SOBRALIA TURRIALBINA (ORCHIDACEAE: SOBRALIEAE): LONG CULTIVATED AND NOW DESCRIBED

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Abstract. *Sobralia turrialbina* is described and illustrated from Costa Rica. The new species is compared with the morphologically similar *S. chrysostoma*, from which can be distinguished by the leaves restricted to the terminal third of the stem, the floral bracts twice longer, the flowers dusty pink or pale rose, and the lip with no keels, provided with a hazelnut-brown gorge and the apical margin finely striped with rose-purple. Notes on species distribution, habitat and ecology, and etymology are provided.

Resumen. Se describe y se ilustra *Sobralia turrialbina* de Costa Rica. Se compara la nueva especie con *S. chrysostoma*, morfológicamente similar, de la cual puede distinguirse por las hojas distribuidas solamente en el tercio apical del tallo, la brácteas florales el doble de largo, las flores de color rosa grisáceo o rosado pálido y el labelo sin quillas, con la garganta color café-avellana y el margen apical finamente estriado de rosado-purpúreo. Se provén notas sobre la distribución, hábitat, ecología y etimología de la especie.

Keywords: flora of Costa Rica, new species, *Sobralia*

Even though the orchids of the genus *Sobralia* Ruiz. & Pav. represent a common element in both pristine and disturbed landscapes in the tropical region of the Americas, they are still poorly understood as to their diversity and biology. With near 200 species, the genus is widely distributed in the Neotropics with the notable exception of the West Indies, but the ephemeral and gregarious flowering of most species, and the particular delicacy of the flower tissues, make *Sobralia* a difficult candidate for collection and study. In the last ten years, scientists at the Lankester Garden Botanical Garden, University of Costa Rica, focused in the diversity of *Sobralia*, building up a large *ex-situ* collection with literally hundreds of specimens from Costa Rica and abroad, to circumvent the inherent difficulties of studying *Sobralia* with the traditional technique of pressing and drying fertile field specimens (Dressler and Bogarín, 2007; Bogarín et. al., 2008; Dressler and Pupulin, 2008; Dressler and Bogarín, 2010; Dressler and Pupulin, 2010; Dressler and Bogarín, 2011; Dressler et al., 2011; Dressler, 2012, 2013; Dressler and Pupulin, 2014; Dressler et al., 2014; Fernández et al., 2014; Dressler and Pupulin, 2015). Thanks to this effort, the flora of Costa Rica presents today a somewhat artificial peak in *Sobralia* diversity, with nearly 40 recorded species, a hundred times greater than Brazil and eight times greater than orchid-rich Ecuador in terms of diversity index. Still, new species of *Sobralia* frequently appear among cultivated plants, and we took this opportunity to describe one here.

There seem to be more plants of this puzzling species in gardens than in nature. The plants vary a good deal in both size and flower color, yet it is a very distinctive species and we feel that it must be recognized as such.

The species was first brought to our attention a couple of years ago by one of the authors (MA), who was trying to give a name to a *Sobralia* that he could not match with any documented species. When he sent us a photograph of the flower, we had to admit that it looked quite different from any other *Sobralia* that we already knew. The plant had been cultivated in a garden in the town of Turrialba, and even though the owner did not remember where it came from, he was kind enough to give a part of the plant to MA, who brought it to the Lankester Botanical Garden.

The plant flowered again at Lankester Garden in September 2015, and having then the opportunity to study a living flower, we could confirm that it was really distinct from the other species of *Sobralia* that we knew from Costa Rica. Instead of the shades of purple or bright pink, which are so common in Central American *Sobralia* species, the flowers of this particular specimen were of a somewhat dusty, dull rose, while at the same time having a depth reminiscent of nacre. On the same ground color, the lip presented a deep chestnut brown gorge, the color breaking down toward the apex into dense lines becoming fine rose-purple stripes on the ruffled edge of the midlobe. Surely, this was quite a novel and showy color combination. We carefully documented the plant and prepared vouchers, both dry and in alcohol, storing them under Dressler's number *7341*. We were reluctant, however, to describe a new species from a plant coming from an unknown locality. In the following months, MA verified that plants of this species were indeed quite common in cultivation in the gardens of Turrialba, and he strongly suspected that the species was a native of that region. If this was the case, we hoped that,

