

M.G. Boegle, S.C. Schneider, A. Melzer and H. Schubert 2010. Distinguishing *Chara baltica*, *C. horrida* and *C. liljebladii* – conflicting results from analysis of morphology and genetics. *Charophytes 2*: 53–58.

*Chara baltica* Bruzelius, *C. horrida* Wahlstedt and *C. liljebladii* Wallman can be distinguished from each other on the basis of a number of morphological features. However, intermediate forms often occur and these can be difficult to allocate to species. In an investigation of whether morphological traits correspond to genetic differences, 61 specimens of *C. baltica*, 17 of *C. horrida* and 5 of *C. liljebladii* were collected from sites in the Baltic Sea and analysed by means of AFLP (Amplified Fragment Length Polymorphism). Eighteen specimens of *C. hispida* Hartmann and 64 specimens of *C. intermedia* A. Braun were included in the analyses as a comparison as these two are easily distinguished species. The additional species were chosen because they were expected to be genetically similar to *C. baltica* but still separable from each other and *C. baltica* by means of AFLP. *Chara baltica*, *C. liljebladii* and *C. horrida* could not be distinguished by AFLP, despite the morphological differences among them. In contrast, both *C. intermedia* and *C. hispida* exhibit well separated species clusters despite the known morphological similarity of *C. intermedia* to *C. baltica*. The similarity among *C. baltica*, *C. liljebladii* and *C. horrida* could be a result of descent from a common ancestor, or gene-flow among the species.

*Keywords*: genetic analyses, morphology, Baltic sea, *Chara*, speciation