

Further studies in *Viola* Sect. *Melanum* (). Identity and typification of *Viola nana* and *V. henriquesii*, two neglected European Atlantic taxa

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Abstract

Based on the analysis of relevant literature and of specimens from European herbaria, *Viola nana* and *V. henriquesii*, currently included in *V. kitaibeliana*, are reaffirmed as independent species. A lectotype is designated here for *V. nana* from the original material found in the Herbier De Candolle in Genève Herbarium (G). A lectotype and three syntypes are designated for *V. henriquesii* from those exsiccata belonging to the gathering cited in the protologue, that were found in the Herbaria of Monaco (M), Stockholm (S), and Meise (BR).

Introduction

Viola Linneus (1753: 933) Section *Melanum* Gingins de la Sarraz (1823: 23) is a rather homogeneous section comprising 125 species, both perennials and annuals (Marcussen *et al.* 2015). It is represented in Europe by over 50 taxa (Erben 1985), including 16 annual species (Valentine *et al.* 1968, Erben 1985, Espeut 2004) closely related to *V. tricolor* Linneus (1753: 935), the common pansy. The taxonomy of this section, especially of the *V. kitaibeliana* aggregate, is very complicated because of the ambiguity of some morphological characteristics and the conflicting taxonomic treatments. Arguably, also the young age of the section *Melanum*, the frequency of polyploidy, dysploidy, and hybridisation events (Marcussen *et al.* 2015), coupled with the lack of an informative phylogeny (Yockteng *et al.* 2003) may have contributed to such conflicting taxonomy.

Particularly, during the last two centuries, many infra-specific taxa described at a local level were attributed on a morphological basis to the three species *V. tricolor* (De Candolle 1824, Grenier & Godron 1848, Boissier 1867, Coutinho 1892), *V. arvensis* Murray (1770: 73) (Besnou 1881, Halász 1900, Becker 1904) and *V. kitaibeliana* Schult. (in Roemer & Schultes 1819: 383) (Rouy & Foucaud 1896, Becker, 1910). Moreover, different chromosome numbers have been reported for *V. kitaibeliana* s.l.: $2n = 14, 16, 18, 24, 36, 40, 48$ (see Magrini & Scoppola, 2013 for the references). According to Soltis *et al.* (2007), such species should be thoroughly investigated to assess if it should be considered an aggregate of mere cytotypes or it can be split in several distinct narrow species differing in chromosome number and showing different ecological characteristics or geographic distributions. Currently, even if modern taxonomic studies (integrating cytology, morphometrics, molecular systematics, etc.) have clarified some criticisms, have given autonomy to different cytotypes within *V. kitaibeliana* s.l. (i.e., *V. phitostiana* Erben 1985: 396, $2n = 24$, and *V. roccabrunensis* Espeut 2004: 18, $2n = 48$) and have recovered some De Candolle's names (i.e., *V. kitaibeliana* Schult. var. *trimestris* (DC.) Espeut in Tison, Jauzein, Girod & Espeut 2010: 132), the taxonomic treatment of this group of annual pansies remains unsatisfactory and many of the segregate taxa are no longer considered in recent floras (Magrini & Scoppola 2013).

This paper is part of a broader research on the taxonomy of *Viola kitaibeliana* s.l. (Scoppola & Lattanzi 2012, Magrini & Scoppola 2013, Scoppola *et al.* 2014). In particular, we here focus on two European Atlantic taxa, *Viola nana* (De Candolle 1824: 304) Le Jolis (1860: 27–28) and *Viola henriquesii* (Willk. ex Coutinho 1892: 36) W. Becker (1906: 190), which are currently included in *V. kitaibeliana* (Valentine *et al.* 1968, Guinochet & De Vilmorin 1982, Muñoz Garmendia *et al.* 1993, Randall 2004).