

Typification of *Aichryson pachycaulon* subsp. *praetermissum* and description of *A. roseum* sp. nov. (Crassulaceae) from Gran Canaria, Canary Islands, Spain

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Source: Willdenowia, 47(2) : 127-134

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: <https://doi.org/10.3372/wi.47.47204>

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Typification of *Aichryson pachycaulon* subsp. *praetermissum* and description of *A. roseum* sp. nov. (*Crassulaceae*) from Gran Canaria, Canary Islands, Spain

Version of record first published online on 10 July 2017 ahead of inclusion in August 2017 issue.

Abstract: A neotype and emended description are provided for the rare Gran Canaria endemic *Aichryson pachycaulon* subsp. *praetermissum* Bramwell (*Crassulaceae*) using a gathering from its original type locality. Additionally, *A. roseum*, a new species locally common on Gran Canaria, is described. Illustrations and comparisons with possibly related biennial plants of *A.* sect. *Aichryson* are also provided.

Key words: *Crassulaceae*, *Aichryson*, taxonomy, nomenclature, neotype, new species, chorology, Macaronesia, Canary Islands, Gran Canaria

Article history: Received 9 January 2017; peer-review completed 28 March 2017; received in revised form 30 April 2017; accepted for publication 9 May 2017.

Citation: Bañares Baudet Á. 2017: Typification of *Aichryson pachycaulon* subsp. *praetermissum* and description of *A. roseum* sp. nov. (*Crassulaceae*) from Gran Canaria, Canary Islands, Spain. – *Willdenowia* 47: 127–134. doi: <https://doi.org/10.3372/wi.47.47204>

Introduction

The genus *Aichryson* Webb & Berthel. (*Crassulaceae*) is confined to the Macaronesian region with a total of ten species endemic to the Canary Islands and three species distributed in Madeira and the Azores (Nyffeler 2003; Bañares 2015a). Furthermore, the Canarian endemic *A. laxum* (Haw.) Bramwell is naturalized in Portugal (Santos 1997). The genus is composed of two lineages in correspondence to habit and growth form. The first, comprising two perennial subspecies, is restricted to the eastern islands of Lanzarote and Fuerteventura (*A.* sect. *Macrobria* Webb & Berthel.) (Bañares & al. 2015b). The second lineage (*A.* sect. *Aichryson*) is made up of herbaceous, glabrous or tomentose annuals, biennials or triennials that are mostly of single-island endemics, except on Lanzarote (Fairfield & al. 2004).

Aichryson pachycaulon subsp. *praetermissum* Bramwell belongs to a taxonomically difficult species

complex of five subspecies (hereafter the *A. pachycaulon* group). This complex has also been accommodated within different species, each of them endemic to a single island and growing in similar wet habitats associated with the Macaronesian cloud forest known as “monteverde”. After cultivation of samples in uniform conditions, Bramwell (1977) carried out cytological and morphological comparisons of each taxon in this complex. Their morphological differences (mainly based on the size of flowers and the shape of leaf margins) led him to recognize them at the rank of subspecies, also including a new subspecies (*A. pachycaulon* subsp. *praetermissum*) endemic to Gran Canaria. However, his study revealed cytological evidence for an independent origin of each island population. Later, Fairfield & al. (2004) made a phylogenetic study of the genus, also revealing different parentages for the five subspecies and the need for re-examination of their correct classification.

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The short original description of *Aichryson pachycaulon* subsp. *praetermissum* as well as the absence of type material (see below) makes its identification difficult. However, the unique morphology of plants belonging to this taxon (tall habit and glabrous leaves) facilitates finding it on Gran Canaria. Bramwell's (1977) diagnosis reads "Herba biennis usque ad 50 cm; folia crenulata, margin nigropunctata; flowers ca 1 cm diametro". Fortunately, recent surveys revealed unequivocal identification of the subspecies in its original locality in the central region of Gran Canaria. In addition, plants of the subspecies were found at some other sites in northern, humid parts of the island, where selected material was collected for an emended description. According to my examination of the material, plants from Gran Canaria differ from the other subspecies of *A. pachycaulon* Bolle mainly by their leaves, which are sometimes scarcely puberulent, especially at the petiole, with crenate, black-dotted margins, and their strongly reddish-tipped petals.

