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Revision of the genus *Lasiacis* (Griseb.) Hitchc. (Poaceae, Paniceae, Boivinellinae)

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Abstract. A taxonomic revision of *Lasiacis* (Griseb.) Hitchc. 47 years since the last contribution (Davidse 1978) is proposed here. Historical and recent collections across 35 herbaria have been examined. Typifications are confirmed or emended, and 8 lectotypes are here designated (see Appendix III). Vernacular nomenclature and economic and therapeutic uses are updated based on bibliographic data or on information from herbarium specimens. For each taxon examined, an iconograph supporting the main diagnostic characters is proposed. Taxa previously described as varieties, such as *L. divaricata* var. *austroamericana*, *L. rugelii* var. *pohlilii*, and *L. ruscifolia* var. *velutina* are elevated to the rank of species, and *L. acuminata* Swallen has been resurrected as a valid species, recognizing a total of 22 taxa, 18 species and 4 varieties.

Keywords: Boivinellinae, *Lasiacis*, Neotropics, Nomenclature, Paniceae, Poaceae, Taxonomy.

...if each biologist wishes to maintain a rich and interesting world to study ..., we cannot afford the luxury of ignoring those most basic of all biological skills-taxonomy and the knowledge of which species lives where (Pimm and Lawton 1998).

INTRODUCTION

Members of the genus *Lasiacis* (Griseb.) Hitchc. are widespread in various habitats of the Neotropics. (Fig. 1). *Lasiacis* was originally described as a section of *Panicum* L. by Grisebach (1864) and later was elevated to the generic rank by Hitchcock (1910) because of its distinctive characters, such as globose spikelets placed obliquely on the pedicels, obovoid fruits, pubescent at the apex and black/purple colored at maturity, palea abaxially concave and adaxially gibbous, oil production in the epidermis of the glumes, sterile lemma at maturity, and bamboo-like growth habit.

The first complete revision of *Lasiacis* was made by Hitchcock (1910). Sixty-eight years after Hitchcock's contribution in 1910, Davidse (1978) published a taxonomic treatment providing detailed information about the morphology, anatomy, and cytology of *Lasiacis*, focusing on polymorphism and phenotypic plasticity. One of the most controversial aspects is the number of taxa circum-



Figure 1. *Lasiacis* (Griseb.) Hitchc., general geographic distribution.

scribed in the genus. Hitchcock (1910) reported 15 species, while Davidse (1978) recognized 16 species and 13 varieties confirmed later by Webster (1988). In turn, Tzvelev (1989) recognized 25 species, and more recently 15 species were reported by Kellogg (2015) and Soreng et al. (2022). The uncertain number of the taxa in *Lasiacis* is due to the high morphological polymorphism and the potential degree of hybridization as observed by Davidse (1978).

This study is based on an exhaustive investigation of the herbarium and bibliographic documentation, and presents an updated taxonomic treatment as a starting point for further systematic studies.

Monographs and floristic treatments (Heywood 2001; Ebach et al. 2011; Lagomarsino and Frost 2020; Gorneau et al. 2022; Löbl et al. 2023) represent an improvement and a solid contribution upon which all biological works are based at any further level, reminding us the basic role of “*taxonomists and taxonomy*,” which is often at risk of “*extinction*” and/or “*disappearance*” (Isely 1972; Baldini et al. 2021).

MATERIAL AND METHODS

This work is based on examinations of herbarium specimens viewed digitally, or *in-situ*, or via institutional loans by the author. The review of herbarium specimens is an important resource since it provides past and recent data, and often uncovers unique novelties (Heywood 2001; Bebbler et al. 2010). Acronyms of the herbaria cited in the present work are according to Thiers (2016–): BM, BR*, C, CAS*, CEPEC, COL*, F*, FI (incl. FI-Webb herbarium), FT, FTG, G, HPZ, HUEFS, IJ#, K, L#, LAGU, LINN, MA, MHES, MO, NY, P, PI, PMA, RO, SCZ (= STRI), SD*, TO, UPS, US, USJ#, VEN#, VPI, W. (*) consulted online, (#) through loans. Specimens collected by the author and cited here has been deposited at CAY, FT, MHES, PMA, and SCZ, herbaria.

Typification is based on the original material according to McNeill (2014) and the current ICN (Turland et al. 2025). Although many digital images are available online, direct examination of the type mate-

rial has proven to be preferable and more than an indirect evaluation. Type material is followed by the acronym of the herbarium (Thiers 2016-), the correspondent barcode and, in its absence, by the accession number. Descriptions are based on direct observations of the author compared with those reported by Hitchcock (1920) and Davidse (1978, 1994). Chromosome numbers when available are reported at the end of each description, and also in bold in the selected 'Specimens Section' including those from unpublished data reported in the herbarium labels. Vernacular names and ethnobotanical information are based on herbarium and bibliographical sources. General geographic distribution from bibliographic and online sources (GBIF, POWO, TROPICOS) are reported in a distinct section, and ecological observations are based on field observations as well as on herbarium specimens. Descriptive terminology follows Davidse (1978) and Beentje (2010).

In the 'Selected Specimens' section the countries of distribution for each taxon are listed alphabetically, and the specimens are in chronological order with the first collector followed by "*et al.*" in case of more than two collectors.

The original drawings published here were created by Anne Maury (FT) and Michelle-Marie Nelson (US).

SPECIES AND VARIETY CONCEPT

In this revision I follow the morphological species concept of Davis and Heywood (1963: 91), "... *assemblages of individuals with morphological features in common and separable from other such assemblages by correlated morphological discontinuities in a number of features. The species in this sense is intended to be a collection of samples so similar that not only the describer, but other users would have little hesitation in saying they are alike, recognizable and communicable*", and as interpreted and commented in Minelli (1993: 63), Stuessy (2009: 144), and Stuessy et al. (2014: 296). The rank of variety here adopted is defined by a secondary variation with a morphological and geo-ecological correlations (White 1971).

GENERAL MORPHOLOGY

Roots and culms

The root system in *Lasiacis* is quite uniform and does not represent a character of systematic importance. In general, the roots are robust and often form long rhizomes (Figs. 2, 3). All species develop adventitious roots either at the basal nodes or at the culm nodes as well

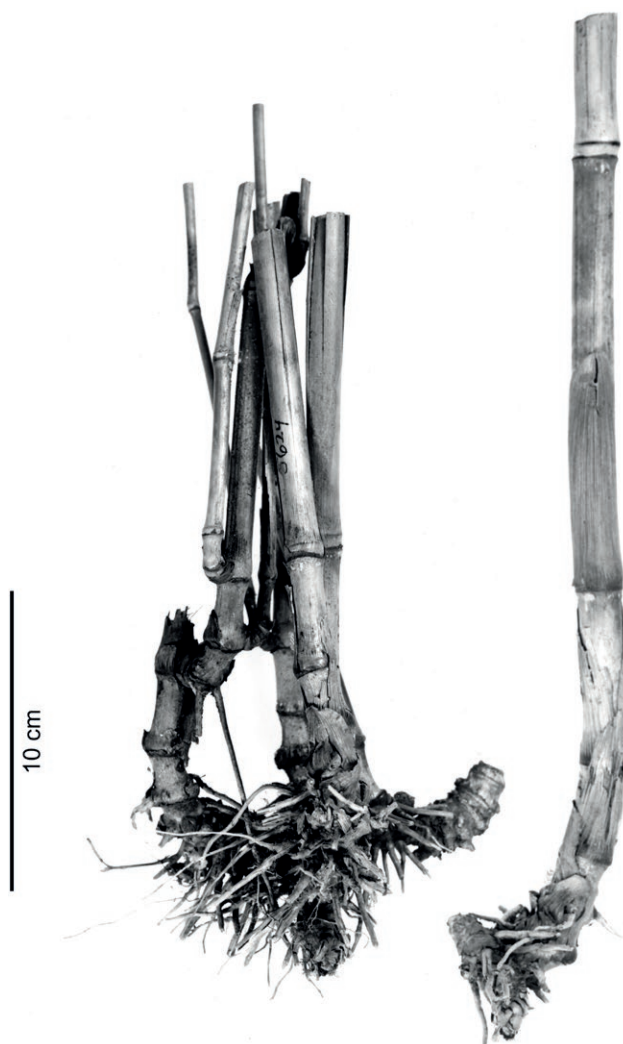


Figure 2. *L. maculata* (Aubl.) Urb., rhizomatous root system. [Colombia, T.R. Soderstrom 1413 (US04285553)].

as robust prop roots [e.g., *L. maculata*, Panama, Coclé, Stapf et al. 828 (FT010893); *L. procerrima*, Panama, El Llano-Cartí, Stapf et al. 791 (FT010896)] at the base of the culm. A detailed description of the seedlings of *Lasiacis* according to the terminology of Hoshikawa (1969) is given in Davidse (1978). Several species have an erect habit while others are creeping and form long prop roots that remain unbranched above the ground (e.g., *L. grisebachii*, *L. sloanei*, *L. standleyi*).

Culms are often striking for their large size and woody habit, and can be 4-10 m tall (Fig. 4). The woody habit cannot be ascribed to a secondary growth, but only to a gradual accumulation of lignified primary tissue. Some species have a climbing or scandent habit, usually arching, and tend to lean on the nearby vegetation. Culm internodes can be either solid and pithy or par-



Figure 3. *L. maculata* (Griseb.) Hitchc., rhizomatous root system [Panama, Veraguas, M. Stapf et al. 844 (FT010891) photo R.M. Baldini].

tially solid. Culm pulvini are present at the base of each internode and are strongly developed in all species.

Culms at maturity are clearly branched. A primary branch can produce several open secondary branches. Although Davidse (1978) does not attribute a diagnostic value to primary and secondary branching, in my opinion it can be useful for identification.

Leaves

Leaves in *Lasiacis* vary from linear-lanceolate (*L. linearis*, *L. oaxacensis* var. *oaxacensis*, *L. oaxacensis* var. *maxonii*) to elliptic, oval (*L. acuminata*, *L. anomala*, *L. divaricata* var. *divaricata*, *L. divaricata* var. *leptostachya*, *L. ligulata*, *L. maculata*, *L. rhizophora*, *L. ruscifolia*, *L. scabrior*, *L. sloanei*, *L. standleyi*, *L. velutina*). The sheath margins are free with a ciliate upper margin; the apex of the sheath can be extended as a narrow auricle. The elongated collar is called petiole or pseudopetiole.

A notable developmental variation feature is leaf pubescence which can be very common in secondary or tertiary branches and along the culm during the growth of the plant. The taxonomic value of leaf pubescence must be taken with care, depending on different causes correlated to the developmental, ecological or genetic factors. Some species have many different pubescence types, such as *L. maculata*, *L. nigra*, and *L. ruscifolia*.

Leaf shape in *Lasiacis* is strictly correlated to habitat of forest margin in the context of the “Forest Shade Clade” (see below Fig. 8). No-Kranz leaf anatomy is correlated with the C_3 photosynthesis pathway. A detailed



Figure 4. *L. maculata* (Griseb.) Hitchc., general habit. In the foreground Dr. Richard S. Cowan. [Colombia, photo from T.R. Soderstrom 1413 (US04285553)].

description of the anatomy of the leaves in *Lasiacis* is given in Davidse (1978).

Inflorescences and spikelets

The inflorescence in *Lasiacis* is a panicle with a diagnostic taxonomic significance due to its size, mode of branching, and the arrangement of the spikelets (Hitchcock 1920; Davidse 1978). Except for *L. anomala*, all species of *Lasiacis* possess the *Panicum* type (Cialdella and Vega 1996; Zuloaga and Scataglini 2023), consisting of two glumes and two distichous florets alternately arranged on the rachilla. The lower or sterile floret bears a lemma, a palea, and sometimes a staminate flower with three stamens and two - sometime - rudimentary lodicules. The upper floret is fertile with a lemma, a palea, and two lodicules, three stamens and a branched stigma. At maturity the fertile floret becomes stiff with a tough surface.

An exception is represented by *L. anomala* whose spikelet differs in having an additional sterile lemma. The spikelet bears two glumes, two sterile florets (sometimes one of them staminate), and one fertile floret. This is a rare condition in the Paniceae found also in *Panicum quadriglume* (Döll) Hitchc. (Palacios 1968; Davidse 1978; Nicora and Rúgolo de Agrasar 1987; Cialdella and Vega 1996; Zuloaga and Scataglini 2023). (Figs. 5, 6, 7).

Distribution and ecology

Lasiacis is distributed in tropical and subtropical Americas, from the United States of America (Florida, Louisiana), the Caribbean area, through West Indies, Central America to Argentina (Hitchcock 1920; Davidse 1978; IPNI 2025; POWO 2025; TROPICOS 2025), covering the entire area of the Neotropical region (Cope



Figure 5. Spikelet structure in *Lasiacis* (Griseb.) Hitchc., staminate floret in white, perfect floret in black. [Modified from Cialdella and Vega (1996)].



Figure 6. Spikelet structure in *Lasiacis anomala* Hitchc., neutral floret dotted, staminate floret in white, perfect floret in black. [Modified from Cialdella and Vega (1996)].

2005) and most of its subregions (Morrone and Ebach 2022). (Fig. 1).

However, the global geographic distribution of *Lasiacis* has often been misunderstood. Clayton and Renvoize (1986), Watson et al. (1992) and Kellogg (2015) report its presence in Madagascar, erroneously including in the synonymy the genus *Pseudolasiacis* (A.Camus) A.Camus (Camus 1945) that is quite distinct from *Lasiacis* as pointed out in Bosser and Florens (1999), this excluding an intercontinental geographical disjunction of *Lasiacis*.

Lasiacis has a distribution range from sea level up to about 3500 m, preferring shady mesophytic forest margins and frequently growing deep into the forest. It often acts as



Figure 7. SEM photograph of the spikelet of *Lasiacis anomala* Hitchc. [Trinidad, G. Davidse 2523 (L0797368), from Cannoni 2013].

a pioneer element in the ecological succession of secondary forests, including margins of the tropical savannah.

Due to its ecology, *Lasiacis* is often found with companion genera such as *Acroceras* Stapf, *Echinochloa* P.Beauv., *Oplismenus* P.Beauv., *Panicum* L. (subg. *Dichanthelium*, sect. *Cordovensia*), *Pseudechinolaena* Stapf to form the so-called “Forest Shade Clade” (FSC) as described by Giussani & al. (2001), Morrone et al. (2008) and confirmed by Teerawatananon et al. (2009) (Fig. 8). All taxa have large leaf blade, an indicator of habitats between forest and open areas (Gallaher et al. 2019).

Lasiacis is a C_3 grass, with a typically non-Kranz panicoid anatomy (Davidse 1978; Watson et al. 1992). Its presence even in C_4 -dominated environments is related to its preference for shaded areas at the forest edge, and up to the montane heights to 3000–3500 m, where it increases its dispersal in more open areas (Giraldo-Cañas 2010). Recent phylogenetic studies have highlighted the uniform correlation between the genera belonging to subtribe Boivinellinae Pilg., and in particular to the “Forest

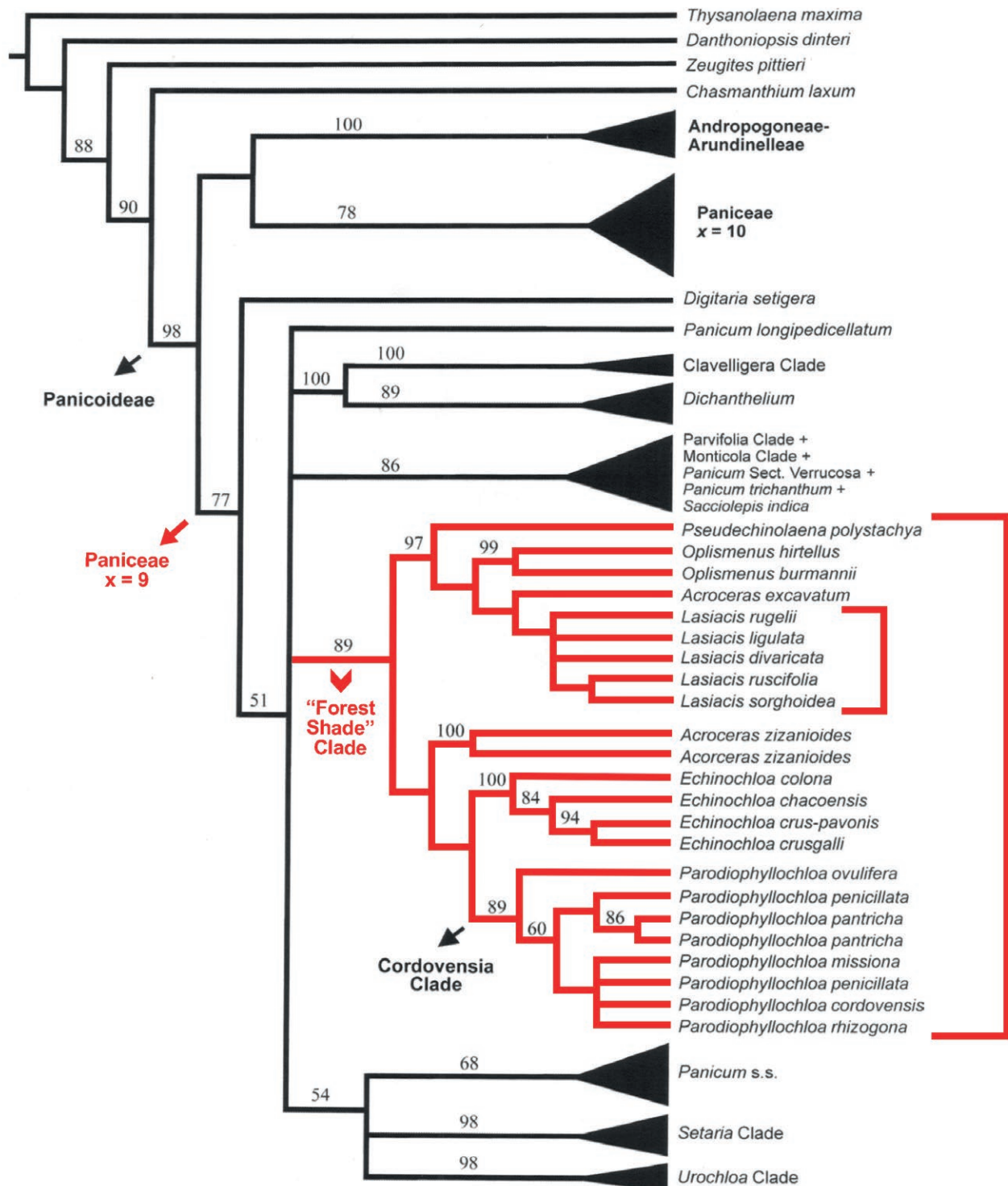


Figure 8. The "Forest Shade Clade" (Modified from Morrone et al. 2008).

Shade Clade", and C_3 photosynthesis, also including the genus *Alloteropsis* J.Presl as an example of reversion from C_4 to C_3 pathway (Ibrahim et al. 2009; Washburn et al.

2015; Hodkinson 2018). The Boivinellinae photosynthetic pathway can be summarized as follows: C_3 , C_4 NADP-ME and C_3 - C_4 intermediates (Morrone et al. 2011).

REPRODUCTIVE BIOLOGY AND CITOLOGY

As result of field and greenhouse observations Davidse (1978) recognized a mixed reproductive system within *Lasiacis* encompassing outbreeding and inbreeding pathways, the latter as dominant force, resulting in a minimal morphological variation within local populations. However, outcrossing among different populations is beneficial to guarantee a good level of genetic variability in a large spatial and geographical scale. Grasses are considered anemophilous, but tropical forest grasses, such as herbaceous bamboos as *Olyra* L., *Pariana* Aubl., *Piresia* Swallen (Gagné 1969; Soderstrom and Calderón 1971; Seres and Ramírez 1995; Gibson 2009; Saunders 2017), are visited by insects. During collecting trips in Panama, I saw some plants of *Cryptochloa variana* Swallen, *Pariana argentea* Davidse & Hollowell, and *L. maculata* visited by small diptera during anthesis when the stigmas were completely exerted. I assume this as an unspecialized and opportunistic pollination probably adequate to maintain high levels of genetic variability. Dórea et al. (2018) suggest a sort of insect-assisted anemophily in *L. ligulata*.

Paniceae have a base chromosome number of $x = 9$, 10 (Stebbins 1956; Davidse 1978; Gould and Shaw 1983; Hunziker and Stebbins 1987; Hilu 2004; Kellogg 2015). *Lasiacis* is typically a panicoid genus with $x = 9$ (Davidse 1978; Gould and Shaw 1983; Kellogg 2015). Davidse (1978) carried out accurate cytological investigations, reporting chromosome counts from natural populations of $n = 18$ and $2n = 36$, concluding a speciation event at the $4x$ level as a result of hybridization followed by polyploidization with subsequent stabilized diploidization (see Doyle et al. 2008).

DISPERSAL

In *Lasiacis*, as soon as the fruit is mature, the glumes and sterile lemmas become shiny black or purple and consequently attractive for bird dispersal (Davidse and Morton 1973; Snow 1981; Wheelwright et al. 1984; Davidse 1987; Cannoni 2013; Purificação et al. 2014; Fig. 9). The dispersal unit in *Lasiacis* is remarkably unique in Paniceae and can be considered basically as a black-purple, berry-like unit that attracts birds, which nourish from the oil present in the epidermis of the spikelet bracts. It can be argued that it is a result of a coevolutionary process due to an adaptative transition from a passive mode to an active mode via internal bird dispersal.

The relationship among the habitats of most *Lasiacis* species and the fruit eating birds (Davidse and Mor-



Figure 9. *Lasiacis nigra* Davidse: mature fruit black colored (Panama, Chiriquí, photo R.M. Baldini).

ton 1973) was revised and confirmed by Cannoni (2013) with a good correlation between the geographical distribution, habitat types of the *Lasiacis* species, and the behavior of the avian species during their nesting and frugivorous activities. Plant-frugivore interactions play a key role in the Neotropics and Caribbean islands and are useful in understanding the floristic distribution of native or introduced species (Vollstädt et al. 2022).

GENERAL PHYLOGENY AND BIOGEOGRAPHY

Lasiacis belongs to the PACMAD clade subfam. Panicoideae, tribe Paniceae, subtribe Boivinellinae Pilg. Butzin (1970a, 1970b) considered *Lasiacis* in the Paniceae belonging to the subtribe Microcalaminae Butzin exclusively on morphological characters, such as the presence of leaf blades with cross-veins, inflorescence type, compression of the spikelet, and lemma orientation (see also Davidse 1978), including genera such as *Oplismenus* P.Beauv. and *Pseudochinolaena* Stapf, typical of the “Forest Clade Shade”.

The phylogenetic position of *Lasiacis* within the subtribe Boivinellinae Pilg. is clearly supported by recent contributions (Morrone et al. 2011; Soreng et al. 2015, 2017, 2022; Kellogg 2015; Burke et al. 2016; Saarela et al. 2018). From the biogeographic and macro-evolutionary point of views, subtribe Boivinellinae, known as “Forest Clade Shade” in broad sense (Giussani et al. 2001; Hackel et al. 2018; Gallaher et al. 2022), is basal in the Paniceae, and includes grasses mainly living in shaded and forest edge habitats.

The origin of Boivinellinae is placed in the Tertiary between 27.65 and 21.92 Ma (Oligocene-Miocene) in

Madagascar and later spread to Asia and Central-South America including Caribbean areas (Hackel et al. 2018) and comprises C_3 , C_4 as well as C_3 - C_4 intermediate genera (Hodkinson 2018; Gallaher et al. 2022). The age estimation proposed by Hackel et al. (2018) agrees with that reported by Bouchenak-Khelladi et al. (2010).

Phytogeographic evaluation of the genus *Lasiacis* in the current neotropical scenario appears more complex. Davidse (1985) in his phytogeographic analysis of the Panamanian grasses, focused on the migratory movements between Central and South America. Bearing in mind the role of Panama as a land bridge in Oligo-Pliocene transition (Gentry 1982; Kirby and MacFadden 2005; Bacon et al. 2012; Graham 2010, 2011, 2018; Leigh et al. 2014) and paying attention to the fact that migration is not always unidirectional, it is, therefore, difficult to generalize migration patterns in a simplistic way. Davidse (1985) formulated the hypothesis of first differentiation of primitive creeping type species of *Lasiacis* in Central America from generalized woody type ancestral elements previously migrated from South America and followed by a counter migration of woody-like species to South America. Even if attractive, this hypothesis requires more solid phylogeographic support.

Undoubtedly, the current state of knowledge of *Lasiacis* includes species with a wide distribution in Central and South America (e.g., *L. maculata*, *L. ligulata*, *L. nigra*, *L. ruscifolia*), others mainly concentrated in Central America and the Caribbean region (e.g., *L. grisebachii*, *L. oaxacensis*, *L. pohlii*, *L. rugelii*), and with a localized distribution (e.g., *L. acuminata*, *L. harrisii* and *L. velutina*), and others showing a geographic vicariance divergence on continental scale (e.g., *L. divaricata* var. *divaricata* and *L. austroamericana*).

TAXONOMIC TREATMENT

Lasiacis (Griseb.) Hitchc., Contr. U.S. Natl. Herb. 15: 16. 1910. [see also Chase (1911)].

Panicum L. sect. *Lasiacis* Griseb., Fl. Brit. W. Ind. 551. 1864.

Type: *Panicum divaricatum* L., Syst. Nat., Ed. 10, 2: 871. 1759. – Lectotype, designated (as holotype) by Hitchcock and Chase, Contr. U. S. Natl. Herb. 22: 20 (1920).

Description

Perennial; shrubby grasses, often with woody culms, sometimes climbing onto trees, often rooting at the

nodes. *Culms* erect, decumbent, open and branched; *internodes* solid or hollow, lignified. *Leaf sheaths* persistent with evident collars; *blades* pseudopetiolate to cuneate at the base, lanceolate to broader; *ligules* (0.4)4–5(–7.0) mm long, conspicuous or inconspicuous, glabrous, often reduced to a rim of hairs or densely pilose or pubescent. *Inflorescences* an open panicle, sometimes with deflexed branches, often densely spikeleted. *Spikelets* 3–6(–7.0) mm long, solitary, homomorphic, subglobose, ovoid, ellipsoid, oblique on their pedicels, deciduous; *glumes* and *sterile lemmas* generally broad, strictly apiculate, chartaceous, green and often black at maturity, nerved, glabrous, with a small tuft of hairs; *lower glumes* more or less 1/3 the length of the spikelet, several to many-veined; *upper glumes* and *sterile lemmas* subequal, about as long as spikelet, rounded on back; *lower paleas* small to well-developed, *lower floret* sterile or staminate; a second sterile lemma in *L. anomala*; *upper fertile florets* generally shorter than the spikelet, elliptical to obovate, shiny; *fertile lemmas* indurate, inclosing a membranous palea or a staminate flower, white, margins enrolled over the margins of the palea tending to be gibbous above, and concave below; both fertile lemmas and paleas woolly pubescent at their apices; stamens 3, styles 2, lodicules 2, fleshy and truncate. *Caryopses* ovate to obovate. *Chromosome number*: $n = 9$, $2n = 18, 36$. (Davidse 1972, 1978).

Etymology

From the Greek *lasios*, woolly, and *akis*, point, referring to the tuft of wool at the apex of the spikelet (Quattrocchi 2006; Clifford and Bostock 2007).

General distribution

From Southern United States of America (Florida, Louisiana), Central Mexico through the West Indies, Central America to South America up to northern Argentina (Davidse 1978; Kellogg 2015). (Fig. 1).

List of taxa

1 - *Lasiacis acuminata* Swallen, Mem. New York Bot. Gard. 9: 267. 1957.

2 - *Lasiacis anomala* Hitchc., J. Wash. Acad. Sci. 9: 1919.

3 - *Lasiacis austroamericana* (Davidse) Baldini

4a - *Lasiacis divaricata* (L.) Hitchc. var. *divaricata*, Contr. U.S. Natl. Herb. 15: 16. 1910.

4b - *Lasiacis divaricata* (L.) Hitchc. var. *leptostachya* (Hitchc.) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

5 - *Lasiacis grisebachii* (Nash) Hitchc., Bot. Gaz. (Crawfordsville) 54: 302. 1911.

6 - *Lasiacis harrisii* Nash, Torrey 13: 274. 1913.

7 - *Lasiacis ligulata* Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 337. 1917.

8 - *Lasiacis linearis* Swallen, Phytologia 4: 427. 1953.

9 - *Lasiacis maculata* (Aubl.) Urb., Symb. Antil. 8: 751. 1921.

10 - *Lasiacis nigra* Davidse, Phytologia 29: 152. 1974.

11a - *Lasiacis oaxacensis* (Steud.) Hitchc. var. *oaxacensis*, Proc. Biol. Soc. Wash. 24: 45. 1911.

11b - *Lasiacis oaxacensis* (Steud.) Hitchc. var. *maxonii* (Swallen) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

12 - *Lasiacis pohlii* (Davidse) Baldini

13 - *Lasiacis procerrima* (Hack.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911.

14 - *Lasiacis rhizophora* (E.Fourn.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911.

15 - *Lasiacis rugelii* (Griseb.) Hitchc., Bot. Gaz. (Crawfordsville) 51: 302. 1911.

16 - *Lasiacis ruscifolia* (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911.

17 - *Lasiacis scabrior* Hitchc., Proc. Biol. Soc. Wash. 40: 85. 1927.

18 - *Lasiacis sloanei* (Griseb.) Hitchc., Bot. Gaz. (Crawfordsville) 57: 302. 1911.

19 - *Lasiacis standleyi* Hitchc., Proc. Biol. Soc. Wash. 40: 86. 1927.

20 - *Lasiacis velutina* Swallen, Ceiba 4: 288. 1955.

Identification key of *Lasiacis* taxa [adapted and amended from Davidse (1978)]

1. Spikelets with 2 glumes and 2 sterile lemmas. **2. *L. anomala***
- 1'. Spikelets with 2 glumes and 1 sterile lemma.
2. Culms solid, plants without a strong central cane, plants creeping or low-clambering, rooting at the nodes.
3. Ligules inconspicuous, 0.3(-0.4)-1.1(-1.3) mm long, ciliate; leaf blades lanceolate, 7.0-18 cm long, 1.3(-1.5)-3.5(-4.0) cm wide **14. *L. rhizophora***
- 3'. Ligules conspicuous, 1.5-6.0 mm long; leaf blades linear to lanceolate, 15-30 cm long, 0.7-2.5(-2.7) cm wide.
4. Leaf sheaths glabrous, spikelets paired or single clusters at the end of the panicle branches; lower floret staminate or not, length of palea subequal to the fertile floret.
5. Ligules 2.0-6.0 mm long..... **11a. *L. oaxacensis* var. *oaxacensis***
- 5'. Ligules 0.5-1.0(-2.0) mm long..... **11b. *L. oaxacensis* var. *maxonii***
- 4'. Leaf sheaths puberulent; spikelets on long pedicels toward the end of the panicle branches; lower floret without a flower and palea 1/3-1/2 rarely 2/3 of the fertile floret..... **8. *L. linearis***
- 2'. Culms entirely or partially hollow; plants creeping and rooting at the lower nodes, or erect, arching, climbing.
6. Plants creeping and rooting at lower nodes, ligules inconspicuous with a ring of hairs, 0.3-0.5 mm long
7. Ligules inconspicuous, reduced to a ring of hairs, 0.3-0.5 mm long; palea of the sterile floret subequal to the length of the fertile floret **5. *L. grisebachii***
- 7'. Ligules conspicuous, 4.5-7.0(-8.0) mm long, lacerate, slightly ciliate, palea of the fertile floret 1/2 the length of the fertile floret **19. *L. standleyi***
- 6'. Plants erect
8. Leaf blades cordate-clasping, 15-40(-45) cm long; lower nodes thick, hollow, with prop roots; inflorescences wide 20-120(-130) cm long..... **13. *L. procerrima***
- 8'. Leaf blades not clearly cordate, smaller; without prop roots; inflorescence smaller, 2-30(-35) cm long.
9. Ligule evident, 3.5-7.0 mm long.
10. Panicle compact nearly spherical, up to 10 cm long, the base included in the upper sheath, rarely exerted; adaxial leaf surface scabrous; ligule up to 7.0 mm long **17. *L. scabrior***
- 10'. Panicle ovoid, 2-25(-30) cm long, usually totally exerted;

- adaxial leaf surface glabrous to pubescent; ligule less than 3.5 mm long.
11. Panicle branches ascending and widely spreading, and deflexed at maturity; leaf sheaths glabrous to pubescent; blades 5–18 cm long, (0.5–)1.0–3.0(–4.5) cm wide..... **7. *L. ligulata***
- 11'. Panicle branches ascending and less spreading, not deflexed at maturity; leaf sheaths papillose-hispid, or pubescent; blades 5.0–24 cm long, 1.2–4.5 cm wide..... **9. *L. maculata***
- 9'. Ligule not well visible, if evident less than 1.5 mm long.
12. Blades narrowly lanceolate, glabrous on both surfaces, sometimes with small hairs **3. *L. austroamericana***
13. Blades linear to narrowly lanceolate, 0.5–2.0 cm wide
14. Panicle with few spikelets; lower panicle branches reflexed or/and spreading; pedicels divergent at maturity; culms strongly arching, and clearly zigzag **4a. *L. divaricata* var. *divaricata***
- 14'. Panicle not as above, lower panicle branches not retroflexed; culms straight zigzag.
15. Spikelets 4.0–5.0 mm long
16. Base of panicle included in the sheath; pedicels and panicle branches short..... **4b. *L. divaricata* var. *leptostachya***
- 16'. Base of the panicle exerted; pedicels branches not as above, slender, spreading, flexuous **10. *L. nigra***
- 15'. Spikelets 3.5–4.5 mm long.
17. Blades 0.8–1.0 cm wide, spikelets ovoid erected..... **6. *L. harrisii***
- 17'. Blades 0.5–3.0 cm wide..... **3. *L. austroamericana***
- 13'. Blades ovate-lanceolate, more than 2 cm wide.
18. Panicle open and sparsely branched, with few, large spikelets up to 5.0(–5.3) mm long.
19. Pedicels short, appressed; blades 1.5–5.0 cm wide, **18. *L. sloanei***
- 19'. Pedicels longer, spreading; blades 0.5–2.5 cm wide **10. *L. nigra***
- 18'. Panicle ovoid not clearly open, with many, smaller globose spikelets up to 4.0 mm long..... **16. *L. ruscifolia***
- 12'. Blades pubescent at least on one surface.
20. Blades small, short and broad, ovate, 2–7 cm long, 0.5–3.0 cm wide.
21. Upper blade hispid, velutinous to pilose; panicle branches densely pilose..... **20. *L. velutina***
- 21'. Upper blade glabrous to puberulent, rarely pilose; panicle branches scabrid or puberulent, rarely pilose.
22. Culms papillose to pubescent, strongly zigzag; panicle branches deflexed; spikelets obovate, 4.5–5.0 mm long..... **15. *L. rugelii***
- 22'. Culms glabrous, not conspicuously zigzag, erect at the base; spikelets globose 3.5–4.4 mm long..... **12. *L. pohlii***
- 20'. Blades larger, linear-lanceolate to acuminate, panicle open, large, often exceeding the sheath.
23. Blades linear-lanceolate, ligule 0.5–2.0 mm long, spikelets obovate, 4.0–5.0 mm long, **10. *L. nigra***
- 23'. Blades acuminate, ligule 0.2–0.5 mm long, spikelets globose, 3.0–4.8 mm long..... **1. *L. acuminata***
- (1) *Lasiacis acuminata*** Swallen, Mem. New York Bot. Gard. 9: 267. 1957. (Fig. 10).

Type: Venezuela, Territorio Amazonas, Great Rapids of the Orinoco, Isla Carestia at Saltos Carestia y Galio, 5 km north of Sanariapo, 100–120 m, erect to 2 m, 11 Nov. 1953, *Bassett Maguire, John J. Wurdack & George S. Bunting* 36171 (holotype: US! [barcode US00134094]; isotype NY! [barcode NY00381281]).

Description

Perennials. Culms 2–6 m long, caespitose, erect and arching or clambering into shrubs, with slender branches as much as 50–60 cm long, 1–5 mm wide, upper part turned upward and climbing, glabrous, sometimes slightly dotted. *Leaf sheaths* mostly 3–5 cm long, generally longer than the internodes, pilose or hirsute toward the distal part, or nearly glabrous; *collars* villous, with margins ciliate, hairs 3.5 mm long; *ligules* 0.4–0.8 mm long, firmly membranous roundly ciliate, hairs 2 mm long; *blades* 3–8 cm long, 0.4–2.0 cm wide, lanceolate-acuminate densely ciliate on abaxial, less on the adaxial surface. *Panicles* 9–18 cm long, branches solitary, narrowly to widely ascending, few-flowered, scabrous. *Spikelets* 3.0–4.8 mm long obovate to subglobose; *lower glumes* 1.5–2.5 mm long, 5–7-veined; *upper glumes* 2.5–3.5 mm long, 3–6(–7)-veined, *sterile florets* staminate; *lemmas* 7–9-veined, *paleas* 1/3 the length of the fertile floret, *anthers* 2.5 mm long; *fertile florets* 2.5–4.0(–4.8) mm long, 1.8–2.8 mm wide; *anthers* 2.0–4.0 mm long, white, *stigmas* white. *Chromosome number*: $n = 18$ (Davidse 1978 as *L. sorghoidea*).

Distribution

Venezuela.

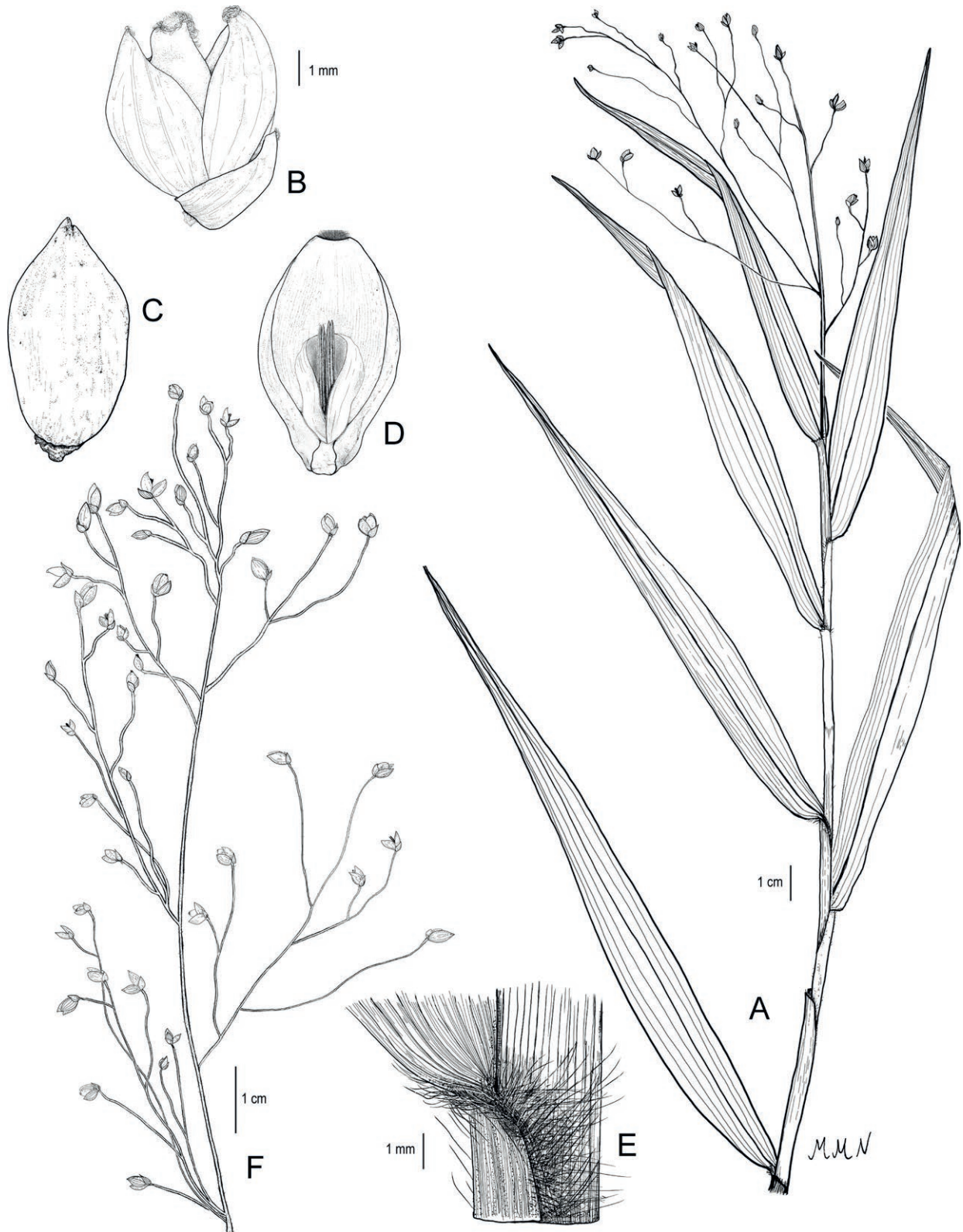


Figure 10. *Lasiacis acuminata* Swallen: **A.** Habit - **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view with lower persistent palea; **E.** Ligular area; **F.** View of the upper culm [A-F. from the holotype: Maguire *et al.* 36171 (US00134094)]. Michelle-Marie Nelson delineavit.

Distribution (bibliographic references)

Swallen (1957); Davidse (1978).

Ecology

Primary forest edges, roadsides, and very common also in secondary forest edges. 100–1500 m.

Phenology

October through May.

Remarks

Upon careful examination of the Venezuelan material, other characters confirm the validity of *L. acuminata* Swallen (Swallen 1957) such as: the ratio between inflorescence and terminal leaves, the open inflorescence with a smaller number of flowers if compared to *L. maculata*, the ratio between the persistent palea of the staminate flower and the maximum reduction of the ligule reduced to a ring of hairs.

Selected specimens

VENEZUELA. Amazonas. 12.5 km S of Puerto Ayacucho, 1 Nov. 1971, *G. Davidse* 2785 (K, US); Isla Carestia, a small island in the Río Orinoco, ca. 5 km NNW of Sanariapo, 50 m, 3 Nov. 1971, *G. Davidse* 2875 (MO), *n* = 18! (as *L. sorghoidea*, Davidse 1978); **Aragua.** Parque Nacional Henry Pittier NW of Maracay, Rancho Grande, 1150 m, 13 Nov. 1971, *G. Davidse* 3047 (MO); 7.4 km S of Alto de Choroní (highest pt. on road) along road to Maracay, 1000 m, 14 Nov. 1971, *G. Davidse* 3087 (MO); 5 km S of Alto de Choroní, along road to Maracay, cloud forest, 1200 m, 14 Nov. 1971, *G. Davidse* 3103, 3104 (MO); **Barinas.** 31 km NW of the Merita intersection (just outside of Barinas) along road to Merita, 550 m, 18 Nov. 1971, *G. Davidse* 3184 (MO, US), *n* = 18! (as *L. sorghoidea*, Davidse 1978); **Bolívar.** Occasional on Isla Santa Elena, opposite of Río Pargueni, 80–90 m, 13 Dec. 1955, *J.J. Wurdack* & *J.V. Monachino* 39855 (NY, US); La Gran Sabana, 49 km W of the intersection of the main road to Santa Elena and road to Cabanayen hillside with savanna on upper slope, forest in gully, 1360 m, 3 Dec. 1973, *G. Davidse* & *al.* 4772A (MO), 4782 (MO), *n* = 18! (as *L. sorghoidea*, Davidse 1978); **Caquetá.** 15 km SW of Belén along road to San José de Fragua (SW of Florencia), 400 m, 10 Jan. 1974, *G. Davidse* & *al.* 5692 (MO), *n* = 18! (as *L. sorghoidea* var. *patentiflora*, Davidse 1978); **Distr. Federal.** 7.0 km SW of Carayaca by road, 1400 m, cloud forest area with much agricultural disturbance and 2nd growth, 6 Nov. 1971, *G. Davidse* 2892 (MO), 2902 (MO), *n* = 18! (as *L. sorghoidea*, Davidse 1978); **Lara.** Distr. Jiménez, Parque Nacional Yacambú, Quebrada El Blanco, 1300–1400 m, 69°34'W, 9°43'N, 24 Oct. 1982, *G. Davidse* & *A.C. González* 21062 (MO, NY); **Mérida.** 73 km NE of Mérida along the Mérida-Azulita road, 1400 m, 20 Nov. 1971, *G. Davidse* 3241 (MO); **Miranda.** Selva de galería de la Quebrada Manzanares, afluente de la Quebrada Baryta, arriba de la Urb. Alto Prado, 10°26'N, 66°53'30"W, 1300 m, 8 Oct. 1980, *J.A. Steyermark* & *al.* 123600 (MO); **Trujillo.** San Pablo de Mendoza, 1400 m, 19 Nov. 1922, *H. Pittier* 10749 (NY, P, US).

