

## A New Species of *Torleya* Lestage, 1917 (Ephemeroptera: Ephemerellidae) from the Far East of Russia

Tatiana M. TIUNOVA

T.M. TIUNOVA: A New Species of *Torleya* Lestage, 1917 (Ephemeroptera: Ephemerellidae) from the Far East of Russia.

Aquatic Insects, Vol. 17 (1995), No. 1, pp. 51-56.

A new species *Torleya mikhaili* is described from the larvae and a reared male imago. The male and female imagines of *Torleya padunica* Kazlauskas are described.

Keywords: Asia, taxonomy, Ephemeroptera, *Torleya*.

T.M. TIUNOVA, Laboratory of Freshwater Hydrobiology, Institute of Biology and Pedology, Far East Branch, Russian Academy of Sciences, 690022 Vladivostok, Russia.

### INTRODUCTION

The genus *Torleya* and its type species, *T. belgica* Lestage, were described from larvae collected in Europe (Lestage 1917). Previously, *Torleya major* (Klapálek) had been described as *Ephemerella major* by Klapálek (1905) from the imago; Ulmer (1928) subsequently placed the species in *Torleya*. Landa (1969) compared *T. major* and *T. belgica* and synonymised *T. belgica* with *T. major*. However, Alba-Tercedor and Sánchez-Ortega (1982) suggested this synonymy was questionable and required additional study.

At present, *Torleya* has four described species (Allen 1980). The second species, *Torleya nepalica* (Allen and Edmunds, 1963, as *Ephemerella* subgenus *Torleya*) was described from larvae collected in Nepal (Himalayan Region). A third species, *Torleya padunica* Kazlauskas, 1963, was described from larvae collected in Asia (Siberia, USSR). The fourth species, *Torleya japonica* Gose, 1980, was described from larvae collected in Japan; the male imago was figured by Ishiwata (1987).

*Torleya mikhaili* sp. n. is the second species of *Torleya* from the Far East of Russia. It is assigned to the genus *Torleya* based on characters used by Allen and Edmunds (1963). The holotype is deposited in the collection of the Institute of Biology and Pedology, Far East Branch, Russian Academy of Sciences (Vladivostok).

*Torleya mikhaili* sp. n. (Figs. 1-9)

*Material*: male holotype (reared from larva), RUSSIA, Primorye Territory, Ussuri River, 1.5 km below Utyos mountain, August 2, 1992 (T. Tiunova). Paratypes (all from Ussuri River): 2 larvae collected with holotype; 1 larva near Beltsovo village, July 18, 1991; 1 larva near Stepanovka village, July 21, 1991 (T. Tiunova).

*Male imago* (in alcohol). Length (mm): body, 5.5; fore wings, 6.1. Head light brown. Upper portion of eyes light brown, lower portion black. Prothorax and mesothorax dark brown. All legs white, without banding, well contrasted with brown colour of prothorax and mesothorax. Length of segments in fore leg (mm): femora 1.0, tibia 2.6, tarsal segments 0.5, 0.4, 0.2, 0.2, 0.1. Wings hyaline, veins light yellow. Abdominal terga light brown, unicolorous; sterna pale, hyaline.