The protologue of *Aichryson pachycaulon* subsp. *praetermissum* cites a specimen collected by Bramwell in 1976 at Presa de los Pérez, Gran Canaria and deposited in JVC (Jardín Botánico Canario Viera y Clavijo in Las Palmas de Gran Canaria, now LPA, herbarium codes according to Thiers 2017+). My enquiry to this herbarium suggests that this specimen is lost. Furthermore, requests of potential duplicates of this specimen from other herbaria (K, RNG, SE), where the author deposited material when the original description was published (Bramwell pers. comm.), resulted only in finding other *Aichryson* collections. However, none corresponded to *A. pachycaulon* subsp. *praetermissum*. In order to provide nomenclatural stability for this name, Articles 9.11 and 9.13 of the ICN (McNeill & al. 2012) were followed, and a new gathering from the original type locality was used to neotypify the name. The neotype is in conformity with the original description provided by the author in the protologue.

This paper aims to contribute to the nomenclature, distribution and conservation status of *Aichryson pachycaulon* subsp. *praetermissum*, a poorly known, rare subspecies endemic to Gran Canaria. It has been classified as Endangered following the latest IUCN criteria (Bañares & al. 2004). An emended description using material from the original locality is provided and the name is neotypified.

This paper also describes a new species, *Aichryson roseum*, which is relatively common on Gran Canaria. Comparisons with possibly related, biennial, pubescent-leaved taxa of *A. sect. Aichryson* are provided.

Aichryson pachycaulon* subsp. *praetermissum Bramwell in Bot. Macaronés. 4: 111. 1977. – Holotype [from protologue]: "Gran Canaria: side of spring below humid cliffs, Presa de los Pérez 700 m", 1976, Bramwell (JVC [apparently lost]). – **Neotype (designated here)**: Spain, Canary Islands, Gran Canaria, "Presa de los Pérez – Lugarejos", 3 May 2015, Bañares 48706 (TFC; isoneotype: B).

Description — Herbs biennial, dark green, rarely scarcely reddish, branched, 15–30 cm tall, 50–60 cm in flower. Stem usually prostrate, to 0.9 cm in diam. in adult plants, glabrous; branches to 0.4 cm in diam. Leaves forming rosettes; petiole to 4 cm, sometimes scarcely puberulent; lamina rhombic, 1.8–3 cm wide, glabrous (rarely with some dispersed hairs toward base), margin with scarcely prominent papillae generally forming hyaline bands, scarcely crenate and usually black-dotted, apex retuse. Inflorescence a lax panicle, 2(or 3)-branched, c. 20-flowered; peduncle glandular pubescent; bracts similar to leaves but reduced in size, glandular pubescent, generally absent at apex; pedicels to 1 cm, glandular pubescent. Flowers 7- or 8-merous. Calyx glandular pubescent, divided for up to $\frac{2}{3}$ its length into lanceolate acute and reddish-tipped segments c. 3×0.8 –1 mm. Petals yellow, lanceolate, 5 – 6×1.5 – 2.5 mm, 1.3 – $1.5 \times$ as long as calyx, abaxially scarcely puberulent, apex with reddish apiculum to 1 mm. Stamens yellow, glabrous. Carpels adaxially puberulent. Nectaries pedicellate, palmate, c. 0.7×0.3 mm. Seeds brown, 0.4 – 0.6×0.15 – 0.35 mm, highly fertile.

Phenology — Flowering in April and May.

Illustrations — Fig. 1, 4A, B; Bañares & al. (2004: 572); Bañares (2015a: 203).

Distribution — *Aichryson pachycaulon* subsp. *praetermissum* is a very local plant found in humid rocks of the potential habitat of the monteverde forest in NW Gran Canaria at altitudes of 700–1100 m (Fig. 3). Since its discovery in the NW central region of Gran Canaria, between Tamadaba and Juncalillo (Bramwell 1977), the plant has been reported by Kunkel (1977), Suárez (1994), Bañares & al. (2004) and Bañares (2015a). An accurate survey of this area undertaken for the present study revealed local presence of the plant, particularly in wet sites, in Valsendero (UTM-WGS84: 28RDS415018), Barranco del Agua de Fontanales (UTM-WGS84: 28RDS400011), above Barranco del Andén (UTM-WGS84: 28RDS407002), and Presa de Lugarejos to Presa de los Pérez (UTM-WGS84: 28RDS340024; 28RDS346024).

