First record of Buchonomyia thienemanni Fittkau, 1955 (Diptera, Chironomidae) from the north-eastern Iberian Peninsula (Zaragoza, Spain)

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Introduction

The family Chironomidae can tolerate a wide range of environmental conditions and is the most widely distributed dipteran family being found in terrestrial, marine and fresh-water habitats (Armitage et al., 1995). Buchonomyiinae is among the 11 subfamilies described within Chironomidae (Sæther, 2000) and it is one of the less diversified, with only three living species currently known in the world, all in the genus Buchonomyia (Murray & Ashe, 1981; Marziali et al., 2004; Ashe et al., 2015). Other life history traits include summer emergence, flying activity during summer-autumn or univoltinism (Murray & Ashe, 1981). At present, previous distribution data have highlighted a wide temperature range (from Southern Spain to Russia) and a preference for freshwater, in-channel lotic habitats, and low altitudes (<1000 m), while little more is known about its ecology (Murray & Ashe, 1981; Marziali et al., 2004; Ashe et al., 2015; Serra et al., 2016). The conservation interest and vulnerability of this species has been also pointed out in France (Moubayed-Breil & Ashe, 2016), identifying habitat alteration and other human activities as the main factors causing the decline and loss of B. thienemanni populations.

The objective of the present paper is to provide a new record for this emblematic species, located in NE Spain, thus expanding considerably the known geographical distribution of B. thienemanni in the Iberian Peninsula. The main environmental features (biological, physicochemical and habitat variables) of the locality are summarized as well.

Materials and Methods

Benthic invertebrates were collected in summer 2017 (August 31st) along the Gállego River (Ebro River Basin, Spain) as part of routine biomonitoring programs in the Ebro River Basin, following the Spanish national sampling protocols (MAGRAMA, 2013). A hand net (mesh size 500 μm) was used and macroinvertebrates were preserved using ethanol 96%. Common physicochemical parameters were measured in-situ: conductivity, temperature, pH and dissolved oxygen concentration. Stream site average width and depth and other habitat features such as substrate size were estimated visually.

Results and discussion

During this sampling, the stream reach presented the following physicochemical conditions: conductivity = 310 μS/cm; pH = 8.38; water temperature = 20.9 ºC and dissolved oxygen saturation = 110.5 %. The sampling site can be characterized by moderate turbulent flow and the substrate of the river bed was basically composed by blocks
This species has been previously found in other countries as Germany, UK, France, Belgium, Luxembourg, Austria, Slovakia, Czech Republic, Italy, Russia, Albania, Morocco or Iran (Ashe et al., 2015). In Spain, B. thienemanni was previously known only from three localities: one in the Ulla river (A. Coruña, Galicia, one sampling site near the location of Santiso; Cobo et al., 1989) and two in the upper Guadalquivir river (Jaén, Andalusia, in two sites, one upstream and one downstream the Tranco de Beas reservoir, in Cazorla; Calle Martínez et al., 1995) (Fig. 1). Thus, this is the fourth record of B. thienemanni in the Iberian Peninsula, more than 20 years after the last record, and the first one for NE Spain (and for Zaragoza province and Aragón region, as well). It considerably expands the current known distribution of the species in this region.

Environmental variables of the collecting site are in concordance with previous records, and the co-occurrence of Psychomyia pusilla would support the ectoparasitic relationship with this species (Ashe et al., 2015).

Finally, we want to stress the importance of preserving the species typical habitats, middle reaches of rivers, already identified as threatened freshwater ecosystems in the Iberian Peninsula (Sánchez-Fernández et al., 2008; Guarasci et al., 2015).

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