We greatly thank Hugo Mata Díaz of Turrialba, and Alicia Arias Arias, of Venecia, who generously shared with us plants from their private gardens. All the wild plants studied and preserved for this study were obtained through scientific collection permits No. 36891 and subsequents, and the Scientific Passports No. 1281 and 1285, issued to the senior authors by the Costa Rican Ministry of Environment and Energy (MINAE) and the National System of Conservation Areas (SINAC), whose cooperation is deeply acknowledged.

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Harvard Papers in Botany, Vol. 21, No. 2, 2016, pp. 251–261.

ISSN: 1938-2944, DOI: 10.3100/hpib.v21iss2.2016.n10, Published online: 31 December 2016

sooner or later, more information on its natural distribution would emerge.

By the end of the year, MA was informed that at least some of the plants cultivated in Turrialba (including the one growing at Lankester Garden) may have been collected in a property at Mata de Caña ("sugarcane plant"), not far from Turrialba, in a mountainous region formed by a series of deep valleys draining toward the Pacuare River, one of the largest rivers that flow the Talamanca range toward the Caribbean Sea. We contacted the caretaker of the *finca*, but it was quite clear that he was not willing to receive a group visit of botanists searching for a "*flor de un día*" (single-day-flower) plant, as Costa Ricans refer to *Sobralia*, on the property he supervised. Checking the coordinates of the *finca* on a satellite map, it was obvious however that a vast forested region could be explored in the nearby areas along the high basin of Río Pacuare. Searches there proved successful, and we now have at least one large plant that was collected in nature. As we feel that it is clearly a valid species, we can therefore describe the "new" *Sobralia* commonly grown in gardens at Turrialba as:

Sobralia turrialbina Dressler, M.Acuña & Pupulin, *sp. nov.* TYPE: COSTA RICA. Limón: Siquirres, Pacuarito, Alto Yolillal, 9°59'4.68"N, 83°32'47.59"W, 290m, path along the Pacuare river, wet tropical forest, epiphytic on the trunk of a fallen tree, originally at some 10 meters from the soil, 17 April 2016, flowered in cultivation at Lankester Botanical Garden, 13 May 2016, *M. Acuña 8* (holotype, USJ; isotypes, JBL). Fig. 1–3.

Species habito medio in magnitudine, Sobraliae chrysostomae Dressler *similis in forma generali, sed caulibus foliatis in tertio terminalis tantum, bracteis floralis duplo majoribus, floribus rosaceo-pulveruluntibus nacreis, rare pallets rosaceis, labello ecarinato fauce fusco-abellana in margine apicali fine rosato-purpureo striato recedit.*

A medium-sized species, morphologically similar to *Sobralia chrysostoma* Dressler, with the stems bearing leaves only in the apical third, the floral bracts twice longer, the flowers dusty pink or rarely pale rose, the lip with no keels, with a hazelnut-brown gorge and the apical margin finely striped with rose-purple.