(2) *Lasiacis anomala* Hitchc., J. Wash. Acad. Sci. 9: 1919. (Fig. 11).

Type: “Trinidad, Fort Gorge Road, Port of Spain, edge of jungle, high climbing, with strong central cane, the branches not fascicled, main culm thick as a pencil, 27 November 1912, Hitchcock 9977 (= Am. Grass Natl. Herb. No. 595) (holotype: US! [barcode US00134096]; isotypes, BM! [barcode BM000938720], BR (photo!) [barcode BR0000006863166], C! [barcode C10017033], F (photo!) [Acc. No. 502308F], G! [barcode G00099527, G00176056 (two sheets)], GH (photo!) [barcode GH00023861], K! [barcode K000309325], L! [barcode L0797373], MO! [Acc. No. MO848755], NY! [barcode NY00381282], P! [barcode P00633948], PH (photo!) [barcode PH00016896], S (photo!) [Acc. No. 05-5476-S], US! [barcode US00134095], W! [Acc. No. W18890239913, W18890163754, W19220009719 (three sheets)].

(=) *Panicum divaricatum* L. var. *lanatum* Schlecht. & Cham., Linnaea 6: 33. 1831.

Type: “Sieber 144” (lectotype, designated here: HAL! [barcode HAL0106585]; isolectotypes: G! [barcode G00614199, G00614200], HAL! [barcode 106584], L! [barcode L0797372], PI! [Acc. No. 041254]; US! [barcode US04319500]).

(=) *Panicum latifolium* L. var. *tomentellum* Döll in C.F.P.Mart. & auct. suc. (eds.), Fl. Bras. 2(2): 207. 1877.

Type: “Brazil, Ceará, Gardner 1894” (lectotype, designated by Davidse (1978: 1162): K! [barcode K000003999]; isolectotypes FI! [barcode FI012329], G! [barcode G00176055, G00176056, G00343686, G00343687 (four sheets)], NY! [barcode NY00863590], P! [barcode P00642273], US! [barcode US00956497, US00956498 (two sheets)], W! [Acc. No. W0005994, Acc. No. W0299446 (two sheets)]).

Description

Perennials. Culms up to 0.5–4 m long, 5–7 mm in diameter, woody, branching, erect at first and clambering over bushes and trees, glabrous. *Leaf sheaths* glabrous to more or less pilose at the margins, striate; *collars* silky-hairy; *ligules* 0.5–1.0 mm long, membranous, glabrous to short ciliate; *blades* 4–14 cm long, 1.5–3.5 cm wide, ovate-lanceolate to elliptic-lanceolate. *Panicles* 3–15 cm long, pyramidal, rachis and branches scabrous to puberulent, slightly reflexed. *Spikelets* 3–4 mm long, ovoid to globose; *lower glumes* 1–2 mm long, 0.5–0.7 mm wide, 7-veined; *upper glumes* 2–2.5(–2.8)

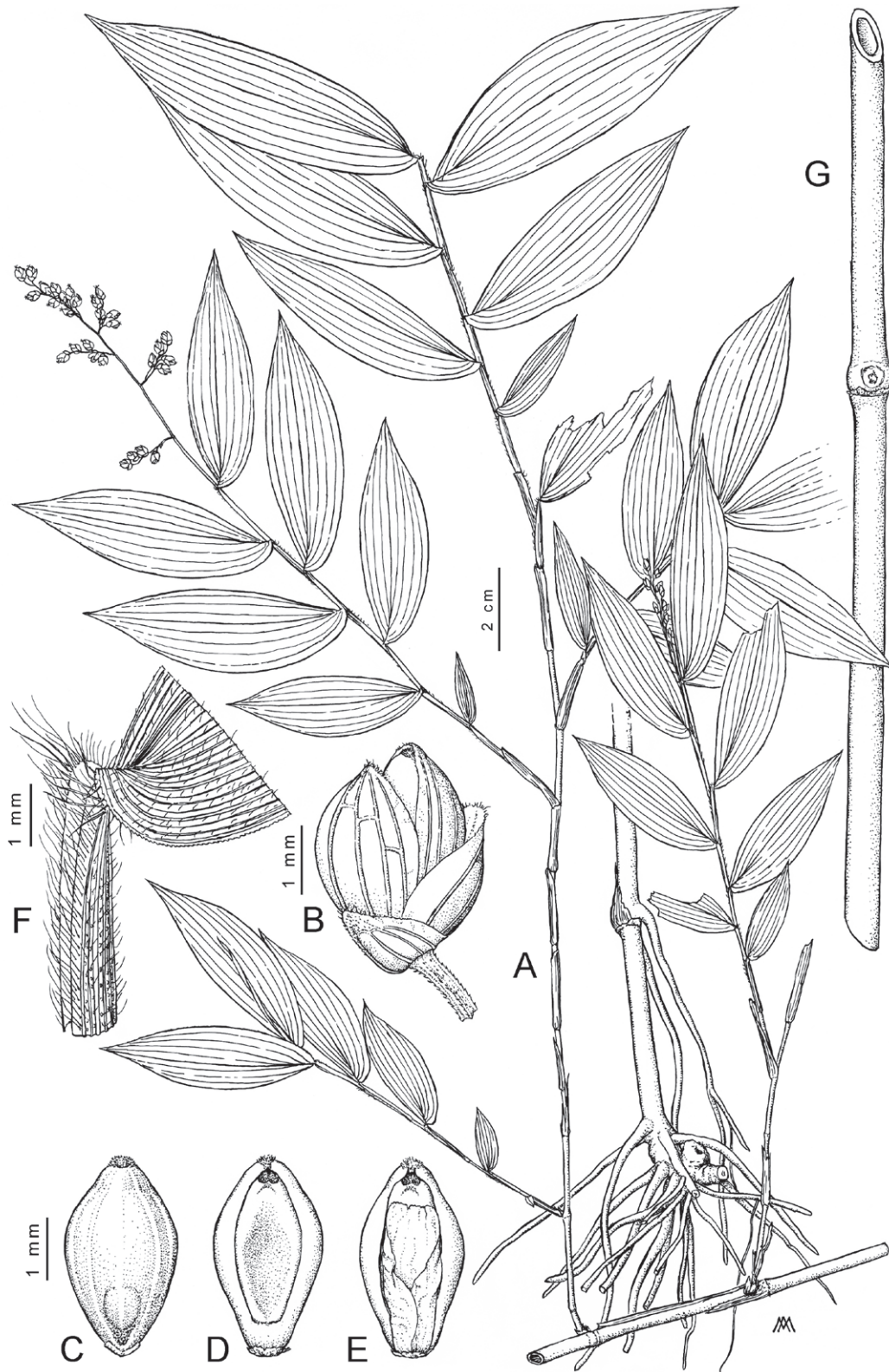


Figure 11. *Lasiacis anomala* Hitchc.: **A.** Habit [from G. Davidse 2592 (L)] - **B.** Spikelet lateral view with two sterile lemmas; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view, without lower palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area [B-F from G. Davidse 2523 (L)]; **G.** View of the culm [from G. Davidse 2591 (K)]. A. Maury delineavit.

mm long, 0.7-1.0 mm wide, 9-veined; *first sterile lemmas* as long as the fertile floret, 9-veined, without a sterile palea; *second sterile lemmas* $\frac{1}{2}$ to $\frac{3}{4}$ the length of the fertile floret, 9-veined, with a well-developed sterile palea sometimes with a staminate flower; *fertile upper florets* 2.5-3 mm long, 1.5-1.7 mm wide, *anthers* 1.5-1.8 mm long, white, *stigma* white; *caryopses* 2 mm long, 1.5 mm wide, ovoid-globose. *Chromosome number*: $n = 18$ (Davidse 1972, 1978).

Iconographs

Fig. 40A-B (Renvoize 1984); Fig. 53H (Judziewicz 1990); Fig. 87D (Renvoize 1998); Fig. 97 (Davidse 2004).

Vernacular names

Suriname: “*tamajoesji*” (Amshoff and Henrard 1948); “*bamboegrass*”, J.C. Lindeman & al. 619 (K, NY, US), “*tamakushi*” (Judziewicz 1990); “*tamakusi*” van’t

Klooster et al. (2003); **Venezuela:** Lara, “*pistillo*” R. Liesner & A. González 5532 (P) .

Distribution

Bolivia, Brazil, Guyana, Caribbean (St. Vincent, Barbados), Colombia, French Guiana, Guyana, Suriname, Trinidad & Tobago, Venezuela. (Fig. 12).

Distribution (bibliographic references)

Hitchcock (1919, 1920, 1936); Nash (1931); Amshoff and Henrard (1948); Hoyos (1985); Judziewicz 1990; Davidse (1978, 2004); Renvoize (1998); Zuloaga et al. (2003); Davidse et al. (2007); Hokchne et al. (2008); Giraldo-Cañas (2011); Villavicencio et al. (2014).

Ecology

Usually along shady forest edges, and savanna areas at the edges of forests. From sea level to 800-1200 m.



Figure 12. *Lasiacis anomala* Hitchc.: general geographic distribution.

Phenology

Plants with mature spikelets between April and December, sometimes also in February/March.

Remarks

The presence of an extra bract (sterile lemma) in the spikelet is undoubtedly the discriminating character that facilitates the identification. Both Hitchcock (1919) and Davidse (1978) consider this species very similar to *L. ruscifolia*. *Lasiacis anomala* has a range of distribution in northern South America. However, its diffusion into the Caribbean area cannot be excluded as supported by specimens from the Windwards Islands such as St. Vincent [*H.H. Smith* 1976 (K, NY)], and Barbados [*F.W. Johnson* 1246 (NY)].

Selected specimens

BOLIVIA. Santa Cruz. Florida, at La Angostura on Highway from Santa Cruz to Samaipata, 18°10'S, 63°31'W, 9 Jan. 1998, *M. Nee* 47870 (NY).

BRAZIL. Bahia. Serra do Curral Feio, 16 km NW of Lagoinha, (which is 5.5 km SW of Delfino), 41°20'W, 10°22'S, 8 Mar. 1974, *R.M. Harley & al.* 16991 (C, CEPEC, K, NY, P, US); Ribeira do Pombal, 19 May 1981, *G. Pinto* 130/81 (CEPEC, HUEFS, US); Fazenda Boa Vista, Serra de S. José, Feira da Santana, 12°15'S, 38°58'W, 10 May 1984, *L.R. Noblick* 3180 (CEPEC, HUEFS, K); **Ceará.** Aug.-Nov. 1838, *G. Gardner* 1894 (G); Baturité to Guaramirango, 30 Apr. 1934, *J.R. Swallen* 4419 (US); Campo Grande, 12-13 May 1934, *J.R. Swallen* 4516 (P, US, W), 4587 (US); Serra de Baturité, sitio B, Inacio de Azevedo, 20 Apr. 1939, *J. Eugenio* 284 (MO, US); RPPN Serra das Alams, Crateús, mata seca, 25 Mar. 2002, *F.S. Araújo* 1378 (HUEFS); Crateús, Serra das Almas, 5°08'787"N, 40°55'651"W, 8 May 2002, *F.S. Araújo* 1508 (HUEFS); **Goiás.** Río Araguaya, Campos Geraes de S. Vicente, 20 Jul. 1899, *L. Buscalioni* 4079 (RO); **Maranhão.** Caxias to Barra do Corda, 18-26 Feb. 1934, *J.R. Swallen* 3554 (US); "Ilha de Balsas", region between the Ríos Balsas and Parnaíba, about 30 km S of Loreto, 7°19'S, 45°07'W, 6 Apr. 1962, *G. Eiten & L.T. Eiten* 4092 (MO); Loreto, a few hundred meters S of main house of Fazenda Morros, in gallery forest of the brook gully "Grota Grande", 22 Feb. 1970, *G. Eiten & L.T. Eiten* 10750 (US); **Piauí.** (= Piauí). In sylvist stat frequens, s.d., *G. Gardner* 3513 (BR); **Rio Grande do Norte.** Municipio de Portalegre, Fazenda Cajazeiras, 06°02'S, 38°04'W, 3 May 1984, *A.C. Sarmento & J.S. de Assis* 743 (K, NY); **Roraima.** Ilha de Maracá, Alto Alegre, SEMA Estação, 3°22'N, 61°20'W, 16 Jun. 1986, *M.J.G. Hopkins & al.* 782 (K, MO, NY, US); Boa Vista, Estrada Confianças 1, 2°50'N, 60°40'W, 30 Jul. 1986, *J.A. Silva & al.* 473 (MO, NY); Ilha de Maracá, Boa Vista, 18 May 1987, *J. Lima & B. Nelson* 774 (K, NY); Ilha de Maracá, SEMA Ecological Reserve, 3°22'N, 61°26'W, 11 Jun. 1987, *W. Milliken* 326 (K, NY).

COLOMBIA. Meta. Los Llanos, Río Meta, La Venturosa, 27 Oct. 1938, *J. Cuatrecasas* 4191 (US); **Guainia.** Immediately S of Casuarito, lajas along the Río Orinoco, 90 m, 5°40'N, 67°37'W, 22 Jun. 1984, *G. Davidse & J.S. Miller* 26374 (MO).

FRENCH GUIANA. Saül, 3°37'N, 53°13'W, 10 Feb. 1978, *J.M. Leeuwenberg* 11763 (CAY); Roche Touatou, Bassin de l'Oyapock, 52°32'W, 2°57'N, 23 May 1995, *J.J. de Granville & G. Cremers* 13048 (CAY, K, MO, NY); Moint Saint Marcel, zone SE

du massif, 300 m, 2°23'N, 53°00' W, 27 Jul. 2002, *J.J. de Granville & al.* 15518 (CAY, MO, P).

GUYANA. Rupununi. Path through forest between Yupukari and Karanambo, 12 Oct. 1963, *R. Goodland* 955 (K, NY, US); Kanuku Mts., Rupununi R., slope of Breeze Mt. (Awartow), 3°05'N, 59°30'W, 11 Feb. 1985, *M.J. Jansen-Jacobs & al.* 163 (CAY, K, NY, US); Rupununi River, Karanambo, 3°45'N, 59°20'W, May 1989, *P.J.M. Maas & al.* 7150 (MO); NE slope of Mount Shiriri, 02°53'N, 059°43'W, 18 Jun. 1995, *M.J. Jansen-Jacobs & al.* 4149 (K, NY, US); 1.5 miles S of Sand Creek, 3°00'N, 59°31'W, 21 Jun. 1989, *P.M. Peterson* 7580 (CAY, NY, US); **Upper Takutu-Upper Essequibo.** Western extremity of Kanuku Mts., in drainage of Takutu River, 4-22 Mar 1938, *H.H. Smith* 3131 (K, MO, NY, P, US); Kanuku Mts. ca. 10 miles NE of Sand Creek on N slope, 3°02'N, 59°25'W, 300-600 m, dense forest, 26 Jun. 1989, *P.M. Peterson* 7637 (US); Rupununi area, Karanambo, 110 m, 03°53'N, 59°35'W, 17 Feb. 1990, *P. Acevedo-Rodriguez* 3283 (US).

SURINAME. Tamakoesji (Kar), Tusschen rotsen by Wono-tobo, Corantyn, 14 Oct. 1916, *G. Stahl* 2854 (US); 8 km ca. in line from Paka Paka (Saramacca R.) to Ebbatop, 19 Feb. 1951, *J. Florschütz & P.A. Florschütz* 1563 (NY); 9 km N of Lucie Rivier, 12 km W of Oost Rivier, 3°36'-3°41'N, 56°30'-56°43'W, 1 Aug. 1963, *H.S. Irwin & al.* 54540, 1 Sep. 55331, 16 Jul. 54204 and 13 Sep. 55696 (K, MO, NY, P, US); Line Lucie R. - Wilhelmina Mts., 25 Jul. 1963, *Schulz* 10464 (K); Zuid River, 2 km above confluence with Lucie River, 220 m, 3°20'N, 56°49'W, 3°10'N, 56°29'W, 16 Sep. 1963, *H.S. Irwin & al.* 55790 (US); Area of Kabalebo Dam project., distr. Nickerie, 25 Nov. 1980, *J.C. Lindeman & al.* 619 (K, NY, US).

TRINIDAD. 1877-80, *A. Fendler* 963 (BM, K, NY, P); 4 Jun. 1908, *W.E. Broadway* 2504 (L, US); Trinidad, Mayaro, St. Margarets (Vallentines), 12 Jun. 1908, *W.E. Broadway* 2627 (G, US); Trinidad, 1908, *A.S. Hitchcock* 2564 (G, US); Chacachacare, 4 Dec. 1912, *A.S. Hitchcock* 10063 (US); San Fernando, 9 Dec. 1912, *A.S. Hitchcock* 10177 (US); Cedros, along banks in woods, 12-14 Dec. 1912, *A.S. Hitchcock* 10136 (US, W); Port of Spain, 28 Dec. 1912, *A.S. Hitchcock* 10001 (US); St. Joseph, 30 Dec. 1912, *A.S. Hitchcock* 10021 (L, US); Lookout Hill, 7 Aug. 1919, *W.E. Broadway s.n.* (K, NY, US); St. Anns, 9 Sep 1920, *W.E. Broadway* 5946 (K); Vicinity of Brighton, 12 Apr. 1921, *N.L. Britton* 2905 (NY, US); Ietron Bay, 6 Oct. 1927, *W.E. Broadway* 6775 (G, MO, US); Lopina Road via Arinea, 5 Aug. 1929, *W.E. Broadway* 6736 (K, US); Pointe Gaude, 29 May 1932, *W.E. Broadway* 8081, 8083 (K, MO, US); St. Augustine, 28 Jul. 1945, *Mogg* 276 (K); St. George, along Morne Catherine Road, Chaguaramas Naval Base, 500-1000 ft, 27 Aug. 1959, *G.L. Webster & K.I. Miller* 9943 (US); S of Point Fortin, Erin Savana, 24 Jun. 1963, *T.R. Soderstrom* 1126 (K, NY, US); Area between the village of Piarco and the Piarco International Airport, 4 Aug. 1970, *G. Davidse* 2522 (MO), 2523 (L, MO, NY, US), **n = 18!** (Davidse 1978); Rois Bay at the end of Chatman Road, 6 Aug. 1970, *G. Davidse* 2580 (K, MO, NY, US), **n = 18!** (Davidse 1978); Along the Mausiga Road NE of parco, 7 Aug. 1970, *G. Davidse* 2591 (K, MO, NY, US), 2592 (MO, L), **n = 18!** (Davidse 1978); Scotland Bay, sea level, 4 Aug. 1976, *C.D. Adams* 14103 (NY); Claxon Bay, Solomon Hochoy Highway, 19 Sep. 1979, *C.D. Adams* 601 (NY).

VENEZUELA. Venezuela, 13 Aug. 1891, *Eggers* 13480 (US); **Amazonas.** 10-30 km al E de Puerto Ayacucho, 120 m, 5°35'N, 67°22'W, 11 Jun. 1977, *J.A. Steyermark & al.* 113905 (MO, NY); **Anzoátegui.** Freites, Morichal Morichalote, 6-7 km al W del Río Oritupano, 110-220 m, 9°02'N, 63°30'W, 12 Jun. 1998, *Á. Fernández & al.* 12764 (MO); **Atures.** 23 km NE of Puerto Ayacucho and 10 km E of Highway, hills and base of hills, near Cachama,

90 m, 5°51'N, 67°24'W, 17–19 Apr. 1978, *G. Davidse & O. Huber* 15229 (MO); Carretera Puerto Ayacucho hacia Samariapo, 5°33'N, 67°35'W, 28 Nov. 1993, *A. Gröger* 561 (MO); **Bolívar**. 1–10 km NW of Uputa, on road to St. Felix, between Uputa and Alta-gracia, 700 m, 31 Jul.–1 Aug. 1944, *J.A. Steyermark* 57686 (NY, US); E of Miamo, Altiplanicie Nuria, 300–500 m, 8 Jan. 1961, *J.A. Steyermark* 88215 (K, NY, US); Along Highway 19 between Calcara and Ciudad Bolívar, 24 Nov. 1973, *G. Davidse* 4469 (K, MO, US); 13 km ESE of Uputa along Highway 10 to Giasipati, 380 m, 2 Dec. 1973, *G. Davidse & al.* 4617 (MO), *n* = 18! (Davidse 1978); San Pedro de las Dos Bocas, 24 Jul. 1978, *R. Liesner & A. González* 5532 (P); Carretera Palito Blanco-Quiroz, en sitio 2 km al E del desvío hacia El Consejo, 23 Nov. 1978, *G.S. Bunting* 6645 (MO); Distr. Cedeño vicinity of Panare village of Corozal, 6 km from Maniapure toward Calcara, 6°55'N, 66°30'W, 24 Se 1985, *B. Boom & M. Grillo* 6070 (NY); Reserva Forestal Imataca, carretera Casa Blanca-San Martín de Turumban, 13 Jul. 1983, *B. Stergios & al.* 5876 (MO); Isla en el Lago de Guri (Sector Las Carolinas), 15 km al E de la Presa R. Leoni, 7°40'N, 62°51'W, Aug. 1990, *G. Aymard & M. Norconk* 8824 (MO, NY); Roscio, entre Parapaoy y El Purgo, 450 m, 6°35'N, 62°40'W, 5 Dec. 1992, *W. Diaz & J. Velazco* 1253 (MO); El Callao, bosques entre El Calao y sector Chocó, entrando por La Ramona, 7°21'9"N, 61°55'06,5"W, 180–190 m, 21 Jul. 2009, *Á. Fernández & R. Gonto* 26980 (NY); **Carabobo**. 2.5 km S of Puerto Ayacucho, small hill with one surface bare rock between road and the Río Orinoco, 1 Nov. 1971, *G. Davidse* 2786 (MO); **Falcón**. Dist. Silva, Cerro Chichiriviche, entre La Luisa y La Soledad, 20–200 m, 6 Sep. 1974, *J.A. Steyermark & B.J. Manara* 110955 (MO); “Casa del Golfete”, parte Oeste del Golfete de Cuare, carretera a Tucacas, 23 Nov. 1993, *M.A. Martín Ballestreros* MB127 (MA); **Guárico**. Road Calabozo-El Sombrero, 29 Aug. 1947, *H.M. Curran s.n.* (NY); Calabozo, Sep. 1963, *L. Aristeguieta* 5135 (MO, NY); Estación Biológica de Los Llanos Calabozo, 6 Aug. 1966, *L. Aristeguieta* 6212 (NY); Estación Biológica de Los Llanos, 10 km SSE of Calabozo, 60 m, 9 Nov. 1971, *G. Davidse* 2916 (MO), *n* = 18! (Davidse 1978); Estación Biológica de Los Llanos, ca. 10 km SSE of Calabozo, savanna, 100 m, 3 Nov. 1973, *G. Davidse* 3690 (MO, US), *n* = 18! (Davidse 1978); 54 km N of San Fernando de Apure along main Highway to Calabozo, patchy forest alternate with strips of wet savanna, now drying out, *Copernicia* palms prominent, 80 m, 10 Nov. 1973, *G. Davidse* 3968 (MO, US); 80 km S of Las Mercedes along Highway 12 to Cabruta, 170 m, 20 Nov. 1973, *G. Davidse* 4272 (MO), *n* = 18! (Davidse 1978); Miranda, Calabozo, 100 m, 8°45'54"N, 67°25'54"W, 22 Jul. 1976, *A. Castillo* 584 (MO); Sabanas de la Estación Biológica de Los Llanos, 10 km SE a Calabozo, 200 m, 8°52'N, 67°22'W, 7 Aug. 1989, *F.O. Zuloaga & al.* 4355 (MO); Estación Biológica de Los Llanos de la Sociedad Venezolana de Ciencias Naturales, 12 km ca. SE de Calabozo, Edo. Guárico, 8°56'N, 67°25'W, 31 Aug. 1990, *N. Ramirez* 2769 (NY); **Lara**. Palavecino, 16 km fuera de Manzanita, Hacia E Altar, 200 m, 15 Jul. 1978, *C. Burandt Jr. & R.F. Smith* 281 (US); **Mona-gas**. Santa Barbara, 26 Oct. 1948, *B. Maguire & al.* 27275 (US); **Yaracuy**. San Felipe, Veroes, fila montanosa 5 kms S de Bella Vista, 200–450 m, 10°23'N, 68°24'W, 11 Jul. 1973, *G. Agostini & al.* 1808 (MO); **Sucre**. Carretera Carupano-El Pilar, 7 km N de El Rincón, 63°13'W, 10°36'N, 6 Jul. 1972, *K. Dumont & al.* 7405 (NY); Bordando el Golfo de Santa Fé, W de Santa Fé, en el sitio Punta Cochaíma, 19 Aug. 1973, *J.A. Steyermark & al.* 107854 (MO, NY); Montaña de Mochina, al S de Mochima, 20 km SE de Cumaná, 10°20'N, 64°20'W, 16 Sep. 1973, *J.A. Steyermark & al.* 108440 (NY); Península de Araya, 20 km NW of Cariaco, 2 km W of corner where road from Cariaco to Chacopata meets ocean, 0–100 m,

10°38'N, 63°40'W, 17–18 May 1981, *R. Liesner & A. González* 12026 (K, MO, NY); Along Highway 9 between Cumaná and Barcelona, near border of the State of Sucre, 48 km E of Puerto Santa Cruz, 210 m, 10°16'N, 64°25'W, 30 Jul. 1982, *T.B. Croat* 54399 (MO); **Valle**. 30 Jul. 1901, *O.O. Miller & al.* 184 (BM, K, MO, NY, P, US); **Zulia**. 7 km E of Cupida, new road 1 km S of main road, starting at Río Chupaquire S of El Guacuco, 150 m, 10°09'N, 65°38'W, 16 May 1981, *R. Liesner & A. González* 11882 (MO, US).

WINDWARDS ISLANDS. **St. Vincent**. Jul. 1888(?), *H.H. Smith* 1976 (K, NY); **Barbados**. 3 Sept 1932, *F.W. Johnson* 1246 (NY).

(3) *Lasiacis austroamericana* (Davidse) Baldini, *stat. nov.* (Fig. 13).

Bas.: *Lasiacis divaricata* (L.) Hitchc. var. *austroamericana* Davidse, *Ann. Missouri Bot. Gard.* 64: 374. 1977.

Type: Brazil, Minas Gerais, near Santa Barbara do Caparaco, streamside, suffrutescent, 3 m high, climbing and rooting at lower joints, “canaviera”, 21 Nov. 1929, *Ynes Mexia* 4007 (holotype: NY! [barcode NY0038128]; isotypes: BM! [barcode BM000938730], F (photo!) [Acc. No. 0046801F]; G! [barcode G00176057], GH (photo!) [barcode GH00023900], K! [barcode K001057518], MO! [Acc. No. MO144056], NY! [barcode NY00863558], P! [barcode P00642275], S (photo!) [Acc. No. S-S14-5165], SI (photo!) [barcode SI007516]; U (photo!) [barcode U0060705], US! [barcode US00134097], WIS (photo!) [barcode WIS0004162]).

(-) *Lasiacis divaricata* sensu Auct. Fl. S. America, non (L.) Hitchc.

Description

Perennials, caespitose. *Culms* up to 5–6 m tall, erect, progressively arching, scandent. *Leaf sheaths* glabrous, sometimes distally with few delicate hairs; *collars* glabrous, rarely puberulent with scattered small hairs; *ligules* 0.5–1.3 mm long, membranous, glabrous and ciliolate at the margins; *blades* 5–10(–15) cm long, 0.5–3.0 cm wide, narrowly lanceolate glabrous, acute to acuminate, the base asymmetrical, often proximally with small hairs on both surfaces, sometimes ciliate. *Panicles* 2–12(–15) cm long, with branches ascending to spreading at maturity. *Spikelets* 3–4 mm long, globose, purple-green when immature; *lower glumes* 1.5–3 mm long, 7–11(–12)-veined; *upper glumes* 2–4 mm long, 9–14-veined; *sterile floret* without flower or staminate, *lemmas* 9–11-veined, *paleas* ¾ to equal the length of the fertile floret; *fertile florets* 3–3.8(–4) mm long, 1.8–2.3 mm wide, *anthers* 2 mm long, white, *stigmas* white; *caryopses* 2–2.5 mm long, 1.7–2 mm wide. *Chromosome number*: *2n* = 36 (Nuñez 1952 as *L.*

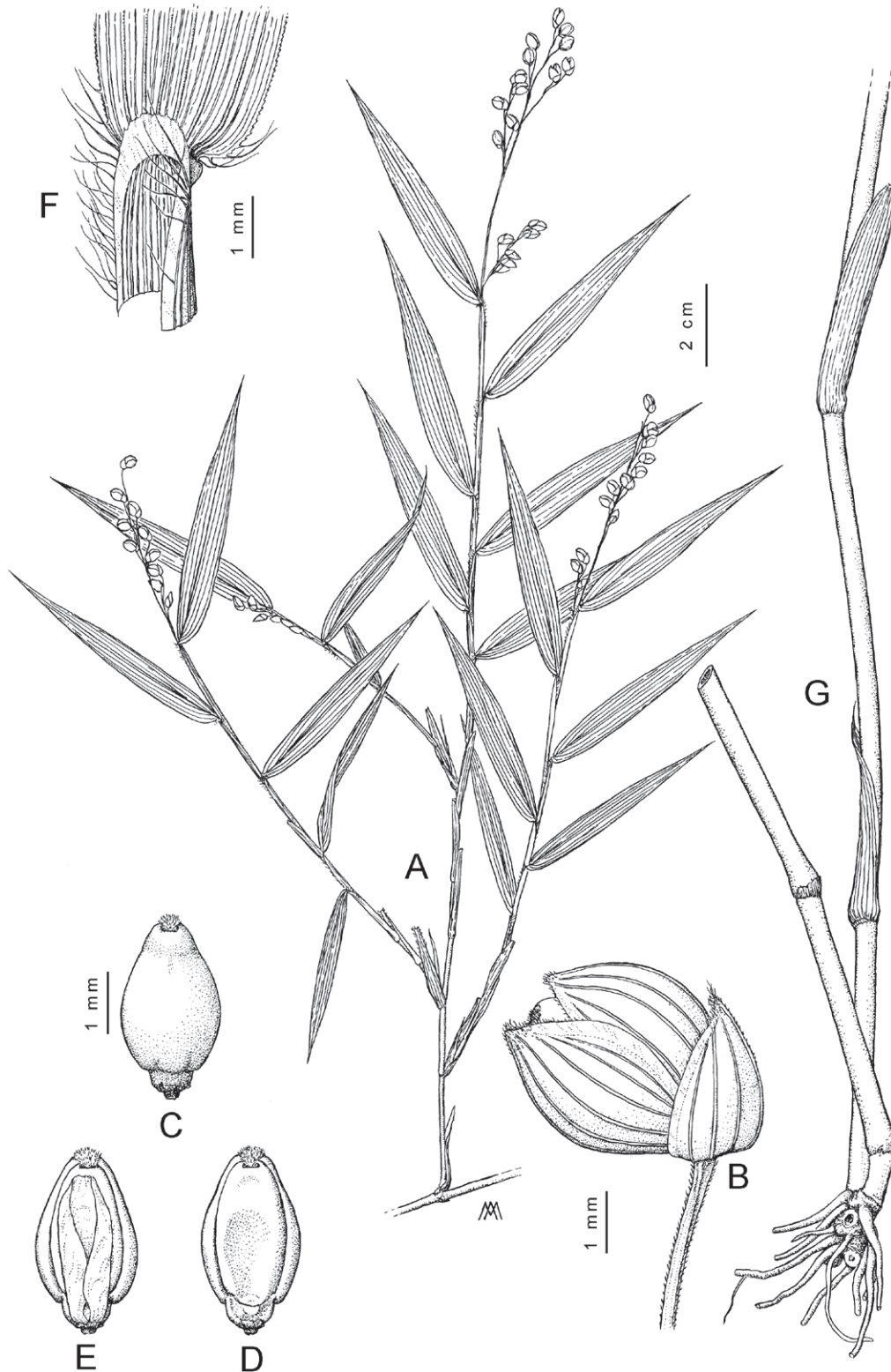


Figure 13. *Lasiacis austroamericana* (Davidse) Baldini: **A.** Habit; **B.** Spikelet lateral view [A-B from *Y. Mexia 4007* (isotype in K)]; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea [C-E. from *E.D. Castellani & al. 150* (K)]; **F.** Ligular area; **G.** View of the culm [F-G. from *Y. Mexia 4007* (isotype in US001057518)]. *A. Maury delineavit.*

divaricata sensu Auct. Fl. Argentina); $n = 18$, $2n = 36$ (Davidse 1972, 1978).

Iconographs

Morrone and Zuloaga (2012: 333) as *L. divaricata* (L.) Hitchc. var. *austroamericana* Davidse.

Vernacular names

Argentina: “caña” (Quattrocchi 2006); **Brazil:** Minas Gerais, “canaviera” Ynes Mexia 4007 (NY); **Paraguay,** “takuapi’i”, “takuaembo’i”, “takuaembo’y”, “tacuarilla”, “tacuarita”, “caña de cesto” (Morrone and Zuloaga 1994a).

Distribution

Argentina, Bolivia, Brazil, Colombia, Ecuador, northern Argentina, Paraguay, Perú, Venezuela (see Fig. 15).

Distribution (bibliographic references)

Hitchcock (1920) as *L. divaricata* (L.) Hitchc. s.l.; Nash (1931) as *L. divaricata* (L.) Hitchc., s.l.; Davidse (1977, 1978); Morrone and Zuloaga (1994a); Cialdella and Vega (1996); Serrano and Terán (2000) as *L. divaricata* (L.) Hitchc. sensu Auct.; Garcia Santos and Takeo Sano (2001); Bussmann (2003) as *L. divaricata* (L.) Hitchc. sensu Auct.; Zuloaga et al. (2003); Renvoize et al. (2006); Hokche et al. (2008); Morrone et al. (2008); Giraldo-Cañas (2011) as *L. divaricata* (L.) Hitchc. sensu Auct.; Morrone and Zuloaga (2012); Villavicencio et al. (2014) as *L. divaricata* (L.) Hitchc. sensu Auct.; Pott and Pott (2021) as *L. divaricata* (L.) Hitchc. sensu Auct. When not indicated in the list above, the reference is as *L. divaricata* (L.) Hitchc. var. *austroamericana* Davidse.

Ecology

Secondary forests and brushy forest edges. Elevation ranges between 100 m to 1800 m above sea level.

Phenology

November through May/June.

Remarks

L. austroamericana is a geographical South American vicariant of *L. divaricata* which represents its related taxon with a Caribbean and Central American area of distribution. More comments are under *L. divaricata* var. *divaricata*.

Selected specimens

ARGENTINA. Corrientes. Chaco, Mayor Pedro La Gerenza, 11 Apr. 1978, A. Schinini & E. Bordas 15187 (K); Dep. Santo

Tomé, Ea. Timbó, en selva marginal del río Uruguay, 2 Mar. 1983, A. Schinini & al. 23773 (HUEFS, US); **Guairá.** Ayo. Guazú, canino a San Gervasio, 56°17'W, 25°57'S, 27 Mar. 1993, A. Schinini & al. 28045 (G); **Misiones.** Loreto, 30 Jan. 1908, E.L. Ekman 618 (US); San Ignacio, 24 Feb. 1914, H. Quiroga 24 (G); Misiones, Colonia G. Roca, 23 Jan. 1940, A. Mutinelli 50 (US); Eldorado, 13 Dec. 1943, A. Burkart 14728 (K, MO); Candelaria, Loreto, 2 Aug. 1944, J.E. Montes 68 (W); Candelaria, 7 Jan. 1946, J.E. Montes 1736 (K, US); San Ignacio, Puerto Viejo, 21 Mar. 1946, G.J. Schwarz 2290 (FI); San Ignacio, 17 Apr. 1946, G.J. Schwarz 2542 (W); Candelaria, Loreto, 12 May 1946, J.E. Montes 2221 (K, US); San Ignacio, Puerto Mani, 20 Mar. 1950, G.J. Schwarz 10232 (US); Candelaria, San Juan, 16 Dec. 1950, J.E. Montes 15286 (K, MO); Depto. San Pedro, Montecarlo, 14 May 1951, J.E. Montes 15401 (MO, US); Candelaria, 12 Apr. 1958, J.E. Montes 27498 (C, MO, NY, US); Parque Iguazu, 25–30 Jun. 1963, Del Puerto & Brescia 2663 (US); Bernardo de Irigoyen, 22 Feb. 1971, A. Burkart 28253 (MO, US); San Pedro, 5 km a Tobuna, 26 Jan. 1973, A. Schinini & A. Fernandez 6103 (G, P); San Pedro, Salto del Moconá, 10 Apr. 1979, F.O. Zuloaga & al. 737 (US); Depto. Cainguas, Campo Grande, Ruta prov. 8, 13 Nov. 1995, E.R. Guaglianone & al. 2817 (MO, NY); Libertador San Martín, Ruta Prov. 220, Parque Nacional Salto Encantado, 420 m, 27°03'S, 54°49'W, 11 Feb. 1996, O. Morrone & al. 670 (MO, NY); General Manuel Belgrano, Parque Prov. Uruguay, Ruta Prov. 19, 50 km de Wanda camino a Deseado, 260 m, 25°51'S, 54°10'W, 21 Apr. 1997, O. Morrone & al. 1968 (MO, NY); Predio Guaranti, 26°54'S, 54°12'W, 27 Apr. 1999, S. Tressens & al. 6108 (NY); San Pedro, Reserva Esmeralda, 480 m, 26°53'S, 53°54'W, 13 May 1999, N.B. Deginani & al. 1302 (MO); Libertador General San Martín, 210 m, 27°05'S, 54°57'W, 26 Feb. 2000, N.B. Deginani & al. 1479 (MO); **Salta.** Orán, camino de General Ballivan a Río Seco, 10 Dec. 1986, F.O. Zuloaga & al. 2693 (K); San Martín, entre Coronel Corneo y Sierra de San Antonio, 12 Mar. 1987, F. Zuloaga & O. Morrone 3045 (K, MO).

BOLIVIA. Cochabamba. Chapare, 8 Feb. 1929, J. Steinbach 9091 (BM, G, K, MO, NY, US); **La Paz.** Yungas, 1890, M. Bang 494 (G, L, US); Sur-Yungas, 21 Dec. 1923, A.S. Hitchcock 22616 (US); Colaya, 1760 m, 14 Dec. 1935, Y. Mexia 4307 (MO); La Paz, arriba de Puente Villa, Tarla Alto, 1850 m, 8 Mar. 1979, G. Beck 395 (US); La Paz, 1.8 km SW of Yolosa on road to Chuspipata, 1400 m, 16°13'S, 67°45'W, 22 Mar. 1984, J.C. Solomon & al. 12020 (MO, NY); Yungas, Alto Beni, 31 May 1995, R. Seidel & al. 7793 (K); La Paz, Sud Yungas, de Chulumani 5 km hacia Irupana-Apa Apa, 16°21'S, 67°30'W, 13 Jan. 2000, S. Beck 24751 (K); La Paz, Franz Tamayo, Senda Apolo-San José de Uchupiamonas, entre cima de Huacataya y arroyo Huacataya, 1955 m, 14°31'23"S, 68°18'23"W, 12 Mar. 2002, T. Miranda & al. 443 (MO); La Paz, Bautista Saavedra, ANMI Apolobamba, Camata, puente sobre el Río Charazani-Camata, 1450 m, 15°13'39"S, 68°45'40"W, 19 Apr. 2005, A. Fuentes & al. 6962 (MO); **Santa Cruz.** Andres Ibanez, 5 km S of Santa Cruz, 200 m, 22 Mar. 1981, S.A. Renvoize & T.A. Cope 4024 (US); Andres Ibanez, 2 km W of La Belgica, 17°34'S, 63°14'30"W, 24 Jan. 1987, M. Nee 33770 (MO, NY); Andres Ibanez, 7 km by air NW of Puerto Pailas, ca. 2.5 km W of center of Montero Hoyos, 300 m, 17°38'20"S, 62°50'30"W, 10 Feb. 1994, M. Nee 44822 (MO); Florida between Samaipata and Las Cuevas, 4 Feb. 1996, J.R. Wood 10551 (K); Santa Rosa de Lima, Quebrada del Creston, 1470 m, 17°52'S, 64°15'W, 3 Jul. 1996, M. Saldias & A. Robles 4348 (MO, NY); Florida, along road to Bella Vista, 6.5 km SE from Santa Cruz-Samaipata Highway, 1275–1335 m, 18°13'S, 63°41'W, 27 Apr. 1998, M. Nee & al. 49193 (MO, NY); **Santa Rosa.** Apr. 1892,

O. Kuntze s.n. (NY); Lower Cocos, 31 Mar. 1902, *R.S. Williams* 954 (NY); **Tarija**. Arce, 29.2 km S of Emboroza-Sidras, road on road to Bermejo, 12.7 km S of Naranjo Agrio, 600 m, 22°22'S, 64°29'W, 21-23 Apr. 1983, *J.C. Solomon* 9879 (MO); Arce, Canton Emborozú, Reserva Natural Alarachi, 1020 m, 22°14'19"S, 64°34'25"W, 20 Sep. 2004, *M. Serrano & al.* 4917 (MO).