Additional specimens examined — SPAIN: CANARY ISLANDS: GRAN CANARIA: Presa de los Pérez – Lugarejos, 27 Mar 1988, Roca & Marrero 16706 (LPA); *ibid.*, 27 Apr 1988, Roca & Marrero 16707 (LPA); near El Hornillo, 1 May 2002, Bañares & A. Acevedo 43411 (TFC); *ibid.*, 1 May 2002, Bañares & A. Acevedo 43412 (TFC); Barranco del Agua de Fontanales, Apr 2011, Bañares 48710 (TFC); Valsendero, 1050 m, May 2014, Bañares 48711 (TFC).

***Aichryson roseum* Bañares, sp. nov.**

Holotype: Spain, Canary Islands, Gran Canaria, "Fontanales (beginning of the track to Valsendero)", 4 May 2015, Bañares 48705 (TFC; isotype: B).

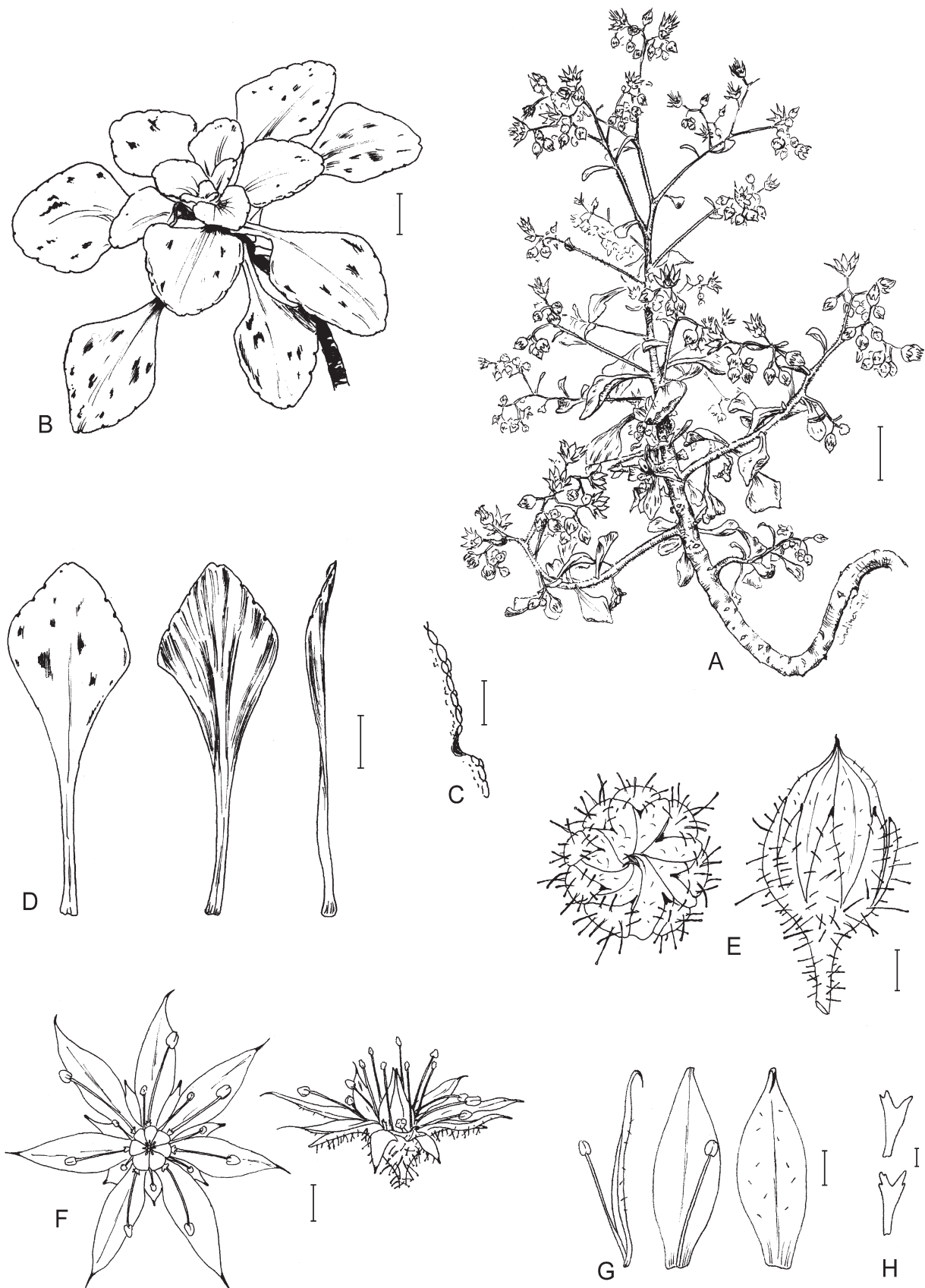


Fig. 1. *Aichryson pachycaulon* subsp. *praetermissum* – A: plant; B: leaf rosette; C: leaf margin; D: leaves, adaxial, abaxial and lateral views; E: flower buds, apical and lateral views; F: flowers, apical and lateral views; G: petals and stamens, lateral, adaxial and abaxial views; H: nectaries. – Scale bars: A = 3 cm; B, D = 1 cm; C = 0.5 mm; E, G = 1 mm; F = 2 mm; H = 0.3 mm. – Drawings made from *Bañares 48711* (TFC).

