

RECONSIDERING *STRYCHNOS GUBLERI* (LOGANIACEAE)

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Abstract. *Strychnos gubleri* was described by François Gustave Planchon based on material collected in what is currently Amazonas state, Venezuela. Although it is one of the most widely cited species of the genus in the literature, it is not listed in *Tropicos*, appears as “unresolved” in *The Plant List*, and it was not included in the most recent flora and checklist of the region. We present here a history of the name, point out the valid description, and conclude that this taxon was described again in 1927 as *S. panurensis*. We also provide miscellaneous information on the species and list specimens cited in the text.

Resumen. *Strychnos gubleri*, fue una especie descrita por François Gustave Planchon basándose en material colectado en lo que hoy en día es el estado Amazonas de Venezuela. A pesar de ser una de las especies más citadas del género, actualmente no está registrada en *Tropicos*, aparece como una especie no resuelta en *Plant List* y no fue incluida en las floras y catálogos de plantas recientes de la región. Se presenta la historia del nombre, señalando la descripción válida de la especie, y se concluye que este taxón fue descrito nuevamente en 1927 como *S. panurensis*. También se presenta información miscelánea sobre la especie y se listan los ejemplares citados en el texto.

Keywords: Amazonas, Loganiaceae, *Strychnos*, Venezuela

Strychnos gubleri, described by François Gustave Planchon based on samples from the Orinoco region of Venezuela, is one of the American species of the genus most widely cited in the botanical and pharmaceutical literature, second perhaps only to *S. toxifera* R.H.Schomburgk ex Lindley. The name, nonetheless, is not listed in *Tropicos*, its status is “unresolved” in *The Plant List*, and it was not included in the latest revision and checklist of the genus for the Guayana region (Brant and Berry and 2001: 28–36; Berry et al., 2007). Furthermore, Krukoff and Monachino (1942, 1946), Krukoff (1972), and Krukoff and Barneby (1974) repeatedly listed this species among the doubtful names attributed to *Strychnos* L., as did Berry and Brant (2008: 443).

The purpose of this essay is first to ascertain where and when this species was validly published, and then to place it among the hitherto described species of *Strychnos*.

A reconstruction of the history of this species reveals the following. Adolphe-Marie Gubler received material and documentation of an unknown *Strychnos* species donated by the Venezuelan consul in Paris, Eugène Thirion.⁴ Gubler (1879) later published an account of these materials. His essay included a description of the species, illustrations

(Figure 1 herein; see also iconography below), and a comparison to other *Strychnos* species, written by F. G. Planchon, to whom Gubler had sent samples. Planchon concluded that it was most likely an undescribed species but that flowers and fruits were needed to write a complete diagnosis, never assigning a binomial to the plant (Planchon in Gubler, 1879: 327).

Planchon later published three articles citing *Strychnos gubleri*: two nearly identical ones based on a lecture delivered during the 19 January 1880 session of the Paris Academy of Science (Planchon, 1880a, 1880c), and a revision of the genus in the context of curare (Planchon, 1880b), the arrow poison. Planchon’s revision was translated into English (Planchon 1880d) and Spanish (Planchon 1880e), was partially printed in French elsewhere (Planchon, 1880f), and later widely cited and reviewed in the late 1800s and early 1900s (e.g. Dallas 1880; Anonymous 1888; Squire, 1916).

Planchon (1880a, c) listed the vegetative characters that differentiated his new species, for which he proposed the name *S. Gubleri*, “... to remember the last work of the scientist and late therapist on the curare of the Rio Negro,” but he did not provide a valid description; he finally did in his treatment of *Strychnos* (1880b: 295–300).

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⁴ Gubler (1821–1879) was a French physician and pharmacologist. He (1879) stated that he had received material from Thirion in 1867 via his colleague and friend Professor [Charles Victor] Daremberg. According to Thirion (in Gubler, 1879), he [Thirion] provided a report sent by the “*gouverneur du district Amazonas (Vénézuéla)*” accompanied by samples of curare, leaves, roots, branches, as well as a sample of the soil where the plant grew. Curiosity about curare may have arisen when Thirion (1813–1879, “Eugenio” in sources in Spanish) presented a curare calabash (*Calebasse pleine de curare*) and a full description of the poison at the Universal Exposition in Paris in 1867 (Thirion, 1867: 30). Thirion did not reveal the name of the governor who sent him the curare material. The historical sequence of governors, even during this short period, is so unclear (see Tavera Acosta, 1901: 41–42; 1954: 120) that the authors hesitate to propose a name.