BRAZIL. Bahia. 25 km NW de Feira de Santana, 12°10'00"S, 39°11'17"W, 13 Nov. 1986, *L.P. De Queiroz & M.J.S. Lemos* 1008 (HUEFS, K); Abaíra, Mata do Engenho de Baixo, 13°19'S, 41°49'W, 2 Jan. 1993, *W. Ganev* 1768 (CEPEC, HUEFS, NY); Município de Abaíra, Capão do criminoso, 950 m, 13°20'S, 41°47'W, 22 Jan. 1994, *W. Ganev* 2846 (K, MO, NY); Brejões, Rod. Amargosa/Brejões ca. 28 Km, margem da rodovia, 13°34'47"S, 39°46'49"W, 25 Feb. 2000, *J.G. Jardim* 2912 (CEPEC, HUEFS); Maracás, Fazenda Nova Esperança, 27 Feb. 2000, *R.P. Oliveira* 365 (HUEFS); Encruzilhada, Rod. Encruzilhada/Ribeirão do Largo, 15°30'54"S, 40°48'51"W, 17 Aug. 2001, *A.M. Carvalho* 6973 (HUEFS); Boa Nova, Fazenda Cotermia, entrada à esq., ca. 1,2 km E de Boa Nova, na esorda para Dario Meira, mata seca, 14°22'25"S, 40°11'15"W, 8 Mar. 2003, *P. Fiaschi* 1392 (CEPEC, NY); Maracás, deposti de Cruzeiro da cidade, Fazenda Juliana, 13°24'51"S, 40°24'37"W, 1016 m, 23 Apr. 2002, *R. Souza* 159 (HUEFS); Maracás, fazenda de Roberto Pereira, 13°24'47"S, 40°24'28"W, 18 May 2002, *G.E.L. Macedo* 41 (HUEFS); **Ceará**. Crato, 16 Apr. 1934, *J.R. Swallen* 4356 (US); **Espírito Santo**. Iuna, 7 Feb. 1973, *G. Hatschbach & al.* 31338 (K); Espírito Santo, Santa Maria de Jetibá, 13 Mar. 2003, *L. Kollmann* 6048 (HUEFS). **Goiás**. São Domingo, 14 May 2000, *G. Hatschbach & al.* 71073 (K); **Maranhão**. Barra da Corda to Grajahú, 1-5 Mar. 1934, *J.R. Swallen* 3773 (US); Município de Loreto, Santa Barbara, 7°30'S, 45°3'W, 26 May 1962, *G. Eiten & L.T. Eiten* 4736 (K, MO, NY); **Minas Gerais**. Caldas, 1844, *A.F. Regnell* 308 (FI-Webb, P, UPS); Juiz de Fora, 24 Feb. 1925, *A. Chase* 8619 (MO, NY, US); Viçosa, 11 Apr. 1925, *A. Chase* 9437 (MO, NY, US); Serra do Caparô, 30 Apr.-4 May 1925, *A. Chase* 9644 (MO, US); Minas Gerais, 15 km N of Montalvania, 18 Mar. 1972, *W.R. Anderson & al.* 37186 (C, K, MO, NY, P, US); Serra de São José, 12 Mar. 1994, *Válka Alves & Sarahyba* 4430 (CEPEC, K); Santa Rita do Sapucaí, Serra da Bela Vista, 20 Feb. 1996, *O.S. Ribas* 1326 (K); **Paraná**. Itararé, 16 Apr. 1910, *P. Dusén* 9643 (G, MO, US); Paraná, Campo Morao, 28 Mar.-2 Apr. 1946, *J.R. Swallen* 8959 (MO, US); Cab. Ribeirão do Tigre, Cerro Azul, 16 Dec. 1992, *G. Hatschbach & O.S. Ribas* 58458 (C, G, HUEFS, K, W); Tunas do Paraná, 15 Dec. 1998, *Cruz & Abe* 27 (W); **Rio de Janeiro**. Corcovado, Apr. 1839, *M. Guillemín* 739 (G, K, UPS); Corcovado, Dec. 1840, *G. Gardner* 5654 (K); Theresopolis, Serra dos Orgãos, 1 Mar. 1887, *J. Schenck* 2947 (W); Rio de Janeiro, 1888, *A. Glaziou* 17397 (C, NY, P, W); Rio de Janeiro, 1891, *A. Glaziou* 18649 (C, K, US); Rio de Janeiro, 1894, *A. Glaziou* 20574 (C, K, US); Petropolis, vale Bonsucesso, 13 Apr. 1968, *D. Sucre* 2752 (MO, NY); Petropolis, Correias, Rio Bom Fim, Fazenda Bom Fim, base of Serra dos Orgãos, ca. 900 m, 22°27'S, 43°09'W, 3 Apr. 1972, *T.R. Soderstrom* 1927 (MO, US); Paraíba do Sul, entre Queima Sangue e Salutaris, 24 Jul. 1984, *da Rocja & Peixoto* 109 (K); **Rio Grande do Sul**. Arroyo Grande, 2 Mar. 1899, *C.A.M. Lindman s.n.* (G); Estación Linha Bonita, 19 Jan. 1949, *B. Rambo* 40005 (MO, W); Lagoa da Pinguela p. Osorio, 27 Mar. 1950, *B. Rambo* 46452 (MO, W); Buttenberg prope Montenegro, 22 May 1950, *B. Rambo* 47132 (K, W); Tenente Portela-Derrubadas, 31 Jan. 1973, *J.M. Valls & al.* 2580 (K); Boa Vista, Salvador do Sul, 24 Feb. 1976, *R.M. Klein* 11735 (K); Sapiranga, 650 m, 18 Jun. 1989, *R. Wasum & al.* 5961 (MA, MO, NY, US); **Santa Catarina**. Itapiranga, Chapecó, 3 Feb. 1951, *P.R. Reitz* 3775 (NY),

17192 (L); Nova Friburgo, Feb. 1951, *Capell s.n.* (MA); Duque de Caxias, Ibirama, 200 m, 22 May 1956, *R. M. Klein* 2026 (US); Itapiranga, 9 km W of Popí, on the road to Sant'Antonio, 200-350 m, 24 Feb. 1957, *L.B. Smith & al.* 11783 (US); Alto Matador, 11 Sep. 1958, *P.R. Reitz & R.M. Klein* 7079 (K, L, NY); Santa Catarina, Morro do Rio Vermelho, 300 m, 22 Jan. 1969, *R.M. Klein* 8089 (US); **São Paulo**. 27 Dec. 1932, *F.C. Hoehne* 29972 (K, P, US); São Manoel de Botocati, 1870, *Gerdes s.n.* (W); São Paulo, 5 Mar. 1874, *H. Mosén s.n.* (P, US); Cerqueira Cesar, 400 m, Dec. 1898, *E. Gounelle s.n.* (G); São Paulo, mata do Jardim Botânico, 2 Jan. 1960, *O. Handro* 910 (K, US); Cotia, 9 Apr. 1967, *T. Sendulsky* 665 (HUEFS, NY); Ca. 38 km SW of Jacupiranga along Highway 116 to Curitiba, 680 m, 8 Mar. 1976, *G. Davidse & al.* 10948 (MO), **n = 18!**, **2n = 36!** (Davidse 1978); São Paulo, São Roque, 27 Sep. 1994, *L.C. Bernacci & al.* 162 (HUEFS); São Paulo, Campinas, Fazenda Santa Elisa, 19 Jul. 1994, *S.L. Jung-Mendaçolli & al.* 562 (HUEFS); Mandurí, 23°00'34"S, 49°21'25"W, 13 Jun. 1995, *J.Y. Tamashiro* 1181 (HUEFS); Bauru, cerca de 5 km da cidade em direção a Agudos, 22°23'13"S, 49°01'25"W, 18 Mar. 1997, *E.D. Castellani & al.* 150 (K).

COLOMBIA. Boyacá. Mt. Chapon, NW of Bogotá, 3400 ft, 14 Jun. 1932, *A.E. Lawrence* 219 (BM, G, K, NY, US); Boyacá, Cordillera Oriental, afluente del Río Cusiana, abajo de Corinto, 24 Jun. 1967, *R. Jaramillo-Mejía* 2753 (K); **Cundinamarca**. Juan Largo near San Antonio de Tena, 11 Dec. 1983, *J.R. Wood* 4134 (K); Laguna Verde, La Capilla near Cachipay, 11 Nov. 1984, *J.R. Wood* 4600 (K); Loma, La Cumbre, Vereda Chipatua, villetta-Guaduas, 18 May 1985, *J.R. Wood* 4839 (K); Monte La Guarida, filo de la cordillera sobre La Carboneria, entre Las Brisas y Albán, 16 Oct. 1946, *J. Cuatrecasas* 22174 (P); Villavicencio, Río Guatiquía, 20 Nov. 1948, *A. Molina & al.* 18M.017 (K); El Valle, Km 51 carretera vieja Cali-Buenaventura, 400 m, 14 Feb. 1987, *X. Londoño & I.D. Quintero* 177 (US); **Santander**. Between Surata and California, 8-11 Jan. 1927, *E.P. Killip & A.C. Smith* 16794 (NY, US); **Santa Marta**. 1898-1901, *H.H. Smith* 2144 (G, K, L, P, W), *H.H. Smith* 2148 (P); Cordillera de Santa Marta, San Andrés de la Sierra, 12 Jul. 1906, *H. Pittier* 1650 (US).

ECUADOR. Esmeraldas. km 14-16 Lita-San Lorenzo, 78°33'W, 0°50'N, 750 m, 6 Jun. 1988, *S. Lægaard* 71372 (G); **Morona-Santiago**. Pachicutza, 140 km on road Loja-Gualaquiza, tropical rain forest along Río Zamora, 78°34'W, 3°37'S, 26-27 Apr. 1973, *L. Holm-Nielsen & al.* 4543 (NY); **Napo**. Along trail to Cascadas San Gabriel, 30 Jan. 1992, *S. Lægaard* 101083 (K); **Napo-Pastaza**. Between Puyo and Canelos, Feb. 1935, *Y. Mexia* 6850 (BM); Rocafuerte, Sep. 1969, *P.J. Edwards* 207 (K); **Pastaza**. 5 km SE of El Puyo, 6 Oct. 1974, *J. Hudson* 885 (K, NY); 18 km from Puyo on road to Tena, 3 Sep. 1976, *B. Øllgaard & H. Balslev* 9260 (NY); Hacienda San Antonio de Baron von Humboldt, 2 km al NE de Mera, 1°27'S, 78°06'W, 27 Feb.-19 Mar. 1985, *D. Neill* 5961 (NY, US); Pastaza, Road Puyo-Macas, 2 Dec. 1985, *S. Lægaard* 53405 (K); Ca. 35-40 km along road towards Arajuno, 1°22'S, 77°43'W, 19 Sep. 1998, *S. Lægaard* 19171 (MO); **Pichinca**. NE of Vincente Maldonado, Reserva de ENDESA, 79°02'W, 00°05'S, 7-8 Apr. 1984, *S. Lægaard* 51921 (K, NY); NE of Vincente Maldonado, 79°02'W, 00°06'N, 29 Apr.-1 May 1985, *S. Lægaard* 54202 (K, NY, UPS); NE of Alluriquin, 21 Jul. 1985, *S. Lægaard* 54711 (K, NY); 13 km, of Alluriquin (32 km E of Santo Domingo) on new road to Quito, 5 Jun. 1990, *P.M. Peterson & E. Judziewicz* 9533 (K); **Tungurahua**. Road Baños to Puyo, 22 km from tunnel at Agoyan, 78°13'W, 01°24'S, 1 Dec. 1984, *S. Lægaard* 53395 (K, NY); **Sucumbios**. Along the road from Gonzales Pizarro to Río Dué, 27 Jan. 1992, *S. Lægaard* 101029 (K);

Zamora-Chinchipe. Bombuscaro, 1000 m, 4°05'S, 78°57'W, 9 Mar. 1998, S. Læggaard & al. 18533 (K, MO).

PARAGUAY. **Plicomayo River** 1888-1890, T. Morong 1569 (K, MO, NY); **Alto Paraguay.** Cerro Cabrera, 5 Nov. 1992, R. Fortunato & al. 3778 (G); **Alto Paraná.** S of Santa Lucia, 25°44'54"S, 54°59'48"W, 29 Feb. 1996, E.M. Zardini & M. Vera 44839 (MO); **Caaguazú.** Feb. 1905, E. Hassler 8920 (BM, G, K, NY, P, W); Caazapá, National Park Caaguazú, 450 m, 26°04'52"S, 55°30'24"W, 24 Nov. 1997, E.M. Zardini & A. Benitez 47492 (MO); **Carapeguá.** Santa Barbara prés de Villa Rica, 27 Feb. 1876, B. Balansa 40a (K, L); **Concepción.** Arroyo Tagatiyá-Mi, 22°37'S, 57°32'W, 16 Mar. 1994, E.M. Zardini & T. Tilleria 38918 (MO); **Guaíra.** Tororo, Compania San Pedro, 25°55'S, 56°15'W, 15 Dec. 1988, R. Gegen 1155 (MO); Road Melgarejo-Antena, 8 km S of Melgarejo, 25°55'S, 56°15'W, 5 Mar. 1989, E. Zardini 11294 (MO); **Hayes.** Ruta Trans-Chaco, Río Monte Lindo, 14 Mar. 1979, A. Schinini & E. Bordas 16582 (K); **Paraguari.** Parque Nacional Yvyicui, 200 m, 14 Aug. 1980, M. Vavrek 64 (US); Parque Nacional Ibicuí, 26°00'S, 56°46'W, 4 Jun. 1989, E.M. Zardini & R. Velasquez 12433 (MO).

PERÚ. **Cajamarca.** Huarango, San Martin-Quebrada Blanca, 860-900 m, 05°17'S, 78°43'W, 14 May 1996, J. Campos & al. 2714 (MO); San Ignacio, La Coipa, localidad Vista Florida, Camino a La Laguna, 1900-2000 m, 05°26'10"S, 78°56'00"W, 20 Jun. 1997, J. Campos & Z. Garcia 4062 (MO); Jaen, 11 km W of Highway 5N up Río Tabaconas and 4 km E of Tamborillo, 29 Mar. 2000, P.M. Peterson & N. Refulio Rodriguez 15095 (K, MO). **Junín.** Pichis Trail, Enenas, 30 Jun.-2 Jul. 1929, E.P. Killip & A.C. Smith 25615 (NY, US); **Loreto.** Maynas, carretera Iquitos-Nauta, km 21, trocha de penetracion al caserio Yarana, Río Nanay, ca. 120-150 m, 31 Jul. 1996, M. Rimachi Y. 11761 (MO); **San Martin.** Mariscal Caceres, Distr. Tocache Nuevo, Río de La Plata, fundo del Sr. Manuel Gatica, 550-700 m, 12 Aug. 1980, J. Schunke-Vigo 12146 (MO); **San Miguel.** Urubamba Valley, 1800 m, 26 May 1915, O.F. Cook & G.B. Gilbert 923 (US).

VENEZUELA. **Aragua.** Near Aragua-Miranda border, Cordillera of Cerro Zamuro, S of La Fila Maestra of Interior Coastal Cordillera, NE of San Casimiro, 2-3 km NE of Hacienda Negrito, 29 km S of Cua, 875-1100 m, 26 Oct. 1963, J.A. Steyermark 91783 (US); 8-9 km from the redoma at Cata Beach, SW towards Cuyaga, 400 m, 10°29'N, 68°42'W, 29 Sep. 1985, B.K. Holst & al. 2300 (MO); **Lara.** Palavecino, 5-10 Aug. 1970, J.A. Steyermark & al. 103639 (K, US, VEN); 16.3 km NW of Rancho Grande along road to Cata, 270 m, 15 Nov. 1971, G. Davidse 3114 (MO); **Yaracuy.** Nirgua, SE de Nirgua, entre el Picacho de Ningua y el Caserio San Mateo, 1200-1400 m, 10°08'N, 68°38'W, 28 Dec. 2010, W. Meier & N. Flauser 16903 (G, US); **Tovar.** Near La Victoria, 14 Nov. 1856, A. Fendler 1613 (K); Near Caracas, 16 Aug. 1855, A. Fendler 1614 (K); Between Caracas and La Guayra, 16 Aug. 1855, A. Fendler 1615 (K); Valley of San Carlos River, 13 Apr.-10 May 1855, A. Fendler 1617 (K); Between Maracai and Coroni, 12 Dec. 1856, A. Fendler 2493 (K); Carayaca, Oct. 1908, A. Jahn 312 (G, US).

(4a) *Lasiacis divaricata* (L.) Hitchc. var. *divaricata*, Contr. U.S. Natl. Herb. 15: 16. 1910. (Fig. 14).

Bas.: *Panicum divaricatum* L., Syst. Nat., ed. 10, 2: 871. 1759.

Type: "*Habitat in Jamaica*", Browne s.n. (lectotype, designated by Hitchcock 1920, 20; See also Jarvis 2007: LINN 80.65!).

(=) *Panicum bambusoides* Ham. Prodr. Pl. Ind. Occ. 10. 1825.

Type: Puerto Rico, "*habitat in Am. Equinozi (P. Rico)*" (holotype: P! (Herb. Desvaux) [barcode P01176737]; isotype US! Fragment and photo from P [barcode US00148168]).

(=) *Panicum chauvinii* Steud., Syn. Pl. Glum. 1: 68 1854.

Type: Guadeloupe, *Duchassaing misit*, 1851, s.n. (holotype P! [barcode P00633950]; isotype US! Fragment from P [barcode US00148349]).

(=) *Panicum divaricatum* L. var. *stenostachyum* Griseb., Fl. Brit. W. Ind. 551. 1864.

Type: "*Panicum divaricatum* L. . *stenostachyum* Gs., Jamaica, Mart. 20" (holotype GOET! (photo!) [barcode GOET001982]; US! Fragment from GOET [barcode US00148441]).

(=) *Panicum divaricatum* L. var. *glabrum* Kuntze, Rev. Gen. Pl. 2: 784. 1891.

Type: "*West Indies, St. Thomas [Virgin Islands], Feb. 1874, O. Kuntze [55] (lectotype, designated here: NY! [barcode NY000710951] isolectotypes NY! (two sheets) [barcode NY00071096, NY00071097].*

Description

Perennials caespitose. *Culms* erect (0.5-)1-6(-8) m long, strongly arching, often supported in brush, often procumbent when unsupported, the upper culm and primary and secondary branches clearly zig-zag; *branches* solitary or in group at the node; *internodes* 5-10 mm thick, glabrous, sometimes with a weak line of hairs on one side; *nodes* totally glabrous. *Leaf sheaths* glabrous, sometimes puberulent; *collars* usually puberulent, rarely pubescent to completely glabrous; *ligules* 0.2-0.5(-1) mm long, membranous, inconspicuous, usually not visible, ciliolate with a rim of hairs 0.2-0.6 mm long; *blades* 4-12(-15) cm long, 0.5-2.0 cm wide, linear-lanceolate, base shortly asymmetrical, adaxial surface glabrous, sometimes scabrid, abaxial surface glabrous, rarely puberulent. *Panicles* 2-15(-20) cm long, the longest branch up to 14 cm long, bearing spaced spikelets, lower branches reflexed. *Spikelets* 3-5(-6) mm long, obo-



Figure 14. *Lasiacis divaricata* (L.) Hitchc. var. *divaricata*: A. Habit [A. from R. Garcia & al. 569 (NY)]; B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea [B-E. from A.H. Liogier 17049 (NY)]; F. Ligular area; G. View of the culm toward the base [F-G. from E.C. Leonard 3081 (NY)]. A. Maury delineavit.

vate; lower glumes (1.5-)2-3 mm long, 6-veined; upper glumes 2-4 mm long, 8-11-veined; sterile floret without a flower, lemma 8-13-veined, paleas subequal the length of the fertile floret; fertile florets 3.5-4.0 mm long, 2-2.5 mm wide, usually brown at maturity, anthers 2 mm long, whitish, stigma usually purple; caryopses 2-2.5 mm long, 1.6-2.0 mm wide. Chromosome number: $n = 18$, $2n = 36$ (Davidse 1972, 1978).

Iconographs

Tab. 29 as *Panicum divaricatum* L. (Kunth 1835); Plate 13 as *Panicum divaricatum* L. (Vasey 1884); Fig. 11 (Chase 1911); Fig. 1080 (Hitchcock and Chase 1950); Fig. 182 E-G (Acevedo-Rodríguez 2005); Davidse (2003: 391, 2007: 470); Lámina 155 (Catasús Guerra 2012b).

Vernacular names

Bahamas: “wild cane” N.L. Britton & C.F. Millspaugh 2630 (NY), “tibisee”, “cane grass”, “wild cane” Acevedo-Rodríguez and Strong (2012); **Brazil:** Santa Catarina, “taquari” (Smith et al. 1982); **Cuba:** “tibisi chico” M. Díaz-Piferrer s.n. (FTG); “pito de bejuco” Hitchcock (1936), “canutillo”, “caña brava cimarrona”, “cañita brava cimarrona”, “caña bravilla”, “cañabucillo cimarron”, “pitilla de monte”, “tibisi”, “yerba brava”, “pito de bejuco”, “tibisi de sabana” Acevedo-Rodríguez and Strong (2012), “canutillo cimarron”, “tibisi chico”, “tibisi de monte” (Roig 1963; Catasús Guerra 2012); **Haiti:** “bamboo-marron” (Urban 1912); **Mexico:** Baja California, “carrizito” (Rebman et al. 2016); Chiapas, “yashal tzuzum (tzeltal)” Alush Mendez Ton 5027 (MO); Quintana Roo, “xiat” M.E. Correa 6 (MO); “carricillo”, “carrizo”, “carrizo de ratón”, “ischcatichiya”, “mehensit”, “pichut”, “pitut”, “sit” (Quattrocchi 2006); **West Indies:** “small cane”, “wild cane” (Quattrocchi 2006).

Distribution

Bahamas, Belize, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Puerto Rico, Leeward Islands, Mexico, Nicaragua, Panama, Virgin Islands, USA (Florida), Windwards Islands. (Fig. 15).

Distribution (bibliographic references)

Boldingh (1909) as *Panicum divaricatum* L.; Hitchcock (1909) as *Panicum divaricatum* L.; Hitchcock and Chase (1917); Hitchcock (1913, 1920, 1927a, 1936); Urban (1921); Nash (1931) pro parte; Standley and Calderón (1925); Schipp (1933); Standley (1937); Moldenke (1944); Swallen (1934, 1936, 1943, 1955b); Hitchcock and Chase (1950); Allan (1957); Adams (1972); Smith et al.

(1982); Davidse (1978, 1994, 2001, 2003, 2007); Lindeman and Stoffers (1963); Beetle (1977); Fournet (1978); Howard (1979); Pohl (1980); Gould and Moran (1981); D’Arcy (1987); Cialdella and Vega (1996); Rogers and Holder (1999); Serna and López-Ferrari (2000); Morales (2003); Correa et al. (2004); Acevedo-Rodríguez (2005); Sutherland (2008); Acevedo-Rodríguez and Strong (2012); Catasús Guerra (2012a); Proctor (2012); Rebman et al. (2016); Villaseñor (2016); Sylvester (2017); Dávila et al. (2018); Sánchez-Ken (2019); Menjívar Cruz et al. (2021).

Ecology

A wide range of habitats such as hammocks (Florida) and pinelands; coastal xerophytic and mesophytic pine vegetation areas (cf. Mexico and Central America). From sea level to 800-1200 m above sea level.

Phenology

Flowering throughout the year, especially from June through April.

Remarks

Lasiacis divaricata var. *divaricata* is essentially a Caribbean species extending its range of distribution to Central America from Mexico until Panama. In South America it is represented by its geographical vicariant *L. austroamericana*, previously described as variety by Davidse (1977) and here elevated to the rank of species.

Selected specimens

BAHAMAS (Lucayan Archipelago). Abaco. Lubbers Quarters, 28 Dec. 1968, W.T. Gillis 7338 (FTG); Great Abaco, Green Turtle Cay, in open coppice E of New Plymouth, 25 Nov. 1976, D.S. Correll & H.B. Correll 47652 (FTG, MO); Great Abaco Island, ca. 5 mi. N of Dundas Town along main road, 14 Dec. 1979, R.P. Wunderlin & al. 8302 (L, MO); Abaco National Park, 22 Jun. 2004, E. Freid 04-109 (FTG); **Andros.** Coppice, near Deep Creek, long Bay Cays, Andros, 20-22 Jan. 1910, J.K. Small & al. 8586 (K, NY, P, US); Along and near beach 1-2 miles S of Andros Town, 27 Feb. 1966, E.Y. Dawson 26547 (US); Andros Island, N of Love Hill, 11 Jul. 1975, S.R. Hill 3366 (FTG); North Andros Island, 20 May 1995, Miller #B5 (C); North Andros, near path to Rainbow Blue Hole, 24°783516N, -77°860733W, 5 Mar. 2012, B. Jestrow 2012-018 (FTG); **Anguilla Islands.** Salt Key Bank, South End, 15-18 May 1909, P. Wilson 8051 (K, NY); **Berry Islands.** Along Stede Bonnet Place, Great Harbour Cay, 16 Oct. 1974, D.S. & H.B. Correll 43636 (FTG, NY); **Bimini.** May 1948, R.A. Howard & E.S. Howard 10069 (FTG, NY); Near center of Cat Cay, 10 Jul. 1975, D.S. & H.B. Correll 45609 (FTG); Congo Town, Ridge Coppice, 5 Mar. 1977, R.P. Saulea 1579 (FTG); **Cat Island.** 10 Jul. 1967, R. Byrne 227 (FTG, NY); Just E of Zonicle Hill, 19 Nov. 1975, D.S. Correll 46073 (FTG); **Crooked Island.** 9-23 Jan. 1906, L.J.K. Brace 1617 (NY); **Eleuthera.** 18 Feb.-4 Mar. 1907, E.G. Britton 6403 (NY); Eleuthera, The Current, vicin-



Figure 15. General geographic distribution of *Lasiacis divaricata* (L.) Hitchc. var. *divaricata* (dotted line) and *Lasiacis austroamericana* (Davidse) Baldini (solid line).

ity of the village and beach, primarily sand and coral, 27 Dec. 1969, *W.H. Lewis* 7476 (FTG, MO); Eleuthera, about 1 mile S of John Millars, 15 May 1975, *D.S. Correll & S.R. Hill* 45128 (FTG); North Eleuthera Airport, 15 Dec. 1979, *R.P. Wunderlin & al.* 8445 (MO); Wemyss Bight Area, 24°07'2"N, 76°12.867'W, 2 Nov. 2006, *M.A. Vincent & C. Kwit* #13300 (FTG); **Exumas.** Hummingbird Cay, 14 Jan. 1969, *N.H. Nickerson* 2952 (FTG); Great Exuma, Flamingo Bay, area just E of George Town, 11 Dec. 1973, *D.S. Correll* 40919 (FTG); **Great Bahama.** 5-13 Feb. 1905, *N.L. Britton & C.F. Millspaugh* 2630 (NY); Long Cay, 7-17 Dec. 1905, *L.J.K. Brace* 4230 (NY, US); Near Russel Town, 4 miles from Freeport, 31 Mar. 1969, *W.T. Gillis* 7769 (FTG); **Inagua.** 21 Oct. 1904, *G.V. Nash & N. Taylor* 1240 (NY); **Long Island.** 1 mile W of the Queen's Highway on the Galloway Road, South Clarence Town, 23 Jun. 1974, *S.R. Hill* 2289 (FTG, MO, NY); Long Island, S of Clarence Town, 23°04'00"N, 74°55'00"W, 16 Aug. 1998, *L. Richey* 98-246 (FTG); **Mayaguana.** SW of Airport, 4 Jan. 2006, *E. Freid* 06-048 (FTG); **New Providence.** Coppice, Farringdon Road, 24 Aug. 1904, *N.L. Britton & L.J.K. Brace* 187 (K, NY, US); New Providence Island, 25 Dec. 1963, *J. Merilainen & K. Roe* 36 (US); 1 mile S of Foxhill, 1 Nov. 1973, *D.S. Correll & et al.* 40321

(FTG, MO, NY); New Providence Island, along N side of West Bay Street, at Love Beach, 7 Sep. 1983, *P. Ruben & D.K. Saulea* 8418 (FTG, MO); New Providence Island, Clifton Heritage Park, 29 Dec. 2006, *E. Freid* 06-761 (FTG); **Rose Island.** 27-28 Jan. 1905, *N.L. Britton & C.F. Millspaugh* 2130 (NY, US); **San Salvador.** 25-26 Feb. 1907, *N.L. Britton & C.F. Millspaugh* 5696 (NY); Watlings Island, northeast end, 27-28 Nov. 1907, *P. Wilson* 7309 (K, NY); N of Pigeon Creek, 1 Jan. 1970, *W.T. Gillis* 8789 (FTG); San Salvador Island, SW of Flamingo Pond, 4 Dec. 1973, *Fernandez & al.* 84 (FTG); San Salvador Island, 22 Nov. 1974, *D.S. Correll* 43906 (FTG); **Turks & Caicos.** North Caicos, Kew and vicinity, 1 Mar. 1911, *C.F. Millspaugh & C.M. Millspaugh* 9132 (NY); Caicos, along road near St. James' Hill, 1 Sep. 1974, *D.S. Correll* 43383 (FTG); Caicos Islands, Providenciales, Turtle Cove area, 16 Dec. 1975, *D.S. Correll* 46438 (FTG); Turks and Caicos Islands, Middle Caicos, Bambarra, North end of MC6 trail, 16 Nov. 2000, *B.N. Manco* 14 (FTG, K); North Caicos Island, Kew, edge of footpath through town of Kew, 7 Sep. 2002, *J.L. Sadle* #115 (FTG); Turks and Caicos Islands, North Caicos, Bottle Creek, Quarry Pit Road, 21°91'20"N -71°9'35"W, 29 Mar. 2006, *M.A. Hamilton* 480 (K, FTG).

BELIZE. **Belize.** Belize, 172 mile South of Rockville Quarry on road to Sibun River, (coarse climbing grass on forest trees, occ. in extremely dense secondary forest on heavy clay soil over limestone), 28 Nov. 1968, R.R. Innes RRI 58 (K); Belize, Gracie Rock, 1.5 miles S of Mile 22 Western Highway, 5 Jun. 1973, J.D. Dwyer 10971 (MO); Belize, vicinity of Maskall River, 6 Jun. 1973, T.B. Croat 23924 (MO, NY, US); Belmopan, 5 Mar. 1974, W.C. Verboom 5075 (MO, P); **Cayo.** Commune Ridge, 1936, C.L. Lundell 6430 (NY, US); Vaca, 11 Mar. 1938, C.L. Lundell 2332 (K, NY, US); Cayo, Sep. 1964, Disney A380/D (BM); Cayo, ca. 250 m W of Hummingbird Highway, at a point ca. 2.5 miles of S of junction with Western Highway, 50 m, 17 Jul. 1970, D.L. Spellman & W.W. Newey 1713 (MO); Cayo, 2 miles S junction W Highway & Hummingbird Highway, 27 Jul. 1971, R. Wunderlin & al. 322 (MO); Vicinity of Milionario between the McCal River and Cuevas, disturbed forest and roadside, 1900 feet elev., 30 May-3 Jun. 1973, T.B. Croat 23707 (K, L, NY, US); Vaca Plateau, 3 Aug. 1980, C. Whitefoord 2024 (BM, MO, NY); South of Guacamallo Bridge, 10 May 1981, C. Whitefoord 2826 (MO); Vaca Plateau, commune Ridge, 16°50'N, 89°06'W, 8 Aug. 1989, M.J. Balick 2053 (MO, US); Cayo, Chial Road, 17°06'N, 89°06'W, 16 Feb. 1993, R. Arvigo 737 (MO, NY); Mountain Pine Ridge, 8 Feb. 1994, A. Monro & al. 153 (BM, MO); Chiquibul, San Pastor, 5 May 1995, A. Monro 1018 (BM); Chiquibul Forest Reserve, track to Monkey Tail Branch, 10 Apr. 1998, C. Whitefoord 10212 (BM, MO); **Corozal.** Port Sal, Aug. 1933, P.H. Gentle 4905 (MO, NY, US); **Orange Walk.** Mile 54, Northern Highway, 25 Jan. 1974, J.D. Dwyer & R. Liesner 12209 (K, L, MO, NY, US); **Stann Creek.** Middlesex, 14 Sep. 1929, W.A. Schipp 332 (BM, G, MO, NY, US); Stann Creek-Sittee Road, 13 Jul. 1953, P.H. Gentle 7975 (NY, US); Stann Creek, 14 Jun. 1954, P.H. Gentle 8215 (BM, NY, US); Stann Creek, Silkgrass Creek Area, 8 Jan. 1955, P.H. Gentle 8523 (G, NY, US); Stann Creek, ca. 5 miles S of Lynam Ag. College, 15 m, 7 Jul. 1970, D.L. Spellman 1598 (MO); **Toledo.** Monkey River, 6 Sep. 1941, P.H. Gentle 3657 (MO, NY); Toledo, comune Ridge, near Jacinto Creek, 7 May 1946, P.H. Gentle 5572 (MO, US); Chavarrias Road, Resemederes, across Columbia River, 10 Oct. 1947, P.H. Gentle 6278 (G, US); Between Macaca and Camp 2, 13 Dec. 1949, P.H. Gentle 6931 (NY, US); El Dorado Road, 24 Jan. 1950, P.H. Gentle 6963 (G, NY, US); Near San Antonio, 11 Oct. 1952, P.H. Gentle 7785 (NY, US); NW of Punta Gorda on Owen Lewis private lane, 1 Aug. 1970, J.R. Wiley 23 (M); Columbia Forest Station, 26 Jun. 1972, J.D. Dwyer 9957 (MO); San Lose, 6.7 miles north of Columbia Forest Station, 13 Jun. 1973, J.D. Dwyer 11155 (K, L, MO, NY, US); Vicinity of San Jose, Myan Indian Villane, 6.7 miles north of Columbia Forest Station, disturbed forest, 13 Jun. 1973, T.B. Croat 24420 (K, L, US); Punta Gorda, 29 Jul. 1979, J.D. Dwyer 14899 (BM, MO); Punta Gorda, 31 Jul. 1980, J.D. Dwyer 15136 (BM, MO); Columbia Forest Reserve, 2 Oct. 1992, C. Whitefoord 8269 (BM).

CAYMAN ISLANDS. Grand Cayman, 2 mi SE of Georgetown, 22 Jul. 1938, W. Kings 166 (BM, NY); Grand Cayman, Governor's Creek Lagon, W. Bay, 29 May 1967, M. Brunt 2031 (BM); Grand Cayman, N of Old Isaacs, 13 Jun. 1967, M. Brunt 2191 (BM); Grand Cayman, North Side, along a graded road going inland through mangrove from the Queen's Highway just E of Old Man Bay, 11 Jun. 1998, G.F. Guala II & al. 1901 (FTG, K, US).

COSTA RICA. Costa Rica, 1845-1848, A.S. Ørsted 14127, 14128, 14130 (C); **Alajuela.** Vicinity of Los Chiles, Río Frio, 1 Aug. 1949, R.W. Holm & al. 728 (BM); **Guanacaste.** Canton de La Cruz, da Bahía Salinas a Santa Cecilia, La Cruz, Santa Cecilia Hacienda El Oro, 500 m, 10°59'26"N, 85°25'40"W, 4 Sep. 1992, R. Espinoza 528 (MO); Canton de Nicoya, Cuenca del Tempisque, sendero a

las Cavernas, 10°09'52"N, 85°21'45"W, 2 Nov. 1996, U. Chavarria 1627 (NY); La Cruz, along unnamed tributary of Quebrada Los Chanchos (between Quebrada Grande and Quebrada Los Chanchos), N slope of Cerros Santa Elena, Peninsula de Santa Elena, 100-200 m, 10.55N, 085.30W, 27 Jan. 2003, M. Grayum & al. 11530 (US); **Limón.** 5 Jul. 1966, R.W. Pohl & C. Calderón 9991 (MO, US); **San José.** Entre San José et le Capote, Jun. 1896, A. Tonduz 7234a (K); **Talamanca.** Forêts de Tráki, Apr. 1895, A. Tonduz 9492 (G).

CURAÇAO. Mt. Christoffel, 26 Dec. 1952, A.L. Stoffers 1184 (L).

CUBA. **Camaguey.** Cayo palma, 12 Oct. 1909, J.A. Shafer 2571 (BM, NY, US); Habana, 1 Jun. 1905, C.F. Baker 5324 (W); Herradure, 15 Aug. 1907, S.M. Tracy 9094 (G, US, W); La Colombia near Havana, Nov. 1908, Bro. León 767 (US); Jatovieja, Cayo Sabinal, 25 Mar. 1909, J.A. Shafer 1073 (US); **Habana.** 1828, Ramon de la Sagra 16 (FI-Webb); La Habana, prés Mariano, 2 Nov. 1908, P. Levy s.n. (L); Habana, Jamaica, 27 Jun. 1911, Bro. León 2602 (US); Habana, Anafe, Laguna de Ariguanabo, 20 May 1914, E.L. Ekman 1020 (NY); Habana, Cerro de Espeon, 7 Dec. 1930, E.P. Killip 13509 (US); Habana, Valley of Yumutí river, Baracca, Aug. 1939, Bros. León & M. Victorin 17336 (US); Habana, in swamp 2 km N of Nueva Gerona, Isla de Pinos, near sea level, 6-10 Feb. 1956, C.V. Morton 9972 (US); **Las Villas.** Las Villas, 23 Jun. 1920, Bro. Fernando Ansovin 349 (US); Las Villas, (Santa Clara), Sierra de San Juan, above San Blas, 300-600 m, 9-10 Nov. 1941, C.V. Morton 4143, 4528 (US); ¼ mile west of Río San Juan crossing of road to Trinidad, 1-20 Jul. 1950, R.A. Howard & al. 384 (K, NY, US); Sancti Spiritus, Banao, Loma de Banao, Tetas de Juana, 21°87'6111N, 79°60'8888W, 600-840 m, 15 Mar. 2003, J. Pipoly 24820 (FTG); **Mantanzas.** Woods near San Miguel, 7 Sep. 1903, N.L. Britton & P. Wilson 241 (NY); Mantanzas, Cienaga de Zapata, Santo Tomas, 22°42'2916N, 81°11'18W, 20 m, 13 Mar. 2003, J. Pipoly 24740 (FTG); **Nueva Gerona.** Isle of Pines, Sierra de los Caballos, 2 Mar. 1916, N.L. Britton & P. Wilson 15134 (NY); **Oriente.** Oriente, 1856-57, C. Wright 747 (G, K, MO, NY, P, US, W), C. Wright 748 (G, MO, NY, P, US); Santiago, vicinity of Baracoa, 24-29 Jan. 1902, C.L. Pollard & al. 76 (MO, US); Santiago, Mar. 1903, L.M. Underwood & F.S. Earle 1642 (NY); Oriente, Sierra Nipe, near Woodfred, 5 Dec. 1909, J.A. Shafer 3017 (NY, US); Oriente, Gorge of the Río Yamuri, 7-9 Dec. 1910, J.A. Shafer 7827 (NY, US); Oriente, Farallon de La Perla, 14 Feb. 1911, J.A. Shafer 8751 (NY, US); Oriente, Bayate, 3 Jul. 1914, E.L. Ekman 1723 (G); Oriente, Bayate, 1 Jun. 1915, E.L. Ekman 5845 (K); North slope of Sierra Nipe, 400 m, 15 Oct. 1941, C.V. Morton & J. Acuna 2914 (K, MO, NY, US); Northern spur of Sierra Maestra west of Río Yao, 24-30 Oct. 1941, C.V. Morton & J. Acuna 3433 (K, NY, US); Renté, Santiago Bay, coastal thickets, Jun. 1943, Bro. Clemente 2879 (US); Oriente, Moa Region, 8 km S of Moa, in "Cayo Chiquita", a pocket of moist hardwood forest in a valley surrounded by pinelands, 20°38'N, 74°57'W, 19 Jul. 1951, G.L. Webster 3832 (NY, US); Santiago Region, dense scrub on limestone ca. 3 km N of El Morro, common, sprawling in shrubbery, 12 Aug. 1951, G.L. Webster 4058 (US); Oriente, Crucero Dorales, Holguín Road to Tunas, 26 Dec. 1954, M. Díaz-Piferrer s.n. (FTG); Oriente, Cayo del Rey, SW base of the Sierra de Nipe, 100 m, 7 Jan. 1956, C.V. Morton & al. 8753 (US); Oriente, Puntón de Cuero, a mountain N of Imias, Southern coast of Oriente, 100-600 m, 11 Jan. 1956, C.V. Morton & Bro. Alain 8879 (US); Holguín, near the Airport, Charrasco vegetation on limestone over serpentine, 100 m, 20°50'N, 76°20'W, 13 Jul. 1985, A. Gentry 51046 (MO); **Pinar del Río.** Vicinity of Mendoza, 29 Nov. 1911, J.A. Shafer 10597 (MO, NY); Sierra de Anafe, 16 Dec. 1911,

P. Wilson 11363 (US); Arroyo del Sumidero, Aug. 1912, *J.A. Shafer* & *Bro. León* 13564 (BM, NY, US); La Finca Caiguanabo, Sierra La Giura, 4 Feb. 1917, *W. Palmer s.n.* (US); San Cristobal, Loma del Pimento, 29 Sep. 1920, *E.L. Ekman* 11527 (US); Tres Marias hill, Rangel, Rosario Mts., Aug. 1926, *Bro. León* 12777 (US); Sabana de Troncones, El Rosario, Jul. 1929, *Bro. León* 14118 (US); La Palma, Sur de Cajalbana, entre Saua y El Cayo, a orilla del arroyo Las Vueltas, 28 Aug. 1993, *X. Londoño* & *al.* 830 (US); Viñales, Sierra del Infierno, 22°76'66"N, 83°40'83"W, 8 Mar. 2003, *J. Pipoly* 24616 (FTG); **Villa Clara**. La Magdalena, Cayamas, Oct. 1904, *C.F. Baker* 2501 (W); Santa Clara, Lomas de Banao, Feb. 1920, *A. Luna* 206 (NY); Santa Clara, Caunao River to Cienfuegos Bay, 22 Mar. 1926, *J.G. Jack* 4380 (BM, NY); Santa Clara, San José, Trinidad Mountains, 30 Jul. 1936, *L.B. Smith* & *al.* 3269 (MO, US).

DOMINICAN REPUBLIC. **Altigracia**. 15.1 km from Punta Cana on the new road to Otra Banda, 18°34'N, 68°29'W, 14 May 1980, *M. Mejía* & *T. Zanoni* 6348 (MA, MO, NY); Near Laguna Turey, just W of the Punta Cana Beach Resort, 18°30'N, 68°22'W, 21 Mar. 2001, *D. Goldman* 1994 (US); **Barahona**. Prope Barahona, 1910, *Bro. M. Fuertes* 130 (G, W); Rincon, 1911, *Bro. M. Fuertes* 1276 (C, L, MO, US); Barahona, near sea level, 24 Jan. 1922, *W.L. Abbott* 1542 (US); Yaroa, La Cabirma, 1 Nov. 1954, *J. de Jesus Jiménez* 2764 (US); 12 km NNE of Polo, along road to Cabral, 16 Aug. 1970, *G. Davidse* 2721 (MO, NY, US), **n = 18!** (Davidse 1978); Sierra Martin Garcia, 4.5 km al E de Las Salinas, 18°19'N, 71°10'W, 30 Oct. 1985, *R. Garcia* & *al.* 569 (NY); **Baorucu**. Environs du Lac Enriquillo, Dec. 1952, *Humbert* 27605 (P); Baorucu, Sierra de Neiba, Los Guineos on upper river Río Colorado, 630 m, 18°35'N, 71°11'W, 11 Aug. 1990, *S.A. Thompson* 7798 (MO); **Cibao**. Jaiquí Picado, 20 miles W of Santiago, 27 Nov. 1969, *A.H. Liogier* 17049 (NY, US); Santiago de los Caballeros, en la ladera SE de la loma Diego de Ocampo, 1070 m, 18°34'32"N, 70°44'00"W, 14 Mar. 2000, *A. Veloz* & *M. de La Cruz* 2097 (MO); **Dajabón**. Sobre Cerro Chacuey (Cordillera Central), 400–800 m, 19°27'N, 71°35'W, 27 Nov. 1984, *T. Zanoni* & *al.* 32386 (MO); **Distrito Nacional**. Santo Domingo City, 9–10 Mar. 1913, *J.N. Rose* & *al.* 3739 (US); Ciudad Trujillo, 17 Dec. 1945, *H.A. Allard* 14126 (NY, US); Km 32 along the Santo Domingo-Santiago Highway, 130 m, 11 Aug. 1970, *G. Davidse* 2619 (MO, US); **El Seibo**. Between Punta Jicaco and Punta Rey, E of Jovero, Seibo Province, 29 Nov. 1923, *W.L. Abbott* 2859 (NY, US); Los Haitises, approx. 2 km al Oeste de la Caseta de Guardaparques en Monte Bonito (de Trepida Alta), Parque Nacional Los Haitises, 19°00'N, 69°31'W, 200–300 m, 7 Aug. 1985, *M. Mejía* & *al.* 35528 (US); Arroyo de Agua, 11.7 km W of El Valle, 200 m, 18°58'N, 69°28'W, 14 Jun. 1988, *T.B. Croat* 68495 (MO, NY); **Españillat**. Llanura de Nagua, 7 km al E de Gaspar Hernande proximo a La Ermita, 20–30 m, 19°38'N, 70°15'W, 14 Oct. 1982, *M. Mejía* & *J. Pimentel* 23704 (MO); **Independencia**. 3 km S of Angel Feliz, 905 m, 18°37'N, 71°46'W, 16 Oct. 1991, *S.A. Thompson* 9777 (MO); **La Romana**. La Romana, Isla Catalina, SW of La Romana, 10–20 m, 18°16'N, 69°02'W, 15 Jul. 1981, *T. Zanoni* & *al.* 15451 (FTG, MO, NY); **La Vega**. Jarabacoa, 15 Jun. 1963, *Bro. Basilio Augusto* 1015 (NY); La Vega, 16 km N of Jarabacoa along Highway, 260 m, 12 Aug. 1970, *G. Davidse* 2641 (MO, US); Vega, on the road, near Hotel Montaña, Jarabacoa, 11 Jul. 1971, *J. de Jesus Jiménez* 5937 (US); Cordillera Central, Loma La Pina o Loma de La Monja, 2 km E de Jarabacoa en la carretera a La Vega y 12 km N a Loma Firme, 700 m, 19°13'N, 70°40'W, 26 Aug. 1983, *T. Zanoni* & *al.* 26883 (MO); Loma del Puerto, from La Vega to Jarabacoa, 31 Aug. 1968, *Bro. A.H. Liogier* 12410 (US); **Macoris**. San Pedro de Macoris, Mar. 1913, *J.N. Rose* & *al.* 4159 (US); San Pedro di Macoris, 18 Oct.