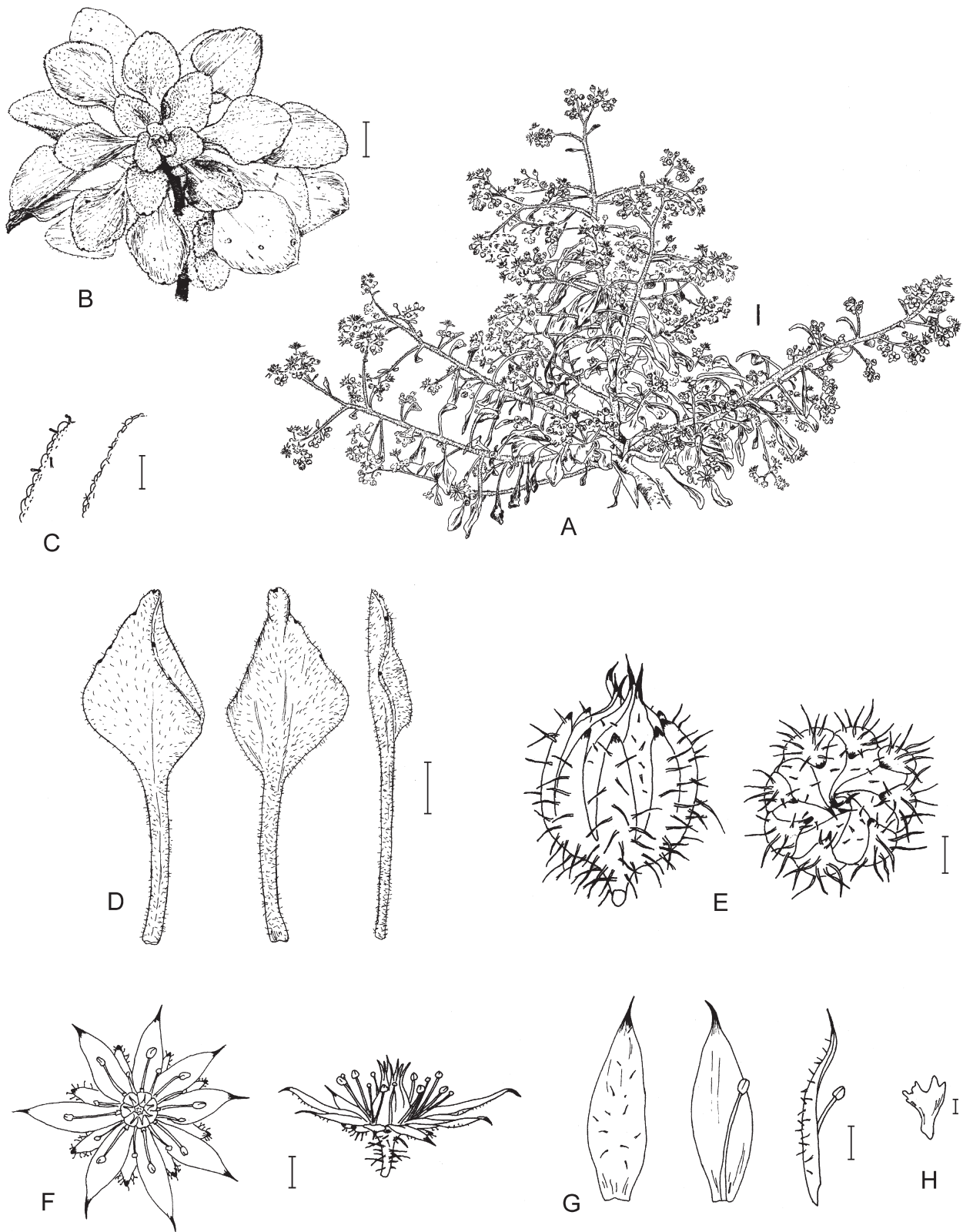


Fig. 2. *Aichryson roseum* – A: plant; B: leaf rosette; C: leaf margin; D: leaves, adaxial, abaxial and lateral views; E: flower buds, lateral and apical views; F: flowers, apical and lateral views; G: petals and stamens, abaxial, adaxial and lateral