On the taxonomic identity and status of *Silene sericea* var. *balearica* (sect. *Dipterosperma*, Caryophyllaceae)

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**Abstract.** This paper presents a re-evaluation of the taxonomic relationships of *Silene sericea* var. *balearica* based on morphological features. Critical examination of herbarium specimens (including type material) and living plants has shown that *S. sericea* var. *balearica* should be recognized at species level. Therefore, the new name, *Silene migjornensis*, is proposed to designate the endemic species growing on maritime sands in southern Mallorca (Balearic Islands, Spain). This taxon is described, illustrated and compared with its morphologically closest relatives from *Silene* sect. *Dipterosperma*. 

**Keywords:** *Silene*; endemic plants; Mediterranean Region; Balearic Islands; Taxonomy.

Sobre la identidad taxonómica y el estatus de *Silene sericea* var. *balearica* (sect. *Dipterosperma*, Caryophyllaceae)

**Resumen.** En este trabajo se presenta una reevaluación de las relaciones taxonómicas y morfológicas de *Silene sericea* var. *balearica*. La revisión crítica de especímenes de herbario (incluyendo material tipo) y plantas vivas indica que *S. sericea* var. *balearica* debe ser reconocida en rango de especie. En consecuencia, se propone un nombre nuevo para este taxón, *Silene migjornensis*. Se trata de una especie endémica que vive en arenas marítimos del sur de Mallorca (Islas Baleares, España). Este taxón es descrito, ilustrado y comparado con aquellos morfológicamente más relacionados de *Silene* sect. *Dipterosperma*.

**Palabras clave:** *Silene*; plantas endémicas; región Mediterránea; Islas Baleares; Taxonomía.

**Introduction**

*Silene* L. (Caryophyllaceae) is a large genus of flowering plants, distributed mainly across the Northern Hemisphere. The number of species included in the genus varies between taxonomic treatments, but some of the latest studies (Melzheimer, 1980; Greuter, 1995; Zhou et al., 2001; Morton, 2005) estimate between 600 and 700. The genus is particularly diverse around the Mediterranean Basin where more than 350 species have been recorded (Greuter et al., 1984). Section *Dipterosperma* (Rohrb.) Chowdhuri is a taxonomically complex aggregate comprising 15 species which is diversified around the Mediterranean Basin (Brullo et al., 2017). This section comprises annual plants, characterized by hairy-pubescent (non-glandular) indumentum, erect flowers, arranged in monochasia or dichasia, calyx hairy, not inflated, 10-nerved, anthophore pubescent, petal limb deeply bifid, coronal scales present, seeds orbicular-reniform, laterally flat and dorsally furrowed between two more or less undulate wings (Talavera, 1990; Brullo et al., 2012, 2017).

In the Balearic Islands, the presence of two species of sect. *Dipterosperma* (*S. apetala* Willd. and *S. secundiflora* Orth) is widely accepted and well documented (Bolòs & Vigo, 1990; Talavera, 1990; Chater et al., 1993). On the contrary, the presence in the Balearic archipelago of another species of this section, usually referred to *S. sericea* All., is controversial. Willkomm (1876) described *S. sericea* var. *balearica* Willk. from southern Mallorca. The description provided in the protologue is rather scarce [Differt a forma typical (corsicana) floribus minoribus matutinis, calycy breviore (non nisi 10 mm l.) basi minus attenuato, anthophoro breviore (calycem medium aequante), capsula anthophoro aequilonga]. The taxonomic value of this variety has been considered null (see Talavera & Muñoz Garmendia, 1989) or scarce in recent floras (see e.g., Talavera, 1990). It has been included within the range of variation of *S. colorata* Poir. (a widespread Mediterranean species), without any formal recognition. On the contrary, Bolòs & Vigo

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(1990) accepted the presence of *S. sericea* var. *balearica* in the Balearic Islands (distributed in southern Mallorca), whereas Chater *et al.* (1993) listed typical *S. sericea* for the Balearic arhipelage. The presence of *S. colorata* in the Balearic Islands was not supported by Bolós & Vigo (1990), Chater *et al.* (1993) and, surprisingly, by Talavera (1990). However, it was listed by Pla *et al.* (1992) as present in the flora of Mallorca. In a detailed taxonomic study (but apparently unnoticed among botanists dealing with the Spanish flora), Valsecchi (1995) circumscribed the distribution area of *S. sericea* only to Liguria (northwestern Italy). At the same time, several species of this group were described, all of them being restricted to the central and western Mediterranean region. Valsecchi (1995) considered doubtful the presence of *S. sericea* in the Balearic Islands, doubts that go back to Chater & Walters (1964).