Planchon later examined *Strychnos* specimens collected along the upper Orinoco river by Albert Gaillard⁵

Planchon identified at least two of Gaillard's *Strychnos* collections as *S. gubleri* (these two specimens are currently deposited in the herbarium of the *Faculté de Pharmacie, Université Paris Descartes* (T. Gaslonde, personal communication, 2015; this herbarium collection is not currently listed in *Index Herbariorum*).

As indicated by Bisset (1992: 48), a specimen of *Gaillard 16* at P (Figure 2) is most likely a duplicate of his collections at *Faculté de Pharmacie* identified by Planchon: the two specimens (based on images supplied by P and the herbarium of the *Faculté de pharmacie, Université Paris Descartes*) share the same general appearance and were collected at the same locality in April 1887, and both were labelled "curare simple."

However, in 1946, Boris A. Krukoff and J. Monachino, identified a specimen of *Gaillard 16* at P as *S. panurensis* Sprague & Sandwith (Krukoff and Monachino, 1947; Figure 2). As Bisset suggested (1992: 48), it appears that *Strychnos gubleri* was redescribed in 1927 as *S. panurensis* and, following the synonymy proposed by Krukoff and Monachino (1942), again in 1934 as *S. placida* J.F.McBride.

Strychnos gubleri G.Planchon, Journal de Pharmacie et de Chimie, 5^o Série, 1: 295[–300]. [April] 1880. TYPE: VENEZUELA. Amazonas: without specific locality, 1867, collected by the governor of the Amazonas District (Holotype: not located; Epitype, proposed here, same country and state, Municipio Autónomo Atures, Puerto Perico [currently within the city limits of the state's capital, Puerto Ayacucho], A. *Gaillard 16*, P; possible Isoepitype: at the herbarium of the *Faculté de pharmacie, Université Paris Descartes*). Fig. 1–5.

Synonyms: *Strychnos panurensis* Sprague & Sandwith, Bulletin of Miscellaneous Information No. 3: 132. 1927. TYPE: COLOMBIA: *Prope Panuré ad Rio Uaupés* [Departamento del Guaviare, Municipio de San José del Guaviare Resguardo Indígena Panuré, Panuré], Twiner and climber; fruits yellowish, succulent, October 1852, *R. Spruce 2634* (Lectotype, proposed here, K 000573468 [Figure 3 herein];

Isolectotypes: K [K 000573467], P [P00641298], TDC [TDC 0000691]).

Strychnos placida J.F.McBride, Candollea 5: 400. 1934. TYPE: PERU. Departamento Loreto, Yurimaguas: 21 November 1929, *L. Williams 5312* [as "5313"; see Krukoff and Monachino 1942] (Holotype: F; Isotype S).

Usage synonym: *Strychnos gubleriana* G.Planch. in Baillon, *Traité de Botanique Médicale Phanerogamique* 1219. 1884.

Nomenclature: None of the specimens of *Strychnos gubleri* identified by Planchon at the herbarium of the *Faculté de pharmacie, Université Paris Descartes* could be matched to the type material of *Strychnos gubleri*, and no samples of *S. gubleri* were found at NA (A. T. Whittemore, personal communication, 2015), where it had been suggested that G. Planchon's types may be deposited (Stafleu and Cowan 1983: 283). The material collected by the governor of the Amazonas District that Thirion passed on to Professor Daremberg may not have been preserved. Notwithstanding, we hesitated to propose a neotype.

There are two specimens of the type collection of *Strychnos panurensis* (*Spruce 2634*) at K: one from *Herbarium Benthamianum* (Fig. 3A) and one from *Herbarium Hookerianum* (Fig. 3B). Following criteria established by McNeill (2014), these two specimens have to be treated as syntypes, because the authors did not select one as the holotype and no recent authors have selected one of the sheets as a "type," qualifying as a *de facto* lectotypification. Furthermore, the locality cited in the protologue obviously combines elements of the two labels. A lectotype is proposed herein, the collection formerly in the Bentham herbarium (Fig. 3A), as its label includes the most elements of the locality cited in the protologue.

