

NOTES ON GEOGRAPHIC DISTRIBUTION

Insecta, Ephemeroptera, Ephemerellidae, *Teloganopsis subsolana*: Distribution extension and first report since its original description

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During a visit to the United States National Museum (USNM), Smithsonian Institution, Washington, DC, USA, I discovered previously unidentified specimens of *Teloganopsis subsolana* (Allen, 1973) (Insecta: Ephemeroptera: Ephemerellidae) from Iran. This newly identified material (Figure 1) is the basis for establishing the first record of *T. subsolana* from Iran and the basis for the first report of the species since its original description from the Kabul River in Afganistan (Allen 1973). *Teloganopsis subsolana* has been included historically in several different ephemerellid genera, including *Ephemerella* Walsh, 1862, *Serratella* Edmunds, 1959, and *Torleya* Lestage, 1917.



Figure 1. *Teloganopsis subsolana* specimens reported herein from Iran, collected on May 28, 1975, from Mazandaran, 13 km northwest of Ghalekesh. Scale bar = 1 mm.

Teloganopsis subsolana is part of the *T. mesoleuca* (Brauer, 1857) species complex, a pleisiotypic group within the monophyletic genus *Teloganopsis* Ulmer, 1939, that is characterized by the structure of the male genitalia in adults and by the presence of a palp on the larval maxilla. In contrast, the palp is absent from the maxilla of the species among the more derived clades of *Teloganopsis* (Jacobus and McCafferty 2008; Ogden et al. 2009).

The *mesoleuca* complex contains four nominal species from central and western parts of the Palearctic Region: *T. mesoleuca* *T. maculocaudata* (Ikonomov, 1961), *T. subsolana* and *T. bauernfeindi* (Thomas, Marie and Dia, 1999) (Soldán 1982; Studemann and Tomka 1989; Marie et al. 1999; Jacobus and McCafferty 2008). *Teloganopsis subsolana* is distinguished from others in the *mesoleuca* complex by its shorter antennae. If these are broken and missing, the species can be recognized by having the following combination of characteristics: labial palp segment three relatively robust and triangular in shape, canines of maxilla sharp and distinct and not fused together, and caudal filaments with dark medial band (Landa 1969; Allen 1973; Alba-Tercedor 1991; Marie et al. 1999).

The *mesoleuca* complex species are relatively infrequently reported in the scientific literature and probably are threatened with extinction (Landa and Soldán 1985; Vidinova and Russev 1997). All four species are known from the larval stage, but *T. subsolana* and *T. bauernfeindi* are not known as adults (Jacobus and McCafferty 2008). Subimagos can be found emerging from the larval habitat on late spring or early summer afternoons, and adults swarm nearby in the evening hours (Soldán 1982; Jacobus and McCafferty 2008). Some of the species in this

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group may have very narrow larval habitat requirements, but the complex in general can withstand relatively warm temperatures and potentially hard and alkaline water conditions, with low dissolved oxygen. Nitrate concentrations may be a determining factor of their current geographic occurrences, however, because larvae appear to be very sensitive to low levels of

nitrate in the water (Vidinova and Russev 1997; Marie et al. 1999).

Material examined

Two larvae from Mazandaran, Iran, 13 km northwest of Ghalekesh, collected on 28-V-1975 by R McCullers (USNM).

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