Our study of the type material of *S. sericea* var. *balearica* preserved at COI (in the Willkomm herbarium) and living plants from the type locality show that the stems of this taxon are prostrate-ascending, the flowers are solitary and the seed wings are flat. These characters do not match with those shown by *S. colorata* (erect stems, inflorescences 4–10 flowered and seeds with undulate wings) according to several authors (e.g., Bolós & Vigo, 1990; Talavera, 1990; Chater *et al.*, 1993). Therefore, our initial identification, based on Bolós & Vigo (1990) and Chater *et al.* (1993), led us to consider this plant as *S. sericea*, without granting taxonomic value to the variety described by Willkomm (Rosselló & Sáez, 2001; Sáez *et al.*, 2017).

Valsecchi (1995) and Brullo *et al.* (2012, 2015, 2017) provided useful information on the main morphological characters discriminating taxa included within *Silene* sect. *Dipterosperma* and discussed in detail their taxonomy and distribution. However, no plant material from the Balearic Islands was included in the mentioned studies.

During a revision of the Balearic plants of the genus *Silene*, the taxonomic position of *S. sericea* var. *balearica* has been questioned in light of the recent and detailed revisions of *Silene* sect. *Dipterosperma* (Brullo *et al.*, 2015, 2017). Our study shows that the Majorcan plants called *S. sericea* var. *balearica* differ from the currently recognized taxa by a unique combination of characters, and in our opinion this variation merits their recognition at the species rank.

### Material and Methods

Morphological characters recognised as taxonomically discriminant within *Silene* sect. *Dipterosperma* (e.g., Talavera, 1990; Valsecchi, 1995; Brullo *et al.*, 2015, 2017, and our own observations) were scored either in the field and herbarium specimens (BC, BNC, COI and MPU; acronyms according to Thiers 2019+). Terminology and delimitation of characters follow Brullo *et al.* (2017). The morphological comparisons with the allied species are base on detailed data recently published by Brullo *et al.* (2015, 2017). Morphological observations of materials were carried out under a Zeiss Stemi DV4 binocular stereoscopic microscope. Micromorphology was observed on dry leaves and stems, pollen and seeds which were glued directly to aluminium stubs, coated with 40–50 nm gold, and examined with a scanning electron microscopy (Hitachi 2300-S) at 20 kV. The extent of occurrence and area of occupancy were calculated using the GeoCAT tool (Bachman *et al.*, 2011).

### Results and Discussion

**Silene migjornensis** L. Sáez, Guasp, P.P. Ferrer, López-Alvarado & Rosselló, nomen novum [or replacement name]  
≡ *Silene sericea* var. *balearica* Willk. in Linnaea 40: 118 (1876) [replaced synonym]  
Lectotype [designated by Rosselló & Sáez (2001: 52)]:  
[Balearic Islands] Mallorca: in sabulosis zonae littoralis prope Salobrar de Campos in consortio Helichrisi Stoechadis Legi d. 20 Apr. 1873, M.H. Willkomm [Herb. Balear n. 303], COI (barcode COI00059139, http://coicatalogue.uc.pt/index.php?t=results_specimen&q=COI00059139&orderby=relevance&orderdirection=DESC&size=10&page=0)

**Etymology.** The specific epithet *migjornensis* is derived from “Migjorn”, the name of the area where the type locality is found, in southern Mallorca (Balearic Islands, Spain).