Iconography: Gubler (1879: figures 1–4); Planchon (1880b: figures 1–4; 1880d: figures 1–3); Planchon and Collin (1895: 672–674, figures 555–557); Krings and Braham (2005: 84: figure 6.3A, as *S. panurensis*); Brant and Berry (2001: 35, figure 27, as *S. panurensis*; see figure 4 herein).

⁵ Albert Gaillard [de Tiremois] (1858–1903), was hired by the *Syndicat Français du Haut-Orénoque* to complete a botanical inventory of Venezuela south of the Orinoco river, including vast regions currently under the sovereignty of Colombia (Gaillard 1907: footnote on page 131; see also F. Plumley in Ralston, 1906: 328). He collected vascular plants, liverworts, and fungi around Caracas and along the Orinoco river in 1887 (see rough itinerary in Patouillard and Gaillard, 1888; see also Fidalgo and Pacheco Kauffmann Fidalgo, 1968). The numbering of his collections indicates he used a different number series for each of these three categories (and at least three series for his fungi). During his stay in Venezuela Gaillard suffered both an accidental fall and also from malaria, which forced his return to France and from which he never quite recovered, dying when he was only 45 years old (Patouillard, 1903). He wrote several essays about curare (Gaillard, 1899, 1907; in Labesse, 1905a–b, 1906) and collected at least two species of fungi from the bark of *Strychnos gubleri* that were later described as *Amphisphaeria strychnicola* Pat. (Amphisphaeriaceae) and *Gloniella strychnicola* Pat. & Gaill. (Hysteraceae); the protologue of the latter, in fact, states "Sur écorce de 'Curare simple' (*Strychnos Gubleri*). Puerto Perico, Avril (No. 45)" (Patouillard and Gaillard 1888: 119–120). The original label, however, reads "sur le *Strychnos* sp. 'Curare simple', Puerto Perico, Avril 1887" (taken from the specimen at FH).

Gaillard's collection of vascular plants was partially identified by Maury (1889), but novelties from his collections from the area continue to be described (e.g., *Trichovaselia canescens* Tiegh. [1902: 208], currently referred to *Elvasia canescens* (Tiegh.) Gilg; *Faramea orinocensis* Standl. [1931: 418], and *Ixora gaillardii* Standl. [1936: 218], currently referred to *I. acuminatissima* M. Arg.). Of the few orchids he collected, *Gaillard 228* represents a species not described until 1920, based on another collection (*Habenaria amambayensis* Schltr.), and one remains undescribed (*Habenaria* sp.; *Gaillard 83*).

His fungal collections, identified by Patouillard (1887, 1889) and Patouillard and Gaillard (1888), included many new species.

According to Plumley (in Ralston, 106: 328), in an analysis of a legal claim against the government of Venezuela, "... the flora of the territories was carefully studied and reported upon by Dr. Gaillard, a distinguished expert, the result of his investigations being printed in two volumes and presented to the Venezuelan Government. Explorations were made on the rivers Vichada, Guaviare, Inirida, Ventuario, Atabapo, Guainia, and the Casiquiare." There is no trace in the recent literature of the two cited volumes and, for their legal claim, either the *Syndicat Français du Haut-Orénoque* exaggerated the extent of Gaillard's collecting expeditions or there are many Gaillard's collections that were never identified: Maury (1889) and Patouillard and Gaillard (1888) only cited collections gathered near Caracas, and along the Orinoco river up to the confluence of the Atabapo and Guaviare rivers (up to numbers 271 and 274 in the largest series, respectively).

