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The genus *Palaeagapetus* Ulmer (Trichoptera, Hydroptilidae, Ptilocolepinae) in North America

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Abstract

The genus *Palaeagapetus* Ulmer (Trichoptera, Hydroptilidae, Ptilocolepinae) is revised in North America. Descriptions of the western species, *P. nearcticus* Banks 1938, are provided with the first descriptions of the female, pupa, larva, egg and case and with notes on food, habitat and annual life cycle. The male and female of the eastern species, *P. celsus* Ross 1936, are described or redescribed with some ecological notes. Distributions of the two species are summarized.

Key words: adult, pupa, larva, case, food, habitat, annual life cycle, distribution

Introduction

Palaeagapetus Ulmer (Trichoptera, Hydroptilidae, Ptilocolepinae) is a small Holarctic genus containing 11 species: 2 living species in North America, 7 living species in the Asian Far East and 2 fossil species from Baltic and Turonian ambers (Ulmer 1912; Banks 1936; Ito & Hattori 1986; Botosaneanu & Levanidova 1987; Ito 1991a, 1991b, 2010; Ito *et al.* 1997; Botosaneanu *et al.* 1998). All known larvae live among liverworts (Hepaticae, Jungermanniales) just above the water in small streams in forests, making their bivalve cases of liverwort pieces and eating the liverworts (Flint 1962; Wiggins 1996; Ito 1998, 2010; Ito & Vshivkova 1999; Ito *et al.* 1997).

Two species of this genus are distributed in North America: *P. nearcticus* Banks 1936 in the west (from British Columbia to California) and *P. celsus* Ross 1936 in the east (reported previously from Quebec and New Brunswick south to Oklahoma, Tennessee and North Carolina) (Wiggins 1996; Morse 2013). In this paper, the descriptions of the adult and immature stages, including the first descriptions of some of these stages are provided along with notes on their distribution, habitat, food and annual life cycle.

Material and methods

Genitalia segments were figured after treatment in hot 10 % KOH solution. Terminology follows Botosaneanu & Levanidova (1987), Wiggins (1996) and Wiggins & Currie (1996). Repositories of specimens are shown in parentheses. Names of collectors, repositories and observers are abbreviated as follows: T. Ito (TI); Robert W. Wisseman (RWW); John C. Morse (JCM), Murray H. Colbo (MHC), John S. Weaver, III (JSW), D. E. Ruitter (DER), J. Lee (JL), O. S. Flint, Jr. (OSF), California Academy of Sciences (CAS), Christian Service University (CSU), Clarion University (CUP), Clemson University Arthropod Collection (CUAC), Illinois Natural History Survey (INHS), Smithsonian Institution National Museum of Natural History (NMNH), Oregon State University,

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