**Description**

Annual herb 5–35(42) cm tall, greyish-green, green or purplish-green. Stems prostrate-ascending (very rarely suberect in small plants), with stems branched at the nodes, also sometimes at the base, usually densely pilose-pubescent, with eglandular hairs 0.3–1.7 mm long. Lower internodes 0.4–2.5 cm long, upper ones 1.0–5.2 cm long. Leaves 7–35 × 3–12 mm, more or less flat, moderately succulent, rounded or sometimes subaplicate, petiolate, 1-nerved, widely spathulate, with eglandular hairs (0.2)0.5–2(2.7) mm long. Bracts ovate-lanceolate to lanceolate, 3–7 mm long. Flowers erect, solitary, terminal. Pedicels 3–12(17) mm long. Calyx 11.5–15.5 mm long, densely pubescent, with eglandular hairs 0.4–1.5 mm long, subtubulose, greyish-green to purplish-green, 10-nerved, without anastomoses; teeth 2.3–3.5 × 1.5–2.0 mm, triangular-oblong to triangular, obtuse to subacute, with margin membranous, ciliate at margins (Figures 1, 2 and 4). Petals 11.5–14.0 mm long; limb 5.0–7.0(7.5) mm long, deeply two-lobed, pale pink to pink, with lobes (3.5)4–5 × 2–3.5 mm, obovate-spathulate, smooth; coronal scales 1.0–1.6 mm, white in the adaxial side, white to pale pink in the abaxial surface, deeply retuse, undulate below, rarely smooth; claw 6–7 mm long, whitish, 3-nerved, glabrescent, with eglandular hairs 0.1–0.2 mm long, along the basal and terminal area of the midrib. Stamens shorter than...
petals, with filament 8.0–9.5 mm long, white; anthers 1.3–1.5 mm long, pinkish. Pollen grains spheroidal, pantoporate; pollen diameter 41–48 μm; pore shape isodiametric and rounded, pore diameter 3.6–5.7 μm (Figure 4). Ovary 3.0–3.5 mm long, glabrous, green. Styles 3, filiform. Capsule 5–7 mm long, ellipsoid-ovoid. Carpophore 4.5–5.5 mm long, pubescent. Seeds 1.1–1.4 mm in diameter, blackish, orbicular-reniform, flat laterally, winged and deeply canaliculate dorsally, and with flat wings (Figure 3).

Figure 1. *Silene migjornensis*. A: Habit. Flower (lateral view). B: Petal (ventral view). C: Petal (dorsal view). D: Anther; E: Calyx teeth. F: Flower (lateral view). G: Flower (above view). H: Capsule. I: Leaves. Illustration by L. Sáez based on living material from Mallorca, Ses Covetes (L. Sáez, herb. pers., no. LS-5337).
Figure 2. *Silene migjornensis*. A: Habit. B: Leaves. C-F: Flower (Field photographs taken by E. Guasp in Mallorca, Es Trenc, 16 April 2019). D: Calyx of a herbarium specimen from the same location (L. Sáez, herb. pers., no. LS-5337).
Geographical distribution and habitat

Silene migjornensis is known from Es Trenc, a coastal area in Southern Mallorca. The population at this location is restricted to a narrow strip of dune vegetation, along 2 km, at an altitude of 1–5 m asl. A considerably smaller population occurs at Ses Covetes, about 2 km at the NW of the first location. In both locations Silene migjornensis is part of a therophytic ephemeral sandy community. Associated species are: Cutandia maritima (L.) Barbey, Lagurus ovatus L., Maresia nana Batt., Pseudorlaya pumila Grande, and Vulpia membranacea (L.) Dumort. Schmitt (1994) also listed S. sericea in some vegetation plots made in northern Mallorca, where suitable habitats for S. migjornensis also exist. Further work is needed to locate possible additional populations in northern Mallorca.

Flowering period. End of March to early May.

Chromosome number. $2n = 24$ (Cardona & Contandriopoulos, 1983).
Figure 4. Scanning-electron micrographs of *Silene migjornensis*. A: Petal claw (abaxial surface). B: Hairs on petal claw (abaxial surface). C: Hairs on calyx lobe margin. D: Detail of hair on calyx lobe margin. E: Pollen grain. (L. Sáez, herb. pers., no. LS-5337).

**Taxonomic relationships**

Taxa of *Silene* sect. *Dipteropserma* constitute a difficult taxonomic aggregate in need of further work. Most species of this section are morphologically closely related. The group of plants that has been referred to *S. sericea* in a broad sense (Chater & Walters, 1964; Bolòs & Vigo, 1990; Chater *et al*., 1993) displays a geographically structured morphological variation, which allows the recognition of taxonomic entities at the species level (Valsecchi, 1995; Brullo *et al*., 2015, 2017). Our study reveals that plants from southern Mallorca traditionally identified as *S. sericea* var. *balearica*, should be considered as a separate taxon because of the well-defined morphological characters discriminating them from the other species currently recognized.