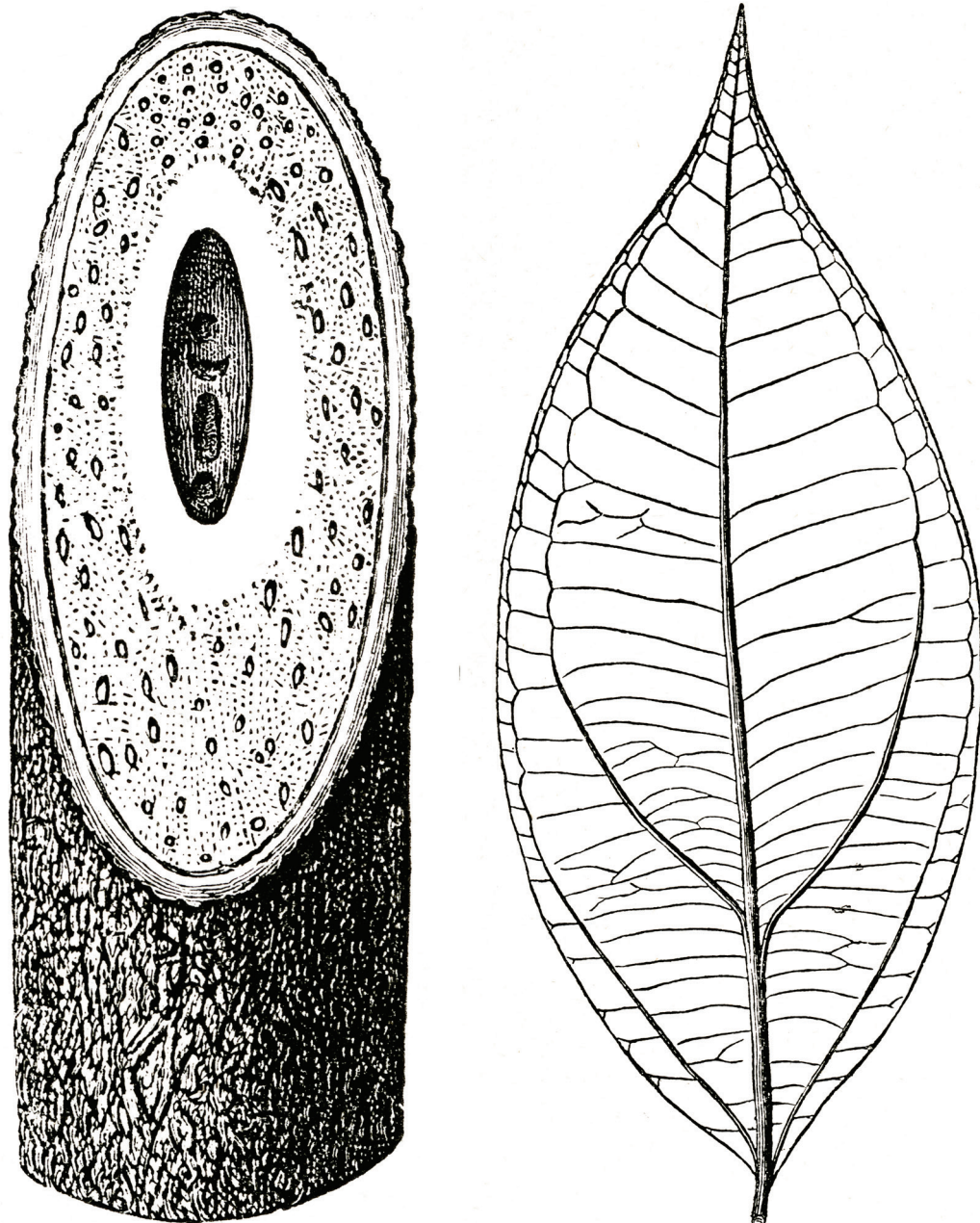


FIGURE 1. *Strychnos gubleri* G.Planchon. Illustrations of a cross section of a branch and a leaf by G. Planchon, first published as figures 1 and 4 in Gubler (1879). Scale not indicated in the original illustrations.



FIGURE 2. Specimen of *Strychnos gubleri* G. Planchon, A. Gaillard 16 (P), selected here as Epitype. © Muséum National d'Histoire Naturelle, Paris. Scale not included in the original illustration.



FIGURE 3. Types of *Strychnos panurensis* Sprague & Sandwith at the Herbarium, Royal Botanic Gardens, Kew. **A**, Lectotype, selected here (Stable URL <http://specimens.kew.org/herbarium/K000573468>); **B**, Isolectotype (Stable URL <http://specimens.kew.org/herbarium/K000573467>). © The Board of Trustees of the Royal Botanical Gardens, Kew.

