

A new hybrid of *Saxifraga* L. (Saxifragaceae)

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Resumen

Un nuevo híbrido de Saxifraga L. (Saxifragaceae)

Se describe un nuevo híbrido natural del género *Saxifraga* L. en la provincia de Almería, *Saxifraga* × *cuatrecasasii* nothosubsp. *ivorrae* Lahora, nothosubsp. nov. [*S. camposii* Boiss. & Reut. subsp. *leptophylla* (Willk.) D.A.Webb × *S. erioblasta* Boiss. & Reut.] y se tipifica *Saxifraga* × *cuatrecasasii* nothosubsp. *cuatrecasasii*. Se aporta también información nomenclatural y corológica sobre los parentales y los híbridos.

Palabras clave: Saxifragaceae; *Saxifraga*; Híbrido; Tipificación.

Abstract

A new natural hybrid of *Saxifraga* from the Almería province (Spain) is described, *Saxifraga* × *cuatrecasasii* nothosubsp. *ivorrae* Lahora, nothosubsp. nov. [*S. camposii* Boiss. & Reut. subsp. *leptophylla* (Willk.) D.A.Webb × *S. erioblasta* Boiss. & Reut.], and *Saxifraga* × *cuatrecasasii* nothosubsp. *cuatrecasasii* are typified. Nomenclatural and chorological information about the parents and hybrids is also provided.

Key words: Saxifragaceae; *Saxifraga*; Hybrid; Typification.

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Received: 16 March 2025

Accepted: 25 July 2025

Published on-line: 1 September 2025

Introduction

Saxifraga L. (Saxifragaceae) is a subcosmopolitan genus well represented in the Iberian Peninsula (Engler & Irmischer 1916, Webb & Gornall 1989, Webb 1993, Vargas 1997, Mota *et al.* 2009).

Hybrid speciation plays a key role in the evolution of this genus, which adds interest to the description of new natural hybrids (Díaz-González *et al.* 1989, Vargas & Nieto-Feliner 1996, Vargas 2000, McGregor 2008, Tkach *et al.* 2015, Ebersbach *et al.* 2020).

A hybrid, *Saxifraga* × *sorianoi* García Maroto & Gómez-Merc. [*S. granulata* L. × *S. trabutiana*

Engl. & Irmisch.], was described from de Sierra de los Filabres in the province of Almería (García-Maroto & Gómez-Mercado 2003). Another hybrid, *Saxifraga* × *cuatrecasasii* Font Quer [*S. camposii* Boiss. & Reut. subsp. *camposii* × *S. erioblasta* Boiss. & Reut.], was cited in Sierra de Lúcar (Almería, Spain) by Pallarés (1987). This hybrid was described by Font Quer (1928) from Sierra Mágina (Jaén, Spain).

However, two subspecies are accepted in one of the parents, *S. camposii* subsp. subsp. *camposii* present in Sierra Mágina, and *S. camposii* subsp. *leptophylla* (Willk.) D.A.Webb which is the taxon living in Almería (Cuatrecasas, 1929;



Vargas, 1997: 219).

In this paper, a new hybrid of the genus *Saxifraga* is described in the province of Almería. Taxonomic and nomenclatural information on the parents is provided and, *S. ×cuatrecasasii* is also typified.

Materials and methods

For the description of the hybrid, information is provided on the taxonomic identity of the parent taxa according to ICBN recommendation H.5A.1 (Turland *et al.* 2018), including nomenclature, bibliographic reference, protologue locality and type; biogeographical and phytosociological information is also provided. The identity sign ‘≡’ precedes homotypic synonyms. Author citations are abbreviated according to Brummitt & Powell (1992) as updated in IPNI (2024). Book titles are abbreviated according to Stafleu & Cowan (1976-1988), but always with initial capital letters.

