



## Biodiversity of mayflies (Insecta: Ephemeroptera) in the Ukrainian section of the Tysa River basin

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At the end of the 19-th century Józef Dziędzielewicz (1894) initiated the study of mayflies in the Ukrainian section of the Tysa river-basin. In his publication he indicated one species - *Rhithrogena semicolorata* (Curtis, 1834). In spite of more than one hundred years of research on Ephemeroptera in this area, our knowledge of this group of insects is still poor, compared to the neighbouring countries of the European Union. The Upper Tysa river-basin within Ukrainian borders has been declared as a zone of ecological disaster, because of catastrophic inundations, becoming more frequent, and water contamination by chemicals in the years 1997-2002 (eg. cyanide pollution in 2000). The extent of influence of these factors on water ecosystems is unknown. Due to relatively narrow ecological valence of most species and also on account of different historical reasons, the mayfly group suffers regression now. Many species are threatened or on the verge of extinction. Thus, the study of mayfly biodiversity in the Ukrainian section of the Tysa is a priority.

As a result of critical analysis of the data in the literature and study of collections of the State Museum of Natural History, National Academy of Sciences of Ukraine, the Institute of Entomology, Academy Sciences of the Czech Republic, the National Museum in Praha, the Department of Hydrobiology, Institute of Environmental Sciences, Jagiellonian University and the author's own collections, 57 species of mayflies have been recorded from the region (Dziędzielewicz 1894, Šámal 1931, Tshernova 1964, 1981, Sinichenkova 1973, Teluk 1982, Polishchuk et al. 1984, Gáldean 1999, Godunko 1998, 1999, 2000, Cser & Andrikovics 2001, Kharchenko et al. 2003, Kłonowska-Olejniak & Godunko 2003, Godunko et al. 2004). The presence of *Rhithrogena endenensis* Metzler, Tomka & Zurwerra, 1985 needs to be reconfirmed (according to Bauernfeind & Humpesch (2001). This species may be a junior synonym of *R. puthzi* Sowa, 1984).

It is also necessary to study further the taxonomic status of the *Ecdyonurus helveticus* species-group (especially taxa cited as: "*E. austriacus*", "*E. parahelveticus*" and "*E. picteti*"), mentioned in some papers. The list of species may change in consequence of: (1) correct taxonomic status of some species or bringing to synonymy some species names; (2) redescription of some species found in the Carpathian section of the

### Streszczenie:

Badania jętek (*Ephemeroptera*) ukraińskiej części zlewni rz. Cisy rozpoczęte były pod koniec XIX wieku przez J. Dziędzielewicza, i chociaż trwają ponad 100 lat, ciągle jest to najmniej zbadana grupa bezkręgowców na tych terenach. Analiza prac zawierających informacji o faunie jętek wspomnianego regionu, badania kolekcji zgromadzonych w instytucjach naukowych Ukrainy, Polski i Czech, jak i własnych zbiorów, wykazała obecność na początku 2006 r. 57 gatunków w ukraińskiej części zlewni rz. Cisy. Jednak występowanie części gatunków wymaga dalszych badań. Dotyczy to głównie przedstawicieli rodziny *Heptageniidae*, wśród których z obszaru Karpat Wschodnich w ostatnim czasie opisano kilka nowych gatunków.

Tysa river-basin and adjective territories (e.g. *E. nigrescens* (Klapálek, 1908)); (3) discovery of new taxa in the region, known from the neighbouring countries or from other sections of this river-basin (see Soldán 1981, Kovács et al. 2002, Móra et al. 2005).

**Acknowledgement.** This research was financially supported by the INTAS Fellowship Grant for Young Scientists (INTAS Ref. Nr 05-109-4162).

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The Latorytsia river near Mali Geivtsi village (Zakarpattia Region, Ukraine)



The Borzhava river near Bene village (Zakarpattia Region, Ukraine)