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First record of the White Campion *Silene latifolia* Poir. subsp. *latifolia* (Caryophyllaceae) in the island of Madeira (Portugal)

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With 2 figures

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ABSTRACT: *Silene latifolia* Poir. subsp. *latifolia* is reported for the first time for the island of Madeira. In Portuguese territory, forty-six *taxa* of the genus *Silene* L. (Caryophyllaceae) are recorded. The species *Silene latifolia* is present in mainland Portugal and in the Azores (island of Santa Maria), not being recorded in the other Macaronesian archipelagos. The presence of *S. latifolia* in Madeira can be a new threat to endemic flora and vegetation, as noted for many other non-indigenous plants over the last years.

Keywords: *Silene*, Caryophyllaceae, casual, Madeira.

RESUMO: Pela primeira vez é assinalada a ocorrência da espécie *Silene latifolia* Poir. subsp. *latifolia* na ilha da Madeira. Em território português, estão assinalados quarenta e seis *taxa* do género *Silene* L. (Caryophyllaceae). A espécie *Silene latifolia* está presente em Portugal Continental e no arquipélago dos Açores (ilha de Santa Maria), não ocorrendo nos outros arquipélagos macaronésicos. A presença de *S. latifolia* na ilha da Madeira pode constituir uma nova ameaça para a flora e vegetação endémicas, tal como tem acontecido com a introdução de outras plantas exóticas ao longo dos últimos anos.

Palavras-chave: *Silene*, Caryophyllaceae, casual, Madeira.

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INTRODUCTION

The flora of Madeira comprises 1.204 *taxa* of vascular plants (species and subspecies). Of these, 29 (2,4%) *taxa* are "possible introduced" and 401 (33,3%) *taxa* are introduced (Jardim & Sequeira, 2008).

The carnation family (Caryophyllaceae) totals twenty-nine native and naturalized *taxa* in the archipelago of Madeira. Among these, one *taxon* is endemic from the island of Madeira (*Cerastium vagans* Lowe var. *vagans*), two are introduced (*Corrigiola littoralis* L. and *Saponaria officinalis* L.) and the remaining *taxa* are native (Short, 1994; Jardim & Sequeira, 2008). Also present in Madeira, but not naturalized or only sporadically found in nature, we have the genera *Dianthus* L., *Lychnis* L. and *Gypsophila* L., widely used as ornamentals (Vieira, 2002; Quintal, 2007).

According to Morton (2005) the genus *Silene* L. has about 700 species found mainly in Northern Hemisphere.

In Portugal, Menezes de Sequeira *et al*. (2012) recognises forty-six *taxa* belonging to the genus *Silene*, including the species *Silene latifolia* occurring in mainland Portugal, as native and in the Azores (island of Santa Maria), as casual (Silva *et al*., 2005). Until this sighting, this species hasn't been recorded in the island of Madeira (Lowe, 1868; Menezes, 1914; Short, 1994; Jardim & Sequeira, 2008) not in the other Macaronesian archipelagos (Acebes Ginovés *et al*., 2004; Sánchez-Pinto *et al*., 2005).

RESULTS

The specimens of *Silene latifolia* subsp. *latifolia* reported herein are deposited in the herbarium of the Natural History Museum of Funchal (MADM) and were found on the south coast of the island of Madeira, along Caminho do Monte (Levada das Cales, between Terreiro da Luta and Monte) (Fig. 1).

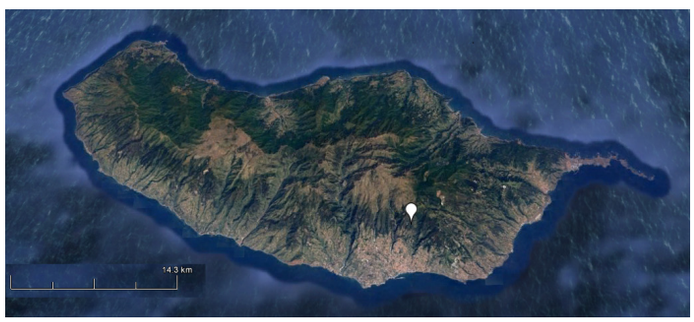

Fig. 1 – Geographical location of *Silene latifolia* Poir. on the island of Madeira.

The plants occur on the borders of a water channel, in a humanized micro-habitat with a strong presence of exotic forest species (*Acacia mearnsii* De Wild., *Eucalyptus globulus* Labill., *Pittosporum undulatum* Vent.) where potentially should exist humid laurisilva (*Clethro arboreae – Ocoteetum foetentis* Capelo, J. C. Costa, Lousã, Fontinha, Jardim, Sequeira & Rivas-Martínez) as described by Costa *et al*. (2004).

About 5 individuals were identified along approximately 10 m.