The morphological characters analysed are based in part on those used by Fernández-Areces *et al.* (1992) and Vargas (1997). An Optika Lab-20 binocular stereomicroscope was used for the morphological study. Original material and digital images from BC, COI, G, GDA, MA and MUB herbaria have been reviewed. Acronyms according to Index Herbariorum (Thiers, 2020+). The handling and measurements of the images of herbarium specimens were performed using the digital tool Annotate-on v1.9.56 (RECOLNAT-ANR-11-INBS-0004).

UTM coordinates, Datum WGS84, were captured with the Zamiadroid 2.7.3 application installed on a smartphone. The distribution map was produced with QGIS 3.40 software using Anthos and GBIF data revised and confirmed by consulting the original bibliographic reference and Vector and Raster Cartography of Spain of the National Geographic Institute (IGN, <http://www.ign.es>).

Results

Saxifraga ×cuatrecasasii Font Quer nothosubsp. *ivorrae* Lahora, **nothosubsp. nov.**

[*S. camposii* Boiss. & Reut. subsp. *leptophylla* (Willk.) D.A. Webb × *S. erioblasta* Boiss. & Reut.]

Holotype: España, Almería, Piedra Lobera, Sierra de Lúcar. UTMX: 547385, UTM Y: 414578, 1645

msnm, grietas de roquedos calizos, entre los parentales. 16-VI-2022, leg. A. Ivorra, F. Luque & A. Lahora. MUB-SURESTE 116391.

Isotypes: Idem. MUB-SURESTE 116386, MUB-SURESTE 116387, MUB-SURESTE 116388, MUB-SURESTE 116389, MUB-SURESTE 116390. MA-01-00967026, HUAL 30701.

Diagnosis: Differing from *S. camposii* subsp. *leptophylla* by its smaller size, up to 13 cm; presence of stipitate glands, glanduliferous hairs, summer buds, and pink petals after anthesis. Differing from *S. erioblasta* by its larger basal leaves 8-9 mm, all three-lobed, summer buds not lanuginose; greater number of flowers (5-9) and acute sepals.

Description: Perennial, lax cushion, with sessile and stipitate glands, and glanduliferous hairs. Basal leaves 8-9x3-3.5 mm, petiolate, with sessile and stipitate glands; lamina 3-lobed, acuminate. Summer-dormant buds 15-20 mm long-stalked, obovoid 7.5x3 mm, semi-closed, their outermost leaves with membranaceous petioles, 3-lobed, inner leaves with long marginal hairs. Flowering stems up to 13 cm, terminal, erect, with sparsely sessile glands at the base and glandular hairs at the floriferous part, with 3-4 cauline leaves, the lowest 3-lobed, the uppermost entire. Flowers 5-9 in a cyme with entire bracts. Pedicels, hypanthium, and sepals covered with sessile and stipitate glands. Sepals 2.5-3x1.5-2 mm narrowly deltate. Petals 4.5x2.5 mm obovate, initially white, but turning pink later. Ovary inferior. Seeds not seen.

Etymology: The epithet of the name of this nothospecies is dedicated to Andrés Ivorra, a great connoisseur of the flora of Almería province.

Saxifraga ×cuatrecasasii Font Quer nothosubsp. *cuatrecasasii* in Cavanillesia 1: 36 (1928) [*S. camposii* Boiss. & Reut. subsp. *camposii* × *S. erioblasta* Boiss. & Reut.]

Ind. loc.: "Hab. in fissuris rupium calc. praeruptarum ad septentrionem spectantibus montis Sierra Mágina dicti (Regno Giennense) ca. 1800 m. alt., ubi, inter parentes, cl. Cuatrecasas, d. 30 junii 1925, detexit."

Lectotypus (hic designatus): [Spain, Jaén] "SCIENTIUM NATURALIUM BARCINONENSE MUSEUM / SECTIO BOTANICA / × Saxifraga Cuatrecasasii F.Q. typus / = × Saxif. Campoi Boiss. Reut. x *S. erioblasta* Boiss Reut / HAB. in Sierra Mágina, in rupium fissuris ad septentrionem spectantibus, versus 1800 m alt. inter par. /

LEGIT Cuatrecasas, 30 Junii 1925 COM. F. Q. / 23767". BC (barcode [BC23767!](#)).