Epiphytic, caespitose, large *herb*, to 150 cm tall. *Roots* coarse, flexuous, branched, finely tomentose, 6–9 mm in diameter, slightly flattened. *Stems* cylindric, round in section, 60–150 cm long, 0.6–0.7 cm in diameter, foliate in the upper third, covered by tightly imbricating, adpressed, green, sparsely subscarious sheaths, becoming dry-papyraceous with age, densely flecked with brown when old. *Leaves* plicate, broadly lanceolate-elliptic, acuminate, 15–20 × 6.5–9.0 cm. *Inflorescence* conical, successively several-flowered, to 12 cm long, the flowers usually produced singly, rarely in pairs, the bracts acuminate, 9–12.5 cm long, the lowest one shortly foliaceous. Pedicellate *ovary* 4.0–4.5 cm long including the pedicel. *Flowers* large, spreading, dusty pink or pale rose, paler toward the floral apices, the lip chestnut-brown within the gorge, pale pink or pinkish white along the margins, the apex with vivid pink-purple radiating stripes, the osmophores bright yellow. *Sepals* similar, narrowly oblong-elliptic, obtuse to subacute, minutely apiculate, curved, 5.8–7.0 × 1.8–2.2 cm, distinctly conduplicate at the base, the *dorsal sepal* suberect to erect, the *lateral sepals* spreading almost horizontally. *Petals* narrowly obovate, broadly obtuse, 5.0–6.0 × 2.5–2.9 cm, the apex reflexed, with slightly undulate margin. *Lip* obscurely 3-lobed, obovate, 7 × 5 cm, the lateral lobes erect, encircling the column; the blade with 2 basal, divergent, bright yellow teeth, and 9 slightly prominent, dark brown veins from the base up to two-thirds of lip length, the lateral veins shorter; the midlobe deeply retuse, ruffled, spreading, reflexed. *Column* clavate, semiterete, 4.2–5.0 cm long, 0.8–1.0 cm wide distally, the apex provided with two acicular, upcurved wings about 0.8–1.2 cm long, free for 0.5–0.7 cm, anther and stigma ventral. *Anther cap* cucullate, elliptic, compressed, 2-celled, 7 × 5 mm. *Pollinia* 4, soft, mealy, in two symmetrical pairs of different size, not sharply distinct from the caudicles, each hemipollinarium 5 × 2 mm.

Additional specimens examined: COSTA RICA. Cartago: Turrialba, La Suiza, Jabillos, Mata de Caña, ca. 9°54'33"N, 83°35'46"W, approx. 900 m, cultivated at Lankester Botanical Garden, flowered and prepared 18 Sept. 2015, *R.L. Dressler 7341* (JBL) (Fig. 4). Alajuela: San Carlos, Venecia, growing in the garden of the Catholic Church, ca. 10°22'00"N, 84°17'00"W, approx. 100 m, collected by M. Acuña and A. Arias Arias, cultivated at Lankester Botanical Garden, flowered and prepared 17 August 2015, *R.L. Dressler 7342* (JBL) Fig. 5–6.

Eponymy: The specific epithet refers to the town of Turrialba in Costa Rica, where the species is frequently grown as a garden plant. Most of the specimens we know were also collected around Turrialba. Costa Rican orchidology has a long tradition of names dedicated to Turrialba, among which are species in the genera *Epidendrum* (Reichenbach 1871), *Goodyera* (Schlechter 1923), *Lepanthes* (Reichenbach 1855), *Maxillaria* (Schlechter 1918), *Notylia* (Schlechter 1923), *Oncidium* (Schlechter 1911), *Pleurothallis* (Luer 1991), and *Trichopilia* (Reichenbach 1863). The toponymic dedication has traditionally been spelled as "*turrialbae*" (also "*turialbae*" and "*turialvae*"), considering that the name of the volcano and the adjacent town are derived from the Latin *turris alba*, white tower, in reference to the white smoke coming out from the high volcano crater, or from the Aragonese patronym Torrealba (see. for example, Garita Hernández 1995). An alternative etymology of Turrialba has been proposed by other scholars (Gagini, 1917, Cleto González 1920), who consider the name derived from an indigenous root, as the word *Turru* o *Turu* is still found in several local toponyms, such as Turrúcares, Turrubares, and others. Gagini (1917) suggests that the name Turriarva is the huetar (a Chibchan language once spoken in Costa Rica and Panama) pronunciation of the word Toriáravac, or the "altar stone of the Toris." This may perhaps explain why in old documents dating to the Spanish colonial occupation of Costa Rica, the name is cited as Turrialva or Turiarba (in the year 1569) or Zurriarba (in 1608), and in other documents of the seventeenth and eighteenth centuries it is recorded as Turi alba, Turriarva, and Torialba (Valerio 1953). When the toponym Turrialba is treated as a Latin compound, *turris-alba*,