Selected additional specimens cited: VENEZUELA. Amazonas: Municipio Autónomo Alto Orinoco, Río Cunucunuma, *J. J. Wurdack & L. S. Adderley 43072* (MO, NY, VEN); Municipio Autónomo Alto Río Negro, bajo río Siapa, boca del caño Chimoni, *G. Aymard et al. 10053* (MO, VEN); Municipio Autónomo Atabapo, Laja Nericagua, entre Caño Piojo y Caño Ucata, *G. A. Romero, F. Guánchez & L. Alvarez 1977* (GH, MO, NY, TFAV, VEN); Municipio Autónomo Atures, “Puerto Perico, Raudal d’Atures”, April 1887, *A. Gaillard s.n.* (kept at the herbarium of the *Faculté de pharmacie, Université Paris Descartes*). Apure: cerca de San Fernando, *T. Lasser s.n.* (VEN).

Field and herbarium characters: Detailed descriptions of *Strychnos gubleri* (as *S. panurensis*) were provided in English by Krukoff and Monachino (1942) and in Spanish by Krukoff and Barneby (1974). *Strychnos gubleri* can be identified using the following combination of characters (largely based on Krukoff and Barneby, 1974, on Brant and Berry, 2001: 29–31, and selected herbarium specimens

at GH): Leaf nodes, interpetiolar lines, and axillary buds glabrous; pubescence barely visible under the leaf blade; leaf blades elliptic-obovate to oblanceolate, 5–9 × 5–25 cm, green, brownish to grey in herbarium specimens, with 5-plinervate veins, reticulation conspicuous on both surfaces; inflorescences axillary, compound, generally elongated and bearing many flowers; calyx greenish yellow, flowers white, fragrant, corolla tube 1.0–2.5 mm long, lobes ca. 4 mm long, style glabrous; mature fruits to 2.5 cm in diameter, the pericarp macroscopically smooth, shiny, thin. The yellow to orange mature fruits are described as usually having one seed, but the fruits in the specimen collected by the senior author (Figure 5) had 1–4 seeds; according to Gaillard, the fruits have up to five seeds (Figure 2); the pulp of the fruits is white, turning lightly pink when exposed to air, and edible (Gaillard in Labesse, 1906).

Distribution: Based on the reported distribution of *Strychnos panurensis*, *S. gubleri* is found in Brazil, Colombia (Amazonas and Pacific coast), Panama, Peru, Venezuela