***Isolectotypus* (hic designatus):** [Spain, Jaén] "23768 / HERBARIUM CUATRECASAS / FLO- RA HISPANICA / PLANTAE A SIERRA MÁGI- NA (REGNO GIENNENSE) LECTAE / × Saxi- fraga Cuatrecasasii F.Q., typus / = × Saxifr. Cam- poi Boiss. Reut. × *S. erioblasta* Boiss. Reut. / In fissuris rupium calcarearum ad septentrionem / spectantibus, versus 1800 m alt. inter parentes /

Leg. Cuatrecasas 30 Junii 1925 det. F. Q.". BC (barcode [BC23768!](#)).

Nomenclatural information on the parents of both hybrids is listed below.

Saxifraga camposii Boiss. & Reut. subsp. *cam- posii*, Pugill. Pl. Afr. Bor. Hispan.: 47 (1852)

Ind. loc.: "Hab. in rupibus montis Sierra de Loja regni Granatensis"

Lectotypus [designated by Webb & Gornall (1989: 220)]: [Spain, Granada] "Boissier et Reu-

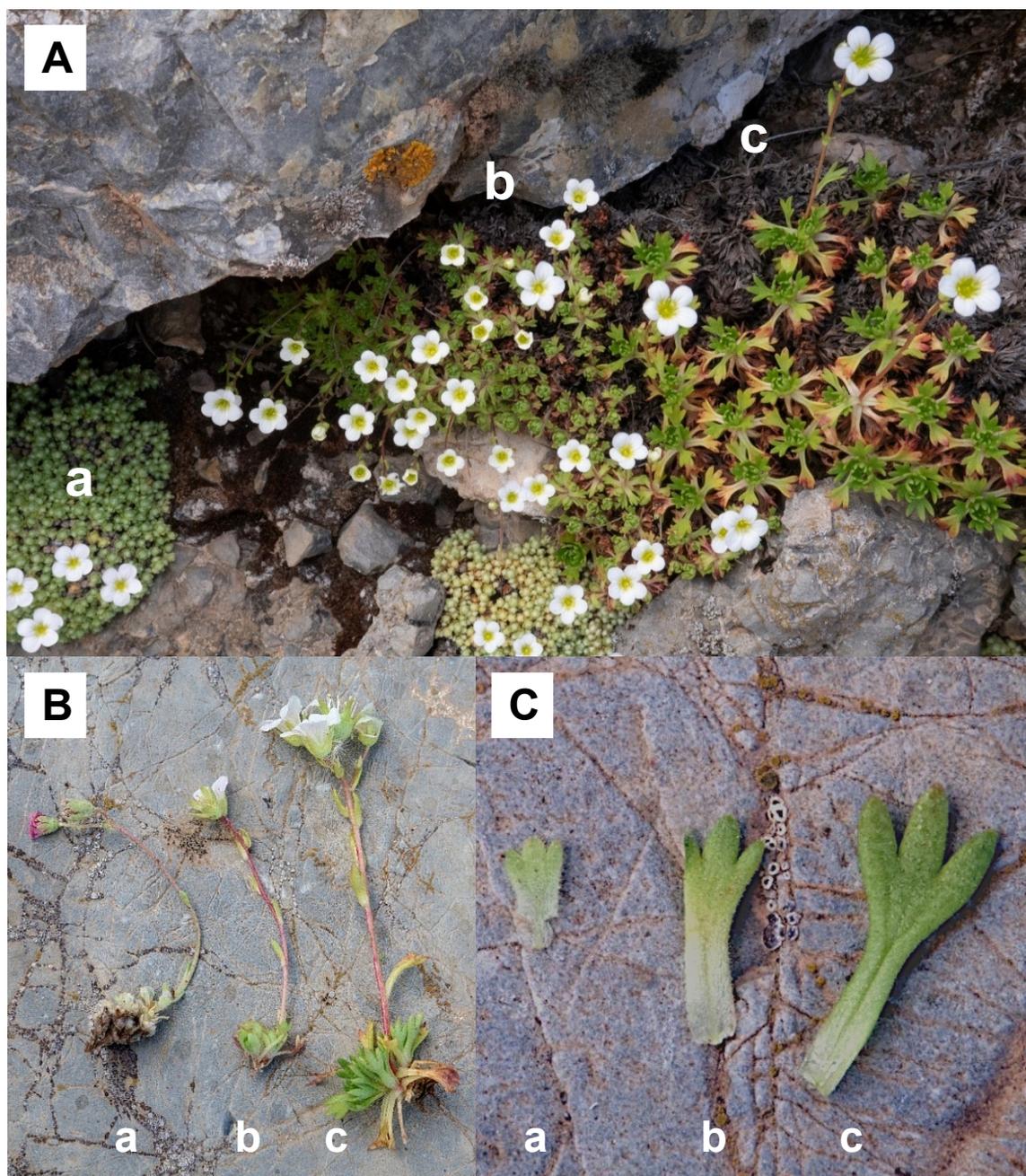


Figura 1. A: Hábito; **B:** plantas en flor; **C:** hojas basales. **a:** *Saxifraga erioblasta*, **b:** *S. ×cuatrecasasii* nothosubsp. *ivorrae* y **c:** *S. camposii* subsp. *leptophylla*. Fotografías de Andrés Ivorra.

Figure 1. A: Habit; **B:** floriferous plants; **C:** basal leaves. **a:** *Saxifraga erioblasta*, **b:** *S. ×cuatrecasasii* nothosubsp. *ivorrae* and **c:** *S. camposii* subsp. *leptophylla*. Photographs of Andrés Ivorra.

ter. /Iter Algeriensi-Hispanicum. / *Saxifraga Camposii* Boiss et Reut. / Hispania. Sierra de Loja, ubi fin. Jun. 1849. / eam detexit el Pedro Campos” [sic]. G-BOIS (barcode [G00388986!](#)).