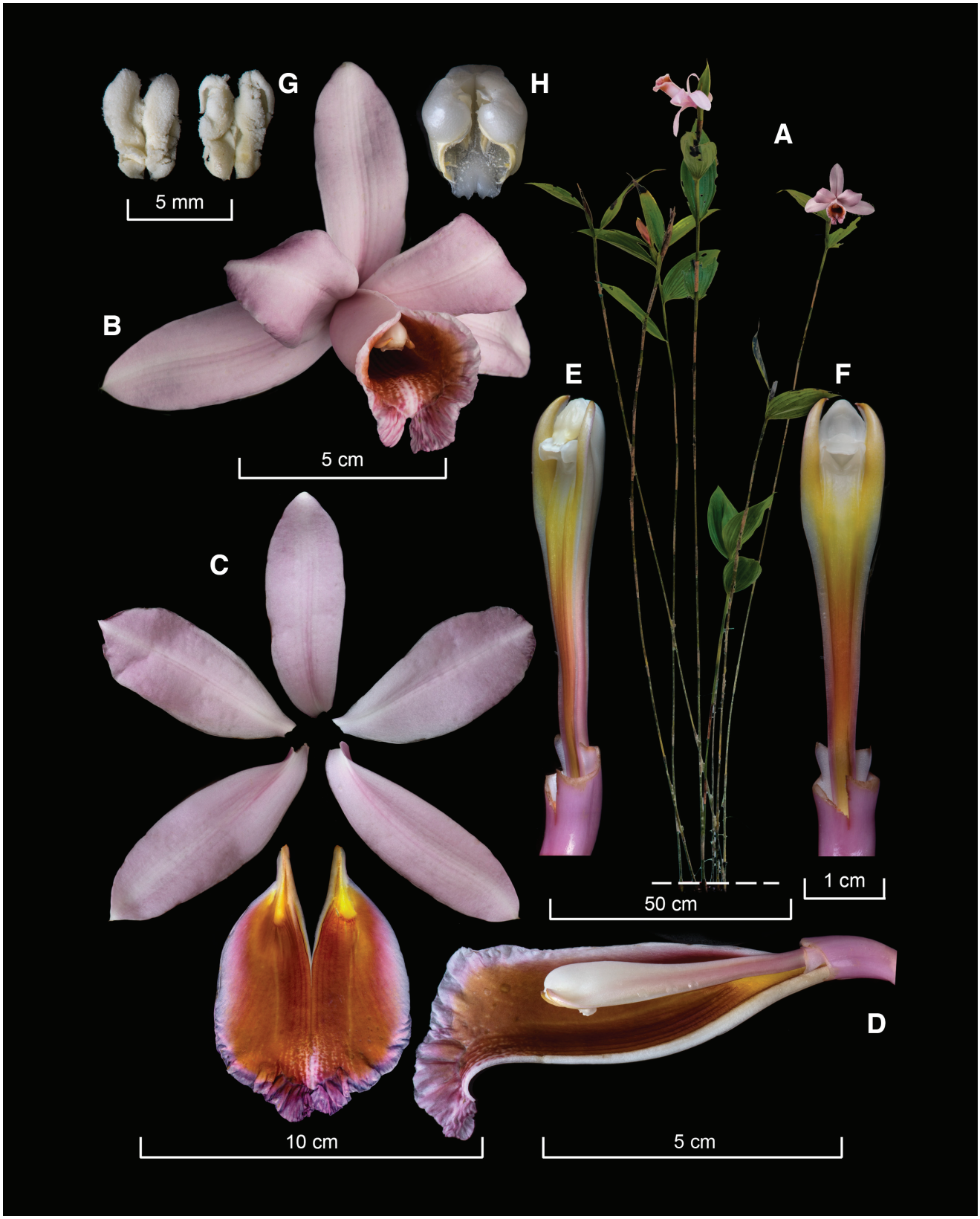

FIGURE 1. *Sobralia turrialbina* Dressler, M.Acuña & Pupulin. **A**, habit; **B**, flower; **C**, dissected perianth; **D**, column and lip, lateral view (the lip longitudinally sectioned); **E**, column, three quarters-view; **F**, column, ventral view; **G**, pollinarium, dorsal and ventral views; **H**, anther cap. Lankester Composite Digital Plate prepared by F. Pupulin based on the holotype.

