

## SHORT COMMUNICATION

***Salvia guaranitica* A. St.-Hil. ex Benth. (Lamiaceae): a new record for the alien flora of Chile*****Salvia guaranitica* A. St.-Hil. ex Benth. (Lamiaceae): una nueva especie para la flora exótica de Chile****Javier Santa Cruz<sup>1,\*</sup>, Diego González<sup>2,3</sup>, Samuel Valdebenito<sup>4</sup> & Patricia Peñaloza<sup>4</sup>**<sup>1</sup>Escuela de Ciencias Agrícolas y Veterinarias, Universidad Viña del Mar, Viña del Mar, Chile.<sup>2</sup>Escuela de Graduados, Facultad de Ciencias, Universidad Austral de Chile, Valdivia, Chile.<sup>3</sup>Instituto de Ciencias Ambientales y Evolutivas, Universidad Austral de Chile, Valdivia, Chile.<sup>4</sup>Escuela de Agronomía, Facultad de Ciencias Agronómicas y de Los Alimentos, Pontificia Universidad Católica de Valparaíso, Quillota, Chile.

## RESUMEN

*Salvia guaranitica* A. St.-Hil. ex Benth. es descrita como una nueva especie exótica para la flora vascular de Chile. Se incluye una breve descripción, ilustración y una clave de identificación de las especies de *Salvia* presentes en Chile.

Genus *Salvia* comprehend about 1000 species around the world (Wester & Claßen-Bockhoff 2011). In Chile, this genus is represented by four species, three of them native and one exotic: *S. gilliesii*, *S. rhombifolia*, *S. tubiflora* and *S. verbenaca*, respectively (Morales 2018, Rodríguez *et al.* 2018).

Between years 2016 and 2020 wild populations of *Salvia guaranitica*, an unrecorded species for Chile, were studied. *S. guaranitica* is native to Argentina, south of Brasil, Paraguay and Uruguay (O’Leary & Moroni 2016), being part of its ethnopharmacopoeia due to its sedatives, hypnotics and “magical” qualities (Viola *et al.* 1997, Keller 2011). This plant became a focus of interest for its potential uses in agrochemical and pharmaceutical industries (Vallverdú *et al.* 2005, Castillo *et al.* 2009, Rongai *et al.* 2015).

*S. guaranitica* is cultivated as ornamental plant all over the world (Echeverrigaray *et al.* 2010, GBIF 2020), including Chile (Macaya 2003). Nevertheless, it has been recorded as naturalized in New Zealand (Randall 2017), and classified as high-risk species (HPWRA 2017) with invasive behaviors (INIA 2004). Likewise, hybridization with other representatives of the genus has also been described (Tychonievich & Warner 2011), which could be facilitated by the constant visitations of hummingbirds (Wester & Claßen-Bockhoff 2007, Montaldo & Haene 2009).

A search of specimens of the species was conducted in the SGO herbarium, as well as a revision of background

information about the presence of the species in Chile through consultation of different checklists (e.g., Zuloaga *et al.* 2008, Ugarte *et al.* 2011, Morales 2018, Rodríguez *et al.* 2018, Fuentes *et al.* 2020). Within that research, a collection of the species dated from year 1960 was found (SGO 130347) which has not been previously identified. This is the earliest precedent of its introduction in Chile. Nevertheless, the populations of *S. guaranitica* presented in this research correspond to the first record of its naturalization in the country.

## TAXONOMY AND MORPHOLOGY

***Salvia guaranitica* A. St.-Hil. ex Benth.** Labiat. Gen. Spec. 298. 1833. Type: Brazil, Rio Grande do Sul, St. Hilaire s.n. (C2-2756), 1816-1921. Fig. 1.

## Synonyms:

*Salvia ambigens* Briq. Bull. Trav. Soc. Bot. Geneve 5: 120. 1889.  
*Salvia caerulea* Moc. & Sessé ex Benth. Edwards’s Bot. Reg. 18: t. 1493. 1832.

*Salvia coerulea* var. *regnellii* Benth. Linnaea 22: 567. 1849.

*Salvia coerulea* Benth. Labiat. Gen. Spec. 298. 1833.

*Salvia melanocalyx* Briq. Bull. Herb. Boissier 4: 862. 1896.