views; H: nectary. – Scale bars: A = 2 cm; B, D = 1 cm; C, E, G = 1 mm; F = 2 mm; H = 0.1 mm. – Drawings made from the holotype.

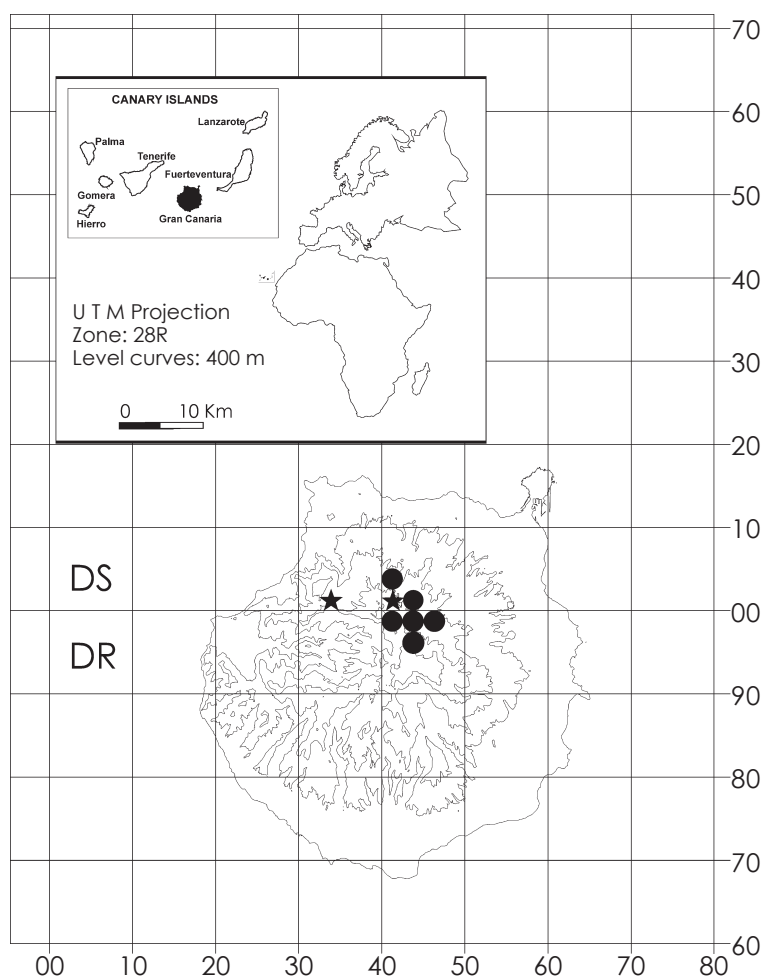


Fig. 3. Distribution of *Aichryson pachycaulon* subsp. *praetermissum* (★) and *A. roseum* (★, ●) on the island of Gran Canaria.