FIGURE 2. The flower of *Sobralia turrialbina* Dressler, M.Acuña & Pupulin, from the plant that served as the holotype. Note the nacreous, dusty rose color of the flower. Photograph by F. Pupulin.

FIGURE 3. Frontal view of the flower of *Sobralia turrialbina* Dressler, M.Acuña & Pupulin, from the plant that served as the holotype. Photograph by F. Pupulin.

FIGURE 4. *Sobralia turrialbina* Dressler, M.Acuña & Pupulin, flower from *Dressler 7341*. Photograph by M. Fernández.

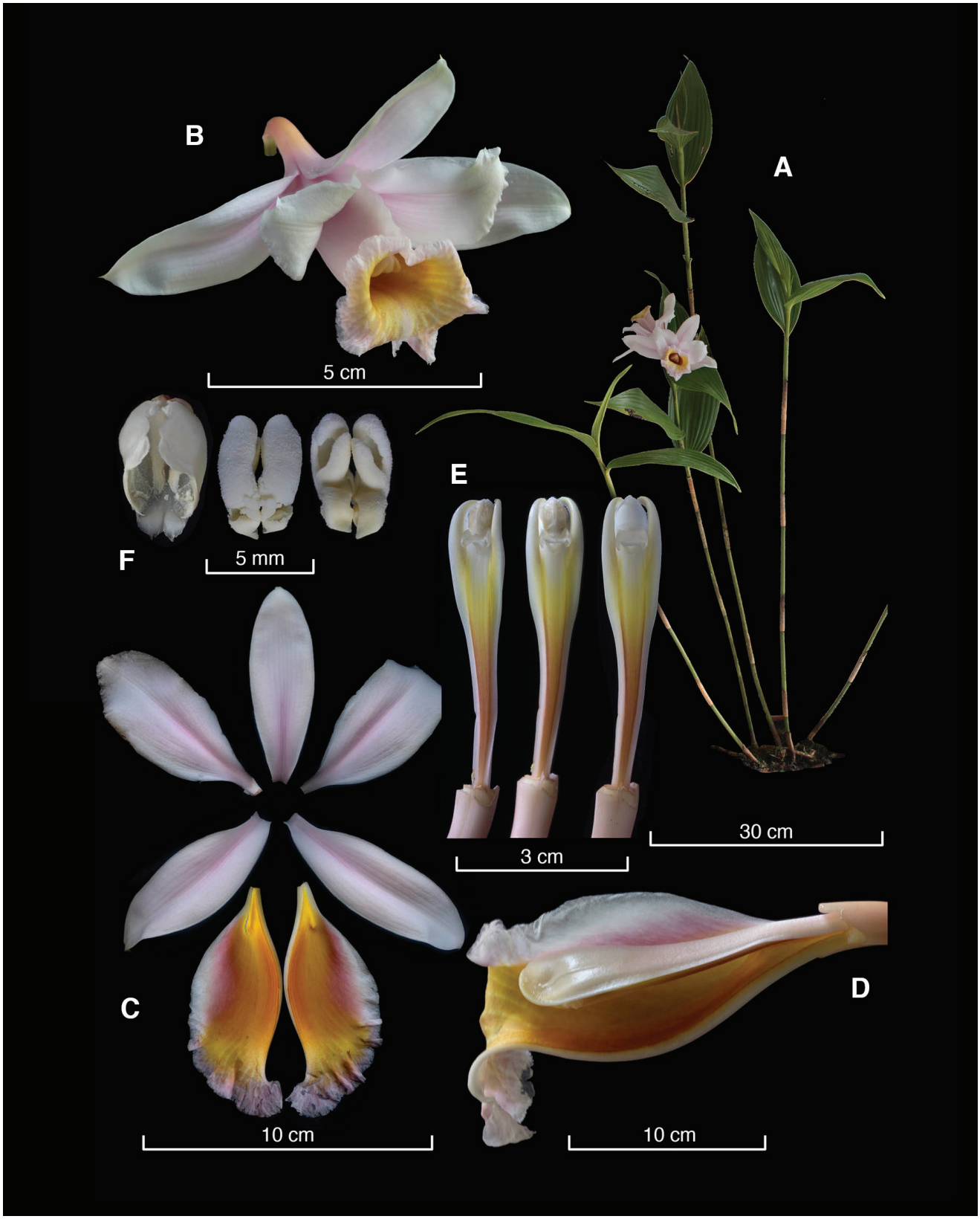

FIGURE 5. *Sobralia turrialbina* Dressler, M.Acuña & Pupulin. **A**, habit; **B**, flower; **C**, dissected perianth; **D**, column and lip, lateral view (the lip longitudinally sectioned); **E**, column, three quarters and ventral views (with and without anther); **F**, anther cap and pollinarium (dorsal and ventral views.). Lankester Composite Digital Plate based on *Dressler 7342*, prepared by F. Pupulin.

FIGURE 6. *Sobralia turrialbina* Dressler, M.Acuña & Pupulin (*Dressler 7342*). Note the pale rose flowers, produced in pairs. Photograph by F. Pupulin.

the genitive case is correctly *turris-albae*, or *turrialbae* (i.e., of the white tower). When, on the other hand, Turrialba is treated as a regular toponym ending in -a, according to recommendation 73D.1 of the Code of Nomenclature, the epithet derived from it should be *turrialb-ensis*, *turrialb-*(*a*) *na*, *turrialb-ina* or *turrialb-ica*.

Distribution: Known only from Costa Rica (Fig. 7).