Saxifraga camposii Boiss. & Reut. subsp. ***leptophylla*** (Willk.) D.A.Webb in Feddes Repert. Spec. Nov. Regni Veg. 68(3): 204 (1963) \equiv *Saxifraga camposii* var. *leptophylla* Willk. in Willk. & Lange, Prodr. Fl. Hispan. 3(1): 113 (1874) \equiv *Saxifraga camposii* f. *leptophylla* (Willk.) Luizet in Bull. Soc. Bot. France 64(1-9): 104 (1917) \equiv *Saxifraga almeriensis* Willk. ex P.Vargas in Anales Jard. Bot. Madrid 54(1): 194 (1996)

Ind. loc.: "β. in regno Granat. (Sierra de Maria et La Sagra ad alt. 5000-6500', Wk. 1845, Fk., 1852)"

Lectotypus [designated by Vargas (1996: 194)]: [Spain, Almería] "1224. *Saxifraga almeriensis* Willk. n. sp. / Sierra de Maria in fissuris rupium umbrosis / lateris borealis c. 5500 – 6500' / 12. VII. 45. Willkomm." COI (barcode [COI00060659!](#)).

Saxifraga erioblasta Boiss. & Reut. in Boiss., Diagn. Pl. Orient. ser. 2, 2: 67. 1856

Ind. loc.: "Hab. in montibus calcareis siccis regni Granatensis maritimi in regione alpinâ S. Tejada, S. Nevada, S. de Lujar (Willkomm), S. de Baza (Bourgeau)" [sic]

Lectotypus [designated by Webb & Gornall (1989: 175)]: [Spain, Granada] "Herb. E. Boissier. / *Saxifraga spatulata* Desf. / in rupibus calcar. Sierra Tejada et Nevada. / Jun. 1837. Alt. 4500' – 6700'." G-BOIS (barcode [G00388969!](#)).