1946, *R.A. Howard* 9503 (BM, NY, US); 1.5 km E of Juan Dolio, 18°26'N, 69°25'W, 20 Aug. 1981, *T. Zanoni* & *S. Peláez* 16225 (FTG, MO, NY); San Pedro de Macoris, Río Cumayasa, en la Boca de Cumayasa, 18°24'N, 69°06'W, 20 Jun. 1986, *J. Pimentel* & *R. Garcia* 598 (NY); **Monseñor Nouel**. Loma Peguera, Banao, 300–400 m, 8 Aug. 1970, *A.H. Liogier* 17367 (US); **Morne Espagnol**. 15°31.60'N, 61°27.84'W, 16 Aug. 2002, *S. Zona* 951 (NY); **Nacional**. Loma Sierra Prieta mountain, 18°39'N, 69°53'W, 13 Aug. 1980, *M. Mejía* & *T. Zanoni* 7842 (MO, NY); Nacional, base and lower southern slope of Sierra Prieta, 13.7 km N of Villa Mella, 14 Dec. 1986, *R. Carter* & *R. Garcia* 5325 (MO); **Pedernales**. About 10 miles NE of Cabo Rojo, Pedernales, 11 Nov. 1969, *A.H. Liogier* 16944 (NY); **Peravia**. San José de Ocoa on road to Cruce de Ocoa, 18°27'N, 70°29'W, 350 m, 26 Jun. 1980, *M. Mejía* & *T. Zanoni* 7041 (FTG); La Cienega, carretera de San José de Ocoa a Río Abajo, 18°34.5'N, 70°27'W, 650 m, 26 Dec. 1980, *M. Mejía* & *J. Pimentel* 9974 (FTG); Arroyo Palma, cerca del poblado la Toronja, 6 km SW de San José de Ocoa en la carretera a El Pinar, 18°32'N, 70°32'W, 24 Sep. 1985, *T. Zanoni* & *al.* 27454 (NY); **Puerto Plata**. Loma del Puerto, 18 Sep. 1969, *A.H. Liogier* 15917 (NY, US); 9 km SW of Sabaneto de Yasicá along road to Jamao, 60 m, 13 Aug. 1970, *G. Davidse* 2674 (MO); Cofresí, Puerto Alta, 24–25 Feb. 1973, *A.H. Liogier* 18839 (NY); Puerto Plata, Pico El Murazo, 910 m, 19°41'N, 70°57'W, 28 Nov. 1992, *S.A. Thompson* 11378 (MO); **Samaná**. Vicinity of Sanchez, Samaná Peninsula, sea level to 300 m, 5 Dec. 1920, *W.L. Abbott* 179 (US); Laguna, Loma Zaramagua, 14 May 1930, *E.L. Ekman* 14971 (US); En el paso y en la cara al viento (N) de Loma Pan de Azúcar, subiendo del poblado de la La Laguna, 19°17'N, 69°18'W, 18 Jul. 1984, *T. Zanoni* & *al.* 31159 (MO, NY); **San Cristóbal**. Cordillera Central, Villa Altigracia, edge of woods, 19 Jan. 1929, *E.L. Ekman* 11246 (K, US); San Cristobal, poblado rural de Hato Damas, 10 km al N de San Cristobal en carretera a La Represa, 18°28'N, 70°07'W, 26 Oct. 1989, *J. Pimentel* 1182 (NY); **San Juan**. El Cercado, 31 Aug. 1946, *R.A. Howard* 8672 (BM, C, FI, MO, NY, P); **Santiago**. In fruticetis ad "Lopez", 8 Jun. 1887, *H.F.A. von Eggers* 2380 (NY, US, W); Santiago, 16 Apr. 1906, *C. Raunkiaer* 951 (C); San José de las Matas, Prov. Santiago, Jicomé, 24 Dec. 1929, *E.J. Valeur s.n.* (G, NY).

EL SALVADOR. **Ahuachapán**. San Francisco Menedez, Hda. San Benito, about 50 m above Casco San Benito, 820 m, 13°49'N, 89°56'W, 11 Nov. 1991, *W. Berendsohn* 1377 (MO); Pie de propiedad Los Arteaga, 500 m alt., 23 Jan. 1998, *E. Sandoval* ES-01763 (K); San Francisco Menéndez, El Corozo, Mariposario, zona alta "Los Sánchez", 380 m alt., 12 Apr. 2000, *J.M. Rosales* 543 (K); **Cuscatlán**. Cojutepeque, a orillas de calle al Cerro de Las Pavas, 16 Jan. 1996, *R. Villacorta* 2328 (K).

GUATEMALA. *s. loco, s.d.*, *E. Ritter von Friedrichsthal* 1539 (W); **Alta Verapaz**. Cubilquitz, Jul. 1900, *H. von Tuerckheim* 7696 (US); Near Pancajché, 5 Apr. 1939, *P.C. Standley* 70615 (US); Alta Verapaz, Telemán, Panzos, 75 m, 22 Sep. 1987, *H. Droege* 428 (MO); **Izabal**. Vicinity of Escoba, on the bay opposite Puerto Barrios, 2 Jun. 1922, *P.C. Standley* 24889 (US); Izabal, near Puerto Barrios, Apr. 25–May 6 1939, *P.C. Standley* 72832 (US); Izabal, Cerro San Gil, 26–27 Dec. 1941, *J.A. Steyermark* 41967 (US); Izabal, forest between Río Dulce and Modesto Méndez, 30 Dec. 1972, *L.O. Williams* & *al.* 41822 (BM, MO); Izabal, ca. 7 miles S of Puerto Barrios, 22 Jul. 1977, *T.B. Croat* 41779 (M); Izabal, a 2 km all'O de El Estor, 31 Aug. 1988, *E.M. Martinez* S. 23363 (MO); **Petén**. El Paso, 27 Apr. 1932, *C.L. Lundell* 1587 (US); Chicbul, La Libertad, 1 Jun. 1933, *C.L. Lundell* 3548 (US); La Libertad and vicinity, Aug.–Nov. 1933, *M. Aguilar* 19 (K, MO, US); Dolores, about 2 km E of Río Mopan trail, 12 Jun. 1961, *E. Contreras* 2448 (US);

Between Santa Elena and San Francisco, 12 Nov. 1965, *A. Molina* 15628 (US); La Cumbre, on Pusila Road, 3 Aug. 1969, *E. Contreras* 8838 (MO, NY); Petén, Lake Yaxha, 17 Jun. 1973, *J.D. Dwyer* 11239 (MO); La Cumbre, on Pusila Road, 31 Aug. 1976, *C.L. Lundell* & *E. Contreras* 20292 (NY); Laguna Macaniché, Flores, 181 m, 16°58'25"N, 89°37'23"W, 23 Oct. 2008, *J. Morales* 4973 (M); **Quetzaltenango**. Mountains near Santa Maria, 25 Mar. 1932, *P. Weatherwax* 180 (K); Quezaltenango, above Mujuliá, between San Martin Chile Verde and Colomba, 1800 n, 1 Feb. 1941, *P.C. Standley* 85472 (US).

HAITI. L'Artibonite. Vicinity of St. Marc, near sea level, 25–28 Feb. 1920, *E.C. Leonard* 2907 (NY, US); Vicinity of Klacroix, Section Dessalines, Dep. de L'Artibonite, 11 Dec. 1925, *E.C. Leonard* 7910 (W); Vicinity of Ennery, Dep. de l'Artibonite, 19 Jan. 1926, *E.C. Leonard* 9007 (US, W); **Gonave**. Vicinity of Anse Gallette, Gonave Island, 4 Mar. 1920, *E.C. Leonard* 3071, 3072 (US); Vicinity of Anse Gallette, Gonave Island, 3–14 Mar. 1920, *E.C. Leonard* 3081 (NY, US); **Môle-Saint-Nicolas**. Nord-Ouest, entre 4 y 10.4 km al oeste de Baie de Henne en la carretera a Bombardopolis, 19°40'N, 73°15'W, 11 Jun. 1985, *T. Zanoni* & *al.* 35093 (NY, US); **Nord**. Bayeux, near Port Margot, 12 Aug. 1903, *G.V. Nash* 362 (NY); Vicinity of St. Michel de l'Atalaye, 15 Nov. 1925, *E.C. Leonard* 7011 (NY, US); Vicinity of St. Michael de l'Atalaye, Département du Nord, 350 m, 30 Nov. 1925, *E.C. Leonard* 7605 (US); Vicinity of Marmelade, 800 m, 19 Dec. 1925, *E.C. Leonard* 8249 (US); Vicinity of Plaisance, 27 Jan. 1926, *E.C. Leonard* 9293 (BM); Grande Cayemite, 21 Aug. 1927, *W.J. Eyerdam* 326 (MO, P, US); **Ouest**. Massif des Matheux, Thomazeau, Morne à Cabrits, 350 m alt., 3 Jul. 1927, *E.L. Ekman* 8559 (C, G, K, US); Barassa, M. des C., 7 Sep. 1944, *L.R. Holdridge* 1945 (BM, MO, NY, US); **Nord-Oueste**. Entre 4 y 10.4 km. al "oueste" de Baie de Henne en la Carretera a Bombardopolis, 19° 40' N, 73° 15' W, 380 m, 11 Jun. 1985, *T. Zanoni* & *al.* 35093 (US). **Port au Prince**. Vicinity of Mission, Fonds Varettes, 17 Apr.–4 May 1920, *E.C. Leonard* 3785 (BM, NY, US); Vicinity of Pétienville, 350 m, 21 Jun. 1920, *E.C. Leonard* 4950 (US); Port au Prince, 30 May 1923, *A.S. Hitchcock* 19888 (US); Pétienville, 2 Nov. 1924, *E.L. Ekman* 2334 (US); Vicinity of La Vallée, Tortue Island, 28 Dec. 1928–9 Jan. 1929, *G.M. Leonard* & *E.C. Leonard* 11235 (K, MO, US), 11692 (US, W); Between Port Margot and Azul du Nord, 13 Jun. 1941, *H.H. Bartlett* 17404 (US); Northward from Morne Jeffrard (i.e., within Arrondissement de Jérémie), along the road from Les Cayes to Les Roseaux, 10 Jul. 1941, *H.H. Bartlett* 17558 (K, US); **Port de Paix**. Vicinity of Port de Paix, Dec. 1923, *E.C. Leonard* 11116 (BM, P, US); **Sud**. Cayaba to Moron southern peninsula (places on the road from Dame Marie to Jérémie), 8 May 1941, *H.H. Bartlett* 17312 (NY, US); Bouzi, Dabon, 24 Jun. 1980, *C.H.L. Sastre* & *Y. Polynice* 7036 (P); Changieux, 28 Jun. 1980, *C.H.L. Sastre* & *Y. Polynice* 7157 (P); Bois Formon, 18°31'86"N, 74°00'96"W, 1020–1025 m, 2 Dec. 2012, *B. Jestroff* 2012-429 (FTG).

HONDURAS. Atlantida. Vicinity of Tela, at sea level, 14 Dec. 1927–15 Mar. 1928, *P.C. Standley* 54545 (US); Roatán Island, Bay of Honduras, s.d., *G.F. Gaumer* 129 (K); San Juan carib village W of Tela, 28 Jul. 1934, *T.G. Yuncker* 4811 (BM, MO, NY, W); Isla de Roatán, north slope of the mountain, 30 Nov. 1969, *F.A. Barkley* & *E.D. Barkley* 39669 (MO); Mountain Nombre de Dios, between Saladino and San Francisco, 26 Apr 1967, *A. Molina* 20845 (NY, US); 17 km SSE of La Ceiba along Río Cangreal, 26 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2126 (NY, US); 28 km NE El Progreso by road, 24 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2174 (MO, NY, US); 33 km SE of Tela by road in Valley of Rion Lean, 26 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2189 (MO, NY, US); 17 km

SSE of La Ceiba along Río Cangregal, 30 m, 26 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2196 (MO), *n* = 18! (Davidse 1978); Zacate de 3 m de altura, Orillas del Río Piedras Gordas, Tela, 15 Aug. 1981, *C. Alvarado* 26 (MO); Southern boundary of Lancetilla Valley, on ridge separating Lancetilla watershed from the watershed edges to the South, around San Francisco, edges of disturbed primary forest, 380–420 m, 15°41'30"N, 87°28'00"W, 8 Nov. 1988, *J.M. McDougal* & *al.* 3368 (MO); **Comayagua**. Near Siguatepeque, 7 May 1936, *T.G. Yuncker* & *al.* 5651 (G, MO, NY, US); Comayagua, margin of forest, summit of range above El Achote above plains of Siguatepeque, 1700 m, 21 Jul. 1936, *T.G. Yuncker* & *al.* 6012 (G, K, NY, US); Comayagua, San José de Comayagua, 30 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2226 (L, MO, NY, US); **Colón**. Capuchin site west, 15°57'30"N, 85°54'30"W, 14 Jan. 1981, *J. Saunders* 881 (BM, MO, NY); **Copán**. 11 miles S of Chiquila on Hgw. from la Entrada to San Pedro Sula, 300 m, 2 Aug. 1977, *T.B. Croat* 42537 (MO); **Morazán**. La Tigra, 20 km NE de Tegucigalpa, 28 Apr. 1984, *H. Lainez* 173 (NY); Morazán, Alrededores Col. Kennedy, 30 Jan. 1985, *V.M. Figueroa* 156 (NY); **Lempira**. Near Gracias, Montaña de Claque, 20 Sep. 1991, *M. Chorley* 341 (BM); **Mosquitia**. Near village of Barra Platano (= Ras) at mouth of the Río Platano, 84°42'W, 15°53'N, 25 Nov. 1976, *P. Fryxell* 2842 (NY); **Olancho**. Valle Catamas, 19 Nov. 1963, *A. Molina* 13291 (BM, US); Olancho 3 km SW of Dulce Nombre de Culmi, 500 m alt., 23 Jul. 1970, *G. Davidse* & *R.W. Pohl* 2440 (K, MO, NY, US).

JAMAICA. Jamaica, 1850, *R.C. Alexander* s.n. (K); **Clarendon**. Ramble, 3 miles S of Clarendon, 14 Oct. 1912, *A.S. Hitchcock* 9519 (US); Lower Clarendon, 7 Dec. 1917, *W. Harris* 12740 (K, MO, NY, US); Pickham Woods near Upper Clarendon, 27 Dec. 1917, *W. Harris* 12768 (K, MO, NY); Portland Parish, Rodney Hall, 1000 ft, 12 Sep. 1962, *C.D. Adams* 11638 (MO); Clarendon, upper W slope of Crofts Mountain, 4 Oct. 1968, *G.R. Proctor* 29244 (BM); Clarendon, ca. 1–2 miles NW of the Mason River Field Station and 4–5 miles NW of Kellits, border of St. Ann & Clarendon Parish, 30 Dec. 1979, *J. Pruski* 1534 (MO, NY, US); **Manchester**. Mandeville and vicinity, 29 Aug. 1907, *N.L. Britton* 946 (NY); Southern Manchester, New Forest, 8 Nov. 1912, *A.S. Hitchcock* 9838 (US); Southern Manchester, 20 Nov. 1917, *W. Harris* 12691 (BM, K, MO, NY, US); Parish Manchester, Marshall's Pan, 6 Jan. 1959, *Robertson* s.n. (K); **St. Andrew**. Kingston, above Constant Spring, 25 Sep. 1912, *A.S. Hitchcock* 9264 (US), 9268 (L, US); Castleton, 4 Nov. 1912, *W. Harris* 11297 (MO, P); Robertsfeld, Blue Mountains, 3 Dec. 1912, *W. Harris* 11490 (C, K, MO, NY, US), 11491 (K, MO, US); St. Andrew, 26 Dec. 1912, *W. Harris* 11528, 11530 (US); Long Mountain, along road to Wareika, 8 Jul. 1954, *G.L. Webster* 4998 (BM, US); Long Mountain, 9 Nov. 1957, *T.G. Yuncker* 17332 (BM, G, MO, NY); St. Andrew Parish, Cooper's Hill in the Red Hill, NW of Kingston, 2300 ft, 7 Aug. 1963, *M.R. Crosby* & *W.R. Anderson* 1099 (MO, NY); **St. Ann**. Upper slopes of Mount Diabolo, Jul. 1926, 500–800 m, *W.R. Maxon* & *E.P. Killip* 473 (US); Near Brownstown, 18 Jan. 1938, *F.W. Hunnewell* 15224 (NY); Parish St. Ann, 1.4 miles S of Ocho Ríos at end of Fern Gully, 130 m, 26 Nov. 1971, *G. Davidse* & *E. Convey* 3274 (MO, US); **St. Catherine**. Bog Walk to Spanish Town, 26 Sep. 1912, *A.S. Hitchcock* 9304 (US); Edwarton to Moneague, 10 Oct. 1912, *A.S. Hitchcock* 9149 (US); Hollymount and vicinity, 750–850 m, 24 Jul. 1924, *W.R. Maxon* 10463 (US); St. Catherine, Río Cobre, below Bog Walk, 3 Aug. 1939, *Phillipson* 594 (BM); St. Catherine, NE slope of Juan de Bolas, 29 Jul. 1952, *G.R. Proctor* 7108 (NY, US); St. Catherine, Mt. Diablo, Blue Mountain, 2.5 miles S by road of Hollymount Road, 21 Aug. 1965, *H.A. Hespeneide* 1409 (MO, NY, US); **St. Elizabeth**. St. Elizabeth, 7 Mar. 1917, *W.*

Harris 12512 (BM, K, MO, NY, US); Balaclava, 1928, *C.R. Orcutt* 1488 (BM); **St. James**. Montego Bay, 24 Oct. 1912, *A.S. Hitchcock* 9687 (US); **St. Mary**. Troy, 6 Nov. 1912, *A.S. Hitchcock* 9802 (US); **St. Thomas**. St. Thomas Parish, 2.3 miles NE of the Eleven Mile intersection along road to Llandewey, 25 Nov. 1971, *G. Davidse & E. Convey* 3258 (MO, NY, US), *n* = 18! (Davidse 1978); **Trelawny**. Leroy, 16 Oct. 1917, *W. Harris* 12572 (K, MO, NY, US), 12597 (C, K, MO, NY, US); Trelawny, NW corner of the crossroads at Burnt Hill, 23 Nov. 1974, *José L. Vivaldi* 338 (FTG); **Westmorland**. Savanna La Mar, 10 Nov. 1912, *A.S. Hitchcock* 9881 (US); Glasgow near Leroy, 19 Oct. 1917, *W. Harris* 12629 (K, MO, NY); Westmoreland, Blauwearie, 31 Oct. 1952, *G.R. Proctor* 7315 (US).

LEEWARD ISLANDS. Antigua. s.d., *Nicholson* 28 (K); Antigua, 4-16 Feb. 1913, *J.N. Rose & al.* 3660 (US); Antigua, between Libertá & Falmouth, 10 Sep. 1931, *H.E. Box* 64 (K, MO, NY); Antigua, Macarthy Valley, 20 Sep. 1931, *H.E. Box* 91 (BM, K, US); **Guadeloupe**. Littoral sec et cultures Anse Bertrand, 28 Apr. 1937, *H. Stehle* 2607 (US); Safaia, 6 Jun. 1937, *A. Questel* 4646 (P); Jarry, 6 Mar. 1938, *A. Questel* 600 (P, US); Port Louis, 12 Mar. 1939, *A. Questel* 4023 (US); Marie Galante, SW of St. Louis, 5 Dec. 1959, *G.R. Proctor* 20298 (BM, US); Deshaies, le Dos d'Ane, 500 m, 23 Sep. 1974, *J. Jeremie* 193 (P); Désiderable plateau, 9 Sept. 1981, *S. Barrier* 2997 (P); **St. Barthélemy**. 5 Dec. 1938, *A. Questel* 845 (P); Nevis, 31 Jan. 1932, *H.E. Box* 172 (K, US); St. Barthélemy Island, 9 Nov. 1957, *C. Le Gallo* 549 (K, NY); **St. Eustatius**. 1906, *I. Boldingh* 990 (P); **St. Kitts**. 13 Oct. 1919, *A.S. Hitchcock* 16354 (US).

MEXICO. Baja California. León de la Luz 4070 (CAS) in Rebman et al. (2016); Baja California Sur, La Paz, Sierra del Novillo: approx. 15 miles southeast of La Paz & northeast of the jctn. of Highway 1 & Highway 19; In a canyon above Rancho Las Calabazas on the northeast side of the Sierra, 23.94732 -110.17519, 655 m, 22 Oct. 2014, *J. Rebman* 29186 (SD); Baja California Sur, Sierra de La Luna, Sierra La Victoria, ca. Rancho Termopilas, 23.70027 -109.98113, 729 m, 29 Sep. 2015, *León de la Luz* 12294 (SD); **Campeche**. About 1 mile E of Highway 180 on road to Hachahen, 12 Aug. 1979, *J. Utley & al.* 6463 (BM); 15 km al NE de Chunchintok, camino Ramon Corona, 19°26'00"N, 89°29'50"W, 25 Sep. 1984, *J.J. Ortiz* 559 (MO); Between Xpujil and Campeche, 14 Jul. 1977, *J.D. Dwyer* 14522 (MO, NY); Calkmul, a 1 km al W de Plan de San Luis, sobre la carretera Escarcega-Chetumal, 18°31'44"N 89°34'15"W, 26 Nov. 1997, *E.M. Lira* C. 604 (MO); Camino al Rancho San Pablito Nohan, cerca del km 98 de la carretera Ciudad del Carmen-Campeche, 21 Sep. 1987, *E. Cabrera* 14477 (MO); Calakmul, a 12 km al W del ejido Plan de San Luis, 274 m, 18°31'46"N, 34°32'W, 20 Sep. 2002, *D. Alvarez* 2040 (MO); **Chiapas**. Near the junction of the Río Perlas and Río Jataté at San Quintin and near Laguna Miramar, 200 m alt., 15 Mar. 1955, *E.R. Sohns* 1590 (K, US); Ocosingo, near Rancho Mumuntil near Ocosingo, 10 Jan. 1968, *A.S. Ton* 3475 (NY); 15 km WNW of Ocozacoatlá, 15 Oct. 1972, *D.E. Breedlove* 29030 (NY); 12 km N of Palenque along road to Catatzaja, 8 Nov. 1980, *D.E. Breedlove* 47298 (NY); SW of Palenque on road to Ocosingo along the Jol Uj'um, 9 Nov. 1981, *D.E. Breedlove* 55240 (NY); 9-12 km S of Palenque on road to Ocosingo, 11 Nov. 1981, *D.E. Breedlove* 55368 (NY); Ocosingo, 8 km SE of Santo Domingo on road to Bonampak, 520 m, 14 May 1982, *G. Davidse & al.* 20461 (MO); Yajalon, Los Pinos, 30 Oct. 1982, *A. Mendez Ton* 4943 (MO); Tenejapa, Río Seco Cruz Pilal, 900 m, 10 Nov. 1982, *A. Mendez Ton* 5027 (MO); Santa Maria, Union Juárez, 24 Aug. 1985, *E. Ventura & E. Lopez* 2300 (NY); Ocosingo, loc. a 2 km al SE de Nuevo Guerrero, camino a Boca Lacantum, 350 m, 30 Jan. 1986, *E. Martinez* 16949 (MO); Al N de la Colonia Benito Juárez Miramar, 23 Aug. 1993,

A. Reyes-García & Sousa 2227 (MO, BM); Ocosingo, a 1.5 km de la entrada al camino de Nuevo Tumbala, 8 Mar. 2002, *G. Aguilar M.* 34 (MO); Ocosingo, arroyo de Nuevo Guerrero, a 500 m del poblado, hacia el sur, 210 m, 16°58'59"N 91°17'04"W, 28 Jun. 2002, *G. Aguilar M.* 1615 (MO); Ocosingo, a 2.5 km al N de Sam Javier, 425 m, 16°27'43"N, 91°14'26"W, 21 Dec. 2002, *G. Aguilar M.* 4829 (MO); Ocosingo, a 0.25 km al W del poblado Petalsino, 195 m, 17°0'16"N, 91°18'W, 14 Jan. 2003, *G. Aguilar M.* 4917 (MO); **Chihuahua**. Aug.-Nov. 1885, *E. Palmer* 10 (G); **Colima**. Manzanillo, woods on low hill near the coast, 19 Sep. 1910, *A.S. Hitchcock* 410 (C, K); Alzada, shady ravine, 21 Sep. 1910, *A.S. Hitchcock* 411 (C, G, K); **Guerrero**. 20.1 km al E de Petaltina, 68.1 km al E de Chilapa, camino a Tlapa Gro., 170 m, 14 Nov. 1982, *R. Torres C.* 1915 (MO); **Oaxaca**. 5 miles N of Palomar (54 miles N of junction Highs. 185 and 190), along 185, 65 m, 2 Jul. 1977, *T.B. Croat* 40006 (MO); Oaxaca, Arroyo Pita, 23 km al N de Lazaro Cardenas, brecha a Sta. Maria Chimalapa, 320 m, 14 Mar. 1983, *P. Tenorio L.* 3483 (MO); Mixe, Rancho La Ardilla, 7 km al E de Totontepec, 18 Jul. 1986, *E. Ramirez G.* 391 (MO); Tuxtepec, Ayotzintepic, banks of Río Soyolapan, 150 m, 17°42'N, 96°17'W, 25 Apr. 1986, *R.E. Gereau & G.J. Martin* 1981 (MO); **Jalisco**. Tequila, Aug.-Sep. 1886, *E. Palmer* 362 (G, MO, NY, UPS, US); **Orizaba**. Orizaba, Jun. 1909, *Bro. Arsène s.n.* (L); **Quintana Roo**. San Miguel, Cozumel Island, 6-8 Aug. 1932, *J.R. Swallen* 2897 (US); 9 km al Norte de Puerto Morelos, 10 Feb. 1980, *O. Jéllez* 1557 (MO, NY); 1 km al norte de Playa del Carmen, 9 Mar. 1980, *O. Jéllez* 1799 (MO); 9 km al SW de Puerto Morelos, carretera a Villarta, 17 Oct. 1980, *Vargas* 3746 (BM); Al sur de Puerto Morelos, rumbo a Punta Brava, 5 Nov. 1980, *E. Cabrera* 57 (MO, NY); En km. 2 sobre la brecha a Villarta, 7 Nov. 1980, *E. Cabrera* 146 (MO, NY); Brecha a Chumpon, 40 km al N de F. Carrello Puerto, 8 Dec. 1980, *E. Cabrera* 589 (BM); Sobre km 25 de la Brecha a Tomas Garrido, 10 Dec. 1980, *E. Cabrera* 700 (MO); 2 km S of Akumal om Highway 307 (Cancún-Felipe Carrello Puerto), 6 May 1982, *G. Davidse & al.* 20120 (BM, MO); San Felipe Balacar, 8 May 1982, *G. Davidse & al.* 20211 (BM, MO); 48 km NE of Felipe Carrillo Puerto on Highway 307 to Cancun, 10 m, 19 May 1982, *G. Davidse & al.* 20623 (MO); A 10 km al sur de Akumal, 25 Sep. 1982, *E. Cabrera* 3607 (MO); A 16 km al S de la Terminal del Ferry, cerca de la entrada a Palancar, 22 Nov. 1985, *E. Cabrera* 9781 (MO); 4 km al N de la zona hotelera de San Miguel de Cozumel, sobre el camino a la Isla de la Pasion, Isla de Cozumel, ecotono de selva y manglar, 14 Jan. 1987, *E. Cabrera* 12984 (MO); Felipe Carrillo Puerto, 19°52'8"N, 88°3'55"W, Jul. 2001, *M.E. Correa* 6 (MO); **San Luis Potosí**. Tamasopo, Sierra Madre Oriental, 8-9 Aug. 1934, *F.W. Pennell* 18014 (US); San Luis Potosí, 2 miles E of Tamazunchale, on N side of river, 24 Jul. 1940, *C.L. Hitchcock & L.R. Stanford* 7311 (US); Between Tamazunchale and Chapulhuacan, 20 Aug. 1943, *C.L. Lundell & A.A. Lundell* 12405 (NY, US); 21.4 km W of Ciudad Valles on the road to Río Verde, 27 Oct. 1985, *B. Bartholomew* 3524 (NY); Along Highway 80 W of Antiguo Morelos, 18.7 miles of Antiguo Morelos, then 7.2 km N on asphalt road to El Salto, vicinity of El Salto to cataracts near military encampment, 200 m, 22°35'N, 99°25'W, 13 Jan. 1987, *T.B. Croat & D.P. Hanon* 63055 (MO); **Tabasco**. La Palma, Balancan, 1-6 Jun. 1939, *E. Matuda* 3242 (US); Tabasco, Tenosique, 12 km de Arena de Hidalgo, 7 Oct. 1980, *C. Cowan* 3223 (MO, NY); **Veracruz**. Córdoba, prés La Luz, 2 Aug. 1862, *E. Kerber* 74 (K); Jacuapan, Nov. 1907, *C.A. Purpus* 2905 (NY); Córdoba, 27 Aug. 1910, *A.S. Hitchcock* 409 (BM, C, US); Vicinity of Río Tonto, Ejido de Almilinga, 6 km W of Campo Experimental de Hule El Palmar, Zongolica, 30 Jul. 1943, *J.V. Santos* 2269 (NY, US); La Laja, 14 Nov. 1963, *McRee*

10956 (P); Ocotal Chico, 20 km al N de San Pedro Soteapan, 700 m, 26 Jul. 1973, *G. Guevara 41* (MO); Brecha Hnos. Cedilo-La Escudra-Hidalgotitlan, 6 May 1974, *B. Vasquez 608* (BM, MO); 6 miles of Coatzacoalcos along Highway 180, 3 Jul. 1977, *T.B. Croat 40038* (MO); Papantla, Cerro del carbon, 200 m, 9 Oct. 1982, *M.E. Cortes 472* (MO); **Yucatán**. s.d., *G.F. Gaumer 1032 pro parte* (MA, K, MO, US); Chichen, Itzá, 7-13 Jul. 1932, *J.R. Swallen 2452* (US), 2465, (K, MO, US), 2469 (US); Tizimin, 14-16 Jul. 1932, *J.R. Swallen 2489* (US); Uxmal, 20-21 Jul. 1932, *J.R. Swallen 2512, 2625, 2641* (US); Peto, 26-27 Jul. 1932, *J.R. Swallen 2706* (US); 13 km W of Muna along road between Muna, Opichen & Maxcanu, 11 Aug. 1979, *J. Uitley & al. 6424* (MO); Merida, ca. 12 km N of Merida, along Highway 273 to El Progreso, at Dzibilchaltun archeological site, 10 m, 20 Oct. 1984, *G. Davidse & J. Davidse 29441* (M); A 2 km all'O de Tahmek, sobre la carretera Valladolid-Merida, 29 Jun. 1985, *E. Cabrera 8784* (MO); A 17 km al E de Celestun, sobre la carretera Merida-Celestun, 20 Jul. 1985, *E. Cabrera 9056* (MO); A 10 km all'O de Chemax, sobre la carretera Cancun-Valladolid, 24 Sep. 1985, *E. Cabrera 9290* (MO); A 10 km al NO de Muna, sobre al cammino a Maxcanu, 30 Sep. 1985, *E. Cabrera 9581* (MO); Yucatán, 3 km al W de Koncal, 21°06'N, 89°42'W, 16 Oct. 1993, *L. Rico 1177a* (MO); 11 km al sur de la frontera Yucatán-Campeche, ca. de San Antonio Yax-ché, 20°05'00"N, 89°43'50"W, 20 Sep. 1999, *G. Carnevali & al. 5656* (NY); Santa Elena, zona Arqueologica de Sayil (Ruta Puc), 50 m, 20°10'37"N, 89°39'09"W, 21 Nov. 2006, *R. Duno de Stefano & G. Carnevali 2170* (MO); Tizimin, E del puerto El Cuyo, 21°30'51"N, 87°39'39"W, 22 Sep. 2011, *M.F. Cervantes & al. 825* (G).

NICARAGUA. Río San Juan. Carretera a San Miguelito, entre Río Oyate y San Miguelito, 100 m, 9-10 Feb. 1984, *A. Grijalva & N. Almanza 3597* (M); Río San Juan, Greytown, Caño Top House y el ultimo creek al a derecha viniendo a Greytown, Lagunas de San Juan Viejo, y en los alrededores de Greytown Nuevo, 11°03'N, 83°50'W, 6 Jan. 1995, *R. Rueda & al. 2608* (MO); **Zelaya.** Bilwascarma along Río Coco, 10 Jul. 1970, *G. Davidse & R.W. Pohl 2295* (MO, NY, US), *n = 18!* (Davidse 1978); Puerto Cabezas, 15 m, 14°01'N, 83°23'W, 3 Jul. 1980, *W.D. Stevens & al. 17811* (MO); Monkey Point, 3 km al S, 10 m, 11°37'N, 83°40'W, 24 Oct. 1981, *P.P. Moreno & J.C. Sandino 12276* (MO); Siuna, Wany, 27 Aug. 1982, *F. Ortiz 20* (MO).

PANAMÁ. Bocas del Toro. Isla Colón, NW side of Island, Mimitimbi Bluff, 31 Jan. 1989, *P.M. Peterson 6517* (MO, US). **Colón.** 0.7 miles NE of Río Piedras bridge on road from Pilón to Portobelo, 15 Mar. 1971, *M. Nee & S. Mori 3649* (MO, PMA); **Panamá.** Research Forest Site at Albrook Air Force Base, 22 Jun. 1967, *W.R. Stimson 5188* (NY, SCZ); Cerro Jefe, 09°14'N, 79°23'W, 7 Apr. 2002, *J.G. Sánchez-Ken 672* (US).

PUERTO RICO. s.d., *F. Riedle s.n.* (FI-Webb); Mayagüez, 22 Oct. 1884, *P.E.E. Sintenis 68* (G, K, W); Cayey, 20 Sep. 1885, *P.E.E. Sintenis 2470* (W); Cayey, ad rivulum Morillos, 5 Oct. 1885, *P.E.E. Sintenis 2318* (G, NY); Aguadilla, 1891-92, *Warning s.n.* (C); Río Piedrao, 22 Jun. 1901, *L.M. Underwood & R.F. Griggs 252* (US); Vicinity of Mayagüez, Monte Mesa, 17 Oct. 1913, *A. Chase 6157* (NY, W); Vicinity of Maricao, jungle bank of Río Maricao, 20-23 Oct. 1913, *A. Chase 6192* (L, NY, US); Vicinity of Vega Baja, 7 Nov. 1913, *A. Chase 6431* (US); Guanica Bay, 14-16 Nov. 1913, *A. Chase 6521* (US); Vicinity of Lares, 23 Nov. 1913, *A. Chase 6587* (US); Island of Vieques, north coast, 28-29 Nov. 1913, *A. Chase 6683* (US); Above Río Grande, Sierra de Luquillo, 1 Dec. 1913, *A. Chase 6726* (L, US); Vicinity of San Juan, Lake Loisa, 9 Dec. 1913, *A. Chase 6782* (US); Vicinity of Mayagüez, Monte Mesa, 12 Dec. 1913, *A. Chase 6814* (US); Vieques Island, 28 Jan. 1914, *J.A. Shafer*

2549 (NY); Vicinity of Guancia, 5-8 Mar. 1915, *N.L. Britton & al. 4955* (NY); San Juan, Arecibo Road, 13 Jan. 1935, *C. Sargent 295* (BM, MO); Bayamon, Río Pedras, Station Grounds, 8 Nov. 1937, *J.I. Otero 255* (MO, US); Lavea, 24 Oct. 1943, *C. Sargent 3236* (K, MO); Mona Island, 9 Mar. 1944, *C.E. Chardon & J.I. Otero 811* (NY); Guayanilla, 18 Sep. 1959, *R. Woodbury s.n.* (US); Susua, 11 Jul. 1963, *A.H. Liogier 9899* (K, P); Rincon, road 115 between Rincon and Aquada just few miles N of Rincon, 2 Jul. 1966, *W.R. Stimson 3193* (MO); Culebrita Island, Nov. 1970, *R.O. Woodbury s.n.* (MO); Reserva Forestal Maricao, 760 m, 18°08'N, 66°58'W, 28 Dec. 1980, *J.C. Solomon 5714* (MO); Arecibo, Garrochales, Cambalache Commonwealth Forest, 18°26'57"N, 66°36'10"W, 50 m, 8 Dec. 1984, *D.K. Edelman 02* (US); Guanica Forest, 18°00'N, 66°50'W, 6 Jan. 1987, *B.M. Boom 6975* (MO); Salinas, Barrio Lapa, W peak Las Tetas de Cayey, 25 Oct. 1987, *P.M. McKenzie 781* (NY); Cayey-Salinas, base of towers on Cerro Las Tetas, 4 Aug. 1988, *C.M. Taylor 8138* (MO, P); Loiza, Calle Villanueva of Pueblo Indio, 13 Oct. 1989, *C.M. Taylor & al. 9481* (NY); Yauco, at end of route 333 in Guanica Reserve, from Playa Tamarindo along trail to cave, 0-30 m, 21 Oct. 1989, *C.M. Taylor 9508* (MO); Isabella, Bo. Arenales Alto, 30 Sep. 1990, *F. Axelrod & al. 1374* (NY, P); Cayey, Sierra de Jajome, 4 Nov. 1990, *F. Axelrod & al. 1583* (NY, P); Cayey, just W of the intersection of routes 184 and 179, private road along ridge leading to Barrio Farrallon, 18°07'N, 66°03'W, 9 Feb. 1991, *J.S. Miller & C.M. Taylor 5998* (MO); Guánica Forest Reserve (Manglillo section), headland at SW end of jeep road, dry scrub forest, 19 Nov. 1991, *F. Axelrod & P. Chavez 3296* (NY); Cabo Rojo, Sierra Bermela upper slopes and summit of Cerro Mariquita, 21 Dec. 1991, *F. Axelrod 3457* (NY); Montañas Aymamon, Reserva Forestal Guajatacas, ca. 10 km N of San Sabastian, Juan Perez Trail and Trail 4, 300 m, 17 Jan. 1992, *R.W. Sanders 1881* (MO); Quebradillas, Guajataca Forest, along trail Juan Perez, 28 Aug. 1992, *P. Acevedo-Rodriguez & D. Chinea 5218* (FTG, NY); Guanica Dry Forest Reserve, about 5 km by air E of Guanica, 17°58'N, 66°52'W, 15 Jan. 1992, *R.W. Sanders 1851* (FTG); Montañas Aymamon Reserva Forestal Guajatacas, ca. 10 km N of San Sabastian, Juan Perez Trail and Trail 4, 18°23'N, 67°01'W, 17 Jan. 1992, *R.W. Sanders & al. 1881* (FTG); Yauco, Susua Forest Reserve, along trail up slope E of Río Loco across from reserve office, 150-300 m, 15 Nov. 1992, *F. Axelrod 5364* (MO); Fajardo, Playa Convento, 18°22.778'N, 65°38.595'W, 19 Dec. 1994, *P. Acevedo-Rodriguez & A. Siaca 6984* (NY, US); Maricao, Río Maricao, 18°09'34"N, 66°59'53"W, 11 Feb. 1995, *J.A. Cedeno & Y. Jimenez 438* (NY); Guanica Forest Reserve, 6 Sep. 2000, *P. Acevedo-Rodriguez 11429* (NY); Guancia Forest Reserve, Canon de las Trichillias, from road 334 taking Las Cobanas Trail to the North, at the junction with other trail taking the drainage to the north, 17°59'09"N, 66°51'60"W, 11 Nov. 2004, *O. Monsegur 253* (US).

