



A taxonomic reassessment of *Viburnum* (Adoxaceae) in the Azores

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Abstract

The taxonomic status of the Azorean endemic *Viburnum tinus* subsp. *subcordatum* is reassessed, using morphological characters and new molecular data from the ITS region and the *trnK* intron. A survey of morphological variation supports the recognition of *V. tinus* subsp. *subcordatum* as distinct from *V. tinus* subsp. *tinus* and the Canary endemic *V. rugosum* (formerly known as *V. tinus* subsp. *rigidum*) based on leaf shape, the shape of the leaf base and apex, the sub-entire and revolute leaf margins, blistered upper leaf surfaces, trichome density and type, and fruit size. Molecular data also confirm this distinctiveness within section *Tinus*. Taken together, our morphological and genetic data presented in this paper support the recognition of the Azorean taxon at the species level under the name of *Viburnum treleasei*. A description of the species is provided and nomenclatural issues relating to the two Macaronesian *Viburnum* taxa are discussed.

Key words: Endemic, taxonomy, Azores Islands, Canary Islands, Mediterranean

Introduction

The genus *Viburnum* Linnaeus (1753: 267–268) (Adoxaceae) is estimated to contain between 175 to 230 species occurring primarily in the temperate regions of the Northern Hemisphere and secondarily in subtropical portions of Asia and Latin America (Malécot 2002, Donoghue *et al.* 2004). Traditionally, the genus has been subdivided into ten sections on the basis of morphological characters (Oersted 1861, Hara 1983). The monophyly of all sections was supported by morphological data and molecular studies, except sections *Megalotinus* and *Odontotinus* (Donoghue 1983, Baldwin *et al.* 1995, Donoghue *et al.* 2004, Winkworth & Donoghue 2005, Clement & Donoghue 2011, 2012, Schmerler *et al.* 2012). *Viburnum tinus* Linnaeus (1753: 267–268), placed in section *Tinus*, is a morphologically variable taxon in which two to three subspecies have been recognised. In addition to *V. tinus* subsp. *subcordatum* (Trelease 1897: 118) P. Silva in Palhinha (1966: 115–116) that is endemic to the Azores, *V. tinus* subsp. *tinus* is distributed throughout the Mediterranean basin including most of the Mediterranean islands. A third taxon, endemic to the Canaries, has been known as *Viburnum tinus* L. subsp. *rigidum* (Ventenat 1805: 98) P. Silva in Palhinha (1966: 116) but as we show below, the correct name is *Viburnum rugosum* Persoon (1805: 326). It was resolved as sister taxon to *V. tinus* subsp. *tinus* in studies by Clement & Donoghue (2011, 2012) and Schmerler *et al.* (2012).

The Azores archipelago comprises nine islands located in the North Atlantic Ocean, on a WNW-ESE axis between 37–40°N and 25–31°W (Fig. 1). The archipelago is volcanic and oceanic in origin and is relatively young, the oldest island being Santa Maria (5–6 Myr, Ávila *et al.* 2012) and the youngest Pico (0.25 Myr, França *et al.* 2003). The Azores span 615 km and the archipelago is isolated from other landmasses as it is situated 1,435 km west from the European coast (mainland Portugal), 3,380 km east from North America and 942 km northwest of Madeira.