Discussion

Photographs of a *Saxifraga* hybrid (sub *S. ×cuatrecasatii*) and both parents (Fig. 1) at the Piedra Lobera in Lúcar (Almería) were published on the Almerinatura website (Ivorra 2024).

At that locality, the hybrid was previously cited by Pallarés (1987: 250-251), who provided a description in Spanish and a detailed iconography of Mary Anne Kunkel (Fig. 2). However, this hybrid does not have a valid name because the taxon living in Almería is *S. camposii* subsp. *leptophylla*.

To confirm this, material was collected from the hybrid and from both parents during a visit to the locality with Andrés Ivorra and Francisco Luque 'Faluke'.

Morphological analysis of the collected specimens (Table 1) confirms the presence of *S. camposii* subsp. *leptophylla* and *S. erioblasta* in Sierra de Lúcar, and its hybrid.

Vegetative and floral characters of *Saxifraga ×cuatrecasatii* nothosubsp. *ivorrae* are morphologically intermediate between the two parents. However, in the population studied, individuals morphologically closer to one or the other of the parents have been observed. It would be interesting to study this variability, as it could be a hybrid swarms process of introgression and speciation, that is not uncommon in the genus *Saxifraga* (Ebersbach *et al.* 2020).

The hybrid and parents live together in chasmo-

	<i>S. camposii</i> subsp. <i>leptophylla</i>	<i>S. ×cuatrecasatii</i> nothosubsp. <i>ivorrae</i>	<i>S. erioblasta</i>
Habit	lax cushion	lax cushion	dense cushion
Indumentum	glabrous, viscid, with sunken glands	sessile and stipitate glands, and glanduliferous hair	sessile and stipitate glands, and glanduliferous hair
Basal leaves (mm)	15-30 × 8-13	8-9 × 3-3.5	3-8 × 1-2
Basal leaves lobes (n°)	5-7	3	1-3
Basal leaves apex	acuminate	acuminate	obtuse
Floriferous stem (cm)	up to 20	up to 13	up to 15
Cauline leaves (n°)	2-4	3-4	1-5
Cauline leaves lobes	1-3	1-3	1
Summer buds	absent	present	present
Flowers (n°)	6-15	5-9	1-3
Sepals (mm)	4-6 × 1	2.5-3 × 1.5-2	1.5 × 2.5
Petals (mm)	6-10 × 3-5	4.5 × 2.5	(3)4-5(7) × 2-4(5)
Seeds (mm)	0.5-0.9 × 0.25-0.45	not seen	0.6 × 0.3

Tabla 1. Comparación de caracteres morfológicos entre el híbrido y los parentales.

Table 1. Comparison of morphological characters between hybrid and parents.

phytic communities of limestone rocks within the Betic alliance *Saxifragion camposii* Cuatrecasas ex Quézel (Martínez-Parras & Peinado-Lorca 1990, Mota *et al.* 1991), accompanied by *Cerastium gibraltarium* Boiss., *Crepis albida* Vill., *Linaria verticillata* Boiss., *Silene saxifraga* L., *Sedum dasyphyllum* L., *Teucrium rotundifolium* Schreb.