Habitat and ecology: Plants of this species grow as large epiphytes on the trunks and primary branches of the lower canopy in tropical wet, premontane moist and premontane wet forests. Specimens have been recorded from the Caribbean watershed of the Cordillera de Talamanca and Cordillera Central in Costa Rica, at elevations between 100 and 900 meters.

Among the plants grown in the large collection of *Sobralia* at the Lankester Botanical Garden, we also identify as *S. turrialbina* a specimen originally collected in the plains of San Carlos, north of the Central Cordillera in Costa Rica (*Dressler 7342*). This specimen is smaller in size (stems up to about 100 cm), and its flowers are of a very pale and delicate pink, with a bolder suffusion along the mid vein of sepals and petals. The lip base has bright yellow basal calli, but instead of the dark hazelnut brown blotch on the disc there is a deep rose and orange blotch, fading yellow toward the apex, with fine, pink, radiating stripes on the ruffled edge of the midlobe (Fig. 5–6). The details of plant habit, the lip without keels, and the column, are however indistinguishable from those of the darker forms of *S. turrialbina*, as recorded in the premontane forests of Talamanca. Such a disjunction in distribution may seem strange, but it is likely an artifact of undersampling, as it is not uncommon among Costa Rican *Sobralia* that species distributions span over two or three main chains of the continental divide, and often along both watersheds (Fig. 8).