Common names: “anise-scented sage”, “blue anise sage”, “brazilian sage”, “hierba de la serpiente”, “mbói ka’a”, “salvia azul”, “salvia azul”.

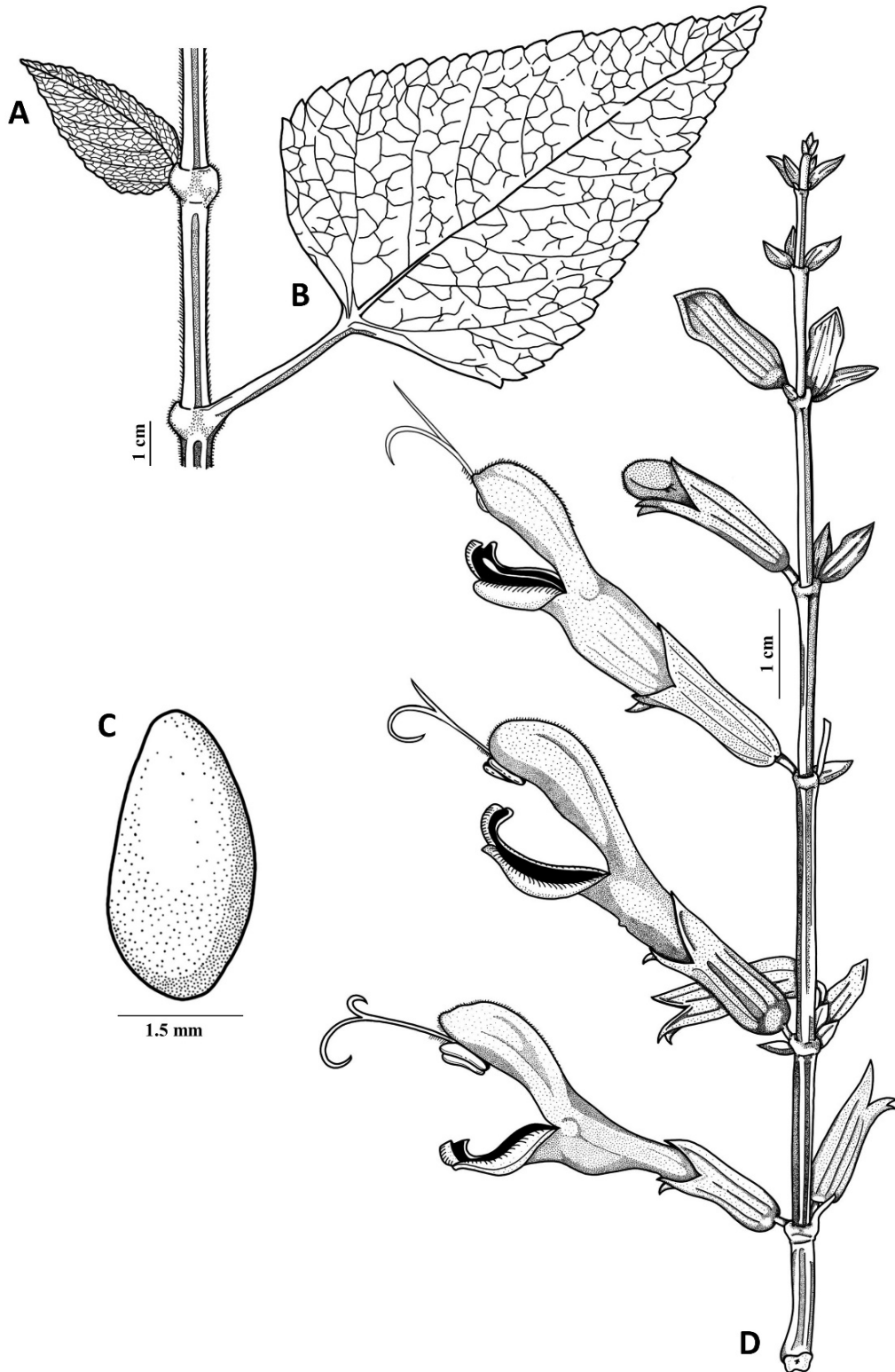


FIGURE 1. *Salvia guaranitica*. A: Primary bract. B: Leaf. C: Fruit. D: Inflorescence. / *Salvia guaranitica*. A: Bráctea primaria. B: Hoja. C: Fruto. D: Inflorescencia.