USA (Florida). Brevard Co. Hummock, 30 Oct. 1902, *A. Fredgolf 5532* (K, NY, US); Dade Co., snapper hammock, 16 Nov. 1903, *A.A. Eaton 315* (K, US); **Collier Co.** Pinecrest, S of Tamiami Trail between Mile 40 and ochopee, 15 Apr. 1952, *H. Field & Y. Lazar s.n.* (US); Ca. 1 mi. near Paolita Station, 21 Sep. 1965, *D.B. Ward 5345* (BM, NY, US); Lee Co. Western Sanibel, 7 Jan. 1975, *W.C. Brumbach 8732* (NY, US); **Dade Co.** Biscayne Bay, 1874, *E. Palmer 630* (MO); Miami, Oct. 27-Nov. 13 1901, *J.K. Small & G.V. Nash 64* (US); Oak Hammock, 1906, *H.C. Cowles 012-2* (G, NY); Miami, 21 Dec. 1904, *S.M. Tracy 9320* (G, K, MO, NY, W); Miami, 9 Apr. 1906, *A.S. Hitchcock 723* (US); Elliott's Key, 19 Oct. 1906, *S.M. Tracy 9050* (G, MO, W); Hammocks, Long Key, (Everglades), 12-13 Jan. 1916, *J.K. Small 7345* (BR, C, NY, W); Between Miami and Cocoanut Grove, Nov.-Dec. 1913, *J.K. Small & G.K. Small*

4647 (G, NY, US); Royal Palm Hammock, 22 May 1925, *E.J. Palmer* 27483 (MO); In everglades, along Tamiami Trail, 25 miles W of Miami, 26 Dec. 1927, *H.N. Moldenke* 3747 (NY); Brickell Hammock, 17 Oct. 1933, *F. Duckett* 212 (NY, P, UPS, US); Near Miami, 19 Jul. 1936, *D.S. Correll* 5974 (US); Climbing on shrubs and low trees in palmetto-pine thicket on Big Pine Key, 11 Feb. 1966, *M.L. Smith* 753 (VPI); Everglades National Park, Mosier Hammock at Long Pine Key, 11 Nov. 1977, *D.F. Austin* & *S.K. Austin* 6651 (FTG); Nixon-Lewis Hammock, W of Homestead, 26 Jun. 1987, *A. Herndon* 1765 (FTG, NY); Tropical hard wood hammock, ca. 0.5 miles E of Old Cutler Rd., 3 air miles NE of Perrine, 25°37'26"N 80°18'30"W, 9 Sep. 1994, *M.L. Orzell* & *E.L. Bridges* 23184 (FTG); Key Biscayne, Aug. 1997, *M. Manna* 2 (FTG); Castellow Hammock Env. Educational Center, 25°33.660N, 80°26'733W, 2 Nov. 1997, *K. Bradley* #1141 (FTG); **Indian River Co.** Hickets in shelly soil, Indian River, Florida, Jul., *A.H. Curtis* 3588 (BM, BR, G, K, MO, NY, P, US, W); **Martin Co.** In coastal hammock by Indian River, Sewall's Point, E of Stuart, 15 Oct. 1975, *R. Kral* 57134 (MO, NY); Twin Rivers Park, 2 Nov. 2007, *J. Bradford* #327 (FTG); **Monroe Co.** Stock Island, 16 May 1917, *F.W. Pennell* 9621 (US); Hammock S of Fort Pierce, 10 May 1918, *J.K. Small* 8771 (NY); Key West, Mar. 1842, *F. Rugel* 111 (BM, MO, NY, US); In dense tropical hammock, north end of Key Largo, a half-climbing shrub about 5 feet tall, 12 Jan. 1930, *H.N. Moldenke* 407 (K, P, MO, NY, US, W); Newport, Key Largo, 1898, *C.L. Pollard* & *al.* 157 (BM, NY, US); Key Largo, near Planter, 10-12 Sep. 1907, *A. Chase* 3930 (US); Vacca Keys, in hammock, 28-29 Jan. 1909, *J.K. Small* & *J.J. Carter* 2864 (NY, US); Boca Chica Key, in hammocks, 27 Nov. 1912, *J.K. Small* 3947 (NY Johnson Hammock, 20 Nov. 1933, *W.M. Buswell* 11 (FTG); Key Vacca, 13 Feb. 1935, *J.R. Swallen* 5200 (US); Near Flamingo, 17-18 Feb. 1935, *J.R. Swallen* 5248 (US); Big Pine Key, hammock, 1-17 Feb. 1937, *E.P. Killip* 32037 (US); Big Pine Key, 29 Jan. 1940, *R.F. Martin* 1281 (NY, US); Key Largo, 11 Feb. 1940, *N. Hotchkiss* 6460 (US); Big Pine Key, end of road through NW hammock at old indian mounds, infrequent, 28 Mar. 1950, *J.R. Swallen* 10694 (K, MO, NY, US); Dense thicket on Stock Island about 3 miles E of Key West, 5 Aug. 1950, *R.L. Wilbur* & *G.L. Webster* 2556 (G, NY, US); Big Pine Key, 9 Nov. 1952, *E.P. Killip* 42259 (US); Big Pine Key, S end, 25 Jun. 1956, *G.K. Briziky* & *W.L. Stern* 253 (NY, US); Monroe-Dade county line, T54s, R34E, 25 Jan. 1963, *D.B. Ward* & *D. Burch* 3306 (US); Monroe-Dade Co. Line, Branching and vinelike, climbing over shrubs and trees along small road into Hammock #7, in swampy part of hammock, 23 Feb. 1967, *M.L. Smyth* 888 (VPI); Marathon Key, low area over dolomite, hammock clearing, 17 Jan. 1973, *R. Kral* 49192 (MO); Key Largo, towards N end of the Key, 25 Oct. 1973, *D.S. & H.B. Correll* 40304 (FTG, MO); Big Pine Key, sandy clearings, 23 Aug. 1974, *R. Kral* 53983 (MO); N of Key Largo, 29 Jun. 1975, *S.R. Hill* 3294 (FTG); Key Largo, growing in forest shade of hard wood hammock near northern end of island, 17-21 Mar. 1977, *M.R. Palmer* 3402 (US); Big Pine Key, SE point, 17 Mar. 1982, *S.R. Hill* 10988 (MO, NY); N end of Big Pine Key, 15 Sep. 1982, *D.S. & H.B. Correll* 54043 (FTG, NY); Big Pine Key, 4 Mar. 1985, *D. Russell* 31 (VPI); Key West National Wildlife Refuge, The Marquesas, SW Key (east), ca. 20.5 miles w of Key West, 3 Apr. 1996, *G. Gann* & *K. Bradley* 529 (FTG); **Palm Beach Co.** Dry woods near Palm Beach, 5 Sep. 1895, *A.H. Curtiss* 5530 (BM, G, K, L, MO, NY, P, US); Palm Beach, hammocks, 28 Dec. 1896, *H. Webber* 204 (MO); Palm Beach, in hammocks near the beach, 19 Nov. 1904, *J.K. Small* 2133 (NY).

VIRGIN ISLANDS. **St. Croix** 1871, *H.F.A. von Eggers* 10 (C); Prosperity Garden, 5 Jan. 1906, *C. Raunkiaer* 642 (C, P); River Estate, 4 Oct. 1923, *J.B. Thompson* 385 (G); St. Croix, 1 Feb. 1955, *F.W. Hunnewell* 20116 (NY); Mahogany Road, above Frederiksted,

12 Jan. 1979, *F.R. Fosberg* 58915 (FTG); **St. John.** Sussanaberg, 17 Jun. 1984, *S. Mori* & *al.* 16579 (FTG, NY); Hillside above Cinnamon Bay on road to Herman Farm, 60-120 m, 8 Nov. 1984, *S. Mori* & *R. Woodbury* 17004 (FTG, MO); Cruz Bay, on trail to Solomon Beach, 16 Jan. 1988, *P. Acevedo-Rodriguez* & *A. Reilly* 2288 (NY); Reef Bay Quarter, along Bordeaux Road, 200 meters from Center Line Road, 6 Jan. 1991, *P. Acevedo-Rodriguez* & *A. Siaca* 3795 (FTG, MO); **Tortola.** Tortola, 13 Oct. 1918, *W.C. Fishlock* 240 (NY); Road to Sage Mountain, 420 m, 25 Feb. 1988, *P. Acevedo-Rodriguez* 2681 (MO); **Virgin Gorda.** Virgin Gorda, 5 Jan. 1919, *W.C. Fishlock* 140 (NY); Gorda Peak National Park, north side of Gorda Peak, 11 Nov. 1999, *P. Acevedo-Rodriguez* 10931 (NY, US).

WINDWARD ISLANDS. **Barbados.** Bay Gulley, Nov. 1935, *Intosh* 3 (K, P); St. Joseph Parish, in forest on the Hackelton Cliff, near Bathsheba, above Andromeda Gardens, 17 Mar. 1977, *F.W. Gould* 15047 (MO); **Dominica.** Hills N of Prince Rupert Bay, West Cabri, 28 Mar. 1956, *A.C. Smith* 10306 (NY, US); Layou River Valley, stream NE of Clarke Hall, 23 Apr. 1964, *Ernst* 1156 (BM); Road through Hungry Hill to Morne Plaisance, 18 Oct. 1984, *C. Whiteford* 4486 (BM, US); Saint John Parish, 2.3 km N of Cabrits Road junction along the NS Douglas Bay Road, 10 Dec. 1993, *S.R. Hill* 25372 (MO, NY); St. Andrew Parish, Hampstead Heights, 0.5 km N of Hampstead River bridge, 100 ft, 15°35'N, 61°22'W, 23 Feb. 1997, *S.R. Hill* 28897 (MO); Morne des Fous: Petit Colubri Estate, 15°12'47.4"N, 61°20'07.5"W, 13 Aug. 2002, *S. Zona* et al. 936 (FTG); **Grenada.** Near Victoria, 1957, *G.R. Proctor* 17221 (BM); **Martinique.** Chemin de St. Pierre, Jan. 1854, *C. Belanger* 70 (G), 782 (G); Martinique, 1868, *T. Husnot* 93 (BM); Céron à Grand Rivière, 14 Sep. 1937, *H. Stehle* 2086 (US); Pic Paradis-Ravine de la Loterie, 388 m, Lat. -63.050106, Long. 18.075888, 6 Nov. 2021, *B. Ferlay* & *al.* 1620 (P); **Montserrat.** Garibaldi Hill, 29 Jan. 1907, *J.A. Shafer* 700 (NY, US); **St. Lucia.** Shores of Marigot Lagoon, west coast, 30-200 m, 21 Mar. 1956, *A.C. Smith* 10200 (NY, US); **St. Martin.** 1906, *I. Boldingh* 2645 (L); **St. Vincent.** Kingshill, 27 Nov. 1945, *P. Beard* 611, 1370 (US); NW peninsula of Connouan Island, Mar.-Apr. 1950, *R.A. Howard* 11100 (US).

TOBAGO. Near Parlatuvier, 22 Oct. 1937, *N.Y. Sandwith* 1884 (K); Above Speyside, 30 Mar. 1993, *Clement* & *Ryves* 596 (BM).

(4b) *Lasiacis divaricata* (L.) Hitchc. var. *leptostachya* (Hitchc.) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

Bas.: *Lasiacis leptostachya* Hitchc., Contr. U.S. Natl. Herb. 22: 19. 1920.

Type: Nicaragua, Jinotepe, 500 m, stout central canes, branches more or less whorled and slender, floral branches conspicuously flexuous, panicles all small, jungle, 7 November 1911, *A.S. Hitchcock* 8718 (holotype: US! [barcode US00134108]; isotype BAA (photo!) [barcode BAA00002173]).

Description

Perennials caespitose. Culms up to 4-5 m tall, erect at the base, and usually clambering into vegetation; secondary branches fascicled, and zigzag arranged; internodes

3–8(–9) mm thick, hollow to completely solid with pith, glabrous, often densely papillose to slightly pubescent, with hairs up to 2 mm long; *nodes* glabrous. *Leaf sheaths* glabrous, overlapping margin ciliate with hairs up to 2.8 mm long, auricular hairs up to 1.5 mm long; *collars* puberulent to pubescent; *ligules* 0.5–1.0 mm long, membranous, a ciliate rim with small hairs to 1.0–1.5 mm long; *blades* 4–10(–12) cm long, 0.5–1.5 cm wide, linear-lanceolate, glabrous, acuminate, base asymmetrical, glabrous, margin scabrid. *Panicles* 2–8(–12) cm long, with the base included in the sheath; *branches* glabrous, scabrous, appressed ascending. *Spikelets* 4.0–4.5 mm long; oblong; *lower glumes* 1.8–2.5 mm long, 1.2–1.5 mm wide, 7–12-veined; *upper glumes* 3.0–3.8 mm long, 1.6–2.0 mm wide, 9–12 -veined; *sterile floret* with a staminate flower, *lemmas* 9–11-veined, *paleas* subequal the length of the fertile floret (as in var. *divaricata*), *anthers* 2.0 mm long; *fertile florets* 3.5–4.0(–4.5) mm long, 1.5–2.0 mm wide, *anthers* ca. 2.5 mm long, whitish, *stigmas* white; *caryopses* 2.5 mm long, 1.5 mm wide. *Chromosome number*: unknown.

Vernacular names

Costa Rica, Guanacaste, “carricillo” O. Jiménez 378 (US); San José, “cañuela trepadora” O. Jiménez 892 (US); **El Salvador**, San Salvador, “carrizo montés” S. Calderón 508 (NY, US), “zacate carrizo” P.C. Standley 19136 (US); **Nicaragua**: León, “carrizo” A. Grijalva & al. 4185 (MO).

Distribution

Belize, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Venezuela, Windwards Islands.

Distribution (bibliographic references)

Hitchcock (1920); Lindeman and Stoffers (1963) as *L. harrisii* Nash; Pinto-Escobar (1966) as *L. leptostachya* Hitchc.; Davidse (1977, 1978, 1994, 2001); Pohl (1980); Serna and López-Ferrari (2000); Morales (2003); Sutherland (2008); Bono (2010); Dávila et al. (2018); Sánchez-Ken (2019); Menjívar Cruz et al. (2021).

Ecology

Forests edges in secondary and disturbed vegetation. From sea level to 2000 m.

Phenology

October through June.

Remarks

Var. *leptostachya* differs from var. *divaricata* for its small, narrow, glabrous leaves and panicles mostly

included in the upper sheaths with divaricate pedicels and spikelets densely arranged. *Lasiacis divaricata* var. *leptostachya* can be confused with *L. harrisii* (cfr. Lindeman and Stoffers 1963: 181).

Selected Specimens

BELIZE. Toledo. Maya Montains, Union Camp, 23 Mar. 1977, Boutin 5132 (BM); Toledo, 11 May 1979, C. Whiteford 1660 (BM).

COLOMBIA. Boyacá. Cordillera Oriental, quebrada afluyente del Río Cusiana, abajo de Corinto, 24 Jun. 1967, M. Mejía & al. 2753 (MA); **Cundinamarca**. Fusagasugá, 18 Jun. 1952, Koie 5237 (C).

COSTA RICA. Costa Rica, 1845–48, A.S. Ørsted 14129 (C); **Alajuela**. Upala, Bijagua El Pilón, Cerro La Carmela, 7 Jul. 1988, G. Herrera 2010 (BM); **Cartago**. Cartago, 17 Aug. 1967, R.J. Taylor 4471 (NY); Cerro Tablazo, NW of Tablon, 20 Aug. 1982, R.W. Pohl 14136 (K, NY); **Guanacaste**. Prés Nicoya, 15 Jan. 1900, A. Tonduz 13748 (BM, G, US); Buena Vista, Febr. 1910, O. Jiménez 378 (US); Santa Rosa National Park, 10°51'N, 85°37'W, 20 Jan. 1978, R. Liesner 4229 (MO); Santa Rosa National Park, 30 km NW of Liberia, 320 m, 10°50'N, 85°35'W, 3 Nov. 1982, D.H. Janzen 12241A (MO); Cantón de Nicoya, P.N. Barra Honda, Cuenca del Tempisque, sendero a las Cavernas, s.d., U. Chavarria & al. 1627 (K); Sendero Natural, Sector Santa Rosa, 27 Jan. 1997, D.H. Janzen s.n. (MO); **Puntarenas**. Canton de Buenos Aires, Rey Curré, a orillas de Río Terraba, Vuelta Campana, ca. 3 km aguas arriba sobre el Río Campana, 300 m, 9°00'05"N, 83°15'35"W, 11 Nov. 1991, R. Aguilar 1438 (MO); **San José**. Alto del Rodeo, 28 Dec. 1884, H. Pittier 1615 (US, W); Llano Grande de Curiscal, Febr. 1913, O. Jiménez 892 (US); 0.5 km SE of Barbacoas, 1100 m alt., 7 Nov. 1968, R.W. Pohl & G. Davidse 11406 (K, US); Ridge between Río Virilla and Quebrada Micos, along road between Finca Micos and Llano Limon, 550–660 m, 9°56'N, 84°18'W, 16 Jan. 1986, M.H. Grayum & al. 6078 (MO); Mora, Colón, 13 Dec. 2001, J. Quesada 928 (K); Pérez Zeledón, Tinamaste, 1000 m, 09°17'40"N, 83° 46'00"W, 26 Mar. 1998, A. Estrada 1502 (USJ).

EL SALVADOR. Ahuachapán. Vicinity of Ahuachapán, Jan. 1922, P.C. Standley 19878 (MO, US); P.N. El Imposible, Transecto 3, San Benito, 12 Dec. 1989, A. Sermeño 33 (MO); San Benito, 8 Nov. 1994, Dávila 784 (K); Cabanas, near of Illobasco, 21 Jan. 1998, G. Davidse & al. 37114 (MO), 37118 (BM); **San Salvador**. San Salvador, 1922, S. Calderón 508 (NY, US); Vicinity of San Salvador, Dec. 1921–Jan. 1922, P.C. Standley 19136 (US); **Santa Ana**. Parque Nacional Montecristo, Cerro Miramundo, 4 Sep. 2002, R.A. Carballo 484 (BM).

GUATEMALA. Jutiapa. Vicinity of Jutiapa, 24 Oct.–5 Nov. 1940, P.C. Standley 75416 (US); **Mazatenango**. in dumetis, Nov. 1862, G. Bernoulli 48 (G, K, NY, W); **Sacatepéquez**. Along Río Madre Vieja, above Patulul, 6 Jan. 1939, P.C. Standley 62204 (US); Sacatepéquez, Volcán de Acatenango, 6 Oct. 1999, M. Véliz 99.7712 (BM). **Santa Rosa**. region of La Sepultura, W of Chiquimulilla, 5 Dec. 1940, P.C. Standley 79364 (US).

HONDURAS. Camayagua. La Chácara, 6 km N of Minas de Oro, 3 Aug. 1985, Donaire 22 (BM); **Copán**. NE of Santa Rita de Copán, 28 Dec. 1973, L.O. Williams & al. 42920 (BM); **Cortés**. El Cusuco, 20 km SW of San Pedro Sula, 1 Oct. 1989, Galo 77 (BM); **El Paraíso**. 32 km W of Danli, 700 m, 19 Jun. 1970, G. Davidse & R.W. Pohl 2145 (MO); 35 km NE of Chichicaste along Río Guayambre, 300 m alt., 31 Dec. 1978, R.W. Pohl & M. Gabel 13834 (K,

MO); **Yoro**. Río Pijol Valley, S of Nueva Esperanza, 28 May 1993, R. Liesner 26611 (BM). **Huehuetenango**. Santa Barbara, between Zacapa and El Mochito, 600 m alt., 30 Dec. 1978, R.W. Pohl & M. Gabel 13826 (K, MO); **La Paz**. Sobre el matorral del bosque mixto de Cordillera Guajiquiro, 5 km a Sabanetas, 21 May 1964, A. Molina & A.R. Molina 13894 (US); **Morazán**. Montaña La Tigra, 35 km NE of Tegucigalpa, 10 Sep. 1989, J.M. Perla 19 (BM).

MEXICO. Chiapas. 13 km N of Arriaga along Mexican Highway #195, 4 Oct. 1972, D.E. Breedlove 28304 (NY); Chiapa de Corzo, 16.5 km NE of Chiapa de Corzo, 3 Nov. 1980, P.A. Fryxell & E.J. Lott 3281 (NY); Cintalpa, 28 Jan. 1990, A. Reyes García & al. 1491 (BM); La Concordia, 13 Jul. 1990, A. Reyes García & R.J. Hampshire 1895 (BM); **Oaxaca**. 9 miles SE of Tapanatepec, 20 Oct. 1965, D.E. Breedlove & P.H. Raven 13704 (NY); 1.5 miles E of Ayautla on road to Tuxtepec, 31 Jan. 1981, J. Bauml & M. Kimmach 464 (US); San Miguel del Puerto, Pochutla, 610 m, 15°56'36"N, 96°5'43"W, 25 Nov. 1999, J.F. Castrejon R. 925 (MO); **Veracruz**. Huitamalco, Jun. 1841, F.M. Liebmman 6308 (C); Sotapan, Cerro Campanario, 14 Jul. 1987, R. Acosta & L. Ceja 1668 (NY); San Martín, Veracruz, Nov. 1932, H.W. von Rozyński 589 (MA).

NICARAGUA. Boaco. 24 Jan. 1970, F.C. Seymour 3840 (BM, MO, NY); **Comalapa**. León, Hacienda La Pelona (El Provenir), Cerro La Pelona, a 2.5 km al NO de la Casa Hacienda, 500–600 m, 14 Dec. 1984, A. Grijalva & al. 4185 (MO); **Río San Juan**. Greytown, 1867–68, W.R. Tate 364 (K); **Madriz**. Lower W slope of Cerro Volcán de Somoto, 13°25'N, 86°35'W, 13 Dec. 1979, W.D. Stevens & al. 16320 (BM, MO); **Jinotepe**. 3–7 Nov. 1911, A.S. Hitchcock 8722, 8723 (NY, US).

PANAMA. Colón. Ca. 6 km N of Chilibre, along shores of Madden Lake (Lago Alajuela), 25–50 m, 9°12'N, 79°36'W, 26 Dec. 1981, S. Knapp 2723 (MO, NY); Colón, La Pintada, Llano Grande, Finca Manuel Bern, 29 Jan. 2014, O.O. Ortiz & R.M. Baldini 1982 (FT, PMA); **Panamá**. Canal Zone near Lhajuela, Chagres Valley, 12–15 May 1911, H. Pittier 2342 (BM, NY, US); Canal Zone, between Madden Dam and Saddle 11 near Alajuela, 25 Nov. 1934, C.W. Dodge & al. 16513 (MO, US); Canal Zone, Madden Lake, 20 Oct. 1975, J.T. Witherspoon & al. 8815 (MO); **Darién**. Darién, Camp Dubaganala, Helipad in Premontane Rain Forest, 15 Mar. 1968, J.A. Duke 15495 (US); Majé, up Río Majé about 5 miles, steep forested ridge above Chocó Indian trail, 400 m, 18 Nov. 1970, H. Kennedy & R. Foster 677 (MO).

VENEZUELA. Mérida. Tabay, 2 Sep. 1930, W. Gehringer 398 (G); **Trujillo**. Alrededores de La Puerta, Valle del Río Momboy, 2000–2200 m, 11 Jan. 1982, J. Bono 768 (FT).

WINDWARD ISLANDS. Martinique. Nov. 1867, L. Hahn 480 (BM, FI, G, K, L, P, PI); Fort de France, Rivière Madame, 12 Jan. 1876, C. Thiébaud 371 (P).

(5) *Lasiacis grisebachii* (Nash) Hitchc., Bot. Gaz. (Crawfordsville) 54: 302. 1911. (Fig. 16).

Bas.: *Panicum grisebachii* Nash, Bull. Torrey Bot. Club 35: 301. 1908.

Type: Cuba, vicinity of Madruga, coral rock ravine, 28 Mar. 1903, N.L. Britton, E.G. Britton & J.A. Shafer 758 (holotype: NY! [barcode NY00071078]; isotypes K! [bar-

code K000308104] as *Panicum martinicense* Griseb., US! Fragment from NY [barcode US00148550]).

(=) *Lasiacis grisebachii* (Nash) Hitchc. var. *lindelliana* Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

Type: Cuba, Habana, Lomas de Camoa, in sylvis locis umbrosis satis frequens, 27 Nov. 1921, Ekman 13530 (holotype: US! [barcode US00956494]; isotypes BM! [barcode BM000927718], F (photo!) [Acc. No. 1474168F], G! Two sheets [barcode G00176058, G00614201], L! [barcode L0797333], NY! Three sheets [barcode NY00888539, NY00888540, NY00888541], U (photo!) [barcode U0008351], US! Two sheets [barcode US00956495, US00956496], W! [Acc. No. W19590000023]).

(-) *Lasiacis rhizophora* Auct. Fl. Cub., non *L. rhizophora* (E.Fourn.) Hitchc.

Description

Perennials, caespitose. Culms 60–70 cm long, widely creeping and branching, distal ends of the branches erect, rooting at the lower nodes, forming prop roots 2–4 mm thick, branched above the soil, slender, apparently herbaceous to mildly lignified, usually forming a curled up network; internodes usually glabrous; nodes glabrous. Leaf sheaths puberulent, rarely hirsute, the overlapping margin weakly ciliate; collars with a line of hairs; ligules 0.3–0.5 mm long, membranous, inconspicuous, glabrous to weakly ciliate; blades 5–15 cm long, 0.5–1.5(–2.0) cm wide, linear-lanceolate, acuminate, base usually asymmetrical, adaxial surface usually glabrous, rarely sparsely pubescent to glabrous, abaxial surface usually sparsely puberulent, rarely glabrous, margin scabrid. Panicles 4–12(–14) cm long, bearing only a few spikelets throughout. Spikelets 3–4 mm long, globose; lower glumes 1.5–2.5 mm long, 5–6-veined; upper glumes 2–3 mm long, 6–12-veined; sterile florets staminate with rudimentary or fully developed stamens, lemmas 7–12-veined, paleas subequal to the length of the fertile floret, margins enrolled; fertile florets 3–4(–4.5) mm long, 2–2.5 mm wide, anthers 2 mm long, white, stigmas white. Chromosome number: unknown.

Iconographs

Lámina 153 (Catasús Guerra 2012b).

Vernacular names

Cuba: “alpiste cimarrón”, “cañutillo”, “tibisi del monte” (Roig 1963; Acevedo-Rodríguez and Strong 2012; Catasús Guerra 2012a).

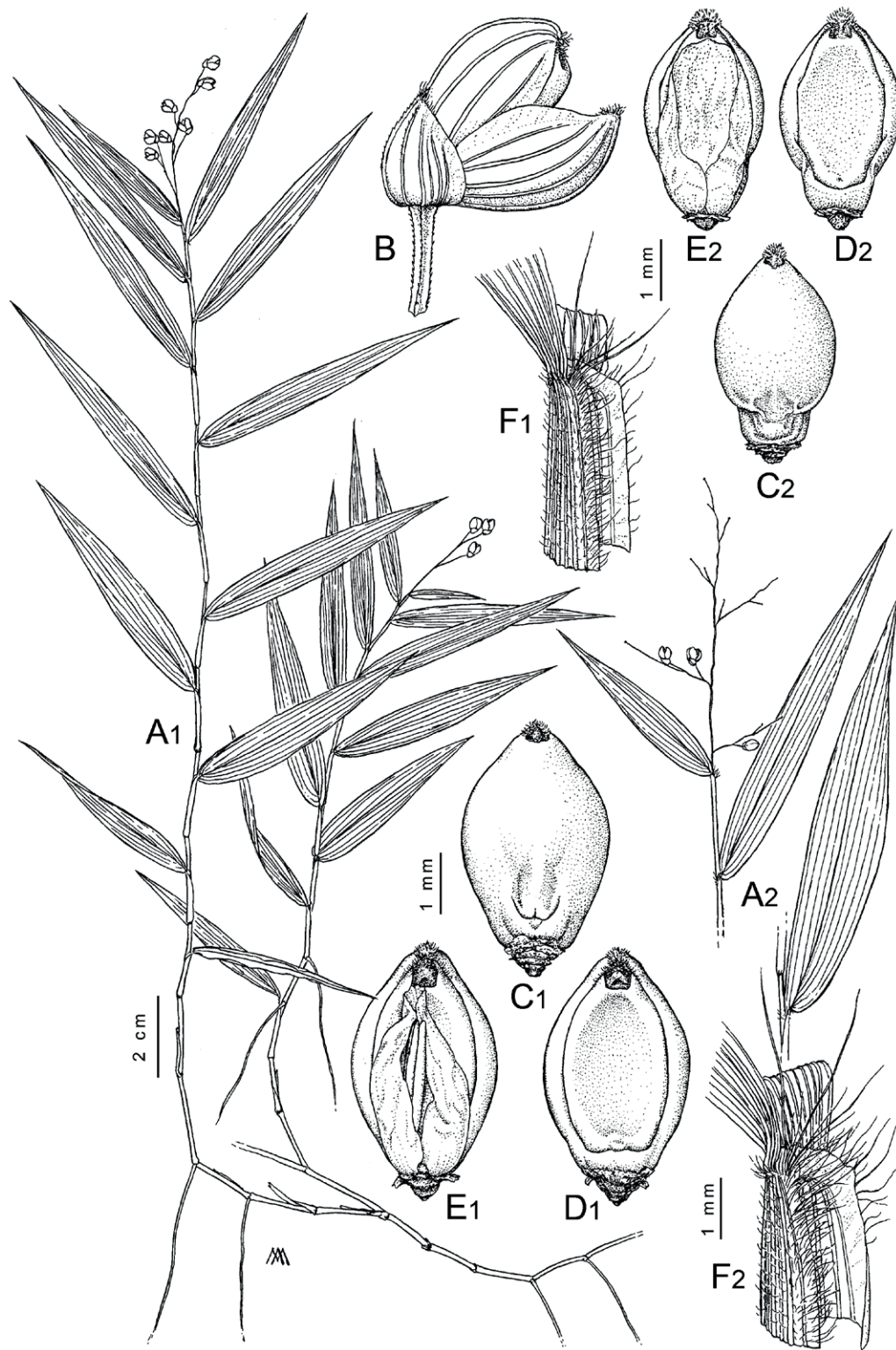


Figure 16. *Lasiacis grisebachii* (Nash) Hitchc.: **A1.** Habit, rooting at the nodes; **B.** Spikelet lateral view [**A1-B.** *L. grisebachii*, from E.L. Ekman 1024 (L)]; **C1.** Fertile upper floret dorsal view; **D1.** Fertile upper floret ventral view without lower persistent palea; **E1.** Fertile upper floret ventral view with lower persistent palea; **F1.** Ligular area [**C1-F1.** *L. grisebachii*, from E.L. Ekman 13531 (K)]; **A2.** Culm at the apex; **C2.** Fertile upper floret dorsal view; **D2.** Fertile upper floret ventral view without lower persistent palea; **E2.** Fertile upper floret ventral view with lower persistent palea; **F2.** Ligular area. [**A2-F2.** Cf. var. *lindeliiana* Davidse from E.L. Ekman 1023 (L)]. *A. Maury delineavit.*

Distribution

Belize, Costa Rica, Cuba, Guatemala, Honduras, Mexico, Nicaragua, Puerto Rico. (Fig. 17)

Distribution (bibliographic references)

Nash (1908) as *Panicum grisebachii* Nash; Hitchcock (1909) as *Panicum grisebachii* Nash (1913); Hitchcock and Chase (1917); Hitchcock (1911, 1913, 1920, 1930, 1936); Nash (1931); Swallen (1936, 1955b); Beetle (1977); Davidse (1978, 1994, 2001); Serna and López-Ferrari (2000); Zuloaga et al. (2003); Catasús-Guerra (2012a); Acevedo-Rodríguez and Strong (2012); Villaseñor (2016); Sylvester (2017); Dávila et al. (2018); Sánchez-Ken (2019).

Ecology

Shade, usually in secondary forests, and in undisturbed areas. From sea level to 900 m.

Phenology

June/July through April in Central America, October through February in Cuba.

Remarks

The holotype of *L. grisebachii* var. *lindeileana* Davidse in US [US00956494] bears 2 labels in E.L. Ekmann's handwriting (see also in Davidse 1978):

"*Lasiacis lindelieana* Ekmann n. sp. Cuba, prov. Habana, Lomas de Camoa, in silva locis umbrosis satis frequens, 27 Feb. 1921, E.L. Ekmann. // Obs.1 Same bind of localities as *L. grisebachii*. To date from two localities only Río de Mosquitos in Prov. Pinar del Río and Lomas de Camoa near Habana. Obs.2 Dedicated to my friend Mr. A.N. Lindelie, from St. Petersburg, Fla., administrator of Pan Ramon near Mariel, where I have been living these last two years. Obs.3 Related to *L. grisebachii* but easily recognized on its broader smoother nearly gla-

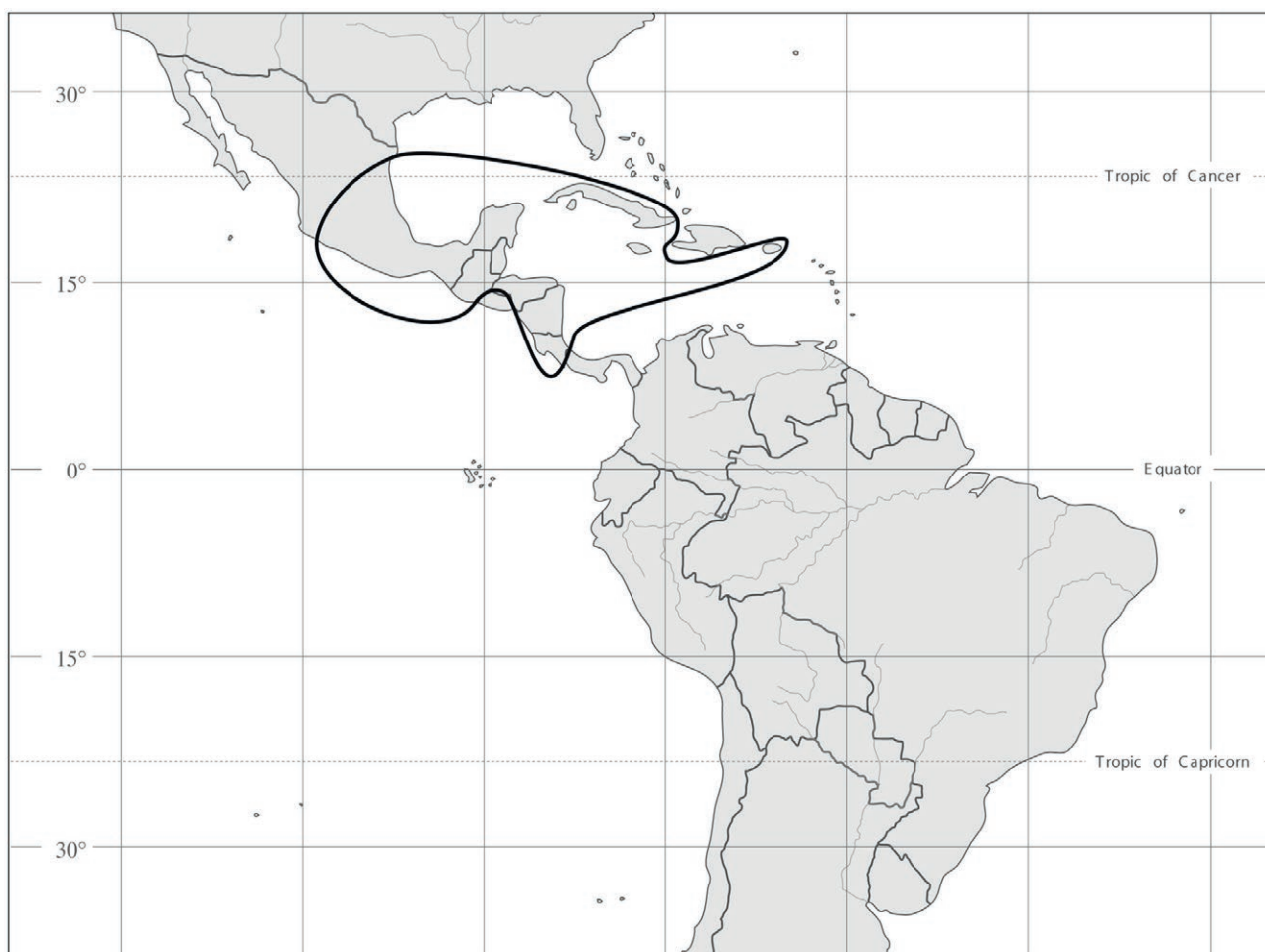


Figure 17. *Lasiacis grisebachii* (Nash) Hitchc.: general geographic distribution.

brous blades and more robust stature". Nash was convinced to propose a new species, but he never formally described it.

In Fig. 16 the comparison of the diagnostic characters between var. *grisebachii* and var. *lindeileana* Davidse are outlined, showing their inconsistency to justify even a difference at the varietal level. Due to its sympatric distribution (Cuba) and the overlap of some diagnostic characters (e.g., the panicles small and shortened to nearly elongate, the blade with the surface from sparsely pubescent to nearly glabrous, and the stature from creeping to suberect habit) of both varieties, we follow the treatment of Catasús Guerra (2012a). *Lasiacis grisebachii* var. *lindeileana* can often be confused with *L. ruscifolia* (Catasús Guerra 2012a).

Selected Specimens

BELIZE. **Belize.** Belize, 12 Sep. 1928, *Simpson* 8 (K); Honey Camp, Oct. 1929, *C.L. Lundell* 559, 559a (K, MO, NY, US); Sibun River, Gracy Rock School, 28 Nov. 1968, *R.R. Innes* 59 (K); Gracie Rock, 1.5–4 miles S of Mile 22 on Western Highway, 100 m, 21 Jan. 1974, *R. Liesner & J. Dwyer* 1483 (MO); **Cayo.** Between El Cayo and Benque Viejo, 15 Feb. 1931, *H.H. Bartlett* 11505 (US); El Cayo, San Augustin, mountain pine forest, Jul.–Aug. 1936, *C.L. Lundell* 6751 (US); El Cayo, Cave Branch Section, Hummingbird Highway, 13 Sep. 1955, *P.H. Gentile* 8864 (NY, US); 41 miles Section, Belize–Cayo Road, 23 Feb. 1958, *P.H. Gentile* 9641 (MO, NY, US); Misionario, 12 Dec. 1968, *G.R. Proctor* 29866 (BM); Ca. 3 km S of Grano de Oro on road between Misionario and La Flor, 2 Jun. 1973, *T.B. Croat* 23398 (K, MO); Vaca Plateau, 3 Aug. 1980, *C. Whitefoord* 2025 (BM, MO, NY); Maya Mountains, Smokey Branch, 19 Mar. 1994, *A. Monro & al.* 249 (BM); Chiquibul, Las Cuevas, 15 Mar. 1997, *A. Monro* 1745 (BM); Chiquibul, Ceibo Grande to Main Divide track, 500 m, 16°31'49"N, 89°05'06"W, 26 Aug. 1998, *A.K. Monro & S. Cafferty* 2684 (MO); Chiquibil Forest Reserve, Monkey Trail of Guacamallo river, growing on riverside, 16°44'N, 88°56'W, 3 Sep. 1998, *R.I. Vargas* 96 (NY); Green Hills, 12 km on Chiquibil Road, 250 m, 17°05'44"N, 88°58'28"W, 25 Nov. 1998, *B.K. Holst & al.* 7135 (MO); **Orange Walk.** Río Bravo Conservation and management Area, 17°49'N, 89°02'W, 11–30 Oct. 1991, *N.V.L. Brokaw & M. Schulze* 60 (MO); **Stann Creek.** Hummingbird Highway, 17 Sep. 1954, *P.H. Gentile* 8384 (BM, NY, US), 11 Nov. 1954, *P.H. Gentile* 8441 (US); Road E of Papal Volunteers House, Lynam Ag. College, 22 Mar. 1967, *J. Dwyer & al.* 544 (MO); **Toledo.** Temash River, 3 Aug. 1935, *W.A. Schipp* 1276 (BM, G, K, MO, NY), as 1376 (US); Río Grande, 4 Sep. 1944, *P.H. Gentile* 4798 (MO); Mason's Land, 29 Sep. 1949, *P.H. Gentile* 6849 (NY, US); Near Columbia, 2 Aug. 1950, *P.H. Gentile* 7101 (G, US); Near San Antonio, 17 Nov. 1951, *P.H. Gentile* 7523 (BM, C, G, NY, US); Southern Maya Mountains, Bladen Nature Reserve, 450 m, 16°31'05"N 88°54'11"W, 25 May 1996, *G. Davidse* 36262 (MO); Bladen Nature Reserve, in the lowlands of the NE BNR, 45 m, 16°33'N, 88°43'W, 16 Feb. 1997, *S.W. Brewer* 172 (MO); BFREE Reserve, Lagoon Trail, 45–75 m, 20 Oct. 2005, *C. Whitefoord & V. Queiroz* 106019 (MO).

COSTA RICA. **Alajuela.** San Migiel de San Ramon, 11 Jan. 1937, *A.M. Brendes* 21911 (NY); Alajuela, vicinity of Los Chiles, Río Frio, 11°02'N, 84°44'W, 1 Aug. 1949, *R.W. Holm & H.H. Iltis* 728 (G, NY, UPS).

CUBA. **Cienfuegos.** Yaguaramas, savana de Alcade Mayor, 22°15'38.9"N, 80°39'54.9"W, 12 Dec. 2002, *E. Lewis & al.* *CEL* 02-060 (FTG); **Habana.** Lomas de Camoa, 7 Nov. 1921, *E.L. Ekman* 13462 (US); La Habana, Lomas de Camoa, 21 Nov. 1921, *E.L. Ekman* 13511 (C, K, L, NY, P, W); La Habana, Lomas de Camoa, 27 Nov. 1921, *E.L. Ekman* 13531 (K, NY, P, US); La Habana, Loma de Coco, Campo Florida, 27 Nov. 1921, *E.L. Ekman* 1024 (C, FTG, G, K, L, NY, W); Habana, La Vigia, Tapaste, 2 Jan. 1922, *Bro. León* 10666 (US); Habana, base of Pan de Cuajaibon, Las Pozas, Apr. 1952, *Bro. Alain* 2415 (US); Habana, Managua, on a low hill, 15 Feb. 1956, *C.V. Morton* 10198 (US); **Mantanzas.** 1849, *F. Rugel* 187 (K, L, NY); Cuba, 1865, *C. Wright* 3457 *pro parte* (MO, NY, US); **Pinar del Río.** Mountains above Taco Taco, 28 Oct. 1909, *C.F. Baker* 3817 (W); Trail from Buenaventura to San Juan de Guacamalla, 16 Dec. 1910, *P. Wilson* 9332 (K, NY, US); Sierra de Anafe, 21 Dec. 1911, *P. Wilson & Bro. León* 11467 (NY, US); Bahia Honda to El Rosario, 29 Jan. 1912, *J.A. Shafer* 12006 (NY, US); Cabañas, towards Sierra de Las Animas, 15 Mar. 1920, *E.L. Ekman* 10506 (G, K, NY, US); Gerardo, 18 Dec. 1920, *E.L. Ekman* 12646 (US); Vinales, 11 Dec. 1930, *E.P. Killip* 13528 (US); Source of Río, Taco-Taco, Sierra de Los Organos, 18 Nov. 1941, *C.V. Morton* 4276 (US), 4306 (K, NY, US), 4390 (MO, US); **Villa Clara.** Santa Clara, Peninsula de Zapata, fores along the railroad from Central Australia to Bahia de Cochinas, 31 Jan. 1924, *E.L. Ekman* 18340 (G, US).

GUATEMALA. **Izabal.** W of Santo Tomás de Castilla, near Guatel antennas on one of the summits of Cerro San Gíl, humid evergreen forest on slopes, 15°13'N, 88°59'W, 21 Sep. 1997, *M. Nee & al.* 47330 (NY); **Petén.** Uaxactum, 19 Mar. 1931, *H.H. Bartlett* 12190 (NY, US); Forest between Finca Yalpemech along Río San Diego and San Diego on Río Cancuen, 25 Mar. 1942, *J.A. Steyermark* 45305 (US); Tikal, along Remate Road, 3 Jul. 1959, *C.L. Lundell* 16144 (G); El Petén, San Luis, 11 Jul. 1959, *C.L. Lundell* 16360 (G, US); Tikal, 23 Sep. 1959, *O. Degener* 26713 (BM, NY); Tikal National Park, bordering Aguada Terminos, 30 Mar. 1960, *C.L. Lundell* 16665 (US); About 6 km W of Dos Lagunas, on Carmelita Road, 6 Nov. 1960, *E. Contreras* 1596 (M); Entre La Libertad y Subin, 50 km S de Sta. Elena, 10 Nov. 1965, *A. Molina* 15503 (US); Sacate, 25 Sep. 1969, *R.T. Ortiz* 326 (BM, MO, NY, US); **Quezaltenango.** Along old road between Finca Pirineos and Patzulín, 9 Feb. 1941, *P.C. Standley* 86936 (US).

HONDURAS. **Lempira.** Guarunta, Wispernini Camp, Mar. 1938, *C. von Hagen & W. Von Hagen* 1342 (NY); Punto Serra, 24 Jan. 1903, *P. Wilson* 169 (NY, US); **Ocotopeque.** 18 km E of Nueva Ocotopeque, 15 Jul. 1971, *W.E. Harmon & J.A. Fuentes* 6473 (NY); **Olancho.** 12 km SW of Dulce Nombre de Culmi along Highway 3, 23 Jul. 1970, *G. Davidse & R.W. Pohl* 2442 (MO, NY, US); **Santa Barbara.** Between Lago Yojoa & El Sauce, 29 Jun. 1970, *G. Davidse & R.W. Pohl* 2218 (MO, NY, US); Lago de Yojoa, opposite to Agua Azul, 670 m, 27 Dec. 1977, *R.W. Pohl* 13410 (MO).