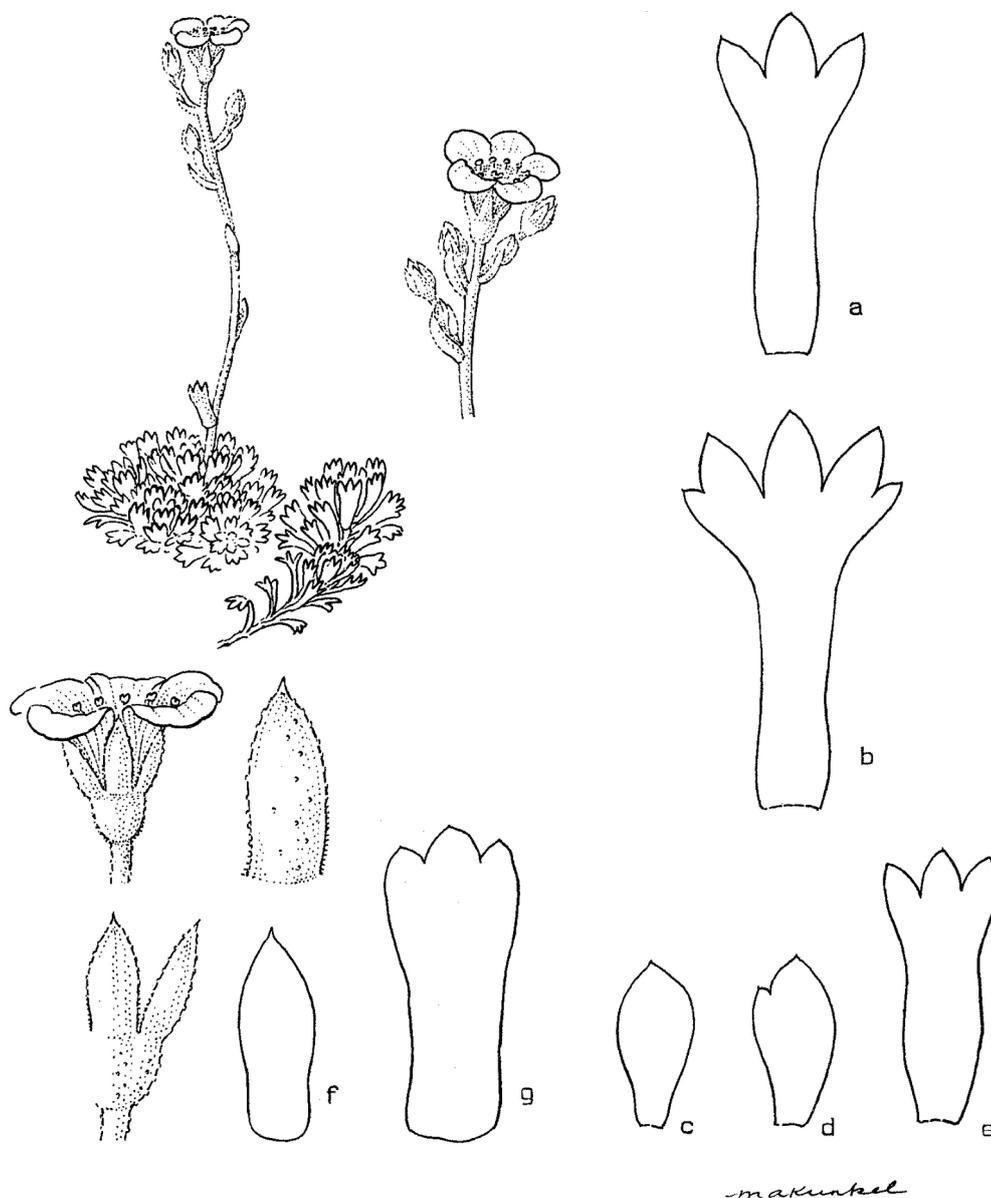
From a biogeographical perspective, the Sierra de Lúcar is part of the Betic Province, Hoyas of Guadix and Baza Sector, Estancias Sierran District (Rivas-Martínez *et al.* 2017).

Regarding the parents, *S. camposii* is included

in Ser. *Pentadactyles* (Lázaro Ibiza) P.Vargas and *S. erioblasta* belongs to Ser. *Gemmiferae* (Willk.) Pawłowska, both of Sect. *Saxifraga* (Vargas 1991, 1997).

S. camposii was discovered by the collector Don Pedro del Campo in the Sierra de Loja (prov. Granada) and was first described by Boissier & Reuter (1852). It was typified by Webb & Gornall (1989).