Description — *Herbs* biennial, green and usually suffused with pink or reddish, with odour of cheese especially in humid and temperate seasons, branched to densely branched, 15–20 cm tall, to 30 cm in flower. *Stem* sometimes prostrate, to 1 cm in diam. in adult plants, glabrous, rarely glabrate; *branches* to 0.5 cm in diam. *Leaves* forming rosettes; *petiole* to 3.5 cm wide; *lamina* rhombic, undulate, especially in dry seasons, 1.5–2 × 1.5–2 cm, glandular pubescent, greasy to subviscid, indumentum sometimes sparse adaxially but abundant abaxially and along petiole, margin densely papillose, crenate, black-dotted, apex weakly retuse. *Inflorescence* a dense panicle, 2(or 3)-branched, 10–50-flowered; *peduncle* glandular pubescent; *bracts* similar to leaves but reduced in size, glandular pubescent, those at apex of peduncle oblanceolate; *pedicels* 4–5 mm, glandular pubescent. *Flowers* 7- or 8-merous. *Calyx* glandular pubescent, divided for up to ⅔ its length into lanceolate, acute to sub-apiculate, reddish-tipped segments 3–3.4 × 1–1.2 mm. *Petals* yellow, elliptic to lanceolate, 5–5.5 × 2–2.1 mm, 1.3–1.5 × as long as calyx, abaxially puberulent, apex with reddish apiculum to 1 mm. *Stamens* yellow, glabrous. *Carpels* adaxially puberulent. *Nectaries* pedicel-

late, palmate, 0.7–0.8 mm. *Seeds* brown, 0.35–0.5 × 0.1–0.2 mm, striate, highly fertile.

Phenology — Flowering in April and May.

Illustrations — Fig. 2, 4C, D.

Distribution — *Aichryson roseum* is widely distributed in shady and humid rocks and slopes in N and NW Gran Canaria at altitudes of 850–1200 m (Fig. 3). It is known from Fontanales (UTM-WGS84: 28RDS404031; 28RDS403038), cercanías de Utiaca, Las Lagunetas, Lanzarote (UTM-WGS84: 28RDS429013; 28RDS430010; 28RDS420000; 28RDS410000; 28RDR 420995; 28RDR425990), Valleseco, Cuevas de Corcho (UTM-WGS84: 28RDS414000), Valsendero to Barranco El Chorrillo (UTM-WGS84: 28RDS413020), and Presa de los Pérez (UTM-WGS84: 28RDS346024).

Etymology — *Aichryson roseum* is named for the pinkish or reddish hues of the plants.

Additional specimens examined — SPAIN: CANARY ISLANDS: GRAN CANARIA: Utiaca – San Isidro, May 2002, *Bañares & A. Acevedo* 43433 (TFC); Teror – Valleseco, May 2002, *Bañares* 48703 (TFC); Valsendero, May 2007, *Bañares* 48707 (TFC); *ibid.*, Apr 2011, *Bañares & O. Bermúdez* 48704 (TFC); Lanzarote, Apr 2011, *Bañares* 48708 (TFC); near Fontanales, Apr 2011, *Bañares & O. Bermúdez* 48709 (TFC).

Comparison with other species — *Aichryson roseum* is a biennial, pubescent-leaved plant to be included in *A. sect. Aichryson* (Bramwell 1977). Other remarkable features are its glabrous stem, its reddish, undulate, subviscid leaves with a crenate margin displaying black dots, and its reddish, apiculate petals. Among the biennial pubescent-leaved species of *A. sect. Aichryson* (Bañares 2002), this combination of characters is observed only in *A. roseum*. Following the key for this section provided by Bañares (2002), the new species is close to *A. bollei* Webb ex Bolle (endemic to La Palma) and *A. bituminosum* Bañares (endemic to Gran Canaria). The former species differs by its densely glandular pubescent stem and leaves, which are never undulate, and by its short-tipped petals. *Aichryson bituminosum* differs by its simple habit and strongly glandular pubescent stem and leaves; its leaves are not undulate, not or only slightly crenate, and its petals are not reddish-tipped. *Aichryson roseum* is also different from *A. porphyrogennetos* Bolle (endemic to Gran Canaria), which has robust, many-branched