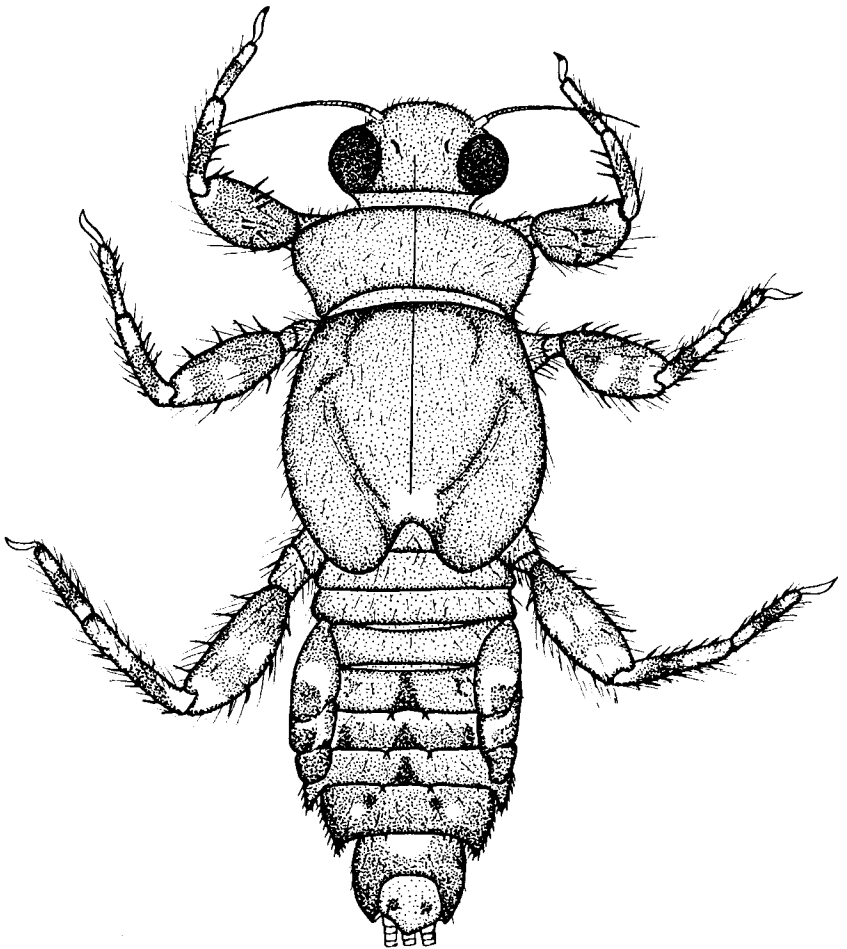


Fig. 1. *Torleya mikhaili*, habitus of full grown nymph.

*Genitalia* (Fig. 2): subgenital plate and forceps segments light yellow, penes darker. Penes with short apical lobes and a shallow median notch.

*Mature nymph* (in alcohol). Length (mm): body, 3.8-5.2; caudal filaments, 1.4-1.8. General colouration light brown. Body covered with numerous thin hairs (Fig. 1).