MEXICO. **Campeche.** Hopelchen, a 20 km al SE de Xpujil, en los terrenos del ejido 20 de Noviembre, 200 m, 18°26'N, 89°22'W, 16 Oct. 1996, *P.A.M. Alvarez* 621 (MO); Calakmul, loc. a 2 km al W de La Mancolona, canino a La Nueva Vida, 230 m, 18°48'36"N, 89°18'50"W, 25 Oct. 1997, *E.M. Martínez S.* 29360 (MO); Calakmul, 6 Dec. 1998, *E.M. Martínez S. & al.* 31555 (BM); **Chiapas.** Near the junction of the Río Perlas and Río Jataté at San Quintin and near Laguna Miramar, 22 Mar. 1955, *E.R. Sohns* 1689 (US); 6–12 km S of Palenque on the road to Ocosingo, 12 Oct. 1972, *D.E. Breedlove* 28838 (NY); Ocozocoautla de Espinosa, 32 km N of Ocozocoautla on road to Mal Paso, 6 Oct. 1974, *D.E. Breedlove* 38201 (NY); Ocosingo, 3 km al S de Frontiera Corozal

paralelo al Río Usumacinta, 17 Aug. 1984, *E. Martínez* 7362 (NY); Ocosingo 24 km al SE de Crucero Corozal, camino Palenque-Boca Lacantum, 22 Sep. 1984, *E.M. Martínez* 7725 (NY); Ocosingo, loc. a 9 km al NW de Boca Lacantum, camino a Crucero Corozal-Palenque, 16 Oct. 1984, *E.M. Martínez* S. 8247 (MO); Ocosingo, En Crucero Corozal, camino Palenque-Boca Lacantum, 180 m, 9 Nov. 1985, *E.M. Martínez* S. 15381 (MO); 7 km S of Crucero El Pinal, 2 km NW of El Piedron, at bridge over Río Tilijá, 480 m, 17°10'N, 91°45'W, 26 Sep. 1988, *W.D. Stevens & E. Martínez* S. 25907 (MO); Ocosingo, 1 km al NW de la Colonia Benito Juárez Miramar, 1 Nov. 1993, *A. Reyes-García* 2460 (BM, MO); Ocosingo, 4.1 km al E de Nuevo Guerrero, 299 m, 16°58'56"N, 91°14'47"W, 5 May 2002, *J.C. Soto* 23139 (MO); **Oaxaca**. Vicinity of Matias Romero, 7-12 Aug. 1970, *L.H. Harvey* 8598 (US); Matias Romero, carretera a Uxpanapa, 17 km al E de Sarabia, 9 km al S de Palomares, 12 Nov. 1978, *S.D. Koch & al.* 78244 (MO); Santa Maria Jacatepec, Tuxtepec, camino a Cosolapa San Antonio, 300 m, 17°51'N, 96°60'03"W, 20 Feb. 1988, *R. Torres* C. 11473 (BM, MO); **Quintana Roo**. Lake Chichancanab (Laguna Chan-kabnab), 28-29 Jul. 1932, *J.R. Swallen* 2750 (K, MO, US); Tancab, Quintana Roo, 4-5 Aug. 1932, *J.R. Swallen* 2823 (K, US); Brecha camino del Norte, 13 km al E de Leona Vicario, 3 Dec. 1980, *E. Cabrera* 440 (MO); **Veracruz**. Campo Experimental Veracruz, de Hule, Ela Palmar, Zongolica, 28-31 Oct. 1943, *J.V. Santos* 2650 (NY); Mecayapan, between Volcán Santa Marta and Volcán San Martín Pajapan, 7.5 km NE of Tatahuicapan, on dirt road to Benigno Mendoza, 18°19'N, 94°46'W, 16 Jul. 1982, *M. Nee & al.* 25085 (MO, NY); Veracruz, Catemaco 5 km, al este de Pen de Moreno, 3 Oct. 1986, *J.J. Ortiz* 1087 (MO).

NICARAGUA. **Jinotega**. Salto Kayaka, Río Bocay, 190-340 m, 13°51'N, 85°22'W, 7 Mar. 1980, *W.D. Stevens & al.* 16500 (MO); **Matagalpa**. Las Brisas, 15 km al W de Waslala, carretera a El Tuma, 250-300 m, 13°15'N, 85°28'W, 23 Dec. 1982, *P.P. Moreno* 19230 (MO).

(6) *Lasiacis harrisii* Nash, *Torreyia* 13: 274. 1913. (Fig. 18).

Type: *Jamaica, vicinity of Cinchona, Cinchona to Strawberry Hill, 2-10 Sep. 1906, Marble* 222 (holotype: NY! [barcode NY00071107]).

Description

Perennials, caespitose. *Culms* 1-5 m long or more, smooth and glabrous, slender, proximally erect arching upward, usually climbing or clambering into the vegetation; *internodes* 2-4(-5) mm thick, glabrous, upward with a line of hairs; *nodes* glabrous; *primary branches* 1 per node, *secondary branches* 2 per node or more usually fascicled. *Leaf sheaths* glabrous, sometimes sparsely pubescent, but always glabrous at maturity, upper margin usually ciliate with hairs 1.0-1.5 mm long, hairs at the auricle prominent; *collars* glabrous; *ligules* 0.5-0.7 mm long, membranous, glabrous; *blades* 5-12(-14.0) cm long, 0.8-1.0 cm wide, linear, acuminate, the base slightly asymmetrical, glabrous, often slightly pubescent at the base with a scabrid margin. *Panicles* small and narrow at

base, 2-8 cm long, enfolded in the upper sheath. *Spikelets* 3.5-4.5 mm long, curved less than 45° from the main axis; *lower glumes* 2.0-2.5 mm long, 8 or 9-veined; *upper glumes* 8-9-veined; *sterile florets* without a flower, *paleas* $\frac{3}{4}$ to subequal to the length of the fertile floret, *lemmas* 8-9-veined; *fertile florets* 3-4 mm long, 1.7-2.0 mm wide elliptic; *anthers* 1.8-2.0 mm long, white, *stigmas* purplish; *caryopses* 2 mm long, 1.5 mm wide. *Chromosome number*: $n = 18$ (Davidse 1972, 1978).

Distribution

Dominican Republic, Jamaica, Puerto Rico, Virgin Islands, Windward Islands. (Fig. 19).

Distribution (bibliographic references)

Nash (1913); Hitchcock and Chase (1917); Hitchcock (1920, 1936); Swallen (1931); Adams (1972); Davidse (1978); Fournet (1978); Cialdella and Vega (1996).

Ecology

Montane cloud forests, usually above 800 m up to 1500-1600 m.

Phenology

October through December.

Remarks

Davidse (1978) expresses some doubts about the clear distinction between *L. harrisii* and *L. divaricata* due to some morphological variation between the two species, particularly in some Caribbean areas (Dominican Republic, Windward Islands). *Lasiacis harrisii* is synonymized within *L. divaricata* by Santos and Sano (2001), Zuloaga et al. (2003), Acevedo-Rodríguez (2005), Giraldo-Cañas (2011), Acevedo-Rodríguez and Strong (2012), Ulloa Ulloa et al. (2025) and in Lindeman and Stoffers (1963: 181) as *L. divaricata* var. *leptostachya*. In our opinion, the two species mentioned above have distinct characteristics and deserve to be considered distinct mainly for their habitus, the size of the spikelets and their orientation.

Lasiacis harrisii is here considered an endemic species restricted in a small Caribbean area (Fig. 19) with its center of distribution in the highlands of Jamaica showing a similar pattern of distribution as other *Lasiacis* species restricted to the Caribbean hotspots (Smith et al. 2004; Francisco-Ortega et al. 2007) and nearby Neotropical territories such as *L. divaricata*, *L. grisebachii*, *L. rugelii*.

Selected specimens

DOMINICAN REPUBLIC. Cordillera Central, Vega, Jarabacoa, at the falls of Río Jimensa, 18 Nov. 1929, *E.L. Ekman* 14176 (K, US).



Figure 18. *Lasiacis harrisii* Nash: **A1.** Habit [A1. from A.S. Hitchcock 588 (L)]; **A2.** Habit; **B.** Erect spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area [A2-F. from A.S. Hitchcock 9730 (L)]. A. Maury delineavit.



Figure 19. *Lasiacis harrisii* Nash: general geographic distribution.

JAMAICA. Jamaica, 26 Dec. 1887, *H.F.A. von Eggers* 3121 (NY); Jamaica, *G.S. Jenman* 35 (K); **St. Mary.** Below Cold Spring Gap, south side, 3 Nov. 1912, *W. Harris* 11354 (BM, NY, US); **Cinchona.** Below Cinchona, north slope of St. Catherine's Peak, 29 Oct. 1912, *A.S. Hitchcock* 9730 (L, US); **Portland.** Abbey Green, Blue Mts., 4 Oct. 1912, *A.S. Hitchcock* 588 (BM, BR, G, K, L, MO, NY, P, US, W); Blue Mts., Abbey Green, 22 Jan. 1913, *W. Harris* 11587 (BM, C, K, MO, NY, P, US); Along road between Section & Hardwar Gap (at "Muriel's Rock"), 3400 ft, 30 Mar. 1963, *G.R. Proctor* 23405 (BM, IJ); Portland Parish, Muriel's Rock, along road between Section & Hardwar Gap, 24 Nov. 1971, *G. Davidse & G. Proctor* 3242 (MO, NY, US), *n* = 18! (Davidse 1978); Blue Mountains, Nanny Falls (upper), on dry waterfall, on rocks, 24 Dec. 1973, *B.D. Morley & C. Whiteford* 758 (MO, US); **St. Andrew.** Blue Mts., Mount Faraway, 3 Dec. 1912, *W. Harris* 11486 (BM, IJ, K, NY); Blue Mts., Strawberry Hill, 3 Dec. 1912, *W. Harris* 11487 (BM, C, K, MO, NY, P, US); Base of Catherine Peak, 3 Jan. 1913, *W. Harris* 11552 (BM, C, K, MO, NY, P, US); Chestervale, 9 Jul. 1963, *G.R. Proctor* 23834 (BM, IJ); Along track between Guava Ridge and Bellevue, Port Royal Mts., 11 Oct. 1964, *G.R. Proctor* 25592 (BM); Hill just above Yallahs River Bridge below Chestervale, 24 Nov. 1971, *G.*

Davidse & G.R. Proctor 3248 (MO, NY, US); Farm Hill, 22 Oct. 1927, *C.R. Orcutt* 3544 (K, MO, US); **St. Thomas.** Farm Hill, 22 Oct. 1927, *C.R. Orcutt* 3544 (K, MO, US); Vicinity of Whitfield Hall, climbing grass, common, ca. 4100 ft, 7 Dec. 1954, *G.R. Proctor* 9585 (IJ).

PUERTO RICO. Monte Alegrillo, vicinity of Maricao, 20-23 Oct. 1913, *A. Chase* 6228 (L, US); Vicinity of Cayey, 3 Dec. 1913, *A. Chase* 6742 (US).

VIRGIN ISLANDS. St. John. Coral Bay Quarter, dirt road to Bordeaux Mountain, 9 Jan. 1990, *P. Acevedo-Rodriguez* 3169 (NY).

WINDWARD ISLAND. Dominica. St. John Parish, Cabrit Swamp, 2 Nov. 1964, *D.H. Nicolson* 1893 (BM, US); Morne Espanol, 15°31.60'N, 61°27.84'W, 190 m, 16 Aug. 2002, *S. Zona* 951 (FTG); **Martinique.** 17 Oct. 1919, *A.S. Hitchcock* 16468 (US); Tivoli, 18 Jan. 1943, *s.coll. s.n.* (P); **St. Eustatius.** 1906, *I. Boldingh* 750 (C); **St. Lucia.** Forest near Dewey, 1 Nov. 1888, *G.A. Ramage s.n.* (K).

(7) *Lasiacis ligulata* Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 337. 1917. (Fig. 20).

Type: *Trinidad, above St. Anns, near Port Spain, among bushes along stream, high climbing, 28 November 1912, A.S. Hitchcock 10007* (= Am. Grass Natl. Herb. No. 589) (holotype: US! Two sheets [barcode US00134109, US00134110]; isotypes BM! [barcode BM000938722], BR! [BR0000006863142], DAO (photo!) [barcode DAO000465664], C! [barcode C10017034], F (photo!) [barcode F0046800F], G! [G00176059], GH (photo!) [barcode GH00023862], K! [barcode K000309328], L! [barcode L0044660], MO! [Acc. No. MO115985], NY! [barcode NY038128], P! [barcode P00633955], PH (photo!) [barcode PH00016893], S (photo!) [Acc. No. S05-5477], W! [Acc. No. W19220009713]).

(=) *Panicum glutinosum* Lam., Tabl. Encycl. 1: 174, tab. 43, fig. 3. 1791, non Sw. (1788), *nom. illeg.* - “*Amer. Merid. Insulare Franciae*” (Lamarck 1791: 174).

Type: “*de Cayenne, Stoupy*”. (lectotype, designated here: P! [barcode 00563917];, isolectotypes P! Two sheets [barcode P00563917, P00563916]; US! Fragment from P [barcode US00148536]).

(=) *Panicum agglutinans* Kunth, Enum. Pl. 1: 120. 1833, based on *P. glutinosum* Lam. (1791).

(=) *Panicum divaricatum* L. var. *agglutinans* (Kunth) Hack. ex Sodiro, Anales Univ. Centr. Ecuador 1889: 5. 1889.

(=) *Panicum divaricatum* L. var. *puberulum* Griseb., Fl. Brit. W. Ind. 551. 1864. – Type: *Trinidad, Mr. Crueger s.n.* (holotype: GOET! [barcode GOET001983]).

(-) *Panicum maculatum* Rchb. ex Schlecht. & Cham., Linnaea 6: 33 1831, non Aubl. (1775), *nom. inval.* as *syn.* of *P. latifolium* L. (1753) (missapplied).

(-) *Panicum fruticosum* Salzm. ex Steud., Syn. Pl. Glum. 1: 74. 1854, *nom. inval.*, as *syn.* of *P. latifolium* L. (1753) (missapplied).

Nomina nuda

Panicum megacarpum Steud. in Lechl., Berb. Amer. Austr. 56. 1857, *nom. nud.*

Panicum divaricatum L. var. *puberulum* Sodiro, Anales Univ. Centr. Ecuador: 5. 1889, *nom. nud.*, non Griseb. (1864).

Description

Perennials, robust caespitose. *Culms* 1-5(-10) m tall, erect at the base, arching upward; *branches* solitary or fascicled at the nodes; *internodes* glabrous or with a line of hairs on the side; *nodes* as much as 1-2 cm in diameter, glabrous. *Leaf sheaths* glabrous, pubescent, the overlapping sheath margin ciliate or completely glabrous; *collars* sparsely to totally puberulent, rarely glabrous; *ligules* 2-4(-5.0) mm long, very variable in length, membranous, dark brown, glabrous or pubescent, margin ciliate, hairs 0.5-2.5(-3.0) mm long, apex glabrous or ciliolate; *blades* very variable in length, (5-)8-15(-18) cm long, (0.5-)1.0-3.0(-4.5) cm wide, ovate-lanceolate, acuminate, base asymmetrical, glabrous or puberulent, sometimes ciliate with long hairs, margin scabrid. *Panicles* up to 8 or 9 cm long, ovoid, terminating with numerous branches, longest branch usually reflexed, usually bearing 5-10 short pedicelled spikelets. *Spikelets* 3-4(-5.0) mm long, obovoid, purplish at immaturity, and purplish black at maturity; *pedicels* scabrid; *lower glumes* 1.5-2.5 mm long, 5-11-veined; *upper glumes* 2.5-3.0 mm long, 8-11-veined; *sterile florets* without a flower, *lemmas* 8-11-veined, *paleas* $\frac{3}{4}$ to equal the length of the fertile floret; *fertile florets* 2.8-4.0 mm long, 2.0-2.5 mm wide, *anthers* 2 mm long, white, *stigmas* white; *caryopses* 1.8-2.0 mm long, 1.5-1.9 mm wide. $2n = 36$ (Gould and Soderstrom 1967); *Chromosome number*: $n = 18$ (Davidse 1972, 1978).

Iconographs

Fig. 135 E (Smith et al. 1982); Fig. 40 E-F (Renvoize 1984); Fig. 53 A-G (Judziewicz 1990); Fig. 153 F-J (Judziewicz 1997); Fig. 87 C (Renvoize 1998); Fig. 96 (Davidse 2004); Fig. 182 H-K (Acevedo-Rodríguez 2005).

Vernacular names

Tobago: “*tibise*” L.M. Andrews 610A (NY); **Bolivia**: Santa Cruz, “*tacuarilla*” R. Guillén & S. Coria 1418 (US); **Brazil**: Acre, “*taquari*” M. de Pardo & al. 139 (HPZ, MO, NY); Acre, “*taboquinha*” G.T. Prance & al. 13723 (K, MO, NY, US); Amapá, “*taboca*” R.S. Cowan & B. Maguire 38105 (NY, US); Bahia, “*taquara*” J.G. Jardim & al. 1115 (MO), “*taquari*” E.B. dos Santos & A.S. Barreto 69 (CEPEC, K), T.R. Soderstrom & al. 2190 (CEPEC, US); Mato Grosso: “*rabo de raposa*” J.A. Ratter & al. 1998 (K, NY, P, US); Minas Gerais: “*taquari*” Y. Mexia 5328 (BM, G, K, MO, NY, P, US); Pará, “*gavinho*” A. Goeldi 227 (US, W); “*taboca*” E. Fittkau & D. Coelho 118 (NY), “*taboquinha, taquari*” (Smith et al. 1982); Pernambuco, “*taquara-de-apito*” A. Ferreira 125 (K, MO, US); Santa Catarina, “*taquari*” (Smith et

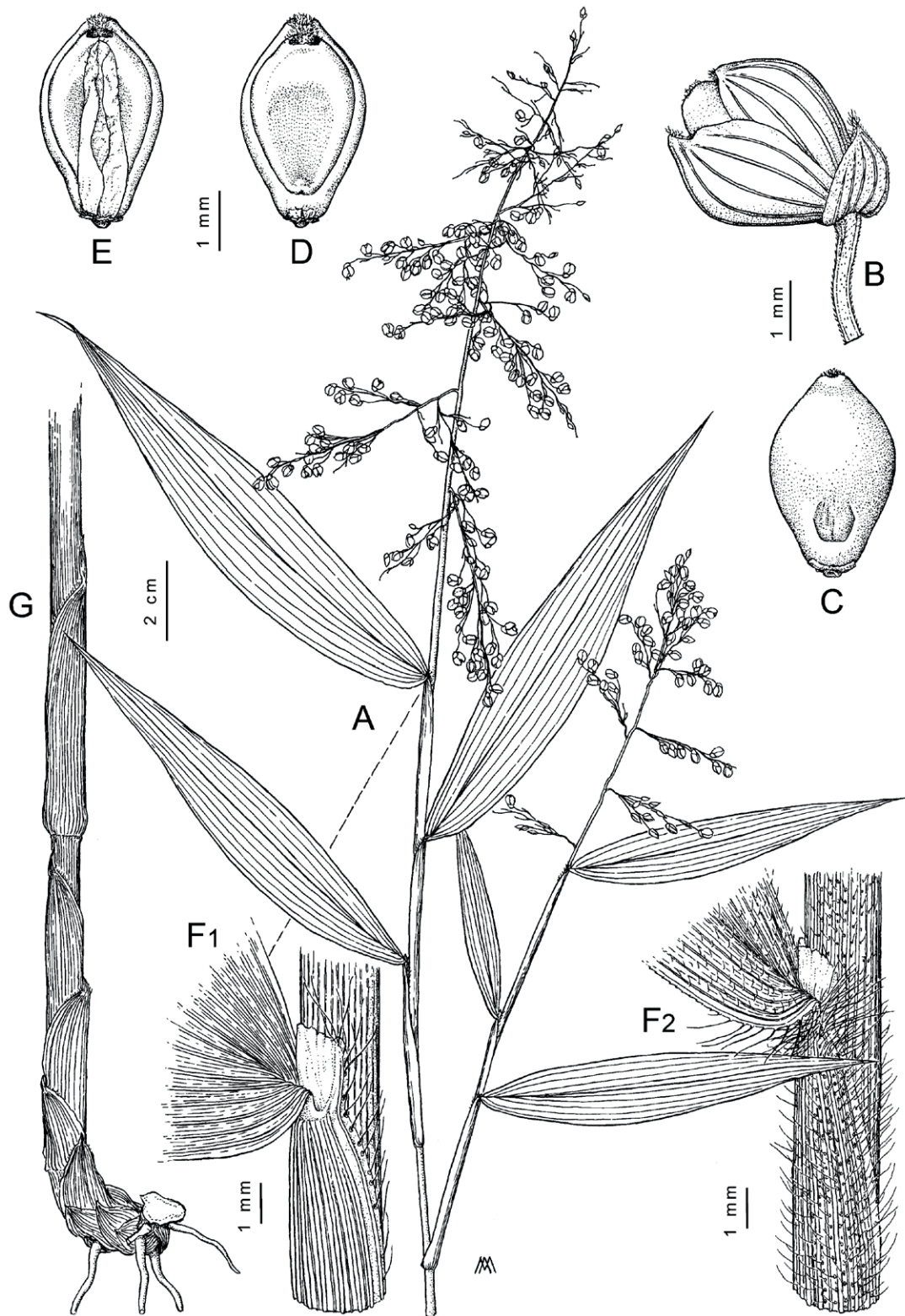


Figure 20. *Lasiacis ligulata* Hitchc. & Chase: **A.** Habit; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F1.** Ligular area, leaf sheath glabrous; [A-F1. from M.J. Jansen-Jacobs & al. 6099 (K)]; **F2.** Ligular area, leaf sheath pilose; **G.** View of the culm with persistent leaf sheath. [F2-G. from R.R. de Santos, & al. 1264 (K)]. A. Maury delineavit.

al. 1982); **French Guiana**: “calumet”, “pen:pē”, “tawka-lipiñú” (Judziewicz 1990); **Perú**: Jaen, “bombilla”, “bombilla de muerta” F.R. Fosberg 27757 (MO, US); San Martín, “carrizo” R. Ferreira 7916 (US); Uyacali, “carricillo” J. Graham & J. Schunke Vigo 516 (F); “náng-kuchip” (Quattrocchi 2006); **Suriname**: “bamboesi-gras”, “kapoweri bamboesi” (Amshoff and Henrard 1948; Judziewicz 1990), “bambusigrasi” (van’t Klooster et al. 2003).

Ethnobotanical and economic uses

Bolivia: Beni, “fruit used in dental use as blister mouth” (Zambrana et al. 2017); **Ecuador**: “culm used to make Shuar instrument “kantash” (Bennet 1990).

Distribution

Bolivia, Brazil, Colombia, Dominican Republic, Ecuador, French Guiana, Guyana, Leeward Islands, Par-

aguay, Perú, Puerto Rico, Suriname, Trinidad & Tobago, Venezuela, Virgin Islands, Windward Islands (Fig. 21). The presence of *L. ligulata* in Mexico is erroneously reported in Santos and Sanos (2001).

Distribution (bibliographic references)

Hitchcock and Chase (1917); Hitchcock (1915, 1920, 1927a, 1936); Nash (1931); Amstoft and Henrard (1948); Lemée (1955); Pinto-Escobar (1966); Smith et al. (1982); Killeen (1990); Howard (1979); Davidse (1978, 2004, 2008); Cialdella and Vega (1996); Foster (1966); Judziewicz (1990, 1997); Renvoize (1984, 1998); Santos and Sano (2001); Zuloaga et al. (2003); Hollowell et al. (2004); Acevedo-Rodríguez (2005); Renvoize et al. (2006); Davidse et al. (2007); Reeves et al. (2007); Hokche et al. (2008); Morrone et al. (2008); Giraldo-Cañas (2011); Acevedo-Rodríguez and Strong (2012); Dorr (2014); Villavicencio et al. (2014).



Figure 21. *Lasiacis ligulata* Hitchc. & Chase: general geographic distribution.

Ecology

Primary and secondary forests, riverbanks, roadsides, and forest clearings. Mostly below 1000 m, except in northern South America where it can reach up to 2400 m (Perú: Amazonas, *J.J. Wurdack 1048* (K, NY, US).

Phenology

Caribbean, and Central America June through March; southern South America, March through September.

Remarks

The specimens in P-Lamarck under several names: "*P. arborescens*", "*P. viscosum*", "*P. glutinosum*" were correctly identified by G. Davidse as *L. ligulata* in 1974 in contrast with A. Lourteig's misinterpretation as *L. maculata* in 1983. At US there is a fragment taken from a Lamarck's specimen [barcode US00148536] by A.S. Hitchcock, who made a sketch from the Lamarck's specimen.

According to the comments above, the previous typification of *Panicum glutinosum* Lam. (Baldini 2010: 114) must be rejected due to a misinterpretation of the Tab. 43, fig. 3 in Lamarck (1791). A direct examination of Lamarck's original material at P turned out decisive to correctly interpret the Lamarckian name above and shows how misleading images alone may sometimes be in typification issues.

Lasiacis ligulata is distributed mainly in the Caribbean area, particularly the West Indies, and northern South America, e.g. in the Guianas and northern and northeastern Brazil. The ligule, up to 5 mm long, is not the only character that appears at first sight and the reclined orientation of the inflorescences is another immediate diagnostic character, with the density of the spikelets greater than in *L. divaricata* var. *divaricata*. The pubescence is very variable and does not show a specific geographical signal as in *L. maculata*. Glabrous forms can be found in Brazil, except for the hairs on the collar, and again in Peru and Bolivia as dominant form. Alves da Silva et al. (2001) found the presence of arbuscular mycorrhizae in *L. ligulata*.

Selected specimens

BOLIVIA. Beni. Ballivián, San Borja, 58 km hacia La Paz, 270 m, 19 Jul. 1981, *S. Beck & al. 6874* (K, US); Prov. Vaca Díez, Riberalta, alrededor de la Estación Experimental de IBTA, 170 m, 11°00'S, 66°04'W, 22 May 1987, *J.C. Solomon 16698* (MO); Vaca Díez, Alto-Ivón, Aug. 1992, *S. Bergeron 315* (K); **Cochabamba.** Cochabamba, Jun. 1909, *O. Buchtien 2499* (US); Carrasco, km 240 en la carretera Santa Cruz-Villa Tunari, 290 m, 64°46'W, 17°00'S, 8-9 Jul. 1989, *H.H. Smith & al. 13637* (K, MO, NY); **La Paz.** Iturralde, Siete Cielos, Río Manupare, 180 m, 12°27'S, 67°37'W, 10 Jun. 1987, *J.C. Solomon 17024* (K, MO); Sud Yungas, Alto Beni, 23

Jul. 1987, *R. Seidel 2089* (K); Nor Yungas, Alto Beni, carretera del puente Sapecho a Boopi, 450 m, 26 May 1988, *R. Seidel 2463* (K, MO, US); Prov. Iturralde, Basin of Río Beni/Río Turchi, 320 m, 14°35'S, 67°35'W, 10 May 1990, *D.C. Daly 6386* (MO, NY); Abel Iturralde, Parque Nacional y Área de Manejo Integrado Madidi, 450 m, 14°24'S, 67°57'W, 22 Apr. 1997, *N. Paniagua Z. 1130* (K, MO); Franz Tamayo, Parque Nacional y Área Natural de Manejo Integrado Madidi, NW de Apolo, Asariamas, Río Resina, 700 m, 14°19'48"S, 68°33'35"W, 20 May 2005, *L. Cayola 1678* (MO); **Madre de Dios.** Near the confluence of Río Tambopata and Río La Torre, 39 km of Puerto Maldonado, 7 Jul. 1987, *S.F. Smith & al. 909* (G); **Pando.** Along Río Madre de Dios, Sena, 125 m, 11°28'S, 67°14'W, 4 Sep. 1985, *M. Nee 31755* (K, MO, NY); Abuná, Nacebe el Río Orthón, 11 Oct. 1989, *S. Beck & al. 19303* (K); Abuná, Río Orthón, 8 Jul. 1992, *H. Vargas & P.F. Foster 746* (K); **Santa Cruz.** Santiago de Chiquitos, 680 m, 2 Sep. 1942, *H. Carter 7007* (US); Nuflo de Chávez, Ascención de Guarayos, 30 Aug. 1985, *S. Beck 12287* (US); Velasco, 200-250 m, 13°35'S, 60°56'W, 25 Jun. 1991, *M. Nee 41359* (K, MO); Ichilo, old meander loop of Río Ichilo, 1-1.5 km SW of Highway from Buena Vista to Villa Tunari, 245 m, 17°18'S, 64°12'W, 17 Jul. 1994, *M. Nee & R. Moran 45215* (MO); Velasco, Reserva Ecológica El Refugio, 15 May 1995, *R. Guillén & S. Coria 3675* (MA); Velasco, Reserva Ecológica El Refugio, 14° 45' 44"S, 61° 02' 53"W, 20 May 1994, *R. Guillén & S. Coria 1418* (US); Between Buena Vista and Amboro Nat. Park, 9 Jul. 1995, *S. Lægård 17656* (K); 4 km N of Parque Nacional Noel Kempff Mercado, Campamento Huanchaca I., 1 Nov. 1995, *P.F. Foster & al. 571* (G), 3 Nov. 1995, *P.F. Foster & al. 595* (G); Parque Nacional Noel Kempff Mercado, 700 m, 14°33'73"S, 60°45'89"W, 20 Jul. 1996, *L. Arroyo & E. Guzmán 1323* (G, MO); Velasco, Parcela Monte Verde, 288 m, 15°00'37"S, 61°07'42"W, 21 Aug. 1996, *R. Guillén & al. 4585* (G, MO); Ichilo, along trail from Río Yapacaní into Campamento Matararú of Parque Nacional Ambró, 350 m, 17°32'S, 63°52'W, 31 May 1998, *M. Nee & L. Bohs 49530* (MO); Guarayos, Conscecion maderera La Chonta, 20-30 Jun. 2001, *J.C. Catari & al. 58* (MO); Ichilo, bridge over Río Vibra, 7.5 km ENE of Puerto Grether, 235 m, 17°10'S, 64°16'W, 24 Jul. 2004, *M. Nee 52814* (MO, NY, US); Florida, Bella Vista, 16°29'N, 63°40'W, 3 Feb. 2007, *M. Vargas 342* (NY).

BRAZIL. Brasiliae, s.d., *W.J. Burchell 703* (FI-Webb, L, US), 879 A (FI-Webb); Brasilia, *L. Riedel s.n.* (FI, G, NY, P, UPS, US), 218 (L), 963 (K, P, US, W), Brasil, s.d., *Martius 675* (FI-Webb, L, MO); Brésil, 1840, *P. Clausen 192* (G); **Acre.** Rio Branco, Surumu, Aug. 1909, *E. Ule 8017* (K); Vicinity of Campinas, 17 Jul. 1968, *E. Forero & al. 6310* (MO, US); Igarapé São Francisco, lower Rio Moa, 9 May 1971, *W.C. Steward & al. P12839* (K, NY, US); Aldeota between Porangaba & Papagaio, Rio Juruá-Mirim, 18 May 1971, *P.J.M. Maas & al. P13109* (K, MO, NY, US, P); Rio Purus, Lago Prêto 2 km N of Lábrea, 26 Jun. 1971, *G.T. Prance & al. 13723* (K, MO, NY, US); Outside of Cruzeiro do Sul, 9 Mar. 1976, *C.E. Calderon & T.R. Soderstrom 2327* (US); Rio Branco, Zoobotanical Garden of Federal University of Acre, 26 Sep. 1980, *S.R. Lowrie & al. 185* (MO, NY); Along road between Cruziero do Sul and Rio Branco, 28 km E of Cruziero do Sul at Lagoinha, 7°38'S, 72°35'W, 160 m, 24 Aug. 1986, *T.B. Croat 62602* (MO, HPZ); Rio Branco, Parque Zoobotânico, 09°58'S, 67°48'W, 5 Jun. 1991, *D.C. Daly 6856* (HPZ, MO, NY); Rio Branco, Parque Zoobotânico, terra firme, 9°48'S, 67°42'W, 25 May 1995, *C.S. Figueredo & I. Riviero 788* (HPZ, MO); Sena Madureira, Riozinho do Andirá, colocação Curitiba, 9°43'747"S, 68°08'854"W, 30 May 1995, *R.S. Oliveira & al. 445* (HPZ, MO); Bujari, Riozinho do Andirá, Fazenda Ipanema, BR 363, 9°44'10"S, 68°08'38"W, 15 Jul. 1995, *M. de Par-*

- do & al. 139 (HPZ, MO, NY); Marechal Thaumaturgo, Reserva Extrativista do Alto Juriá, margem direita do Rio Tejo, 3 May 2001, L.G. Lohmann & E.C. de Oliveira 465 (MO); Senador Guimard, Catuaba, Fazenda Continenta, 10°04'20"S, 67°37'25"W, 5 Jul. 2001, K.N. Yoshida Arns & al. 971 (HPZ); **Alagoas**: Munic. de Marechal Deodoro, Alagoas, Ladeira Sumauma, Rio Sumauma, 17 Oct. 1986, A.C. Sarmiento & al. 888 (CEPEC); Murici, EE de Murici, borda da mata, 9°16'16"S, 35°54'17"W, 14 Nov. 2002, M.J.N. Rodal 1325 (CEPEC, NY); **Amapá**: Serra do Navio, Rio Amapari, 1 Nov. 1954, R.S. Cowan & B. Maguire 38105 (NY, US); Santa Catarina, Morro da Fazenda, Itajaí, 100 m, 22 Apr. 1955, R. M. Klein 1320 (US); Rio Oiapoque, Boa Esperança, 3°12'N, 52°19'W, 18 Aug. 1960, W.A. Egler 47665 (K, NY, US); Rio Oiapoque, 15 Oct. 1960, J.M. Pires 48844 (K, US); Rio Araguari, near Porto Platón, 0°44'N, 51°22'W, 17 Sep. 1961, J.M. Pires & al. 51007 (K, NY, US); Vicinity of Igarape Ariramba, 1°13'N, 51°3'W, 4 Aug. 1962, J.M. Pires & P.B. Cavalcante 52353 (MO, NY, US); **Amazonas**: Nov. 1849, R. Spruce 412 (K, NY); Autaz-Mirim, Rosa Branca, 14 Jun. 1973, A. Loureiro & al. 38879 (NY); Behind São Paulo de Olivença, 16 Aug. 1973, E. Lleras & al. P17333 (K, NY, US); 2 km S of Maués, E shore of Maués River, surrounding Guaraná farm, 27 Apr. 1974, D.G. Campbell 22147 (K, NY, US); Transamazon Highway, 7.2 km above Igarapé Mafuí, ca. 159 km E of Humaitá, 14 Jun. 1979, C. Calderón & al. 2522 (K, MO); Bank of Rio Abacaxis, accross from Axinim, 58°41'W, 4°10'S, 8 Jul. 1983, S.R. Hill 13012 (K, MO, NY); S.W. of Manaus, road from Cacau Pirera to Manacapuru, 6 Aug. 1987, S. Tsugaru & Y. Sano B-729 (NY); **Bahia**: In sylvis prope Bahia, M. Salzmann s.n. (FI, P); Vicinity of Bahia, 3 Dec. 1924, A. Chase 8027 (US); Margem da Rodovia Itabuna-Ilhéus, mata úmida, 30 Aug. 1965, R.P. Belém 1657 (CEPEC, US); Potiragua, ca. 48 km N of Itapebí, 5 Apr. 1976, T.R. Soderstrom & al. 2132 (CEPEC, US); Porto Seguro, Reserva Biológica do Pau Brasil (CEPLAC), 35 m, 7 May 1976, T.R. Soderstrom & al. 2190 (CEPEC, MO); Sta. Cruz de Cabralia, Torre da Embratel, rodoviária Eunápolis/Porto Seguro, 17 Aug. 1978, S. Mori & al. 10767 (CEPEC, K); Itamarajú, ca. 5 km ao NW de Itamarajú, 3 Jul. 1979, L.A. Mattos Silva & al. 537 (CEPEC); Salvador, 11°09'S, 40°00'W, 15 Aug. 1979, R. Souza & S. Sant'Ana 10115 (CEPEC); Cachoeira-Vale dos Rios Paraguaçu e Jacupé, Aug.-Sep. 1980, Costa 641 (CEPEC, HUEFS, K); Chapadão Ocidental da Bahia, by Correntina, 13°20'S, 44°38'W, 26 Apr. 1980, R.M. Harley & al. 21784 (K, MO, P); Estação Ecológica Pau-Brasil, 22 Apr. 1982, A.M. de Carvalho & al. 1314 (K); Jacobina, Serra do Brite, 23 Aug. 1980, W.N. da Fonseca 323 (CEPEC, US); Ilhéus, km 2 a 3 do ramal de baixo para o Povoado de Sambaituba, 10 m, 8 Aug. 1980, L.A. Mattos Silva & J. L. Hage 1007 (CEPEC, K, US); Ilhéus, Fazenda Barra do Manguinho, 29 Sep. 1980, L.A. Mattos Silva & al. 1101 (CEPEC); Municipio de Santa Cruz de Cabralia, 16 Jul. 1981, H.S. Brito & S.G. da Vinha 03 (G); Ilhéus, area do CEPEC, 29 Jul. 1981, J.L. Hage & H.S. Brito 1134 (CEPEC, K); Sta. Cruz Cabralia, cerca 16 km W de Porto Seguro, 29 Aug. 1983, T.S. dos Santos 51 (CEPEC, G); Ilhéus, CEPEC, 8 Sep. 1983, E.B. dos Santos & A.S. Barreto 69 (CEPEC, K); Santa Cruz Cabralia, cerca 16 km a W de Porto Seguro, 8 Aug. 1984, R. Souza & al. 427 (CEPEC); Lamarão do Passé, 12°31'S, 38°24'W, 21 Nov. 1984, L.R. Noblick 3384 (CEPEC, HUEFS); Lamarão do Passé, 21 Nov. 1984, L.R. Noblick 4109 (K); Ilhéus, CEPEC, 24 Jul. 1986, J.L. Hage 2109 (CEPEC, G); Feira da Santana, BA-052, 25 km NW do entrocamento c/BR-116, 12°10'00"S, 39°11'17"W, 22 Nov. 1986, L.P. De Queiroz 1383 (HUEFS); Ilhéus, grounds of CEPEC, 24 Nov. 1987, P.J.M. Maas & al. 6966 (CEPEC); Belmonte, districto de Barrolandia, EGREB, Rodovia Itapebí/Belmonte, mata igrofita bahiana, 30 Mar. 1988, R. Souza 840 (CEPEC); Jussari, ca. 7 km na estrada de Jussari para Palmira, 21 Sep. 1990, A.M. de Carvalho & W. Thomas 3196 (CEPEC, HUEFS, K); Uruçuca, Serra Grande, 14°25'S, 39°01'W, 11-21 Sep. 1991, A.M. de Carvalho & al. 3532 (CEPEC, HUEFS, K, NY, US); Near Teixeira de Freitas, Rod. BR-101, 13 Apr. 1992, G. Hatschbach 57047; Belmonte, Barrolandia, Est. Experimental "Gregorio Bondar" CEPLAC, 48 km E of BR 101 on road to Belmonte, 16°08'S, 39°15'W, 13 May 1993, W. Thomas & al. 9927 (K, MO, US); Prado, 10 km N of Prado on coast road to Cumuruxatiba, 17°17'S, 39°18'W, 19 Oct. 1993, W. Thomas & al. 9982 (CEPEC, NY); Prado, on road from Itamaraju to Cumuruxatiba, 10.5 km NE of turn off road to Prado on road to Cumuruxatiba, 17°08'S, 39°25'W, 20 Oct. 1993, W.W. Thomas & al. 10027 (MO); Una-Bahia, 20 Jul. 1994, J.G. Jardim & al. 503 (CEPEC, NY); Ilhéus, área do CEPEC, mata higrofila Sul Baiana, coletas efetuadas em área de cacau abandonado, 6 Aug. 1996, J.G. Jardim & al. 871 (CEPEC, G, NY); Municipio de Una, Reserva Ecologica do Mico-leão (IBAMA), entrada del km 46 de la Rodovia BA-001 Ilhéus-Una. Región de la Mata Higrofila Sud Bahiana, camino que leva a la Faz Jaqueival, interior de mata, 15°09'S, 39°05'W, 14 Aug. 1996, M.S. Ferrucci, & al. 1053 (MA); Ilhéus, Campus da Universidade Estadual de Santa Cruz, 4 Sep. 1996, L.A. Mattos Silva 3489 (CEPEC); Almadina, on road to Ibatupã, 14°44'11"S, 39°41'57"W, 4 Apr. 1997, W.W. Thomas & al. 11431 (NY); Porto Seguro, Prque Nacional Monte Pascola, 16°52'02"S, 39°24'54"W, 17 Jul. 1997, W.W. Thomas & al. 11570 (NY); Almadina-Bahia, Rod. Almadina/Ibitupã, 12 Sep. 1997, J.G. Jardim & al. 1115 (HUEFS, NY); Jussari, Rodovia Jussari/Palmira, 39°31'43"W, 15°09'29"S, 7-8. Nov. 1998, A.M. Amorin & al. 2607 (CEPEC, NY); Salvador de Bahia, Região Metropolitana, 12°58'S, 38°30'W, 13 Nov. 1998, M.L. Guedes 6654 (CEPEC, HUEFS); São Gonçalo dos Campos, 15 Nov. 1998, M. Vanilda 130 (HUEFS); Santa Teresina, Serra da Jibóia, ca. 4 km de Pedra Branca, 12°51'10"S, 39°28'32"W, 27 Sep. 2000, L.P. De Queiroz 6379 (HUEFS); Uruçuca, área da EMARC, Reserva Gregório Bondar, mata igrofita Sul Baiana, 14°36'8"S, 39°16'27"W, 23 Sep. 2000, S. Sant'Ana 996 (CEPEC, NY); Jussari, Serra do Teimoso, 1 Sep. 2001, R.P. Oliveira 737 (HUEFS); Margem da estrada Barra da Estiva-Mucugê, 13°7'3"S, 41°29'13"W, 1105 m, 28 Feb. 2002, A.M. Giuliatti & R.M. Harley 2064 (HUEFS); Floresta Azul, entrada a ca. 12 km à esq. estrada de Floresta Azul para Itapetinga, Haras Binau, no interior da mata atlantica, 23 Apr. 2003, P. Fiaschi 1512 (CEPEC); Esplanada, Linha Verde, 12°2'13"S, 37°42'17"S, 17 Aug. 2003, K.R.B. Leite 315 (HUEFS); Almandina, ca. 4 km da estrada Almandina-Coaraci, enrada à esq. Fazenda São José, 14°43'S, 39°36'W, 2 Oct. 2003, P. Fiaschi 1629 (CEPEC, MO, NY); Barro Preto, Serra da Pedra Lascada, 13,7 km de Barro Preto, 600-900 m, 14°46'13"S, 39°12'10"W, 29 Sep. 2004, A.M. Amorin 4220 (HUEFS, MO); Senior e Bonfim, Serra de Santana, 10°21'55"S, 40°11'55"W, 28 Jul. 2005, T.S. Nunes 1213, 1222 (HUEFS); Bahia, Arataca, Serra do Peito-de-Moça, completo Serra das Lontras, 15°10'25"S, 39°20'30"W, 12 Oct. 2005, A.M. Amorin 5278 (HUEFS); São Desiderio, 12°31'2"S, 45°5'46"W, 17 Jun. 2007, G. Araújo 147 (HUEFS); Santa Terezinha, Serra da Jibóia, Serra da Pioniera, 12°45'S, 39°32'W, 4 Aug. 2007, R.P. Oliveira 1373 (HUEFS); Igrapiúna, estrada para Ituberá, Reserva Ecológica da Michelin, mata litoranea, 13°49'S, 39°7'W, 17 Aug. 2007, R.P. Oliveira 1381 (HUEFS). **Ceará**: Guaramaranga, 23 Jun. 1929, G. Bolland 38 (K); **Districto Federal**: Praia de Sernambetida (Receio dos Bandeirantes), 23°00'S, 43°20'W, sea level, 4 Apr. 1952, L.B. Smith 6335 (US); Fazenda Vargem Bonita, ca. 10 km S of Brasília, 4 Feb. 1966, H.S. Irwin & al. 12268 (MO, NY, P); Côrrego Landim, ca. 25 km N of Brasília, 950 m, 15 Mar. 1966, H.S. Irwin & al.

