



Sedum album subsp. *rupi-melitense* (Crassulaceae), a new vegetatively reproducing subspecies from Malta (Maltese Islands, Central Mediterranean)

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Abstract

Plants of *Sedum album* (*Sedum* ser. *Alba*; Crassulaceae) from Malta (Maltese Islands) differ from previously known *S. album* plants in having very rarely formed inflorescences mostly without peduncular leaves and floral bracts, flowers in which (3–)5 stamens of one whorl, mostly of the antepetalous one, have dysfunctional and often abortive anthers and only the stamens of the other whorl having 5, dark maroon to blackish-brown, mostly indehiscent anthers at anthesis, pollen which is partly deformed and shrivelled, carpels without nectary scales, and fruits and seeds which remain undeveloped and sterile. The Maltese plants have apparently switched from generative to almost exclusively vegetative reproduction and are described as a new endemic subspecies *Sedum album* subsp. *rupi-melitense*. The local history, distribution, habitat, phenology, and conservation status of this new taxon (which is categorized as Critically Endangered according to IUCN Red List Criteria) are discussed.

Key words: asexual reproduction, chromosome number, endemic, Flora of Malta, Mediterranean Flora, IUCN Red List assessment, *Sedum gypsicola*, taxonomy, vegetative reproduction

Introduction

Sedum Linné (1753: 430) is by far the largest genus of the Crassulaceae and comprises some 420 species, distributed mainly in temperate and subtropical regions of the Northern Hemisphere (Thiede & Egli 2007). *Sedum* is found in most of Europe, but centred in the Mediterranean region: of 53 European species, less than ten occur in Northern Europe (Hart & Egli 2003).

In Europe, *Sedum album* Linné (1753: 432) is the most widespread *Sedum* species, distributed throughout in various habitats and it is accordingly very variable in the size and shape of the leaves, the length of the flowering shoots, the size of the inflorescences and flowers, and the size and shape of the petals. It is distributed from Northern Africa to 64° N in Scandinavia and from Morocco and Western Europe (Portugal and Spain) to western Russia, Anatolia, the Lebanon, Northwestern Iran and the Caucasus and is possibly not indigenous to the British Isles (Hart & Berg 1982; Jalas *et al.* 1999; Hart & Egli 2003). The similar *S. gypsicola* Boissier & Reuter (1842: 205) is rare in Europe and occurs locally on gypsum, marl, limestone and shale in Portugal, Spain, Italy (Sicily) and Croatia, but is also native in Morocco, Algeria and Tunisia (Greuter *et al.* 1986; Nikolić 1997; Hart & Egli 2003; Stephenson 2009; Marhold 2011). These two species constitute the dispecific *Sedum* series *Alba* A. Berger (1915: 452) which comprises sparingly to densely glandular pubescent perennials with alternate, terete, oblong, obtuse or rounded leaves, pedicellate flowers, erect follicles, and seeds with acute apex (Hart 1991; Hart & Egli 2003). In addition, both species share a chromosome base number of $x = 17$, are assumed to have descended from a common diploid ancestor, and can be hybridized artificially (Hart & Berg 1982). In the wild, no mixed populations and no natural hybrids between the two species are known (Hart & Berg 1982; Hart & Bleij 2003; Hart & Egli 2003). The detailed morphological study of *S. album* and *S. gypsicola* by Hart & Berg (1982) revealed the leaves densely covered with papillae in *S. gypsicola* vs. glabrous leaves in *S. album* remain as the sole non-overlapping difference. However, this “classical” separation of both species is not constant, since the papillosity may vary between populations of both species (Castroviejo &