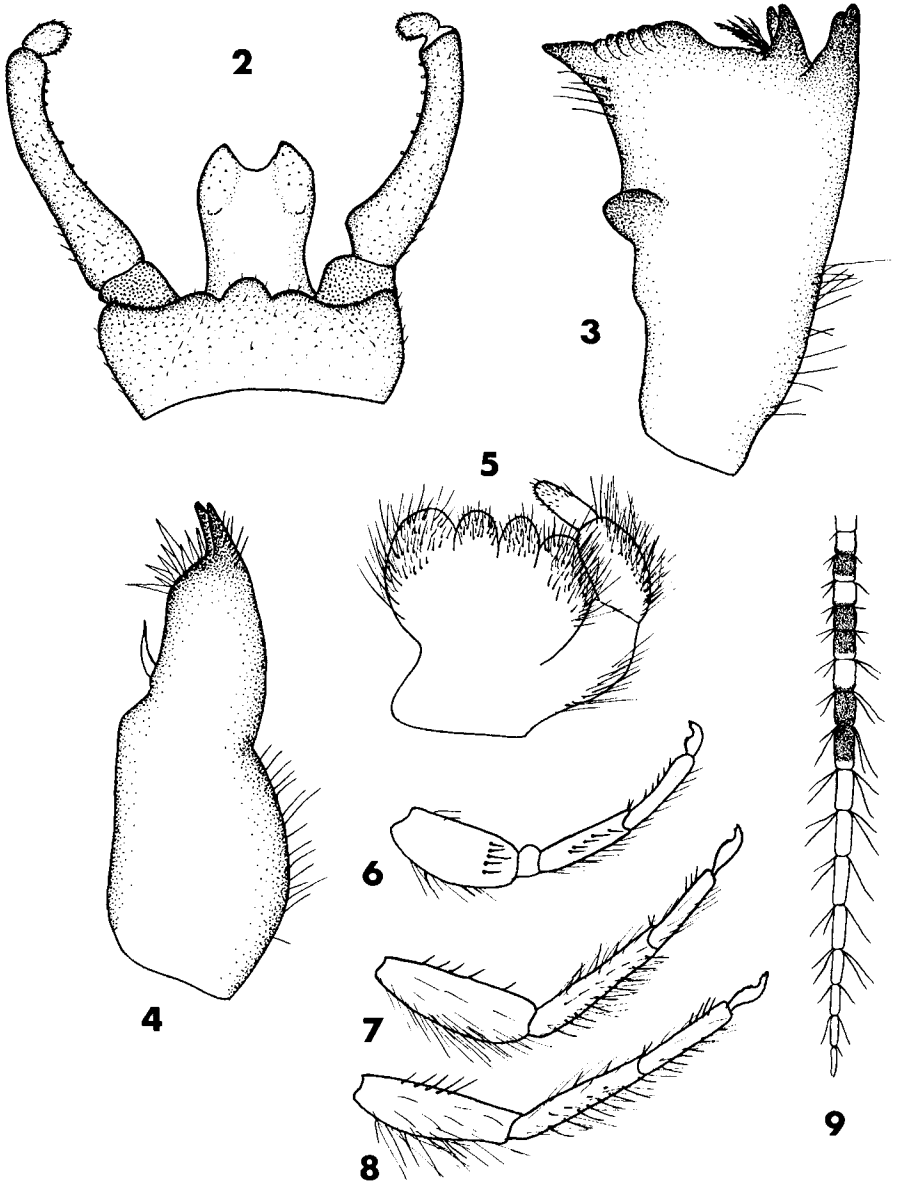
Head light brown, antennae light yellow, basal segment large and brown. Incisors of mandibles dark brown and well contrasted with pale brown colour of mandibles; outer margin of mandibles with a row of long hairs basally (Fig. 3). Maxillae without palpi (Fig. 4). Labium with a pronounced 3rd palpal segment; ratio of 2nd to 3rd palpal segment length 7:5 and width 2:1.

Thorax usually light brown, unicolorous. A large whitish spot between wing pads. Legs banded. Femora of all legs with white median spots; fore femora with subapical row of long spines, with hairs along dorsal margin, and ventral margin without spines (Fig. 6); middle and hind femora with long stout spines and thin hairs along dorsal and ventral margins (Fig. 7-8). Tibiae and tarsi of fore legs with alternating wide, brown and white transverse bands; tibiae with a row of brown spines and whitish hairs along ventral margin; tibiae and tarsi of middle and hind legs with thin hairs only; claws light yellow-brown, apex brown.

