

Ethological differentiation of *Hyalesthes obsoletus* (Hemiptera, Cixiidae) on field bindweed and stinging nettle

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Since the early 1930s, the grapevine yellowing disease “Bois noir” (BN) associated to 16SrXII (stolbur) phytoplasmas, is reported from Germany. Main distribution at present are vineyards along the rivers Moselle, Rhine and Nahe. The only known vector (so far) of this disease is *Hyalesthes obsoletus* Signoret. In Germany primarily collected from field bindweed (*Convolvulus arvensis*), *H. obsoletus* was increasingly often observed feeding on stinging nettle (*Urtica dioica*) in recent years. From populations of the two main host plants two different types of stolbur were identified (type I in *U. dioica*, type II in *C. arvensis*). Morphometric and genetic studies provided evidence for a differentiation of the two *H. obsoletus* populations. Accordingly, an analysis of the insects’ intraspecific communication signals were conducted to clarify the species status of the separated populations. The signal repertoire of the two *Hyalesthes obsoletus* populations from nettle and bindweed was recorded (Magneto-Dynamic System) and analyzed. Since the study was based on field collected specimens, the song vouchers were tested for phytoplasma infection *a posteriori*. This provided a chance to examine the potential influence of phytoplasma infection on the signal patterns of both populations. Main results of the study are:

1. The repertoire of vibrational signals in *Hyalesthes obsoletus* is highly diverse and more complex than previously documented.
2. In the male “calling” signal, the *H. obsoletus* populations from bindweed and nettle show clear differences both in the number of pulses and the pulse length; providing further evidence for ecological differentiation of populations on different hosts.
3. Differences were also observed between infected and non-infected individuals within and between populations on bindweed and nettle.

Potential evolutionary implications of phytoplasma infection on the vector via influence on signal pattern differentiation is discussed.