Fig. 4. *Aichryson pachycaulon* subsp. *praetermissum* (A, B) and *A. roseum* (C, D) in habitat in Gran Canaria. – A, C: flowering plants; B, D: non-flowering leaf rosettes. – A: Presa de los Pérez-Lugarejos (neotype locality), 3 May 2015; B: Barranco del Agua de Fontanales, Feb 2011; C: near Fontanales, 1 May 2006; D: Fontanales, 15 May 2015. – All photographs by Ángel Bañares Baudet.

plants; wholly pubescent stems; larger, more pubescent leaves with the margin non-crenulate and lacking black dots; and apiculate petals not reddish-tipped. *Aichryson pachycaulon* subsp. *praetermissum* (Gran Canaria) has tall plants (up to 60 cm in flower), glabrous stems, and dark green, non-undulate leaves, which are glabrous but sometimes slightly puberulent and not viscid. Finally, robust plants of *A. parlatoarei* Bolle (endemic to El Hierro, La Palma, La Gomera, Tenerife and Gran Canaria) differ from *A. roseum* by having an annual life-span, simple or branched, pubescent stems, narrower leaves (0.7–1.5 cm wide), usually broadest near apex, and simple or 1- or 2-branched inflorescences.

Remarks — *Aichryson roseum* is widely distributed on Gran Canaria, however, its identity has possibly been overlooked by authors due to misinterpretations of similar and possibly related species, most likely *A. parlatoarei* and *A. pachycaulon* subsp. *praetermissum* (see comparisons above). The abundance of the new species excludes the possibility of a hybrid origin. Interspecific hybridization processes are, however, a common feature in the Canary Island endemic flora (van Hengstum & al. 2012) and many hybrids have been described between sympatrically occurring *Crassulaceae* species (Praeger 1932; Bañares 2015a; Voggenreiter 1999). Such hybrid plants appear in small numbers or as single plants around their parents not only in habitats newly created by human activities but also (less commonly) in their own original, unaltered locations. Additionally, the genus *Aichryson* seems not to be prone to hybridization when compared to other *Crassulaceae* genera found in this archipelago, since only three nothotaxa have been described from 16 taxa. In contrast, there are 54 nothotaxa from 41 taxa in *Aeonium* Webb & Berthel. and 10 nothotaxa from 11 taxa in *Monanthes* Haw. (Bañares 2015a, 2015c). On Gran Canaria, only the hybrid between *A. laxum* subsp. *laxum* and *A. porphyrogenetos* has been reported; it is very local and scattered between the parents due to the absence of intermediate habitats. In the field, *A. roseum* is commonly found forming monospecific populations; however, it co-occurs in several locations with *A. porphyrogenetos* or with *A. pachycaulon* subsp. *praetermissum*. At the locality of Presa de los Pérez only, *A. roseum* appears co-occurring with two other taxa, *A. pachycaulon* subsp. *praetermissum* and *A. parlatoarei*, but their presence does not obscure the taxonomy of the new species, since its morphology is unequivocally the same as plants found at other localities throughout its wide distribution area.

Acknowledgements

The author is indebted to Dr. S. A. Ghazanfar (K), Dr S. Mott (RNG), Dr F. J. Salgueiro (SE) and Dr A. Marrero (LPA) for their help in trying to locate original mate-

rial of *Aichryson pachycaulon* subsp. *praetermissum*. Aurelio Acevedo collaborated in field surveys, Carlos M. Rodríguez made the line drawings and Guido Jones checked the English. Dr Urs Eggli and two anonymous reviewers are thanked for their comments on an earlier version of this paper.

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Willdenowia

Open-access online edition www.bioone.org/loi/will 

Online ISSN 1868-6397 · Print ISSN 0511-9618 · Impact factor 0.680

Published by the Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin

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