Selected characters of the most similar and likely most closely related taxa of *S. migjornensis* are shown in Tables 1 and 2, including *S. colorata*, which apparently seems to be non-closely allied. We also discuss the morphological relationships with *S. sericea*, which seem to be remote, so it is not included in Tables 1 and 2. The other taxa recognized within *Silene* sect. *Dipterosperma* show a quite different assemblage of characters (see Brullo *et al*., 2015, 2017) and are not need not to be dealt with.
Table 1. Selected characters of *Silene migjornensis* and most closely related species belonging to sect. *Dipterosperma*, based on our own results as well as Brullo et al. (2017).

| Character                                      | *S. migjornensis* | *S. nummica* | *S. crassiascula* | *S. melitensis* | *S. colorata* |
|------------------------------------------------|-------------------|---------------|-------------------|-----------------|---------------|
| Plant height (cm)                              | 5–35 (42)         | 5–10 (15)     | 10–22             | 10–25           | 20–30         |
| Plant indumentum                              | usually densely hairy | densely hairy | densely pilose-pubescent | densely pilose-pubescent | minutely pubescent |
| Stem                                           | prostrate-ascending | prostrate-ascending | prostrate-ascending | prostrate-ascending | erect         |
| Stem branching                                | at nodes, sometimes at the base, rarely at nodes | at nodes at the base | not or few branched |                |
| Lower internode length (cm)                   | 0.4–2.5           | 0.5–1.5       | 0.4–2             | 1–3             | 0.5–4         |
| Upper internode length (cm)                   | 1–5               | 1–3           | 2–4.5             | 1.5–6.0         | up to 7       |
| Leaf shape and thickness                      | oblongate to widely spathulate, succulent | narrowly spathulate, succulent | oblongate to widely spathulate, succulent | linear-spathulate, thin |
| Leaf size (mm)                                | 7–35 × 3–12       | 10–30 × 2–10  | 10–40 × 5–18      | 15–45 × 5–17    | 8–30 × 2–10   |
| Leaf apex                                     | rounded, sometimes subapiculate | rounded to obtuse | rounded          | sub-acute to apiculate |           |
| No. flowers and inflorescence type            | solitary          | usually solitary | (1)2–5 (2)      | helicoid monochasia | 4–10          |
| Bract length (mm)                             | 3–7               | 5–8 (10)      | 3–10              | 3–10            | 4–8           |
| Pedicel length (mm)                           | 3–12 (17)         | 5–20          | 5–18              | 2–8 (10)        | 2–10          |
| Calyx indumentum                              | tomentose-hirsute | tomentose-hirsute | minutely pubescent | tomentose-hirsute | minutely pubescent |
| Calyx length (mm)                             | 11.5–15.5         | 11–13         | 12–15             | 11.5–12.5       | 13–14 (15)    |
| Calyx teeth size (mm)                         | 2.3–3.5 × 1.5–2   | 2–2.5 × 1.4–1.8 | 2–2.8 × 1.5–2.5 | 2.5–2.7 × 1.3–1.6 | 2.0–2.5 × 1.4–2 |
| Calyx teeth shape                             | triangular-oblong to triangular, obtuse to subacute | ovalate-triangular, obtuse | ovalate-triangular, obtuse | ovate, rounded |           |
| Corolla colour                                 | pale pink to pink | pinkish to pink | purplish-pink     | pink to purplish-pink | purplish-pink |
| Petal length (mm)                             | 11.5–14           | 14–15         | 15.5–17           | 12.0–13.5       | 13–15         |
| Petal limb length (mm)                        | 5.0–7.0 (7.5)     | 7.5–8         | 8–10              | 6.5–7.0         | 7–9           |
| Petal lobe size (mm)                          | (3.5)4 × 2–3.5    | 5–5.5 × 3.5–4 | 6–6.5 × 3–5      | 4.8–5.2 × 2.2–2.7 | 5.0–5.5 × 2.5–2.7 |
| Petal lobeshape                               | obovate-spathulate | obovate-spathulate | spathulate       | obovate-spathulate | oblong         |
| Petal claw length (mm)                        | 6–7               | 7–7.5         | 7.5–8.5           | 6–7             | 6–8           |
| Claw back                                     | glabrescent, minutely pubescent in midrib | totally hairy | minutely pubescent in midrib | hairy in above midrib |           |
| Coronal scale length (mm)                     | 1.0–1.6           | 1.4–1.8       | 2–2.4             | 1.5–1.8 (2.0)   | 1.5–2.0       |
| Coronal scale shape                           | deeply retuse, white to pale pink, undulate below (rarely smooth) | totally incised, white, undulate below | deeply retuse, white, smooth | deeply retuse, white, undulate below |           |
| Stamens filament length (mm)                  | 8.0–9.5           | 9–10          | 8–10              | 6.5–9.0         | 6.5–8.5       |
| Anther colour                                  | pinkish           | greenish-white | pinkish           | pink-lilac       | yellowish-green |
| Anther length (mm)                            | 1.3–1.5           | 1.8           | 2                 | 1.6–1.8         | 1.8–2.0       |
| Ovary length (mm)                             | 3.0–3.5           | 3             | 3.5               | 2.2–3.0         | 2.4–2.8       |
| Capsule length (mm)                           | 5–7               | 4.5–6.5       | 8–9               | 7–8             | 7.5–8.0       |
| Carpophore                                     | 4.5–5.5           | 6–6.5         | 5–5.5             | 4.5–5.2         | 5–6           |