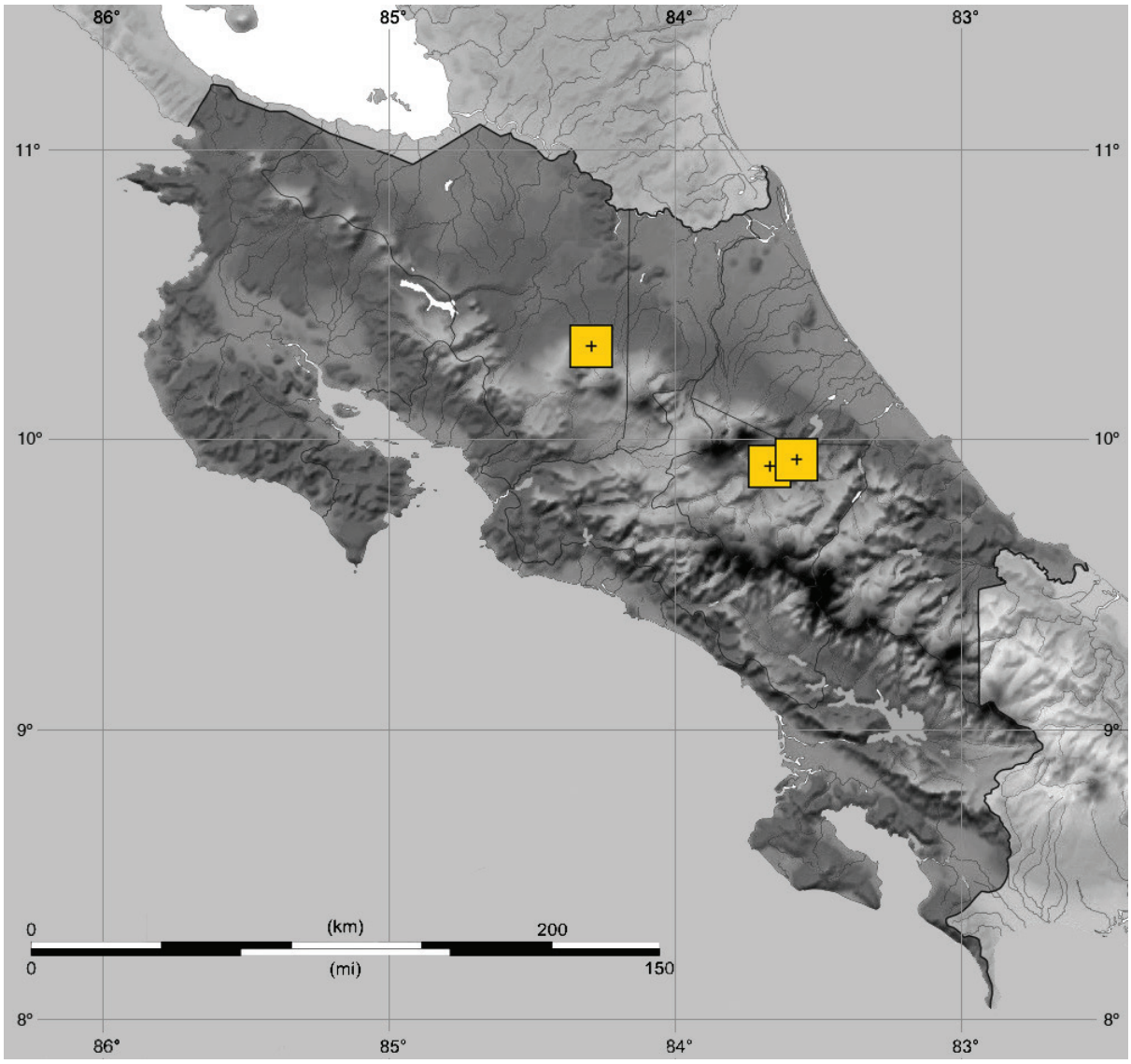

FIGURE 7. Distribution map of *Sobralia turrialbina* Dressler, M.Acuña & Pupulin.