- 13958 (MO, NY, P, US); Parque Municipal do Gama, 1000 m, 21 Mar. 1966, *H.S. Irwin & al.* 14155 (C, MO, NY, P, US); **Espírito Santo**. Near Muqui, Morro Bom Retiro, 250 m, 22°57'S, 41°21'W, 23 Apr. 1972, *T.R. Soderstrom & D. Sucre* 1957 (CEPEC, K, MO, US); Vitoria, Vila Velha, Morro do Convento de N.Sra. da Penha, 3 May 1974, *D. Sucre* 10743 (MO); San Mateus, 7 Aug. 1983, *G. Hatschbach* 46792 (CEPEC); Santa Teresa, Valsugana Velha, 6 Mar. 1990, *W. Boone* 1357 (HUEFS); Linhares, Reserva Florestal da Campana Vale do Rio Doce, 19°84'S, 40°88'W, 24 Apr. 1990, *L.P. De Queiroz* 2473 (HUEFS); Santa Teresa, Aparecidinha, terreno de Luiz Briguenti, 13 Apr. 2003, *R.P. Oliveira* 867 (CEPEC, HUEFS); **Goias**. Rio Araguaia nella foresta Travessão de S. Vicente, 19 Jul. 1899, *L. Buscalioni* 4570 (RO); Between Viannapolis and Ponta Funda, 17 Mar. 1930, *A. Chase* 11321 (NY); Geral do Paraná, 15 km by road S of São João da Aliança, 1120 m, 21 Mar. 1973, *W.R. Anderson* 7537 (K, MO, NY, US); 31 km N of the intersection of Highways BR-153 and GO-54, 650 m, 10 Apr. 1976, *G. Davidse & al.* 12241 (MO); Crominia-Mairipotaba, 750 m, 17°20'S, 49°23'W, 27 Apr. 1988, *R.D. Reeves & J.M. Baker* 209 (K, MO, NY); Niquelandia, Cidade de Macedo, 20 km N de Niquelandia, 19 May 1993, *T. Filgueiras* 2445 (MO); São Domingo, 14 May 2000, *G. Hatschbach & al.* 974 (K); **Mato Grosso**. Santa Anna da Chapada, 16 May 1903, *G. Malme* 3357 (US); Mato Grosso, S. Anna da Chapada, 1903, *Robert* 332b (K); Vicinity of Dourados, 22°S 54°40'W, 18-21 Feb. 1930, *A. Chase* 10969 (NY, US); On the Xavantina-São Felix road, 12°54'S, 51°52'W, 27 Jun. 1968, *J.A. Ratter & al.* 1998 (K, NY, P, US); Ca. 300 km N of Xavantina, 12°54'S, 51°52'W, 3 May 1968, *R.R. de Santos & al.* 1264 (K, NY, P, US); Fazenda Suiá Missú, 27 Jul. 1968, *P.W. Richards* 6531 (P, US); Cuiabá dos Guimarães, Veu da Novia falls along Rio Coxipozinho at base of falls, 15°24'S, 55°50'W, 21 Oct. 1985, *W. Thomas & al.* 4490 (K, MO, NY, US); Chapadão do Sul, 19°01'14"S, 53°00'08"W, 23 Jan. 2001, *M. Groppo & al.* 481 (G, K); **Maranhão**. Perizes, 6 Jul. 1954, *G.A. Black & al.* 54-16532 (P); Santa Catarina, Itajaí, Morro da Ressacada, 29 Mar. 1956, *P.R. Reitz & R. M. Klein* 2951 (G); Lorêto, Ilha de Balsas, between the Rios Balsas and Parnaíba, 7°23'S, 45°4'W, 17 Apr. 1962, *G. Eiten & L.T. Eiten* 4320 (K, NY, US); Rio Alto Turiaçu, Nova Esperança, 2°55'N, 45°45'W, 30 Nov. 1978, *J. Jangoux & R.P. Bahia* 93 (NY); Codô to Peritorô, 4°34'S, 44°0'W, 28 Sep. 1980, *D.C. Daly & al.* D348 (MO, NY, US); Fazenda Bacaba, Doctor Haroldo, 3 km NW of Lago do Junco, 4°26'S, 44°58'W, 4 Oct. 1980, *D.C. Daly & al.* D478 (MO, NY, US); Posto Indígena Pindaré, Bom Jardim along Rio Pindaré, ca. 15 km W of Santa Ines, 3°30'S, 45°30'W, 31 Aug. 1983, *M.J. Balick & al.* 1491 (MO); Caru Reserve, 9 Jul. 1996, *L. Cormier* 88 (MO); **Minas Gerais**. 18 Feb. 1847, *A.F. Regnell* 308 (UPS); Serra do Cipó, 110 km NE of Belo Horizonte, 28 Mar.-1 Apr. 1925, *A. Chase* 9103 (MO, NY, W); Juiz de Fora, 700 m, 23 Feb. 1925, *A. Chase* 8610 (US); Viçosa, road to São Miguel, 20 Nov. 1930, *Y. Mexia* 5328 (BM, G, K, MO, NY, P, US); Viçosa, 5 Apr. 1935, *J.G. Kuhlmann* 152952 (MO, US); Serra do Espinhaço, NE of Francisco Sá, 12 Feb. 1969, *H.S. Irwin & al.* 23138 (BM, MO, NY, US); Chapada dos Veadeiros, ca. 10 km S of Cavalcante, 1000 m, 10 Mar. 1969, *H.S. Irwin & al.* 24237 (MO, US); Serra do Espinhaço, 15 km N of São João da Chapada, 23 Mar. 1970, *H.S. Irwin & al.* 28160 (MO, NY, P); Marliéria, Parque Estadual di Rio Doce, 450 m, 19°42'S, 42°30'W, 25 Sep. 1975, *E.P. Heringer & G. Eiten* 15220 (MO, US); Municipio Trofílo Otoni, along the BR-116, 29 Mar. 1976, *G. Davidse & al.* 11500 (K, MO), **n = 18!** (Davidse 1978); Minas Gerais, São João Del Rey, ca. 8 km de Tiradentes em direção à Villa Santa Cruz, 21°07'45"S, 44°12'71"W, 16 Jan. 1994, *A.M. Giulettili & al.* 13724 (K); **Pará**. In vicinibus Santarem, Apr. 1850, *R. Spruce* 795 (K, NY, W); Pará, ad ripas fluminis Amazonum, inter Santarem et Barra do Rio Negro, Oct. 1850, *R. Spruce* (17) (FI-Webb, G, NY, US, W); Pará, Rio Tocantins, nella foresta Igarapé Curiman presso Cametá, 2 May 1899, *L. Buscalioni* 1252 (NY, RO); Rio Tocantins, Ilha da Bandeira, 31 May 1899, *L. Buscalioni* 2871 (RO); Rio Tocantins, Floresta da Villagem do Lago Vermelho, 23 Jun. 1899, *L. Buscalioni* 2959 (RO); Pará, 29 Jun. 1908, *C.F. Baker* 392 (G); Pará, Bragança Railroad, Apr. 1914, *A. Goeldi* 38 (MO, US, W); Paraná, Yacarchy, 17 Apr 1915, *P. Dusén* 14050 (K); Marajó Island, Jun. 1918, *A. Goeldi* 227 (US, W); Rio de Janeiro, Niteroi, San Francisco, 23 Sep. 1921, *E.W.D. & M.M. Holway* 1148 (US); Santarem, 14 Apr. 1924, *J.G. Kuhlmann* 2002 (BM, MO, US); Pará, Santa Isabel, 1-2 Jul. 1934, *J.R. Swallen* 5051 (US); Campo east of Fazenda Urucurituba on Rio Tapajos, opposite Fordlandia, 17 Apr. 1943, *W.A. Archer* 8403 (US); Belém, on lands of Instituto Agronomico do Norte, 28 Apr. 1944, *A. Silva* 168 (K, P, US); Rio Mojú, Fábrica, mata de Najateua, 1 Jun. 1954, *G.A. Black* 54-16333 (P); Tiriós, Rio Parú do Oeste, 22 Mar. 1962, *E. Fittkau & D. Coelho* 118 (NY); Vicinity of Paragominas, Belém-Brasília, 13 Aug. 1964, *G.T. Prance & N.T. Silva* 58699 (K, MO, NY, US, W); Road BR 22, Capanema to Maranhão, vicinity of Cachoeira, 30 Oct. 1965, *G.T. Prance & T.D. Pennington* 1823 (K, NY, US); Belém, 13 Dec. 1966, *T.R. Soderstrom* 1198 (US); Santarém, km 35 da estrada do Palhão, Ramal para o Novo Imperio, 13 Aug. 1969, *B.M. Silva & R. Souza* 2247 (K, MO, NY, US); Cujaba-Santarem, km 890, 14 Feb. 1977, *J.H. Kirkbride & E. Lleras* 2764 (US); Km 858, Rio Escorpiao, Serra do Cachimbo, 430 m, 8 Nov. 1977, *G.T. Prance & al.* 25017 (MO, US); Oriximiná, along Rio Trombetas, ca. 8-10 km SE from Cachoeira Portiera, 29 Jun. 1980, *C. Davidson & G. Martinelli* 10580 (MO, NY); Sete Varas airstrip on Rio Curua, 54°92'W, 0°95'S, 5 Aug. 1981, *J.J. Strudwick & al.* 4176 (MO, NY, US); Serra dos Carajás, 6°03'S, 50°16'W, 650 m, 19 May 1982, *C.R. Sperling & al.* 5771 (K, MO, NY, US); Marabá, mata de Cipó, 24 May 1982, *R.S. Secco & al.* 331 (K, MO, NY, US); **Paraná**. 1857, *R. Spruce* 1099 (K, US, W); Alexandra, 5 Mar. 1911, *P. Dusén* 11487 (MO, US); Condrina, 6-8 Mar. 1946, *J.R. Swallen* 8756 (US); Campo Morao, 28 Mar.-2 Apr. 1946, *J.R. Swallen* 9005 (MO, NY, US); Antonina, Pinheirinho, 22 Mar. 1966, *G. Hatschbach* 14091 (K, US); 15 km E of São Tomé, 220 m, 5 Apr. 1966, *J.C. Lindeman & J.H. de Haas* 929 (K, US, W); **Pernambuco**. Garunhuns, 450 m, 26-27 Nov. 1924, *A. Chase* 7833 (MO, US); W of Recife, 21 Jul. 1967, *J.C. Lindeman & J.H. de Haas* 6198 (NY); Caruarú, Serra dos Cavalos, 15 Sep. 1981, *A. Ferreira* 125 (K, MO, US); Caruarú, Murici, Brejo dos Cavalos, Parque Ecologico Municipal, solo arenoso, 1100 m, 08°18'36"S, 36°00'00"W, 10 Sep. 1994, *S. Mayo & al.* 1024 (K, MO, NY, US); Caruaru, Distr. Murici, Brejo dos Cavalos, 4 Sep. 1995, *R.P. de Oliveira* 66 (K); Reserva Biológica da Pedra Talhada, Lagoa do Ouro, 28 Oct. 2014, *L. Nusbaumer* 4257 (G); **Rio de Janeiro**. Mandiocca, s.d., *G. von Langsdorff* 405 (G, UPS); Rio de Janeiro, 1817-1818, *G. Raddi* s.n. (FI, PI); Rio de Janeiro, 1833, *M. Gaudichaud* 303 bis (G, P); Corcovado, 1840, *M. Guillemin* 826 (G, P); Rio de Janeiro, Mar. 1872, *A. Glaziou* 1007 (BM, C, FI, NY, K, P, US); Corcovado, 25 Apr. 1887, *J. Schenk* 3754 (C); Rio de Janeiro, bei Palmeiras, Apr. 1900, *E. Ule* 4993 (L); Corcovado, 8 May 1925, *A. Chase* 9744 (MO, NY, US); Rio de Janeiro, Pao de Assicar, vicinity of Rio de Janeiro, 15 May 1925, *A. Chase* 9796 (US); Rio de Janeiro, Meio da Serra, 500 m, 22°33'S, 43°11'W, 7 Apr. 1929, *L.B. Smith & A.C. Brade* 2284 (BM, NY, P, US); Restinga de Jacarepaguá, 17 Apr. 1940, *B. Lutz* 1374 (BM); Guanabara, Gavea, São Conrado, May 1960, *A.P. Duarte* 5221 (MO, US); Rio de Janeiro, Inoa, 300 m, 23 Jul. 1961, *L. Emygdio &*

B. Marx 1217 (US); Guanabara, Tijuca, 19 Apr. 1963, *J.P. Lanna 568* (NY); Rio de Janeiro, Ilha de Paquetá, 11 May 1993, *M.G. Bovini 104* (HUEFS); City of Paratí, 23°13'S, 44°21'W, 21 Apr. 1965, *G. Eiten & L.T. Eiten 6279* (MO, US); Marambia, entrada Niterói-Friburgo, 25 May 1965, *F.C. Hoehne 5998* (US); Rio de Janeiro, Guanabara, Alto da Boa Vista, 6 Jan. 1968, *D. Sucre 2098* (MO, US); E da Guanabara, Serra da Mendanha, 9 Apr. 1970, *D. Sucre 6555* (G, MO, US); Estrada Velha, Rio de Janeiro-Petrópolis, Mata do Principe, 6 Mar. 1972, *T.R. Soderstrom & D. Sucre 1872* (K, L, MO); Serra da Mendanha, forest on P.H. Gentle slopes, consisting of palms, bamboos (*Bambusa*, *Chusquea*, *Merostachys*), *Pharus* spp., *Olyra* sp., and mostly small trees, 19 Apr. 1972, *T.R. Soderstrom & D. Sucre 1948* (K, MO); Between Cachoeira de Macacu and Nova Friburgo, 280 m, 29 Apr. 1972, *T.R. Soderstrom & D. Sucre 1976* (MO); Santa Alice, Itaguaí, 10-15 m, 17 May 1978, *K. Mizoguchi 602* (MO); Niterói, Praia de Itaipucu, Alto Moínas, 100-250 m, 22°53'S, 43°07'W, 1 Jul. 1982, *T.B. Croat 53744* (MO); Angra dos Reis, Ilha Grande, Reserva Biológica Estadual da Praia do Sul, 23°10'S, 44°17'W, 11 Apr. 1984, *D. Araujo & al. 6201* (K); Resende, Parque Nacional de Itatiaia, Rio Campo Belo, proximo de Cachoeira Véu Nova, 1150 m, 30 Apr. 1985, *F.O. Zuloaga 2368* (MO, US); **Rio Grande do Sul**. Santo Angelo et Silveira Martins, 2 Mar. 1893, *C.A.M. Lindmann 1239* (UPS); **Rondônia**. Vicinity of Jaciparaná, on road WNW of village, 24 Jun. 1968, *G.T. Prance & al. 5158* (K, MO, NY, US); Basin of Rio Madeira, 3 km W of Rio Madeira along road Abunã to Rio Branco, 13 Jul. 1968, *G.T. Prance & al. 5954* (K, MO, NY, US, P); Basin of Rio Madeira, 1 km N of Riberão, road Abunã-Guajará-Mirim, 25 Jul. 1968, *G.T. Prance & al. 6451* (C, K, MO, US, NY); Basin of Rio Madeira, vicinity of São Lorenzo mines, 65°6'W, 9°33'N, 27 Nov. 1968, *G.T. Prance & al. 8926* (K, MO, NY, US, P); Ariqueles, Mineração Mibrasa, Setor Alto Candeias, 10°35'S, 63°35'W, 11 May 1982, *L.O.A. Teixeira & al. 104.091* (K, NY, US); Santa Barbara, Rodovia BR 364, 9°10'S, 63°07'W, 28 May 1982, *L.O.A. Teixeira & al. 104565* (K, NY, US); Ca. 2 Km ENE along road to São Sebastiao off BR-364, 23 May 1984, *D. Frame & al. 139* (MO, US); Rondônia, Rolin de Moura, estrada para Brasilândia, 11°12'S, 61°62'W, 18 Jun. 1984, *C.A. Cid & al. 4624* (K, MO, NY); **Roraima**. Porto Velho, Território do Guaporé, 24 May 1952, *G.A. Black & E. Cordeiro 52-14444* (P); Base of Serra Tepequem, Boca de Mata, 11 Feb. 1967, *G.T. Prance & al. 4311* (K, MO, NY, US); Porto Velho, Rio Jaci-Paraná, Jirau-Porto Velho, 09°16'19"S, 64°23'37"W, 89 m, 27 Jun. 2012, *M.F. Simon et al. 1564* (NY); Jaci Paraná, Ro Jaci Paraná, 9°16'18"S, 64°23'37"W, 89 m, 27 May 2014, *N.A. Perogolo et al. 365* (NY); **Santa Catarina**. Brusque, Azambuja, Brusque, 35-135 m, 27°06'S, 48°54'W, 4 Mar. 1952, *L.B. Smith & R. Reitz 6039* (US); Itapá, morro da Fazenda, 4 Mar. 1954, *P.R. Reitz & R. M. Klein 8292* (G); **São Paulo**. São Paulo, Municipio de Iepê, fazenda C.A.P.I., 4 km N of the Rio Paranaíba & 6 km E of Porto Alvorada, 300 m, 22°44'S, 51°71'W, 9 Feb. 1965, *G. Eiten & L.T. Eiten 5955A* (K, NY, US); Bocaina do Sul, Guará, São José, 29 Mar. 1997, *R.M. Harley 28543* (CEPEC, HUEFS); Paraty, lado opposto da Cachoeira do Promirim, 23°22'33"S, 44°57'55"W, 8 Jun. 2006, *M.M. Silva-Castro 1027* (HUEFS).

COLOMBIA. **Antioquia**. San Luis Cañon del Rio Claro, 325-400 m, 05°53'N, 74°39'W, 7 Mar. 1984, *A. Cogollo 1413* (MO); **Caquetá**. Montañita ad flumen Rio Orteguaza, 2 Aug. 1926, *G.J.N. Woronow & S. Juzepczuk 6379* (US); On road from Florencia to Neiva (near Sucre), 1080 m, 24 Jan. 1969, *T.R. Soderstrom 1415* (K, MO, NY, US), *n = 18!* (Gould and Soderstrom 1970); **Cauca**. El Tambo, 25 Jul. 1934, *K. von Sneider 164* (G); Parque Nacional

Munchique, El Tambo, vereda La Romelia, la Gallera, 24 Jul. 1993, *F. González & al. FG 2813* (MA); El Tambo, vereda La Romelia, camino de Nueva Grenada, 28 Jul. 1993, *M. Velayos & al. MV7033* (MA). **Cundinamarca**. South side of guaivo River, 28 km NE of Gachalá, Puerto Rico, 1660 m, 31 Oct. 1944, *M.L. Grant 10549* (NY, US); Río Loretoyacu, Oct. 1946, *G.A. Black 46-185* (K); **El Valle**. Cordillera Occidental, entre San Antonio y Mares, 14 Nov. 1943, *J. Cuatrecasas 15202* (G); Bosque de San Antonio, W of Cali, near TV tower, 1950-2050 m, 15 Jul. 1984, *A. Gentry 48146* (MO); **Mariquita**. Cauca, Quindio, 2000 m, Jul. 1853, *J. Triana s.n.* (US); **Tolima**. Andes, Cordillera Central, Ibaqué, bosque y matorral, 8 May 1932, *J. Cuatrecasas 2995* (MA).

DOMINICAN REPUBLIC. **Liali**. Liali, 100-500 m, 9 Feb. 1923, *W.L. Abbott 2597* (US); **Maria Trinidad Sánchez**. Rio San Juan, 18 Mar. 1928, *G.S. Miller 1184* (US); **Samaná**. Vicinity of Sanchez, Samaná Peninsula, 0-300 m, 3 Dec. 1920, *W.L. Abbott 121* (US); **Vega**. Vicinity of Pedra Blanca, 200-500 m, 14 Nov. 1945, *H.A. Allard 13333* (US); La Vega, vicinity of Pietra Blanca, 200-500 m, 10 Dec. 1947, *H.A. Allard 17779, 17785* (US).

ECUADOR. **Los Rios (or Pichinga)**. At El Centinala at crest of Montanas de Ila road from Patricia Pilar to 24 de Mayo at km 12, 600 m, 7-12 Feb. 1979, *C.H. Dodson & J.A. Duke 7666* (US); **Madre de Dios**. Manu, Puerto Maldonado, Los Amigos Biological Station, Madre de Dios River, ca. 7.0 km upriver from mouth of Río Los Amigos, 270 m, 12°57'S, 70°01'W, 22 May 2001, *J.P. Janovec & al. 2206* (MO); **Morona-Santiago**. Taisha, path running along pastures near the military camp, 444 m, 77°30'W, 02°23'S, 21 Jun. 1980, *J. Brandbyge 32136* (K, US); Morona Santiago, Los alrededores del Centro Tuutin Entsa, 330 m, 12 Aug. 1985, *L. Anananch 101* (MO); **Napo**. Napo-Pastaza, near Tena, 400 m, 2-11 Apr. 1935, *Y. Mexia 7218* (BM, US); Santa Cecilia, 340 m, 30 Mar. 1972, *J.D. Dwyer & J.E. Simmons 9753* (MO); North shore of the Yasuni River not too far from the Napo River, at the edge of a clearing in tropical rain forest, 270 m, 25 Aug. 1979, *S.M. Young 23* (US); Río Eno near San Pablo at Río Agarico, 250 m, 76°31'W, 00°11'S, 20 Feb. 1984, *S. Lægaard 51503* (K, MO, NY, UPS); Río Napo below Mishauai, 14-15 Dec. 1985, *S. Lægaard 55837* (K); Río Napo, 8 km al E de Mishauai, 450 m, 01°04'S, 77°36'W, 24 Apr.-5 May 1987, *C.E. Cerón 1355* (MO, NY); Orellana Canton, Parque Nacional Sumaco Napo-Galeras, zona de amortiguamiento fuera del parque, Comunidad Mushullacta a 1.2 km al E del Río Punino, 425 m, 00°12'S, 77°16'W, 18 Oct. 1996, *H. Vargas & A. Alvarado 1051* (MO); Napo, Cotococha, about 1 km W of Venecia, S side of the Napo River, 450 m, 01°3.088'S, 77°42.72'W, 13 Jun. 2003, *L.R. Landrum 10611* (MO, NY); **Pastaza**. Tungurahua, valley of Pastaza River etween Banos and Cashurco, 8 hours east of Banos, 1300-1800 m, 25 Sep. 1923, *A.S. Hitchcock 21863* (US); Río Ishpingo, tributary of Río Pastaza, 285 m, 76°45'W, 02°25'S, 22 Jul. 1980, *B. Øllgaard 35024* (K, US); **Zamora-Chincipe**. Zamora, ca. 15 km W of Zumba, 27 Apr. 1992, *S. Lægaard 102469* (K); El Oso, km 40 Loja-Zamora, 04°00'S, 79°02'W, 21 Jun. 1998, *S. Lægaard 18927* (K, MO).

FRENCH GUIANA. La Mana, s.d., *P.A. Sagot 656* (G, NY, P, W); 1840, *F.M.R. Leprieur s.n.* (FI-Webb, G, L, P); s.l., 1842, *M. Mélinon s.n.* (L, P, US); Vicinity of Cayenne, 4 Jun. 1921, *W.E. Broadway 415* (NY); Cayenne-route du Mohury, 2 Jul. 1955, *J. Hoock 82* (K, NY, P); Cayenne, chemin du moulin Vidal, 13 Jul. 1955, *J. Hoock 89* (CAY, K, P, US), 14 Jul. 1955, *J. Hoock 90* (NY, US); Cayenne, 2 Jul. 1956, *J. Hoock s.n.* (P); Près de Maripasoule, 1 Sep. 1961, *R.A.A. Schnell 11692* (P, US); Manoi, 24 Aug. 1962, *J. Hoock 93* (CAY, G, MO, NY, P); Cayenne, route de Stoupan, 21 Jul. 1970, *R.A.A. Oldeman B-3485* (P, US); Tumuc Humac, fron-

tière Brésil-Guyane, 500 m, 25 Aug. 1972, *J.J. de Granville* 1380 (CAY, P, US); Camopi, Trois-Sauts, 7 Sept. 1976, *P. Allain* PA69 (P); Saül, rudérale dans la village, 15 Sep. 1979, *M.F. Prévost* 787 (CAY); Cayenne, Montravail, 8 Apr. 1982, *G. Cremers* 7761 (CAY, MO, P); Haute Canopi, Mont Belvédère, 23 Nov. 1984, *J.J. de Granville* 6982 (CAY, MO, P); Haut Oyapock, village Zidock, 20 Aug. 1985, *M.F. Prévost & Grenand* 1969 (K, P); Saül Region, along road between airport and Saül, 200 m, 3°37'N, 53°12'W, 29 Oct. 1986, *L. Skog & C. Feuillet* 7106 (SD, US); Ile de Cayenne, Mont Baduel, 20 m, 52°19'W, 4°55'N, 23 May 1987, *M. Hoff* 5199 (CAY, P, US); Saül, 300 m, 3°40'N, 53°10'W, 28 Jul. 1987, *W. Hahn* 3663 (CAY, NY, P, US); Bassin du Haut Marouini, Roche Koutou, 320 m, 54°4'W, 2°52'N, 16 Aug. 1987, *J.J. de Granville & al.* 9320 (MO, US); Ile de Cayenne, Mont Cabassou, 40 m, 6 Oct. 1989, *M. Hoff* 5694 (CAY, G, MO, NY, P, US); Saül, vicinity of Eaux Claires, on the route de Bélizon, 0-4 km S of Eaux Claires, 200 m, 3°37'N, 53°12'W, 11 Oct. 1991, *S. Mori & al.* 22086 (MO, US); Ile de Cayenne, Mont Rorota, 20 m, 52°15'W, 4°53'N, 1 Apr. 1994, *B. Bordenave* 901 (P, US); Ile de Cayenne, Mont Grand Matoury, 5 Apr. 1995, *G. Cremers & al.* 13869 (CAY, MO, P); Bassin de l'Oyapock, Roche Touatou, 120 m, 19 May 1995, *G. Cremers & J.J. de Granville* 14008 (CAY, G, NY, P, US); Roche Touatou, Bassin de l'Oyapock, 120 m, 52°32'N, 2°57'W, 23 May 1995, *J.J. de Granville & G. Cremers* 13048 (P, US); Savane Renner, Région littorale, 52°53'N, 5°20'W, 3 m, 1996, *G. Cremers & J.J. de Granville* 14455 (CAY); Region de Saül, 220 m, 53°13'W, 3°28'N, 3 Apr. 1997, *G. Cremers & F. Crozier* 14636 (P, MO, US); Taluwen (Apoya) abatti wayana, 9 Nov. 1997, *M. Pignal* 1502 (NY); Region de Saül, 53°13'W, 03°28'N, Montagne Trésor, le long route de Kaw, Roura, 21 Nov. 1997, *Rouselle* GU96/106 (MA); Montagne Favard, au sommet de la colline, 4°52'N, 52°2'W, 5 Nov. 1998, *O. Poncy & F. Crozier* 1128 (CAY, NY, P); Maripasoula, 54°3'W, 3°40'N, 3 Nov. 1999, *M. Fleury* 1581 (CAY); Pic Matécho, versant sud, 450 m, 53°2'N, 3°44'W, 19 Sep. 2000, *J.J. de Granville & al.* 14294 (CAY, NY, US); Monts d'Arawa, savane-roche centrale, 53°22'00"N, 02°49'00"W, 11 Jul. 2002, *J.J. de Granville & al.* 15207 (CAY, MO, NY); Inselbergs de la haute Wanapi, 170 m, 53°49'20"W, 2°31'00"N, 13 Apr. 2004, *J.J. de Granville & al.* 15880 (CAY, MO, US); Inselbergs du haut Marouini, inselberg de la D.Z., 190 m, 2°36'30"N, 54°1'45"W, 21 Jun. 2004, *J.J. Granville & F. de Crozier* 16318 (CAY, MO, US); Inselbergs du haut Marouini, 200 m, 2°36'20"N, 54°40'W, 27 Jun. 2004, *J.J. Granville & F. de Crozier* 16487 (CAY, MO, US); Cayenne, colline Montabo, 4 m, 25 Nov. 2005, *C. Girod* 3159 (CAY); Kaw Mts., Trésor Reserve, 210 m, 4°35'N, 52°17'W, 2 Oct. 2006, *M.J. Jansen Jacobs & al.* 1812 (US); Site Ariane 4-Crique Karoubo, 8 m, 05°14'18"N, 52°47'52"W, 11 May 2007, *J.J. de Granville & O. Tostain* 17393 (CAY, US); Saül, aval Crique Cambrouze, 200 m, 03°36'16"N, 53°14'43"W, 11 Feb. 2008, *O. Tostain & al.* 1683 (CAY, US); ZNIEFF Abattis Kotika, 61 m, 04°1'20.7"N, 54°19'14.9W, 6-17 Sep. 2011, *G. Quenette* 35 (CAY); Maripasoula, massif du Mitaraka, Crique Alama Sommet en Cloche, flanc nord den contrebas du dôme, 2°13'50"N, 54°28'W, 9 Mar. 2015, *O. Poncy* 2890 (CAY); Commune de Cayenne, Sentiere de Montabo, 4°56'41"N, 52°19'03" W, 10 m, 28 May 2022, *R.M. Baldini* 2118, 2119, 2121 (CAY, FT).

GUYANA. Barina-Waini. Aruka River, Oct. 1905, *H.H. Bartlett* 8576 (K, US); Aruka River, 8°10'N, 59°50'W, 16 Jan. 1920, *A.S. Hitchcock* 17553 (BM, C, G, K, L, MO, NY, P, US, W); Waini River, NW Distr., 3-18 Apr. 1923, *J.S. De La Cruz* 3663 (K, MO, NY, US); Assakatta, NW Distr., 7°45'N, 59°5'W, 18-28 Sep. 1923, *J.S. De La Cruz* 4291 (K, MO, NY, US); Barima-Waini Region: Aranka Head, 107 m, 7°25'N, 60°32'W, 10 Apr. 1991, *T. McDowell*

4365 (CAY, K, MO, US); **Berbice-Corentyne.** Corentyne River, Sep. 1879, *G.S. Jenman* 257 (K); Berbice River, Dec. 1886, *G.S. Jenman* 3593 (K, NY); Baba Grant Sawmill, Corentyne River above Cow Falls, 5°00'N, 57°42'W, 10-25 m, 21 Apr. 1990, *T. McDowell* 2424 (NY, US); **Cuyuni-Mazaruni.** Near Bartica, Jul. 1884, *G.S. Jenman* 2053 (K); Upper Mazaruni River region, between Kako and Akawaio Indian village on the Kako river near its junction with the Maxaruni River and Karowtipu, 500 m, 5°45'N, 60°35'W, 15 Apr. 1987, *B. Boom & D. Gopaul* 7332 (MO, NY, US); **Essequibo Islands-W Demerara.** Naamryck Canal, ca. 8 km SE of Naamryck Public Road, just W of Lookout Village, 1 m, 6°50'N, 58°25'W, 31 Mar. 1988, *J.J. Pipoly* 11301 (CAY, MO, NY, US); **Pomeroon-Supenaan.** Pomeroon River, Dec. 1886, *G.S. Jenman* 1916 (K); **Potaro-Siparuni.** Second-growth thickets along Potaro River, Tumatumari, Jun.-Jul. 1921, *H.A. Gleason* 70 (K, NY, US); Chenapou, Amerindian village (Patumona), 50 km upstream from Kaieteur Falls, 450 m, 5°00'N, 59°34'W, 16 Oct. 1987, *L.P. Kvist* 305 (CAY, K, MO, US); Pakaraima Mts., upper Ireng River, 15-20 km up river from Cipo settlement, Julong Falls, 05°00'N, 59°57'W, 701 m, 2 Nov. 1994, *P. Mutchnick* 354 (CAY, MO, US); Mt. Kopinang, 1500-1600 m, 4°58'N, 59°53'W, 7 Apr. 1988, *W. Hahn* 4349 (NY, US); Nyion, trail from Kato to Paramakatoi, 650 m, 4°40'N, 59°50'W, 12 Mar. 1989, *W. Hahn* 5634 (CAY, MO, NY, P, US); Micobe, 200 m, 59°30'W, 05°20'N, 20 Oct. 1991, *S. Tiwari* 462 (MO, NY); Pakaraima Mts., Cipo Mt., ca. 2 km from summit escarpment, headwaters Cipo Creek, 1000 m, 04°54'N, 60°05'W, 26 Jan. 1993, *T.W. Henkel* 967 (US); Garraway stream, 102.5 miles on Bartica-Potaro Road, 38 m, 5°22'25.2"N, 59°7'20.5"W, 12 Mar. 2004, *K.M. Redden* 2184 (US); **Rupununi.** Rupununi River, Isherton, 9-15 Nov. 1937, *H.H. Smith* 2417 (K, NY, US); Marudi Mts., ca. 1 km along trail from Nor Man Mines camp to Aishalton, 300-400 m, 02°15'N, 059°10'W, 9 Nov. 1982, *A.L. Stoffers & al.* 238 (K, MO, NY, US); Between Kuyuwini Landing and Kassikaityu River, 150-250 m, 02°00'N, 059°15'W, 18 Oct. 1992, *M.J. Jansen-Jacobs & al.* 2989 (CAY, MO, NY, P, US); Kuyuwini Landing and Kassikaityu River, 150-250 m, 02°05'N, 059°15'W, 30 Oct. 1992, *M.J. Jansen-Jacob & al.* 3176 (CAY, MO, NY, P, US); **Upper Demerara-Berbice.** Upper Demerara River, Sep. 1887, *G.S. Jenman* 4089 (K, US); **Upper Takutu-Upper Essequibo.** Surama Village, headed ca. 4 km NW of village, ca. 10 km N of new Paranapanum Rd., 60-90 m, 4°08'N, 59°04'W, 19 Feb. 1990, *T. McDowell* 1889 (FT, US); Acarai Mts., Tinarnau Creek at NW base of Tirarnau Peak, 500 m, 01°16'N, 58°36'W, 5 Mar. 1994, *T.W. Henkel* 4940 *pro parte* (US); Rewa River, 0.5 km S of Great Falls, 03°10'N, 58°40'W, 90 m, 20 Sep. 1997, *D. Clarke* 6666 (US); Wassarai Mts., 01°35'57"N, 059°14'17"W, 27 Aug. 1999, *D. Clarke* 7997 (CAY, NY); Wassarai Mts., summit of unnamed peak, 10.5 km S of Kassikaityu R., 900 m, 01°33'10"N, 059°14'35"W, 15 Sep. 1999, *D. Clarke* 8637 (US); Rewa River, Spider Mts., 03°08'N, 05°32'W, 16 Sep. 1999, *M.J. Jansen-Jacobs & al.* 5930, 23 Sep. 1999, *M.J. Jansen-Jacobs & al.* 6099 (CAY, K, MO, NY).

LEEWARD ISLANDS. St. Croix. Propserity Garden, 5 Jan. 1906, *C. Raunkiaer* 642 (C); **St. Kitts.** s.d., *Walsh s.n.* (K); **St. Thomas.** St. Thomas, 1802, *Ventenat s.n.* (BM); 11 Dec. 1905, *C. Raunkiaer* 2304 (C); St. Thomas, St. Peter, 11-22 Feb. 1913, *E.G. Britton & D.W. Marble* 1230 (NY, US); St. Thomas, Water Island, 3 Jan. 1914, *C.H. Ostenfeld* 55 *p.p.* (C).

PARAGUAY. Amambay, Bella Vista, 14 May 1986, *F. Merelles* 619 (G); Guairá, Tororò, subida al Cerro Acate, 20 Jan. 1988, *I. Basualdo* 1399 (G).

PERU. Amazonas. Bongará, 5km SE of Yambrasbamba, 2100-2400, 25 Jun. 1962, *J.J. Wurdack* 1048 (K, NY, US); Bon-

- gará, lower portion of Shipasbamba-Pomacocha trail, 1600-1900 m, 29 Jun. 1962, *J.J. Wurdack 1096* (K, NY, US); Bagua, Valley of Río Marañón above Cascadas near Campamento Ste. Montenegro, 450 m, 3-4 Sep. 1962, *J.J. Wurdack 1807* (K, NY, P, US); Amazonas, Quebrada Huampami, Río Cenepa, 890 ft, 8 Jun. 1973, *R. Kayap 903* (K, MO); Amazonas, Bagua Prov., Distr. Imaza, Region NE del Marañón, Comunidad de Yamayakat, Río Marañón, 320 m, 04°55'S, 78°19'W, 14 Jul. 1994, *R. Vasquez & al. 18647* (MO); Prov. Bagua, Distr. Imaza, Comunidad Aquaruna Yamayakat, Camino hacia Temashnum, 300-480 m, 17 Aug. 1996, *C. Diaz & al. 7905* (MO); **Ayacucho**. Estrella, between quanta and Río Apurimac, 500 m, 8-14 May 1929, *E.P. Killip & A.C. Smith 23080* (NY, US); **Cajamarca**. San Ignacio, Distr. Huarango, Caserio El Triunfo, Fundo El Convento, 2100 m, 05°13'S, 78°40'W, 1 Jul. 1996, *E. Rodriguez R. 1244* (MO); Cutervo, 5 km N of Santo Domingo de la Capilla on road towards Chiple, 22 Mar. 2000, *P.M. Peterson & N. Refulio Rodriguez 15034* (K); **Cuzco**. Paucartambo, Hacienda Villa Carmen, 540 m, 19 Jul. 1963, *C. Vargas 14689* (US); Prov. Quispicanchi, Distr. Camanti, Maniri, 8 km W de Quincemil, 720 m, 13°17'S, 70°48'W, 22 Jul. 1990, *M. Timaná & H. Astete 712* (M); Distr. Echarate, Palma Real, Koribeni, 718 m, 1280°30'S, 7249°45'W, 16 Jul. 2007, *G. Calatayud & al. 4342* (MO); **Huanuco**. Tingo Maria, Valley of Río Huallaga, 7000 ft, 11-14 Jul. 1937, *C.M. Belshaw 3086* (K, MO, NY, P, US); Alrededores de Tingo Maria, 700 m, 11 Aug. 1946, *R. Ferreyra 920* (US); Vicinity of Tingo Maria, 22 Jun. 1959, *M.E. Mathias & D. Taylor 3463* (K); Pachitea, Honoris, Bosque Nacional de Iparia, 8 May 1967, *J. Schunke Vigo 1938* (K, P, MO, US); Prov. Leoncio Prado, Distr. Rupa Rupa, al E de Tingo Maria, cerca al Cerro Quemado, 672-800 m, 5 Apr. 1978, *J. Schunke Vigo 10089* (MO); **Loreto**. Pinto-Cocha on the Río Nanay, Jun. 1929, *L.O. Williams 399*, 781 (K, US); Iquitos, 3-11 Aug. 1929, *E.P. Killip & A.C. Smith 27125* (MA, NY, US); Yurimaguas, lowe Río Huallaga, 135 m, 22 Aug.-9 Sep. 1929, *E.P. Killip & H.H. Smith 27561* (MA, NY, US); Iquitos, 120 m, Oct. 1929, *L.O. Williams 3717* (G, US); Vicinity of Iquitos, San Juan, 7 Nov. 1940, *E. Asplund 14378* (G, K, NY, UPS, US); About 3 km S of Yurimaguas on Río Shanusi, 180 m, 1 Jun. 1964, *R.M. Straw 2450* (US); Prov. Coronel Portello, Dept. Iparia, Bosque Nacional de Iparia, 18 Aug. 1968, *J. Schunke Vigo 2618* (G, NY, US); Valseci-Rudolpho, Río Corrientes between Q. Platanoyacu and mouth of Río Macusari, 18 Sep. 1968, *S. McDaniel 11097* (NY); Alto Amazonas, Lagunas, trail to Argentina, 6 Jul. 1972, *S. McDaniel & M. Rimachi 16411* (MO, NY); Alto Amazonas, Yurimaguas, lower Río Parapapura, partially disturbed forest, 180 m, 9 Jul. 1972, *S. McDaniel 16566* (MO, US); Maynas, Quebrada Tahuayo above Tamishiyaco, 27 Aug. 1972, *T.B. Croat 19761* (K, L, MO); Altura Tuta Pischco on Río Napo, 16 Sep. 1972, *T.B. Croat 20302* (L); Vicinity of Aguaytia, primary forest on steep slopes along Río Aguaytia, 3 Oct. 1972, *T.B. Croat 21008* (MO); Río Ampiyacu, Pebas and vicinity, 71°49'W, 3°10'S, 4 May 1977, *T.C. Plowman & al. 7251* (K, US); Maynas Iquitos, carretera de Zingaro Cocha, 150 m, 1 Sep. 1981, *M. Rimachi 5634* (NY, US); Requena, restinga del Capite, abajo de S. Herrera, Río Ucayali, 26 Aug. 1982, *F. Encarnación 26216* (G, MO); **Madre de Dios**. Cocha Cashu, forest in vicinity of Lake of Río Manu, between Panagua & Tayakome, 17-24 Aug. 1974, *R.B. Foster 3487* (MO, US); Río Manu, Cocha Cashu station, 350 m, 23 Jul. 1979, *R.B. Foster & al. 6832* (F); Tambopata, Tamponata Nature Reserve, 260 m, 12°49'S, 69°17'W, 30 May 1980, *P.J. Barbour 5432* (MO, NY); 30 km SW from Pto. Maldonado, 12°50'S, 69°20'W, 6 Sep. 1985, *X. Londoño 14* (MO, US); 39 km SW of Puerto Maldonado, near the confluence of Río Tampopata and Río La Torre, 12°50'S, 69°20'W, 7 Jul. 1987, *H.H. Smith & al. 909* (K, L, MO, NY, US); Tambopata, 280 m, 12°49'S, 89°18'W, 11 Aug. 1990, *C. Reynel & E. Meneses 5032* (MO); Parque Nacional Manu, Río Manu, Pakitza, Radial 3, a 0,4 km de la trocha Tachigali, 330 m, 11°56'S, 71°15'W, 24 Apr. 1991, *X. Londoño 616* (US); Manu, Centro de Investigación y Capacitación Río Amigos, 250 m, 12°55'.90"S, 70°08'.87"W, 24 Sep. 2003, *J. Oliver 2* (P); **Pasco**. Oxapampa, Río Palcazu valley, Río San José, in the Río Chuchuras drainage, 400-500 m, 75°20'W, 10°10'S, 14 May 1983, *D.N. Smith & E. Palanchak 4026* (MO, US); Oxapampa, Río Huaylamayo, Ancahuachanan SW of Chorobamba, 1850 m, 4 May 1984, *D.N. Smith 6991* (MO); Oxapampa, Villa Rica, Comunidad Nativa San Pedro de Pichanaz, sector San Francisco de Pichanaz-Albergue turístico COROP, 518 m, 10°30'03"S, 75°04'14"W, 9 Jun. 2008, *R. Rojas & al. 5738* (MO); **Jaen**. Tiruyas, 30 km from Huancabamba, valley of Río Tabaconas, 1600 m, 11 Jun. 1947, *F.R. Fosberg 27757* (MO, US); **Junín**. Río Paucartambo Valley, near Perene Bridge, 19 Jun. 1929, *E.P. Killip & A.C. Smith 25255* (NY, US); Puerto Yessup, 10-12 Jul. 1929, *E.P. Killip & A.C. Smith 26327* (NY, P); Tarma, 9 km SW of San Ramon, 1500 m, 4 Dec. 1962, *H.H. Iltis & al. 313* (K, US); San Francisco de Satipo, 700 m, 23 Jun. 1977, *J.C. Solomon 3240* (MO); Chanchamayo, La Merced-Puente Paucartambo road, near San Luis Shuaro, 780 m, 75°19'W, 10°55'S, 17 May 1983, *H.H. Smith 4071* (K, MO, US); Satipo, along road between La Merced and Satipo, 1000 m, 11°10'S, 74°39'W, 8 Jun. 1998, *T.B. Croat & M. Sizemore 81977* (MO); **San Martín**. Along Río Curiyacu, an affluent of Río Cumbasa, about 8 km above San Antonio, 1400 ft, 7 Nov. 1937, *C.M. Belshaw 3615* (P, US); Arriba de San José de Sisa, 500-550 m, 21 Jul. 1950, *R. Ferreira 7916* (US); At 25 km on road to Lima from Tingo Maria along Huallaga Road, 750 m, 30 Oct. 1949-19 Feb. 1950, *H.A. Allard 21524* (NY, US); Saposoa, 450 m, 13 Jul. 1964, *F. Woytkowski 8349* (MO); Mariscal Cáceres, Distr. Tocche Nuevo, Fondo Miramar, 450 m, 3 Jul. 1978, *J. Schunke Vigo 7559* (K, US); Tarapoto, carretera Tarapoto-Yurimaguas, 700 m, 14 Jun. 1980, *M. Rimachi 5155* (MO, NY); Mariscal Cáceres, Distr. Tocache Nuevo, Río de La Plata, fundo del Sr. Manuel Gatica, 550-700 m, al borde de la quebrada, en bosque alto, 12 Aug. 1980, *J. Schunke Vigo 12146* (US); 36 km NE of Tarapoto, Río Cainarachi, 6°20'S, 76°20'W, 22 Jul. 1982, *A. Gentry & al. 37939* (G, NY); **Uyacali**. Coronel Portillo, Bosque Nacional de von Humboldt, km 86, Pucallpa-Tingo Maria road, 270 m, 08°40'S, 75°00'W, 7 Aug. 1980, *A. Gentry & A. Salazar 29418* (MO); Coronel Portillo, Yarinacocha, quebrada Maputay, 8°21'S, 74°34'W, ca. 200 m, 24 Jul. 1998, *J. Graham & J. Schunke Vigo 516* (F); Purus, Río Curanja, cerca la Comunidad nativa colombiana, 300-350 m, 10°04'S, 71°06'W, 9 Jul. 2002, *J.G. Graham & J. Schunke Vigo 16158* (MO); Padre Abad, Carretera al caserio San Miguel y Mapuya, 12 a 17 km de la Aguaytia, 9°05'S, 75°26'W, 350 m, 10 Jan 2004, *J. Schunke Vigo & J.G. Graham 16181* (G).
- PUERTO RICO**. Porto Rico, s.d., *C. Bertero s.n.* (TO); 1827, *H. Wydler 250* (FI-Webb, G); Puerto Rico, Dec. 1883, *A. Stahl 7* (W); Maricao, 13 Nov. 1884, *P.E.E. Sintonis 215* (BM, K, NY, US, W); Prope Lares in fruticetis ad "Palina Llanos", 17 Jan. 1887, *P.E.E. Sintonis 5918* (C, US); Luquillo Mountains, Jul. 1902, *P. Wilson 350* (NY, US); Vicinity of Mayagüez, 4-10 Mar. 1906, *E.G. Britton & D.W. Marble 678* (NY, US); Vicinity of Arecibo, 8 Nov. 1913, *A. Chase 6454* (US); Jajome Alto, vicinity of Cayey, 3 Dec. 1913, *A. Chase 6747* (L, US); Near Maricao, Indiera Fria, 19-22 Feb. 1915, *N.L. Britton & al. 4490* (K, NY, US); Guavate State Forest, 14 Dec. 1963, *A.H. Liogier 10418* (NY, US); In forest from Mayagüez to Maricao, 25 Feb. 1982, *A.H. Liogier & al. 32736* (NY); Cayey, Cerro Avispa, 10 Feb. 1983, *A.H. Liogier & L.F. Mar-*

torell 33832 (NY); Maricao State Forest, 15 Jan. 1986, A.H. Lio-gier 35847 (NY); Caribbean National Forest, along Highway 966, ca. 0.5 km E of Junction with Highway 191, 450–500 m, 18°17'N, 65°47'W, 5 Jan. 1987, B.M. Broom 6911 (MO, NY, US); Maricao, Bairro Maricao Afuera, Rio Maricao margins, 18°10'16"N, 66°59'17"W, 10 Feb. 1994, J.A. Cedeño 238 (NY).

