Siphonuridae)

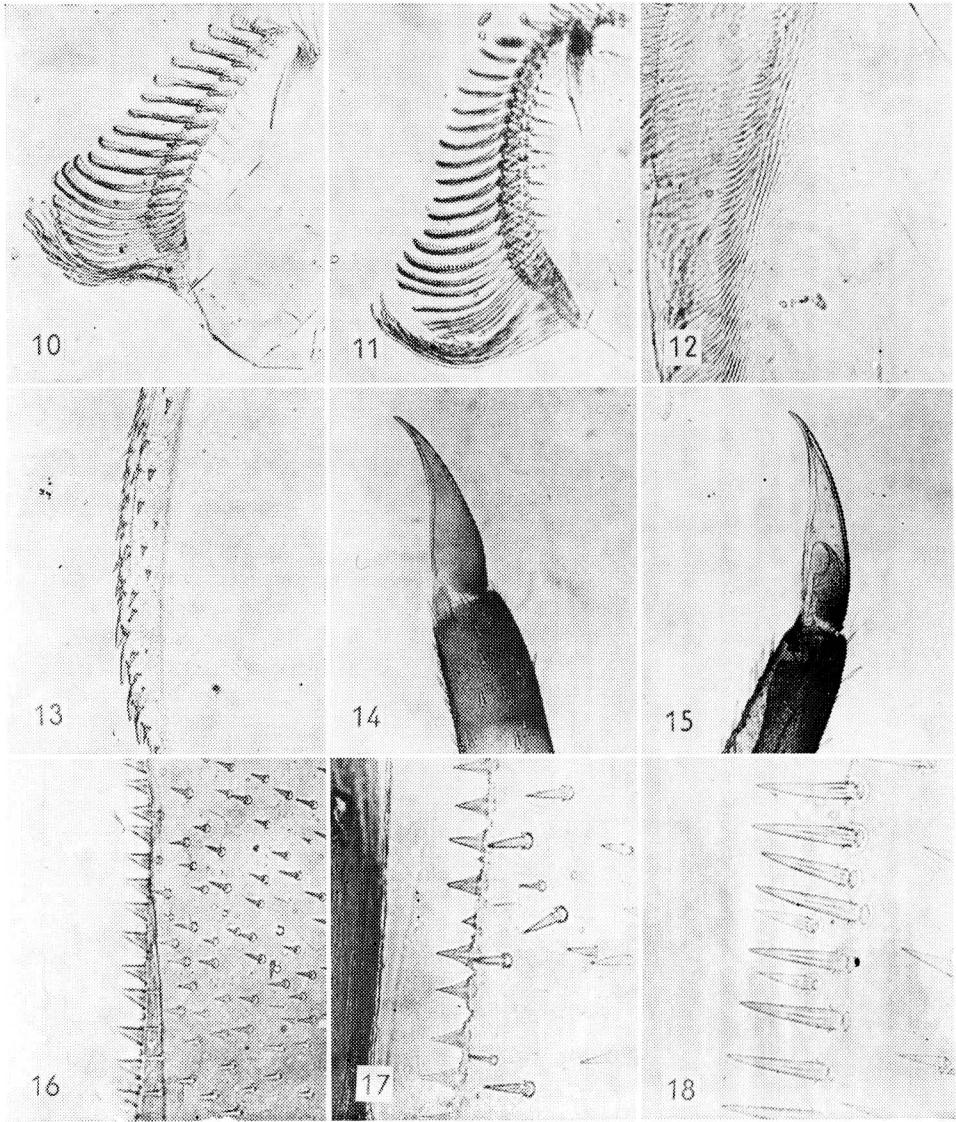


Plate II, 10, 12, 13, 14, 16: *Ameletus asiaecentralis* sp. n., larva (holotype). Figs. 11, 15, 17, 18. *Ameletus alexandrae*, larva. Figs. 10, 11 — apex of maxilla. Fig. 12 — margin of hypopharyngeal superlingua. Fig. 13 — outer margin of gill 3. Figs. 14, 15 — claws. Figs. 16, 17 — posterior margin of abdominal tergum III. Fig. 18 — posterior margin of abdominal sternum III. Figs. 10, 11, 13—15 — objective 10, projection 8. Figs. 12, 16—18 — objective 64, projection 8.