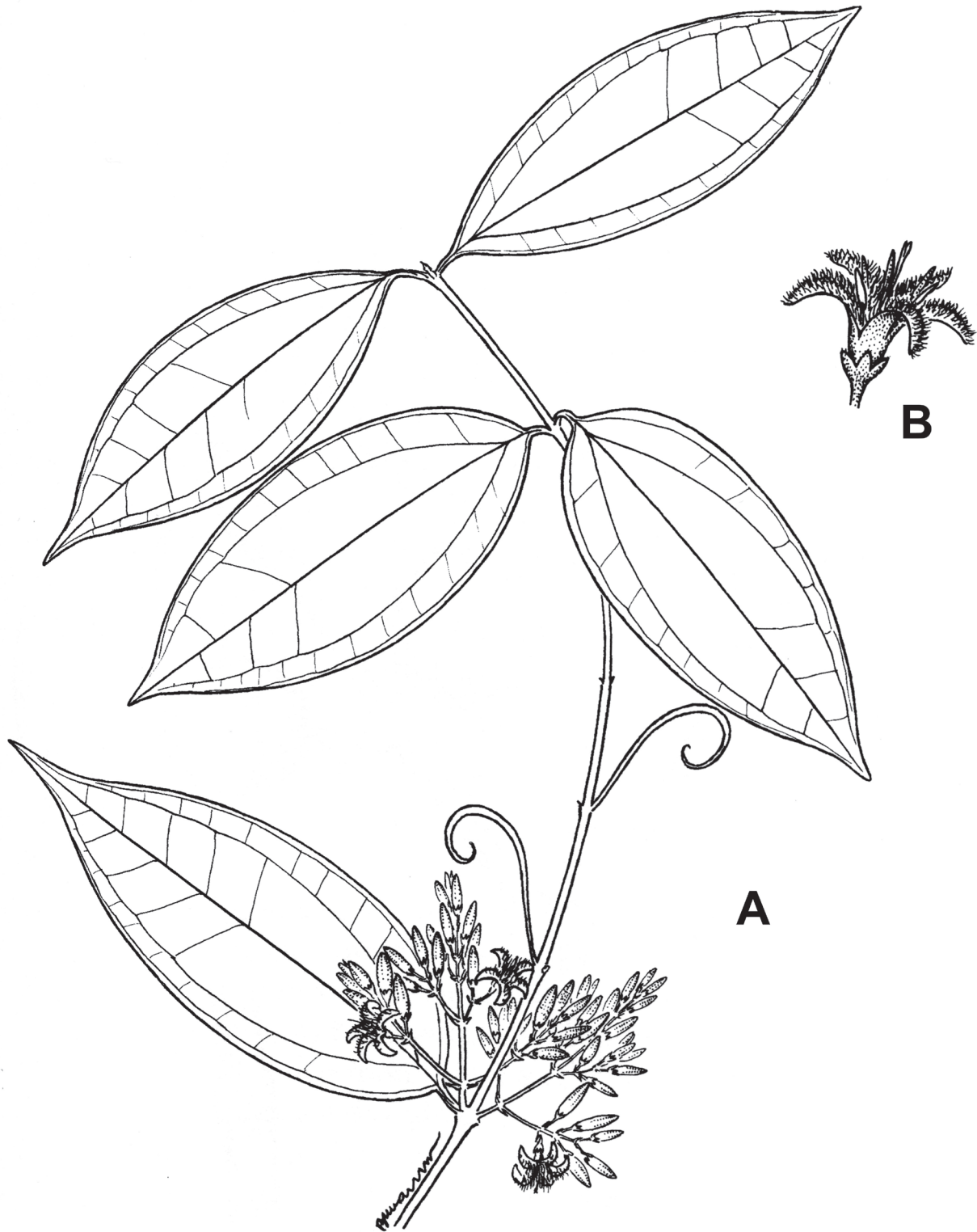


FIGURE 4. *Strychnos guebleri* G.Planchon (as *S. panurensis* in Brant and Berry 2001: 37, Figure 27; **A**, habit based on *T. Lasser s.n* [VEN]; **B**, flower based on *Wurdack and Adderley 43,072* [VEN]). Drawn by Bruno Manara and reproduced with permission from the Missouri Botanical Garden Press. Scale not indicated in the original illustration.



FIGURE 5. *Strychnos gubleri* collected by the senior author, *Romero et al.* 1977 (GH).

(Krukoff and Barneby, 1974); Ecuador (Brant and Berry 2001: 33); Mexico (Veracruz), Belize and Guatemala (according to Tropicos); the Guianas (according to specimens at P); and Costa Rica (Klings and Braham, 2005: 83; Sánchez, 2007: 216). In Venezuela it is known from the states of Amazonas, Apure, Bolívar, Guárico (Brant and Berry 2001: 33; Estrada, 2007: 538), and Zulia (according to TROPICOS).

Planchon (1880b) cited *S. gubleri* as the source of curare in the Orinoco river basin, later proposing *S. toxifera* as an additional source, which he called, quoting his sources, “curare fort” (Planchon, 1882; see also Le Janne, 1881).

Gaillard (in Labesse, 1906) added that *Strychnos gubleri* was used to prepare a weak curare (“Curare faible”):

“The weak curare is used only for hunting birds and small quadrupeds. It is often used to capture some live animals that only momentarily faint or are paralyzed.”

This weak curare may be the “curare destemplado” cited by Humboldt (Humboldt and Bonpland, 1811: 334; Humboldt, 1819: 267; 1820: 338; 1825: 528; 1942: 358; 1956: 296, in a footnote in 1811, 1819, and 1820).

As of 1979, *Strychnos gubleri* had not been chemically studied (Krukoff, 1979, as *S. panurensis*).

Strychnos gubleri, long overlooked since the late 1800s and early 1900s, is hereby re-instated and made available for the anthropological, botanical, ethnological, pharmaceutical, and scientific literature at large.

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