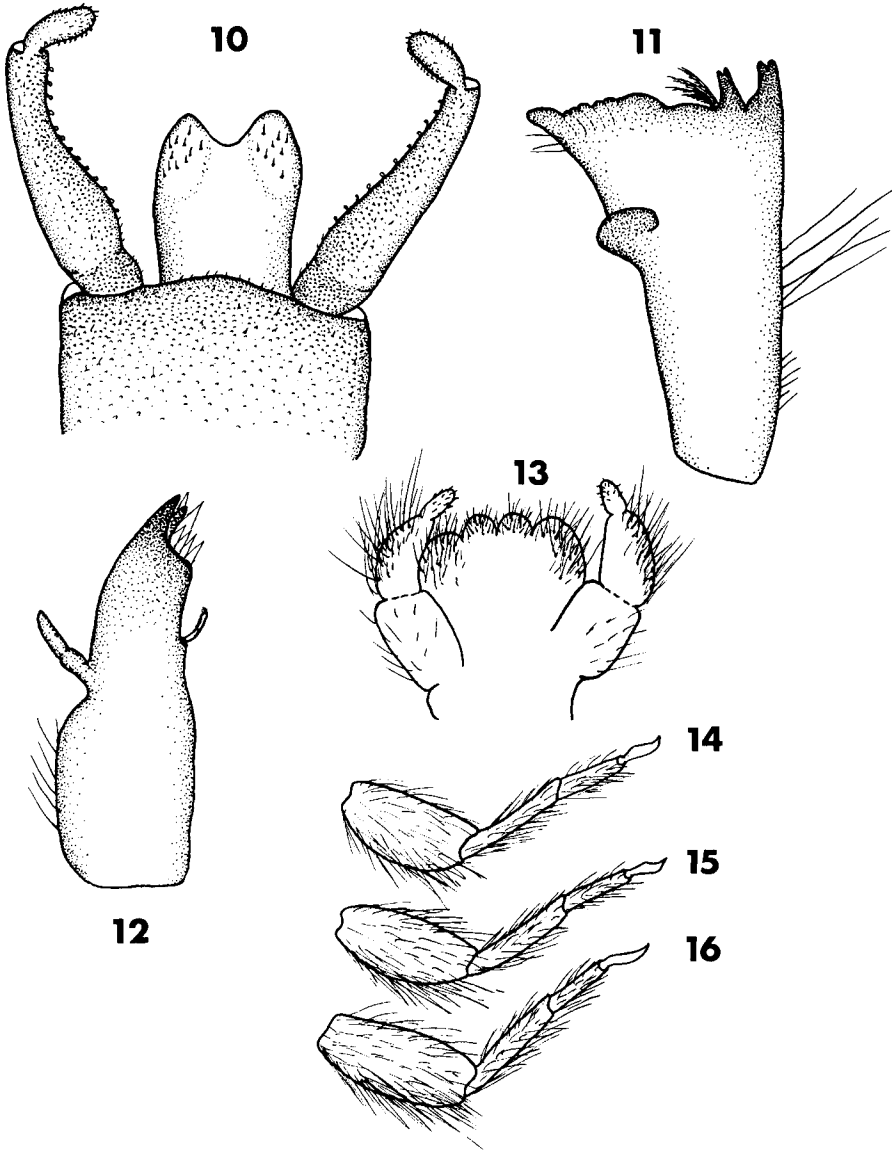
Abdominal terga 1-4 brown, unicolorous; tergum 5 pale brown with narrow dark brown stripe on median line; anterior margin of tergum 6 light brown, remainder dark brown; tergum 7 dark brown; tergum 8 with small dark brown and white anterior spots; tergum 9 dark brown with an anterior round white spot; tergum 10 white with two brown spots. Posterior margin of terga 5-7 with paired submedian short brown spines. Abdominal sterna whitish. Caudal filaments banded, with basal alternating segments dark brown, apical segments pale; short stout spines at apex of each segment (Fig. 9).

*Comparison.* *T. mikhaili* can be distinguished from all known species of *Torleya* by the unique male genitalia. Among described imagines, the male of *T. mikhaili* most closely resembles that of *T. padunica* in the absence of lateral projections. *T. mikhaili* can be distinguished by the short distal segment of the genital forceps (length only a little greater than width, Fig. 2); in *T. padunica* the distal segment is at least two times longer than wide (Fig. 10). Also, the penis lobes of *T. mikhaili* have small subapical spines and tubercles (Fig. 2), but in *T. padunica* the spines are well developed (Fig. 10).

The larva of *T. mikhaili* can be distinguished from the larvae of all known species by the following characteristics: 1) fore femora with few well developed subapical spines, 2) posterior margins of terga 5-7 with short, paired submedian spines, and 3) maxillary palpi absent. *T. mikhaili* most closely resembles *T. nepalica* in the absence of maxillary palpi but can be distinguished by 1) the absence of paired occipital tubercles, and 2) posterior margin of terga 5-7 with short, paired submedian spines.



Figs. 2-9. *Torleya mikhaili*: 2, genitalia of male imago; 3-9, structural details of larva: 3, right mandible, dorsal view; 4, right maxilla, dorsal view; 5, labium; 6-8, right legs; 9, segments of caudal filaments.