Shrub or sub-shrub, rhizomatous, from 0.5 to 2 m tall, stems quadrangular and pubescent, erect and branched. Opposite leaves, with petiole 0.5-4 cm long, pubescent, and blades of 2-15 x 1-6 cm, aromatic, rough, ovate-deltoid, acute apex, truncated base or slightly cordate, margin finely serrate or crenate, pubescent, with more density of indumentum on the underside, mostly over the venation. Inflorescence in terminal lax pseudoracemes, 10-40 cm long. Flowers zygomorphic, with a 2-5 mm pedicel, and grouped in verticillasters of 3-10 flowers. Primary floral bracts green, 3-5 x 2-3 cm, persistent, rough, ovate-deltoid, not always present. Secondary floral bracts green, 4-7 mm, deciduous, ovate, non-ampexical, pubescent. Calyx green or blue-violet, 12-20 mm, pentanerved, upper lip entire with acuminate apex, lower lip bicrenate with glandular pubescence on the outer face and on the upper half of the inner side. Corolla blue-violet, 35-50 mm, tube of 20-30 mm, pubescent on the upper outer half, galea 10-20 mm, concave, emarginate, lower lip 7-18 mm, reflexed, trilobate. Superior ovary, two inserted stamens and one exert style, pubescent, which gets wider towards the apex, ending in a bifid stigma. Nutlets brown, 2.7-3.2 x 1.6-1.8 mm, ellipsoid or trigonous, with rounded apex and obtuse base, plurigranular surface. Octaploid, 2n = 88.

#### ECOLOGICAL CHARACTERISTICS AND PHENOLOGY

There were registered the presence of four wild populations of *S. guaranitica* in Quillota, Valparaíso Region. Three of them were found growing next to a road in La Palma, a rural area within Quillota with high agricultural activity; two of these three populations were nearby irrigation canals. In contrast, the fourth population were found in an urban area, growing by a high-transited road.

The studied populations grow in association with other alien species such as *Arundo donax*, *Calystegia sepium*, *Cichorium intybus*, *Raphanus raphanistrum*, y *Rubus ulmifolius*, as well as the native species *Cestrum parqui*.

*S. guaranitica* exhibits vegetative growth throughout the year, getting to regrow after mowing for weed management in two of the studied populations. Its reproductive growth occurs between October and May.

#### MATERIAL STUDIED

CHILE, Valparaíso Region: Prov. Petorca, Papudo. V-1960, Véliz s.n (SGO 130347). Prov. Quillota, Quillota. (32°53'53" S 71°13'10" W, 129 m), XII-2017, Santa Cruz s.n (SGO 169864); (32°52'44" S 71°12'55" W, 131 m), I-2018, Santa Cruz s.n (SGO 169865); (32°53'37" S 71°12'35" W, 139 m), I-2018, Santa Cruz s.n (SGO 169866); (32°52'9" S 71°14'21" W, 141 m), XI-2018, Santa Cruz s.n (SGO 167867).

#### IDENTIFICATION KEY OF SALVIA SPECIES IN CHILE

- 1. Corolla reddish..... *S. tubiflora*
- 1'. Corolla bluish/violet or whitish..... 2
- 2. Corolla lower lip reflexed; corolla not ringent..... *S. guaranitica*
- 2'. Corolla lower lip deflexed; corolla ringent..... 3
- 3. Leaf blade margin lobed ..... *S. verbenaca*
- 3'. Leaf blade margin serrate or crenate ..... 4
- 4. Margin constituted by irregular prominences, truncate or cordate base, stamens inserted..... *S. gilliesii*
- 4'. Margin constituted by regular prominences, truncate or attenuate base, stamens exerted..... *S. rhombifolia*

#### COMMENTARY

The species was mentioned erroneously as naturalized in Chile by Zuloaga *et al.* (2008 printed version), Fuentes *et al.* (2013), Ray *et al.* (2014), PNUD (2017) and Randall (2017), as well as in GRIIS (2017) and Pauchard *et al.* (2020) under Dusén authorship. Nevertheless, this is corrected in later publications, excluding its presence in vascular flora of Chile (Zuloaga *et al.* 2008 online version, Morales 2018, Rodríguez *et al.* 2018, Zuloaga *et al.* 2019, Fuentes *et al.* 2020).

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