On morphological grounds, *S. migjornensis* is mainly related to *S. nummica* Vals., endemic to Sardinia and Sicily (Peruzzi et al., 2014), with which it shares most of the vegetative features (prostrate-ascending stems, leaves moderately succulent and rounded) and some reproductive features (solitary flowers, and flat seed wings). However, a careful comparison of their morphological features (Tables 1 and 2) shows relevant differences: *S. migjornensis* is easily distinguished from *S. nummica* by its longer calyx and calyx teeth, smaller petals lobes, shorter and pinkish anthers, shorter carpophore and by its glabrescent abaxial surface claw (vs. totally hairy in *S. nummica*) (Figures 1, 4). Regarding seed characters, several discontinuities also exist, like seed size, and dorsal furrow epidermal cell size and shape, among others (Table 2).
Morphological relationships with *S. colorata* (endemic to mountains of C and S Europe) appear to be more remote. This species can be easily discriminated by several characters, including erect stems, 4–10 flowers in dichasia, longer anthers and strongly undulate seed wings (Table 1). In addition, several seed characters allow an easy distinction between both species (Table 2).

*Silene sericea*, currently interpreted to be a Ligurian (north-western Italy) endemic species, (Valsecchi, 1995), can be easily separated by several vegetative and reproductive characters: erect stems; lanceolate leaves, longer calyx (18–22 mm long), longer capsule and carpophore (10–11 mm long and 12–14 mm long, respectively) (see Valsecchi, 1995 and Brullo et al., 2015).

Geographic isolation is most, likely, linked to the speciation processes occurred within *Silene* sect. *Dipterosperma*. Apparently, polyploidy is not present within the section and all cytologically known species are diploid (2n=24). In this context, the geographic isolation of *S. migjornensis* with respect to the morphologically-related *S. nummica* (endemic to Sardinia) is interesting. The importance of restricted gene flow and genetic drift as a major evolutionary force driving plant diversification in Mediterranean continental islands is well known (Mayol et al., 2012). Several, closely related taxa (putative sister species) replacing each other between the Balearic Islands and Corsica and Sardinia (and adjacent areas) are a well-documented phenomenon. Some examples include *Crocus cambessedesii* J. Gay vs. *C. minimus* DC., *Erodium richardii* (Murray) DC. vs. *E. corsicum* Lénan ex DC., *Helleborus lividus* Aiton vs. *H. corsicus* Willd., and *Urtica bianorii* (Knoche) Paiva vs. *U. atrovirens* Req. ex Loisel.

**Conservation status**

Following the categories and criteria of IUCN (Anonymous, 2012), our data so far indicate that *S. migjornensis* should be listed as EN (Endangered): B1ab(iii)+2ab(iii) c(ii-iv) based on: i) its geographic restriction: the extent of occurrence and the area of occupancy (calculated on a 2 × 2 km grid) is 12 km² (both values are 1.5 km² on a 0.5 × 0.5 km grid), ii) the number of locations or subpopulations (two locations are here recognized), iii) continuing decline inferred in area, extent and/or quality of habitat, and iv) extreme fluctuations in the number of mature individuals exist. The Balearic population is found in maritime dunes, so it is likely that anthropogenic disturbances (trampling and circulation of vehicles) can cause impact on *S. migjornensis*.

