



Aichryson santamariensis (Crassulaceae): a new species endemic to Santa Maria in the Azores

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Abstract

A new species of *Aichryson*, *A. santamariensis*, is described. The species is endemic to the island of Santa Maria in the Azores. Analysis of molecular (ITS and *trnL-F*) and morphological data support the segregation of this new species from *A. villosum* with which it was formerly considered conspecific. *Aichryson santamariensis* differs from *A. villosum* by characters including indumentum, leaf shape, seed shape and its generally smaller size.

Introduction

The genus *Aichryson* Webb & Berthelot (1840: 180) is endemic to Macaronesia, with a distribution spanning the Canarian, Madeiran and Azorean archipelagos. It is part of the *Aeonium* alliance, a monophyletic group of 64 species [*Aichryson*, 18 species; *Aeonium* Webb & Berthelot (1840: 184), 31 species; *Greenovia* Webb in Webb & Berthelot (1840: 198), 4 species; *Monanthes* Haworth (1821: 68), 11 species; Acebes-Ginovés *et al.* (2004), Jardim & Menezes de Sequeira (2008) and Silva *et al.* (2010)] that radiated extensively in Macaronesia (Mort *et al.* 2001, 2002). The Canary Islands are the centre of diversity for *Aichryson* with 15 endemics recognised (Fairfield *et al.* 2004; Acebes Ginovés *et al.* 2010). In the Madeira Archipelago three species occur: *A. dumosum* (Lowe 1864: 328) Praeger (1932: 127), a rare endemic of Madeira island, *A. divaricatum* (Aiton 1789: 108) Praeger (1932: 125), endemic to Madeira and the Desertas and *A. villosum* (Aiton 1789: 148) Webb & Berthelot (1840: 181), which has a distribution spanning both the islands of Madeira and the Azores. In the Azores, *A. villosum* is restricted to Santa Maria, while in the Madeira archipelago it occurs in Madeira, Porto Santo and the Desertas. *Aichryson villosum* is notable as it is the only Macaronesian Crassulaceae with a native distribution spanning two archipelagos. Furthermore, it is one of only two angiosperm taxa that are considered shared Azores-Madeira endemics (the other being *Tolpis succulenta* Lowe (1868: 535) in Asteraceae).

Nyffeler (2003) considered *Aichryson* to be "...urgently in need of a thorough revision" and problems with the taxonomy of *A. villosum* in particular have been widely acknowledged. In Madeira, the morphological variability of *A. villosum* led C. A. Menezes to first recognize a distinct species (*Sempervivum barreti* Menezes, 1922: 115), which he later combined as one of three varieties he recognised in Madeira (Menezes 1927). Praeger (1932) suggested that "the species [i.e. *A. villosum*] and its variants need further study on the ground." and Bramwell (1968) further commented that "the species would seem to merit biosystematic study." At the inter-archipelago level, Watson (1870) had earlier expressed some doubts on the nature of Azorean plant specimens, specifically, he was "...not prepared to decide whether this is truly the *Sempervivum* to which the name *villosum* would be applied by the Rev. R. T. Lowe". Nevertheless, both Palhinha (1966) and later Franco (1971) included Azorean plants in *A. villosum*.

From a molecular perspective, the combined chloroplast and nuclear phylogeny of *Aichryson* by Fairfield *et al.* (2004), included a single accession of *A. villosum* from Madeira, which grouped with *A. pachycaulon* Bolle (1859: 244) subsp. *pachycaulon*, albeit without support. A subsequent analysis by O'Leary (2009), based on seven chloroplast regions, included only specimens of *A. villosum* from the Azores. They were resolved in a clade with *A. pachycaulon*