S. camposii subsp. *leptophylla* was first described as a variety by Willkomm (Willkomm 1874) with material from Sierra de María (Almería); it was considered as a form by Luizet



Saxifraga × *cuatrecasii* Font Quer. Planta y yema hibernante a tamaño natural. Inflorescencia × 2, flor × 3, sépalo × 10. Hojas basales (a, b, c, d, e) × 6 hojas caulinares (f, g) × 6.

Figura 2. *Saxifraga* × *cuatrecasii* nothosubsp. *ivorrae* Lahora. (Pallarés, 1987: 251, sub *S.* × *cuatrecasii*). Reproducción autorizada.

Figure 2. *Saxifraga* × *cuatrecasii* nothosubsp. *ivorrae* Lahora. (Pallarés, 1987: 251, sub *S.* × *cuatrecasii*). Reproduction authorized.

(1917) and elevated to the rank of subspecies by Webb (1963). It was typified by Vargas (1996). It has sufficient morphological and karyological differences to be considered an independent subspecies or a species known as *S. almeriense* Willk. ex P.Vargas (Willkomm 1881, Vargas 1996). It is distinguished by its clearly differentiated petioles, flabellate leaves with 3-5 narrow mucronate divisions, narrower sepals, and number of chromosomes $n=32$; compared to poorly differentiated petioles, cuneate-shaped leaves, and $n = 30, 31$ of subsp. *camposii*. They also have well-defined distribution areas, *S. camposii* subsp. *camposii* is found in the Betic systems from the Serranía de Ronda to Sierra Mágina and Cerro Jabalcón (Ca, Co, Gr, J, Ma). The subsp. *leptophylla* extends to the eastern Betic systems (Ab, Al, Gr, J, Mu, V) (Vargas 1997, Anthos 2012, GBIF 2024) (Fig. 3).

These are allopatric subspecies from mountain ranges separated by the Guadiana Menor-Almanzora corridor. A phylogeographic pattern that is repeated in other taxa (Salmerón-Sánchez *et al.*, 2014), perhaps related to palaeogeographic events such as the existence until the Tortonian of the Dehesas de Guadix Strait (Martín *et al.* 2014).

The other parent, *S. erioblasta* ($2n=34$), is also a Betic endemism (Al, Gr, J, Ma) (Vargas 1997), first described by Boissier & Reuter (Boissier 1856) and typified by Webb & Gornall (1989).

S. erioblasta coexists with *S. camposii* subsp. *camposii* in several mountain ranges (Sierra de Loja, Sierra de Arana, Sierra de la Pandera and Sierra Mágina), but becomes rarer towards the NE, with Sierra de Lúcar as the only known locality where *S. erioblasta* coexists with *S. camposii* subsp. *leptophylla*. (Fig. 3).

Font Quer (1928) described *Saxifraga* × *cuatrecasasii* from Sierra Mágina (Jaén) based on specimens collected by José Cuatrecasas. In the catalogue of nomenclatural types of the herbarium of the Botanical Institute of Barcelona there are two sheets (BC23767 and BC23768), corresponding to the Cuatrecasas gathering of June 1925 in Sierra Mágina, with almost identical labels, handwritten by Font Quer, on which the word “typus” appears and which conform to the prologue. The sheets also bear the red label “TYPUS” of the BC herbarium. The specimen on sheet BC23767 labelled ‘SCIENTARIUM NATURALIUM BARCINONENSE MUSEUM’ is here designated as