Figs. 10-16. *Torleya padunica*: 10, genitalia of male imago; 11-16, structural details of the larva: 11, right mandible, dorsal view; 12, left maxilla, dorsal view; 13, labium, ventral view; 14-16, right legs.

*Torleya padunica* Kazlauskas, 1963 (Figs. 10-16)

*Material*: 5 males (reared from larvae), Russia, Primorye Territory, Ussuri River, near Varlakhovka village, July 28, 1992; 3 females (reared from larvae), Ussuri River, near Mikhajlovka village, July 27, 1992; 2 males (at light), Ussuri River, 1.5 km below Kamenka village, July 27, 1992 (T.Tiunova).

*Male imago* (in alcohol). Length (mm): body, 5.0-5.7; fore wings, 5.1-5.9; caudal filaments, 5.7-6.8. General colouration light yellow. Head light yellow. Upper portion of eyes orange-brown, lower portion black. Thorax light yellow. All legs white. Length of segments in fore leg (mm): femora 1.0, tibia 2.0, tarsal segments 0.5, 0.4, 0.2, 0.1, 0.1. Wings hyaline, veins whitish. Abdominal terga and sterna white, hyaline.

Genitalia (Fig. 10): penis lobes with subapical well developed spines. Subgenital plate, forceps segments and penes white.

*Female imago* (In alcohol). Length (mm): body, 4.7; fore wings, 6.3-6.4; caudal filaments, 5.1. General colouration same as in male. Length of segments in fore leg (mm): femora 0.9, tibia 1.1, tarsal segments 0.2, 0.1, 0.1, 0.2.

## ACKNOWLEDGEMENTS

I wish to thank Prof. W.L. Peters for help with literature and information for my paper. This work was supported by the International Science Foundation (Travel Grant Program).

## REFERENCES

- ALBA-TERCEDOR, J. and A. SANCHEZ-ORTEGA (1982): Presencia del género *Torleya* Lestage, 1917 (Insecta, Ephemeroptera: Ephemerellidae) en la Península Ibérica. – Bol. R. Soc. Española Hist. Nat. (Biol). 80: 81-88.
- ALLEN, R.K. (1980): Geographic distribution and reclassification of the subfamily Ephemerellinae (Ephemeroptera: Ephemerellidae). – In: *Advances in Ephemeroptera Biology* (eds. J.F. Flannagan and E. Marshall), Plenum Publ.Co., New York, pp. 71-81.
- ALLEN, R.K. and G.F. EDMUNDS, Jr. (1963): New and little known Ephemerellidae from Southern Asia, Africa and Madagascar (Ephemeroptera). – *Pacific Insects* 5: 11-22.
- GOSE, K. 1980. Nihon san kagero-rui. [The mayflies of Japan.] Part 9. – *Aquabiology* (Nara) 2(4): 286-288 (in Japanese).
- ISHIWATA, S.-I. (1987): Structure and keys of the family Ephemerellidae (1). Structure and keys to genera from the family Ephemerellidae. – *Aquatic Organisms in Kanagawa Prefecture* 9: 27-34 (in Japanese).
- KAZLAUSKAS, R. (1963): New and little known mayfly (Ephemeroptera) species of the USSR fauna. – *Entomol. Obozr.* 42: 582-592.
- KLAPALEK, F. (1905): Ephemeridarum species quatuor novae. – *Cas. Spol. Entomol.* 2-3: 75-79.
- LANDA, V. (1969): Jepice-Ephemeroptera. – *Fauna CSSR*, 18: 1-347.
- LESTAGE, J.A. (1917): Contribution à l'étude des larves des éphémères paléarctiques. – *Ann. Biol. Lacustre* 8: 113-182.
- ULMER, G. (1928): Über die Ephemeropteren *Torleya belgica* Lest. und *Ephemerella major* Klap. – *Dt. Ent. Z.* 1928: 142-145.