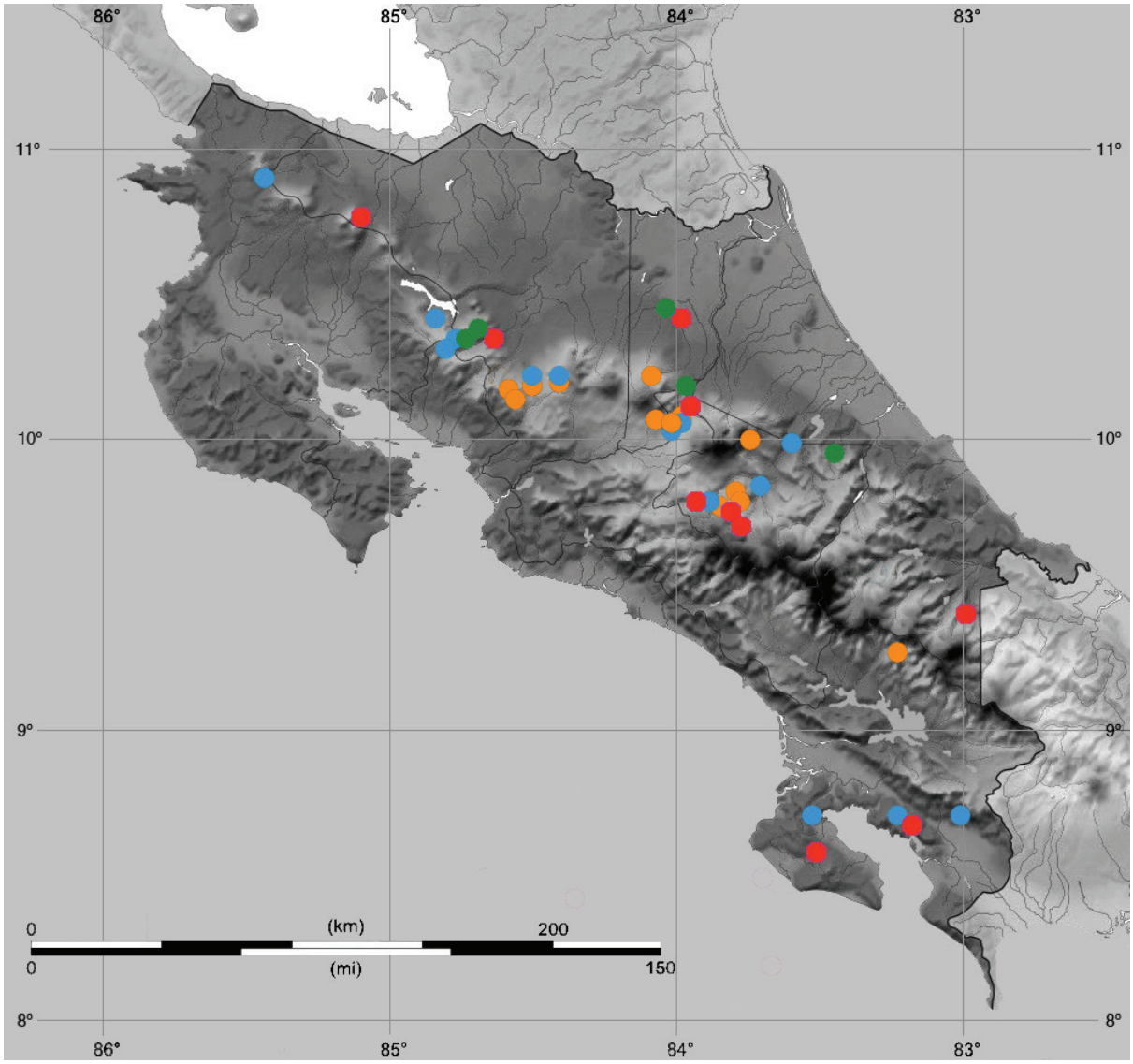

FIGURE 8. Distribution map of selected species of *Sobralia* in Costa Rica. Blue dots = *S. bletiae* Rchb.f.; orange = *S. carazoi* Lank. & Ames; red = *S. doremiliae* Dressler; green = *S. powellii* Schltr. Based on data from Lankester Botanical Garden databases. Digital cartography by Sofía Granados-Martínez.

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