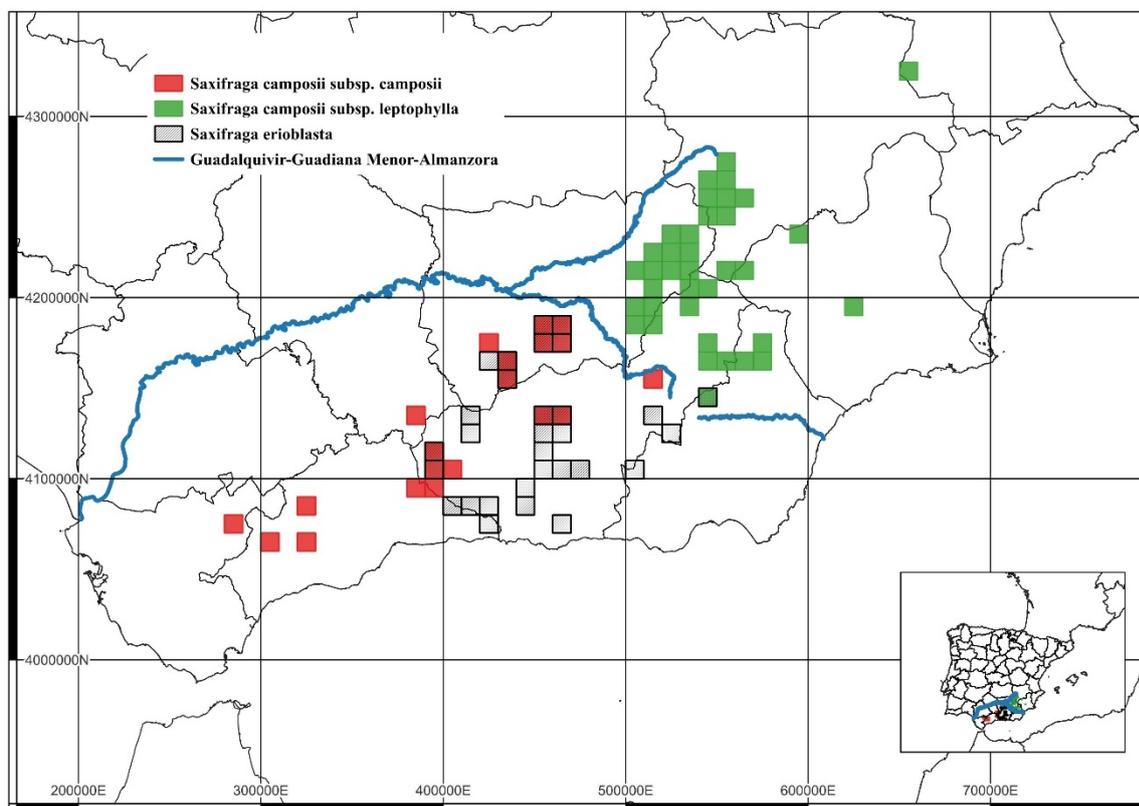


Figura 3. Mapa de distribución de *Saxifraga camposii* subsp. *camposii*, *S. camposii* subsp. *leptophylla* y *S. erioblasta* (10×10 km UTM).

Figure 3. Distribution map of *Saxifraga camposii* subsp. *camposii*, *S. camposii* subsp. *leptophylla* and *S. erioblasta* (10×10 km UTM).



Figura 4. Lectotipo de *Saxifraga x cuatrecasii* nothosubsp. *cuatrecasii* Font Quer. (BC-23767). © Institut Botànic de Barcelona (CSIC-CMCNB). Reproducción autorizada.

Figure 4. Lectotype of *Saxifraga x cuatrecasii* nothosubsp. *cuatrecasii* Font Quer. (BC-23767). © Institut Botànic de Barcelona (CSIC-CMCNB). Reproduction authorized.

the lectotype (Fig. 4); the specimen on sheet BC23768 labelled 'HERBARIUM CUATRECASAS' is a duplicate and is here designated as isolectotype.

Acknowledgements

I wish to thank Dr. Juan F. Jiménez for reviewing the English text, Dr. Pedro Sánchez-Gómez and Dr. José L. Cánovas for facilitating access to the MUB herbarium. Thanks also to Montserrat Conesa from HUAL, Francisco Aparicio from MA, and Neus Ibáñez, curator of the Herbarium of the Institut Botànic de Barcelona (BC).

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