**Identification key**

In order to incorporate *S. migjornensis* into the recent identification key of the taxa of *Silene* sect. *Dipterosperma* (Brullo et al., 2017), thereby facilitating its identification, we present here a partial modification of this key. The key is the same until couplet #14, where it should be modified as follows:

14. Inflorescence (1–)2–3(–5)-flowered. Seeds with undulate wings..........................*S. melitensis*

Table 2. Comparison among seed features of *Silene migjornensis* and most closely related species belonging to sect. *Dipterosperma*, based on our own results and Brullo et al. (2017).

| Seed diameter (mm) | *S. migjornensis* | *S. nummica* | *S. crassiuscula* | *S. melitensis* | *S. colorata* |
|-------------------|-------------------|--------------|-------------------|-----------------|--------------|
| Seed wing         | flat              | flat         | undulate          | undulate        | undulate     |
| Lateral epidermal cell size (μm) | 60–200×20–45 | 80–170×20–35 | 140–222×27–45 | 100–200×20–37 | 65–110×22–30 |
| Periclinal wall shape | manifestly colliculate | manifestly colliculate | manifestly colliculate | slightly colliculate | manifestly colliculate |
| Periclinal wall surface | densely and irregularly microgranulate | rugose and sparsely microgranulate | densely and uniformly microgranulate | irregularly granulate | densely and uniformly microgranulate |
| Periclinal wall sculptures | spaced and irregular tubercles | spaced and regular tubercles | spaced and irregular tubercles | raised and thin | narrow and irregularly tuberculated |
| Anticlinal wall position | narrow and usually deeply depressed | deeply incised-depressed | narrow and slightly depressed | not lacerate | not lacerate |
| Anticlinal wall groove | not lacerate | lacerate | not lacerate | not lacerate | not lacerate |
| Anticlinal wall shape | more or less irregularly lobated | regularly and uniformly lobated | more or less regularly lobated | irregularly lobated | irregularly lobated |
| Anticlinal wall undulation | S-like | S-like | U-like | S-like | S-like |
| Dorsal furrow epidermal cell size (μm) | 50–90 | 40–55 | 60–90 | 80–160 | 80–115 |
| Dorsal furrow epidermal cell shape | stellate-elongate-elliptical to isodiametric | stellate-isodiametric | stellate-isodiametric | elongate-elliptical | subcircular-isodiametric |
| Dorsal furrow epidermal cell surface | 1 central and 1–4 lateral tubercles | 1 central and several lateral tubercles | 1–2 tuberculate | 1–3 tubercles | 1–2 tuberculate |
| Dorsal furrow epidermal cell tubercle | regularly microgranulate | regularly microgranulate | irregularly granulate | irregularly granulate | loosely macrogranulate |
| Dorsal furrow epidermal cell undulation | V-like or U-like | V-like | V-like | V-like | no undulations |
14° Flowers solitary. Seeds with flat wings............ 15
15° Petal claw totally hairy on the back. Carpophore 6.0–6.5 mm long......................... S. nummica
15' Petal claw glabrescent (minutely pubescent in midrib) on the back. Carpophore 4.5–5.5 mm long............................. S. migjornensis

Studied specimens

Balearic Islands, Mallorca: in sabulosis zonae littoralis prope Salobrar de Campos in consortio Helichrisi Stoechadis Legi d. 20 Apr. 1873, M.H. Willkomm [Herb. Balear n. 303] (COI, barcode COI00059139 [lectotype]); Puerto de Campos, 2 m asl, 16 Apr 1907, H. Knoche s.n. (MPU); La Ràpita (Mallorca), 14 May 1986, J. Orell s.n. (BC 676502); Platja des Trenc, 22 May 1984, I. Soriano s.n. (BCN 124394); Mallorca, Es Trenc, Campos, 31SDD9855, 2 m asl, maritime sands, 22 Apr 2000, L. Sáez LS-5337 (L. Sáez, herb. pers.); Mallorca, Ses Covetes, Campos, 31SDD9656, maritime sands, 22 Apr 2000, L. Sáez LS-5337 (L. Sáez, herb. pers.); Mallorca, entre sa Ràpita i Ses Covetes, Campos, 31SDD9656, maritime sands, 20 Apr 2017, E. Guasp s.n. (L. Sáez, herb. pers.); Mallorca, Es Trenc, Campos, 31SDD9855, 2 m asl, maritime sands, Apr 2017, E. Guasp (L. Sáez, herb. pers.; 8 specimens).

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