STUDIED MATERIAL

Silene latifolia Poir. subsp. *latifolia*

Portugal, Madeira: Caminho do Monte, Monte, Funchal, 20.VI.2016, Juan Silva & Rúben Paz leg., 32º 41' 04,4'' N, 16º 54' 00,7'' W, 867 m *a.s.l.* (♀, MADM 6917).

Portugal, Madeira: Caminho do Monte, Monte, Funchal, 20.VII.2016, Juan Silva & Rúben Paz leg., 32º 41' 04,20'' N, 16º 54' 00,27'' W, 865 m *a.s.l.* (♀, MADM 6937).

Portugal, Madeira: Caminho do Monte, Monte, Funchal, 20.VII.2016, Juan Silva & Rúben Paz leg., 32º 41' 04,20'' N, 16º 54' 00,27'' W, 865 m *a.s.l.* (♂, MADM 6938).

General description

The following description is based on the one given by Chater *et al*. (1993):

Dioecius, short-lived perennial (sometimes annual) up to 80 cm, often much-branched, usually rather densely and softly hairy, and more or less glandular above. Leaves ovate or ovate-lanceolate; cauline sessile. Inflorescence a lax, compound dichasium of large flowers, opening in the evening and slightly scented. Calyx of male flowers 15-22 mm, 10-veined; of female 20-30 mm, 20-veined, glandular, inflated and strongly accrescent in fruit; calyx-teeth very long, acuminate. Petals usually white; styles 5. Capsule 10-25 mm, more or less ovoid, dehiscing with 10 teeth. Seeds with concave faces and obtuse tubercles.

Flowering (according to Talavera, 1990): (III) IV-VII (IX).

The above description applies to subsp. *latifolia* (Fig. 2 – A), B), C), D)).

Fig. 2 – *Silene latifolia* Poir. (Madeiran population): **A)** general aspect; **B)** male flower; **C)** female flower; and **D)** section of the female flower.

Key of the Madeiran species of the genus *Silene* (adapted from Short, 1994):

1. Plant dioecius with unisexual flowers, styles 5 ---------- ***latifolia***
   Plant monoecius with hermaphrodite flowers, styles 3 ---------- 2

2. Flowers in raceme-like, usually simple, monochasial cymes ---------- 3
   Flowers in branched dichasial cymes ---------- 4

3. Calyx contracted at the mouth, pubescent with long, spreading, multicellular hairs and shorter glandular hairs; inflorescence +/- 1-sided; capsules ovoid ---------- ***gallica***
   Calyx not contracted at the mouth, appressed-pubescent with very short, ascending hairs; inflorescence not as above; capsules oblong ---------- ***nocturna***

4. Perennial; calyx very inflated, 1 cm or more broad in fruit ---------- 5
   Annual; calyx not or slightly inflated and then less than 1 cm broad in fruit ---------- 6

5. Bracteoles scarious; capsule teeth erect or erecto-patent; plant +/- erect ---------- ***vulgaris***
   Bracteoles herbaceous; capsule teeth recurved; plant +/- procumbent ---------- ***uniflora***

6. Plant puberulent; stems very slender; leaves narrowly linear ---------- ***inaperta***
   Plant glabrous; stems rather stout; leaves obovate or lanceolate ---------- ***behen***

CONCLUSIONS

According to Jardim & Sequeira (2008), the introduction of new *taxa* is one of the main factors causing habitat fragmentation; in fact, invasive plant species are the dominant element in the landscape of the south coast of the island of Madeira, forming, in some cases, areas of monospecific vegetation (*e.g*. *Acacia* spp.).

During the second half of the 20th century, several new introductions and consequent naturalizations, were reported by Hansen (*e.g*. 1974, 1978, 1987 and 1992) and compiled by Vieira (2002). Recently, *Solidago chilensis* Meyen and *Viburnum tinus* L. were confirmed as new introduced *taxa* in the island of Madeira (Gonçalves Silva *et al*., 2008, 2009).

Due to poor seed dispersal (seeds are dispersed by gravity) at a local scale (Barluenga *et al*., 2011) and the fact that is a dioecious species, this plant has a restricted range in Madeira. However, this weed, which can thrive in a wide array of conditions, profits from human activity for long-distance seed dispersal (Barluenga *et al*., 2011). Although, for now, this plant appear to be casual (reproduces sporadically without maintaining stable populations or maintaining a small population beyond the area where it was introduced), this status can be changed by any phenomenon that stimulates the rapid increase in its distribution, triggering the process of biological invasion. This stimulus can be a natural disturbance such as the adaptation of a disperser of seeds or a pollinator, a fire or a disturbance caused by human activities (Marchante *et al*, 2014). For this reason, it should be implemented a monitoring program in order to evaluate the progress of the population of this species.

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