

## **Morphological and genomic assessment of divergence between closely related species of the genus *Philaenus* (Hemiptera, Aphrophoridae)**

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**Abstract:** *Philaenus spumarius* (Linnaeus, 1758) (Hemiptera, Auchenorrhyncha, Aphrophoridae), the meadow spittlebug, is a polyphagous xylem-feeding insect, quite widespread in the Holarctic region. It has lately been under attention since this species was found to be a vector of *Xylella fastidiosa* during a recent outbreak in Italy. Several other species of the genus *Philaenus* are found in southern Europe, most of them being differentiated by morphological, karyological and genetic characteristics. Two of the species, *P. spumarius* and *P. tessellatus* are considered sister species, differentiated at the male genitalia level but not at karyological, mitochondrial DNA and some nuclear gene levels. Knowledge about the amount of morphological variation in the male genitalia shown in both of these species is, however, still lacking. Here we aim at characterising such variation in populations from the southern Iberian Peninsula, where both species occur. New data on thousands of genome-wide markers (RAD sequencing) revealed previously unreported differentiation between *P. tessellatus* from Morocco (defined by male genitalia) and *P. spumarius* from the Iberian Peninsula, contrasting to an absence of mtDNA differentiation. It is expected that such data may provide genetic markers for more accessible genotyping of specimens to discriminate these two closely related species, with relevance in the management of *X. fastidiosa* vector populations.