SURINAME. F.W. Hostmann 13 (G, K), F.W. Hostmann 511 (G); In fruticetis Surinami, prope Lustryk, 30 Dec. 1837, *Splitgerber* 446 (L); 1827, C. Weigelt s.n. (FI-Webb, G, L, MO, W); 1842, C.V. Hartmann 13 (FI-Webb); In distr. Para, Feb.–Apr. 1844, A. Kappler s.n. (G, K, W); Sandrij, 14–25 Nov. 1934, W.A. Archer 2759 (K, US); Charlesburg Rift, 3 km N of Paramaribo, 5 Apr. 1944, B. Maguire & al. 24746 (K, NY); Saramacca River, trail to Coppenam River, rear village, Pakka Pakka, 26 Jun. 1944, B. Maguire 23965 (K, MO, NY, P, US); Inter Coppename fluv. ostium et Coronie oppidum, 15 Dec. 1948, J. Lanjouw & J.C. Lindeman 1384 (K, NY); In montibus qui dicuntur Nassau, 17 Feb. 1949, J. Lanjouw & J.C. Lindeman 2146 (K, NY); Jodensavanne-Mapane kreek area, along road to Mapane creek, 21 Dec. 1954, J.C. Lindeman 6933 (W); Vicinity of Moengo, Cottica River, Adjoema Kondre Hill, trail to Adjoema Kondre Village, 27 Dec. 1954, R.S. Cowan 39007 (NY, US); Wilhelmina Gebergte, Zuid River, 220 m, 16 Sep. 1963, H.S. Irwin & al. 55790A (K, NY, P, US, W) : **2n** = **36!** (Gould and Soderstrom 1967); Wilhelmina Gebergte, Kaiser Airstrip, 45 km above confluent with Lucie River, 270 m, 3°20'N., 26 Sep. 1963, H.S. Irwin & al. 57618 (K, MO, NY, P, US); Nickerie, area of Kabalebo Dam Project, ca. 20 km SW of Avanavero dam site, 11 Nov. 1976, N.M. Heyde & J.C. Lindeman 10 (K, MO, NY).

TOBAGO. Belmont woods, 30 Mar. 1910, W.E. Broadway 3551 (MO); Greenhill, 2 Dec. 1910, W.E. Broadway 4038 (BM, G, K, L, MO, NY, US); Tobago, centre of the island, 18–21 Dec. 1912, A.S. Hitchcock 10261, 10262, 10269, 10275 (US); Tobago, 25 Oct. 1925, W.G. Freeman & L.O. Williams 11426 (K); Parlatuvier-Roxborough Trace, Bloody Bay to road-head above Roxborough, 8 Apr. 1959, R.S. Cowan 1486 (K, NY, US); Castara Road, 17 Mar. 1963, L.M. Andrews 610A (NY); Mount St. George to Hillsborough Dam Road, 5 Jun. 1975, D. Philcox & A.M. Raynal 7906 (K); Roxborough, 1 Mar. 1981, C.D. Adams & Y.S. Baksh 323 (MO, NY); St. Paul Parish, NNW of Roxborough, 6 Jan. 1989, R.D. Worthington 17634 (NY).

TRINIDAD. Tabaquite, 10 Dec. 1912, A.S. Hitchcock 10170 (L, US); Cedros, 12–14 Dec. 1912, A.S. Hitchcock 10151 (L, US); Port of Spain, 26 Dec. 1912, A.S. Hitchcock 9962 (US); St. Joseph, 30 Dec. 1912, A.S. Hitchcock 10020 (US); Cedros, Dec. 1914, A.S. Hitchcock 33391 (L); Samana, near the Rest House, 14 Jan. 1915, W.E. Broadway 4952 (US); Morne Blue, 13 Mar. 1921, N.L. Britton & al. 2266 (G, K, NY, US); Heights of Aripo, 10–26 Jan. 1922, W.E. Broadway 9929 (K, NY, US); Morne Blue, 18 Dec. 1924, W.E. Broadway 5504 (BM, K, MO); Aripo, 15 Jan. 1926, W.E. Broadway 5892 (BM, K, MO, US); Blanchisseuse road, 10 Nov. 1929, W.E. Broadway 7666 (G); Zamsel Hill, Arouca, 15 Feb. 1928, W.E. Broadway 6811 (BM, K, MO); Rain forest on slopes above Oropuche River (on Valencia-Matura Road), 19 Jun. 1963, T.R. Soderstrom 1036 (US); About 1 mile outside of Tabaquite, 21 Jun. 1963, T.R. Soderstrom 1071 (US); Northern Range, 4 miles N of the intersection (along the Heights of Guanapo Road) of the Heights of Guanapo Road and Eastern main road (intersection 1 mile E of Arima), 200 m, 30 Jul. 1970, G. Davidse 2461 (MO); Peninsula between La Vache and Maracas Bays, mile post 5 along the North Coast Road, 280 m, 5 Aug. 1970, G. Davidse 2566 (MO); Ca. 2 miles NE of Point Fortin, 20 m, 6 Aug. 1970, G. Davidse 2579 (MO); Above Spring Hill, Arima-Blanchisseuse road, 26 Dec. 1976, C.D. Adams

14168 (K); Manzanilla Bay, 22 Nov. 1977, C.D. Adams 341 (NY); On the Blanchisseuse Road at mile 10 N of Arima, 16 Jan. 1982, N.A. Harriman 17501 (NY).

VENEZUELA. Amazonas. Raudal Montserrat, 19 Sep. 1951, L. Croizat 677 (NY); Caño Ceiba, Rio Venturi, 4 Dec. 1975, *Lister* 103 (K); Caño Mosquito on Cano Marita, 2 Feb. 1976, *Lister* 187 (K); Sta. Elena, Mata Cutia, 11 Nov. 1979, N.A. Rosa & O.C. Nascimento 3388 (NY); Río Negro, 1.5 km E of Cerro de La Neblina, 140 m, 0°50'N, 66°10'W, 2–3 Dec. 1984, R. Liesner 17412 (K, MO, US); Vicinity of Neblina base camp along Rio Mawarinuma, 140 m, 0°50'N, 66°10'W, 4 Dec. 1984, T.B. Croat 56617 (MO, NY, US); Depto. Atures, E slope of a peak, 8 km NW of Yutaje, 4 km W of Rio Coro Coro, W of Serranda de Yutaje, 05°41'N, 66°10'W, 4 Mar. 1987, R. Liesner & B. Holst 21608 (MO, NY); Depto. Atabapo, Alto Rio Cunucunuma, Poblacion Culebra, 190 m, 03°45'N, 65°45'W, Apr. 1990, Á. Fernandez 7567 (MO); **Anzoátegui.** Distr. Freites, Burro trail between San Durrial and Los Pajaritos, 30 km by air ENE of Bergantín and N of Mundo Nuevo, 1200–1400 m, 10°03'N, 64°06'W, 1 Dec. 1981, G. Davidse & A.C. Gonzalez 19775 (MO); **Bolívar.** Alrededores Km 88, carretera El Dorado, Nov. 1958, L. Aristeguieta 3712 (MO, NY, VEN); Cerro Uroi, Rio Uroi, 13 Sep. 1962, B. Maguire & al. 53806 (NY); **Cojedes.** Pao, Las Galeras de El Pao, carretera El Tinaco-El Baul, 9°30'N, 68°10'W, Oct. 1988, M. Ramia 8779 (K, MO); **Guárico.** Estación Biologica de los Llanos, a unos 10 km al SE de Calabozo, 7 Aug. 1989, F. Zuloaga & M. Ramia 4355 (K); **Isla de Margarida,** Nueva Sparta, Cerro Copey, 11°2'N, 63°55'W, 24 Mar. 1985, J.A. Steyermark & al. 131009 (MO, NY); **Miranda.** Distr. Paez, Fila de Guayas between Rio Guayas and Rio Guapo, ca. 15 km SW of El Guapo, 400–700 m, 10°04'N, 66°04'W, 6 Jun. 1977, G. Davidse & A.C. Gonzalez 13648 (MO); Selva Riverina cerca de Puente Galipero comunidad indigena de indios Guahibo a unos 30 km de Puerto Ayacucho, 100 m, 9 Jan. 1978, J. Bono 8 (FT); Cerro Bachiller, W of Caño Rico, 21 Mar. 1978, J.A. Steyermark & G. Davidse 116550 (MO, NY); **Sucre.** Distr. Benitez, primary forest on low ground along Caño Ajies, N of Ajies, 10°28'N, 63°05'W, 18 Feb. 1980, J.A. Steyermark & al. 121318 (MO).

VIRGIN ISLANDS. **St. Croix.** North slope of Bodkin Hill, 2 Feb. 1974, F.R. Fosberg 55312 (MO, US); **St. John.** Cruz Bay Quarter, dirt road to Susannaberg, 8 Jan. 1991, P. Acevedo-Rodriguez & A. Siaca 3844 (NY); **Tortola.** 18–21 Feb. 1913, J.A. Shafer 1147 (NY, US); Road to Sage Mountain, 23 Feb. 1988, P. Acevedo-Rodriguez 2681 (NY).

WINDWARD ISLANDS. **Martinique.** Chemin de St. Pierre, Jan. 1854, C. Belanger 782 (FI-Webb); Martinique, 1870, L. Hahn 1158 (G, K); **Guadeloupe.** s.d., C. Bertero s.n. (TO); **St. Lucia.** 6 Dec. 1929, N.Y. Sandwith s.n. (K).

(8) *Lasiacis linearis* Swallen, Phytologia 4: 427. 1953. (Fig. 22).

Type: Guatemala, Zacapa, Sierra de las Minas, below Finca Alejandria, pine covered canyon bordering Rio Lima, 2000 m, 14 Oct. 1939, J.A. Steyermark 30046 (holotype: F (photo!) [Acc. No. 1044422F]).

Description

Perennials, caespitose. Culms 50–75(–100) cm tall, mostly creeping, decumbent, rooting at nodes, branch-

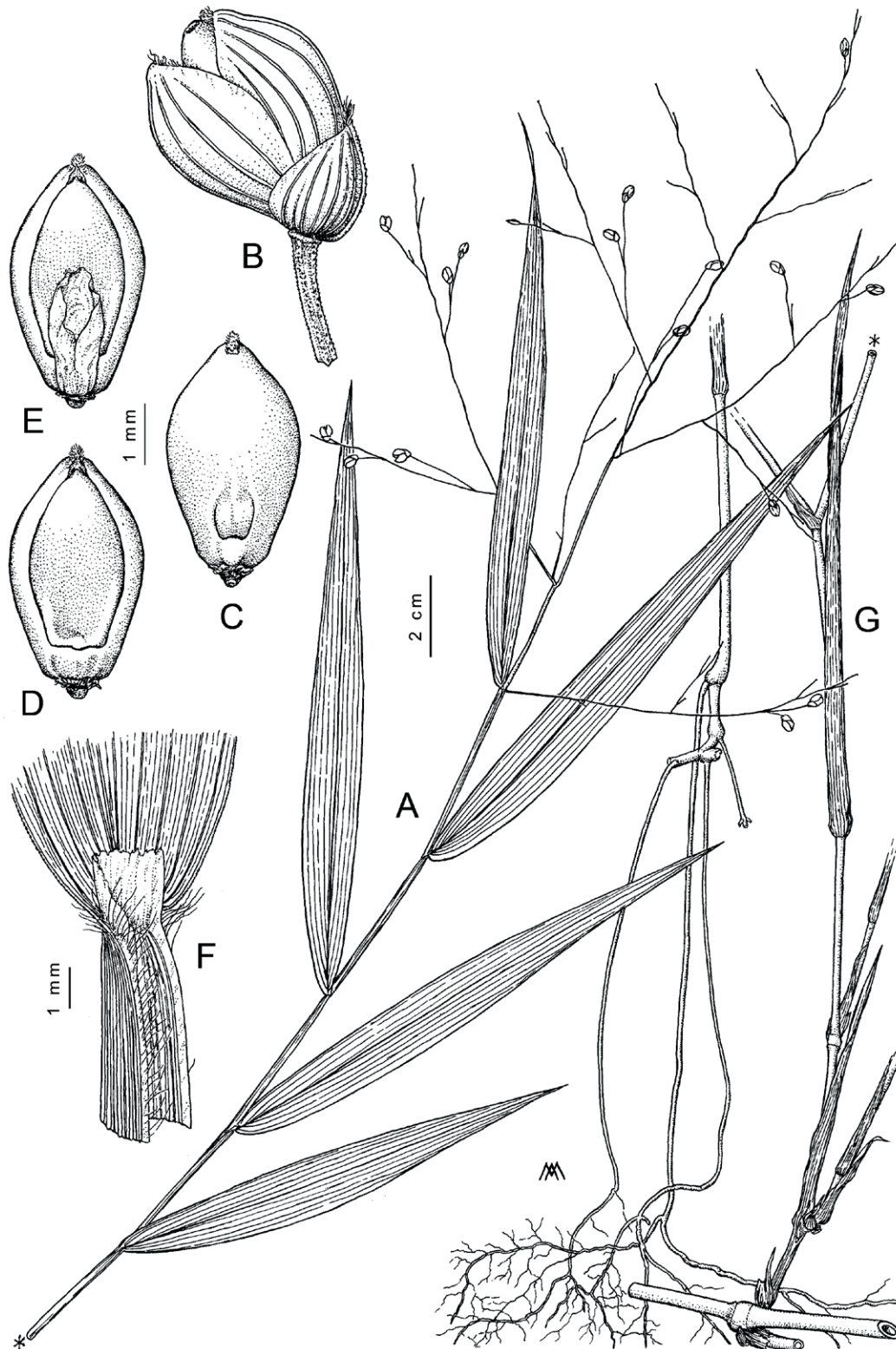


Figure 22. *Lasiacis linearis* Swallen: A. Habit; B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea [A-E. from C.V. Morton 6954 (K)]; F. Ligular area; G. Culm with persistent leaf sheaths, and basal area rooting at the nodes [F-G. from G. Davidse & R.W. Pohl 2106 (L)]. A. Maury delineavit.

ing, straggling; *internodes* 2–5 mm thick, slender, solid, usually glabrous, upper part puberulent; *nodes* glabrous. *Leaf sheaths* shorter than internodes, puberulent to pubescent, hairs up to 0.8 mm long, overlapping margins ciliate with small hairs up to 0.4–0.5 mm long; *collars* puberulent throughout; *ligules* 1.5–4.0(–4.8) mm long, conspicuous, usually dark brown, apex erose to lacerate, with hairs 1.5–2.8 mm long; *blades* 16–22 cm long, 0.8–1.3 cm wide, base slightly acuminate, apex acuminate to attenuate, adaxial surface glabrous and scabrid, abaxial surface glabrous with margin scabrid. *Panicles* up to 30–35 cm long; *branches* scabrid widely spreading, distally bearing long-pedicelled spikelets. *Spikelets* 4–4.5 mm long, 2.0–2.5 mm wide, narrowly obovate, often purplish at immaturity; *lower glumes* 2.0–2.5 mm long, 2.0 mm wide, 7–10-veined; *upper glumes* 2.8–3.2 mm long, 2.0 mm wide, 8–11-veined; *sterile florets* without a flower, *lemmas* 9–11-veined, *paleas* $\frac{1}{2}$ long the length of the fertile floret; *fertile florets* 4–5 mm long, 2.5–3.0 mm

wide, *anthers* 1.5–1.8 mm long, white, *stigmas* purple; *caryopses* 2.2–2.5 mm long, 1.5–1.8 mm wide. *Chromosome number*: $n = 18$ (Davidse 1972, 1978).

Vernacular names

Panama: Chiriquí, “bambito” E.L. Tyson 5666 (MO, US).

Distribution

Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama. (Fig. 23).

Distribution (bibliographic references)

Swallen (1953, 1955b); (Davidse 1978, 1994); Pohl (1980); D’Arcy (1987); Morales (2003); Correa et al. (2004); Sutherland (2008); Dávila et al. (2018); Villaseñor (2016); Sánchez-Ken (2019); Menjívar Cruz et al. (2021).



Figure 23. *Lasiacis linearis* Swallen: general geographic distribution.

Ecology

Cloud forests and oak-pine forests in Central America. Between 1400–2400 m [J. Menjívar & R.M. Baldini 3616, 3624 (FT, LAGU, MHES) and E.M. Martínez S. & al. 13218 (MO)].

Phenology

June/July and October through April.

Remarks

Lasiacis linearis presents much affinity to other species from Central America such as *L. oaxacensis*, *L. sloanei*, and *L. standleyi*, with procumbent growth habit, and rooting at the nodes. *Lasiacis linearis* prefers cool, high montane habitats if compared with the adaptability even in low altitude habitats of *L. oaxacensis* and *L. sloanei*, and it is considered a Mesoamerican endemic species with a peculiar distribution and ecology.

Selected specimens

BELIZE. Belize. Belmopan, 5 Mar. 1974, W.C. Verboom 5075 (K).

COSTA RICA. Cartago. Cerro Tabalzo, 20 Aug. 1982, R.W. Pohl 14135 (K, MO, NY); **Puntarenas.** Cordillera de Talamanca, area between headwaters of Río Bella Vista and Sitio Coton, 2000 m., 9°49'N, 82°46'W, 25 Aug. 1983, G. Davidse & al. 24055 (MO); Buenos Aires, Parque Nacional de La Amistad, Cuenca Térraba-Sierpe, Buenos Aires, potrero Grande, Tres Colinas, PILA, Herbazal arbolado por *Quercus burnelloides*, *Cornus disciflora*, *Freziera candidans*, *Quercus insignis* y *Clethra*, 9°08'17"N, 83°04'12"W, 200–2100 m, 28 Feb 2008, D. Solano 5213 (PMA); **San José.** Z.P. Cerros de Escazú, carretera a Fila El Cedral, 1900 m., 9°50'02"N, 84°06'40"W, 22 Sep. 1993, J. Morales 1746 (MO).

EL SALVADOR. San Salvador. Volcán San Salvador, El Boquerón, 1650–1800 m, 13°45'50"N, 89°16'15"W, 4 Feb. 1998, A. Monro & al. 2194 (MO); **Santa Ana.** Parque Nacional Montecristo, Cordillera de Matapán, 89°22'W, 14°27'N, 27 Jan. 1998, G. Davidse & al. 37167 (BM, MO); Metapán, Parque Nacional Montecristo; Camino a Miramundo, por Puente Oriconte, 1900 m, 3 Sept. 2002, R.A. Carballo 444 (BM, LAGU, MO); Metapán, Santa Ana, P.N. Montecristo, arriba de la cabaña científica, 1900 m, 14°25'N, 89°21'W, 29 May 2002, J. Monterrosa 222 (MO); Metapán, Santa Ana, Parque Nacional Montecristo, hacia El Trifinio, 14°24'56"N, 89°21'17"W, 2235 m, 11 Feb. 2016, J. Menjívar & R.M. Baldini 3616, 3624 (FT, LAGU, MHES).

GUATEMALA. El Progreso. Hills between Finca piamente and slopes SE of Finca Piamente, 4 Feb. 1942, J.A. Steyermark 43405 (US); **Guatemala.** On dry hillside of River Villalobos, 12–23 Jun. 1966, A. Molina & al. 16075 (US); Guatemala, vicinity of San Andreccillo, 1700 m, 26 Sep. 1972, A. Molina R. & A.R. Molina 27555 (MO); **Huahuatenango.** Chanximil, Aldea San Martín, Todos Santos Cuchumatán, 2185 m, 16 Sep. 2006, J. Morales 3895 (MO); **Quiché.** Sierra madre Mountains between Los Encuentros and Chichicastenango, 1800–2000 m, 22–23 Dec. 1972, L.O. Williams & al. 41632 (MO); **San Marcos.** Near Aldea Fraternidad, between San Rafael Pie de la Cuesta and Palo Gordo, 10–18 Dec. 1963, L.O. Williams & al. 6097 (NY, US); **Sololá.** Volcán Atitlán, 11 Jun. 1942, J.A. Steyermark 47347 (US).

HONDURAS. Lempira. Cerro Oeste Río Naranjo, bosque nublado latifoliado en el filo a cerro Oeste del Río Naranjo, Parque Nacional de Celaque, 9 Jul. 1991, P. House 1035 (MO); Parque Nacional Celaque, along trail from old electricity generation plant to Camp Don Tomas, ca. 10 straight line WSW of Gracias, 1850 m, 14°33'N, 88°40'W, 11 Feb. 1993, R. Evans 1163B (MO). **Morazán.** Mt. Uyuca, 2000 m, 2 Mar. 1947, L.O. Williams & A. Molina 12112 (US); Mt. Uyuca, 26 Jun. 1947, A. Molina 205 (BM, US); Mt. Uyuca, cloud forest, 16 Jun. 1948, S.F. Glassman 1625 (NY); Mt. San Juancito, 18 Jul. 1948, S.F. Glassman 1972 (NY); Cerro de Uyuca, trail between Las Flores and La Labranza, 22 Aug. 1949, P.C. Standley 23126 (NY, US); Cerro de Uyuca, 10–20 Mar. 1951, C.V. Morton 6954 (K, NY, US); Mt. Uyuca, 19 Oct. 1951, J.R. Swallen 10900 (MO, US); Morazán, Sierra San Juancito, road to San Juancito, 27–28 Oct. 1951, J.R. Swallen 11138 (US); La Tigra, Presa La Tigra, 29 Nov. 1958, J.G. Hawkes 2131 (US); Cloud forest, Mount Uyuca, 1500–1800 m, Aug. 1960, H.W. Pfeifer 1447 (US); Mountains above San Juancito, 7500 ft, cloud forest, Aug. 1960, H.E. Pfeifer 1879 (US); Cerro de Uyuca, near Zamorano, 1 Jul. 1962, G.L. Webster & al. 11898 (US); Cerro Uyuca ca. 8 km W of El Zamorano, 1800 m, 16 Jun. 1970, G. Davidse & R.W. Pohl 2100 (MO), 2106 (K, L, MO, NY, US), **n = 18!** (Davidse 1978); Cerro La Tigra, ca. 11 km NE of Tegucigalpa, 1800 m, 17 Jun. 1970, G. Davidse & R.W. Pohl 2121 (K, L, MO, NY, US); Montaña de Celaque, SE part of massif, represa trail from Gracias to top of mountain, 2300–2400 m, 14°33'N, 88°40'W, 25 May 1991, G. Davidse & R. Zuniga 34756 (MO).

MEXICO. Chiapas. Sierra Madre, 3 Nov. 1960, T. Tateoka 1031 (US); Chiapas, Unión Juárez, en el volcán Tacaná, entre Talquian y la cima del volcán, 1600–2400 m, 19 Jun. 1985, E.M. Martínez S. & al. 13218 (MO); Chiapas, San Fernando, carretera San Fernando-Chicoasen, 900 m, 16°54'12"N, 93°08'44"W, 17 Dec. 2007, J.A. Espinosa Jimenez 534 (MO).

PANAMA. Chiriquí. Chiriquí Volcano, Sep. 1911, A.S. Hitchcock 8201 (US); Valley upper Río Chiriquí, vicinity of Monte Lirio, 27 Jun.–13 Jul. 1935, R.J. Siebert 278 (MO, NY, US); Ca. 2 miles W of Cerro Punta, clambering near Río Chiriquí Viejo, 1630 m., 17 Jan. 1968, S. McDaniel 10048 (MO); Bambito, 1 mile SW Cerro Punta, 5600 ft, forest shade, 26 Jun. 1969, E.L. Tyson 5666 (MO, US); Cerro Punta, in deep shade, 6000 feet., 27 Jun. 1969, E.L. Tyson 5802 (MO, SCZ); E of Boquete along steep, forested slopes and in wooded pastures on Cerro Azul near Quebrada Jaramillo, 1620–1700 m., 11 Aug. 1974, T.B. Croat 26858 (MO); E slope of Volcán de Chiriquí (Barú), WNW of Boquete, partially cleared slopes with patches of original oak forest and mostly secondary growth, 1900–2000 m, 19 Nov. 1975, G. Davidse & W.G. D'Arcy 10162 (MO, US); W end of high ridge N of Barú summit, 8 Apr. 1979, B. Hammel & al. 6941 (MO); Near Fortuna Dam Camp, beside gravel road, 08°43'N, 82°14'W, 25 Feb. 1985, R.J. Hampshire & C. Whiteford 59 (PMA); Along road to top of Volcano Barú, 1800 m, 08°45'N, 82°30'W, 1800 m, 28 Jul. 1987, G. McPherson 11332 (MO, PMA); Renacimiento, Jurutungo, carretera de acceso a la Finca Los Quetzales, 1870–1935 m, 8°54'N, 82°44'W, 27 Sep. 1996, C. Galdames 3459 (MO, NY, PMA, SCZ).

(9) *Lasiacis maculata* (Aubl.) Urb., Symb. Antil. 8: 751. 1921. (Fig. 24, 25, 26).

Bas.: *Panicum maculatum* Aubl., Fl. Guiana Fr. 1: 51. 1775.

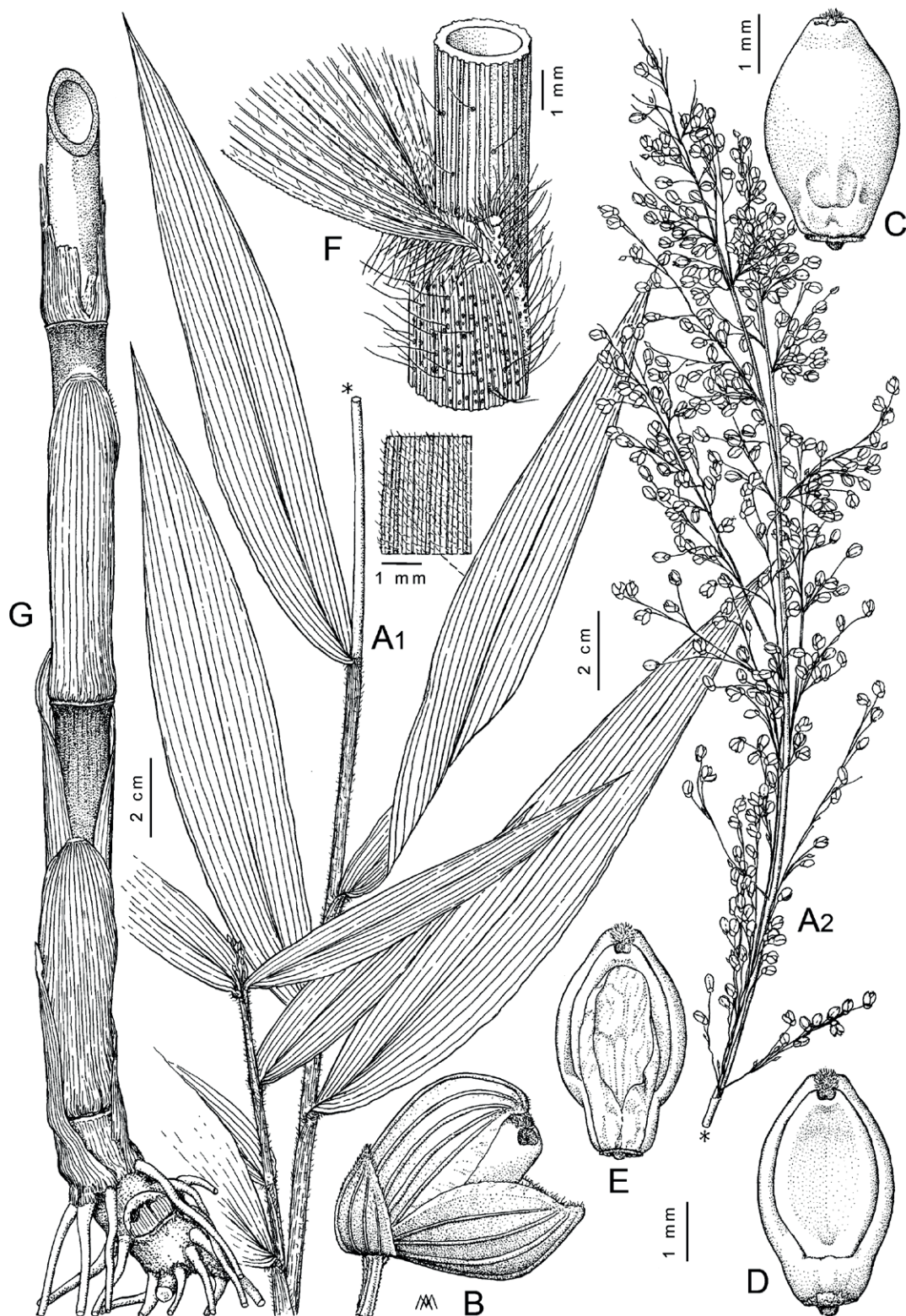


Figure 24. *Lasiacis maculata* (Aubl.) Urb.: A1. Habit; A2. Apical part of the culm with fertile branches; B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea [B-E. from A.F. Skutch 3817 (K)]; F. Ligular area; [A1, A2 & F. from A. Ratter & al. 2120 (K)]; G. Lower robust culm with persistent leaf sheaths, and prop roots at the base. [G. from R.M. Harley & R. Souza 11074 (K)]. A. Maury delineavit.



Figure 25. *Lasiacis maculata* (Aubl.) Urb.: dense inflorescence (Panama, Veraguas, photo R.M. Baldini).



Figure 26. *Lasiacis maculata* (Aubl.) Urb.: general erect to procumbent habit (Panama, Veraguas, photo R.M. Baldini).

Type: Plumier MS 4: ic. 82. (holotype: P! Bibliothèque Central du Museum National d'Histoire Naturelle). *Martinique environs de St. Pierre, Mai 1853, Belanger 390*" (epitype: FI! [barcode FI012314]; isoeptypes G! [barcode G00614203], P! Two sheets [barcode P00633954, P01931995] (see also Baldini, 2010: 114)).

(=) *Panicum lanatum* Sw., Prodr. Veg. Ind. Occ. 24. 1788, *nom. illeg.*, non Rottb. (1776).

Type: "Jamaica, Swartz s.n.". (**lectotype, designated here:** S (photo!) [Acc. No. S-R-3976]; isolectotypes: S (photo!) [Acc. No. S-R-3974], BM! [barcode BM000938727], US! Fragment from S [barcode US00148223]).

(=) *Panicum divaricatum* L. var. *lanatum* (Sw.) Kuntze, Rev. Gen. Pl. 2: 784. 1891.

(=) *Panicum sorghoideum* Ham., Prodr. Pl. Ind. Occ. 10. 1825.

Type: "Porto Rico, Desvaux Herb. No. 24". (holotype: P! [barcode P00633952]; isotype US! Fragment from P [barcode US00140003]).

(=) *Panicum lanatum* Sw. var. *sorghoideum* (Ham.) Griseb., Fl. Brit. W. Ind. 551. 1864.

(=) *Lasiacis sorghoidea* (Ham.) Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 338. 1917.

(=) *Panicum divaricatum* L. var. *latifolium* Schlecht. & Cham., Linnaea 6: 33. 1831, non E.Fourn. (1886).

Type: Nova Hollandia?, "Sieber 120" (lectotype designated by Baldini (2010: 116): HAL! [barcode HAL0106587]; isolectotypes: G! Three sheets [barcode G00176060, G00176061, G00176062]; L! [barcode L0797238], PI! [Acc. No. 0411253], W! [barcode W0005812]).

(=) *Panicum praegnans* Steud., Syn. Pl. Glum. 1: 74. 1854.

Type: "Mexico, Oaxaca, Buchinger 488." (lectotype, designated by Hitchcock (1920: 26): P! [barcode P00633953]; isolectotype: US! Fragment from P [barcode US00139891]).

(=) *Panicum maculatum* Aubl. var. *pilosum* E.Fourn., Mex. Pl. 32. 1886. Based on *P. praegnans* Steud. (1854).

(=) *Panicum martinicense* Griseb., Fl. Brit. W. Ind. 552. 1864.

Type: "Martinique, Flora martin. Nro. 29, Sieber 1822" (lectotype, designated by Davidse (1978): GOET! [barcode GOET006592]; isolectotypes: L! Two sheets [barcode L0797212, L0797213], MO! [Acc. No. MO126663], US! Two sheets [barcode US00132971, US00132972], W! Two sheets [Acc. No. W0005811, W1889021140]).

(=) *Panicum guaraniticum* Speg., Anales Soc. Ci. Argent. 16: 107. 1883.

Type: "Panicum guaraniticum Sp. (n.sp.), Misiones, Posadas, Mar. 1883, von Gülich s.n." **lectotype, designated here:** LP! (photo) [barcode LP001599]; syntypes: LP! (photo), four sheets [barcode LP001600,

LP001601, LP001602, LP001603], BAA! (photo) [barcode BAA00000408].

($\equiv$) *Lasiacis guaranitica* (Speg.) Parodi, Notas Mus. La Plata, Bot. 8: 95. 1911.

($\equiv$) *Panicum swartzianum* Hitchc., Contr. U.S. Natl. Herb. 12: 140. 1908, *nom. illeg. hom.* Based on *Panicum lanatum* Swartz (1788).

($\equiv$) *Lasiacis swartziana* (Hitchc.) Hitchc., Bot. Gaz. (Crawfordsville) 51: 302. 1911.

($\equiv$) *Lasiacis patentiflora* Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 338. 1917.

Type: "Tobago, center of island, edge of woods on mountainside, 20 December 1912, A.S. Hitchcock 10268" (holotype US! [barcode US00134119]; isotypes, US! [barcode US00134118], L! Two sheets [barcode L0797276, L0797277], W! [Acc. No. W19280008751]).

($\equiv$) *Lasiacis sorghoidea* (Ham.) Hitchc. & Chase var. *patentiflora* (Hitchc. & Chase) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

($\equiv$) *Lasiacis maculata* (Aubl.) Urb. var. *patentiflora* (Hitchc. & Chase) Baldini, **comb. nov. & syn. nov.**

(-) *Panicum orinocense* Willd. ex Spreng., Syst. Veg. 1: 316. 1825, *nom. inval.*, as *syn.* of *Panicum glutinosum* Lam. (1791). The lectotypification of Baldini (2010): 116 is ineffective as this is an invalid name.

(-) *Panicum arborescens* Sieb. ex Trin., Gram. Pan. 208. 1826, *nom. inval.* as *syn.* of *Panicum latifolium* L. (1753). The lectotypification of Baldini (2010: 116) is ineffective as this is an invalid name.

(-) *Panicum fuscum* Sieb. ex C.Presl, Abh. Böhm. Ges. Wiss. 3: 550. 1845, non Sw. (1788), *nom. inval.* as *syn.* of *P. glutinosum* Sw.(1788). The lectotypification of Hitchcock 1920: 26 is ineffective as this is an invalid name (see also Baldini (2010): 116).

(-) *Panicum glutinosum* J.Presl ex Griseb., Fl. Brit. W. Ind. 552. 1864, non Sw. (1788) nec Lam. (1791), *nom. inval.*, as *syn.* of *Panicum martinicense* Griseb. (1864).

Description

Perennials, robust caespitose. *Culms* 1-10 m tall, erect at the base, strongly vigorous, arching and lean-

ing on nearby vegetation; *internodes* 5-15(-18) mm thick, strongly lignified, glabrous to papillose-pubescent; *nodes* glabrous. *Leaf sheaths* papillose-pubescent especially toward the apex, hairs 1.5-4.0 mm long, overlapping margin and throat ciliate; *auricles* with hairs 2.5-3.8 mm long; *collars* hispid and pilose; *ligules* 0.3-1.5 mm long, inconspicuous usually ciliate with hairs 0.5-1.5 mm long; *blades* 5.0-24 cm long, 1.2-4.5 cm wide, very variable from elliptic-lanceolate to lanceolate or linear-lanceolate, acuminate, base asymmetrical and ciliate, adaxial surface puberulent, abaxial surface velutinous to puberulent, margin scabrid. *Panicles* 5.0-25(-35) cm long; *branches* ascending, largely spreading at maturity, scabrous to pubescent. *Spikelets* 3.5-4.5 mm long obovate to elliptic, purple when immature; *lower glumes* 1.2-2.5 mm long, 7-11-veined; *upper glumes* 3.2-4 mm long, 9-13-veined; *sterile florets* sometimes staminate, *lemmas* 9-11-veined, *paleas* 2/3 to equal to the length of the fertile floret; *fertile florets* 3.0-4.0(-4.3) mm long, 2.5-3.0 mm wide, dark brown, clearly indented on the dorsal surface of the lemma, *anthers* 2-2.5 mm long, whitish, *stigmas* white; *caryopses* 1.8-2.3 mm long, 1.5-1.7 mm wide. *Chromosome number*: $n = 9$ (Gould and Soderstrom 1970); $n = 18$, $2n = 36$ (Davidse 1972, 1978); $2n = 36$ (Killeen 1990).

Iconographs

Lámina 148 E as *L. sorghoidea* (Desv.) Hitchc. & Chase (Steyermark and Huber 1978); Fig. 40 C-D as *L. sorghoidea* (Desv.) Hitchc. & Chase (Renvoize 1984); Fig. 183 A-D as *L. sorghoidea* (Desv.) Hitchc. & Chase (Acevedo-Rodríguez 2005); Lámina 156 (Catasús Guerra 2012b); Morrone & Zuloaga as *L. sorghoidea* (Desv.) Hitchc. & Chase (2012: 334).

Vernacular names

Argentina: Misiones, "tacuapi" Montes 2198 (K, US), "picaquilla" Montes 2232 (Davidse 1978); **Belize:** El Cayo, "rat rice" P.H. Gentle 2196 (K, NY, US); Stann Creek "wild rice" P.H. Gentle 1910 (K, NY, US); **Bolivia:** Santa Cruz, "tacuarilla" M. Saldias & al. 5029 (MO), "taquarilla" Killeen (1990); **Brazil:** Paraná, "taquaril" J.M. Pires & P.B. Cavalcante 52138 (K, MO, NY, US); "canna de passarinho" (Quattrocchi 2006); **Colombia:** Meta, "carrizo" X. Londoño & I. D. Quintero 283 (US), "cola de caballo" (Quattrocchi 2006); **Costa Rica:** San José, "cañuela" Jiménez 3717 (Davidse 1978); **Dominican Republic:** "carrizo" (Acevedo-Rodríguez and Strong 2012); **Ecuador:** Los Ríos, "carrizo" M. Acosta Solís 10696 (US); Guayas, "tundilla" M. Acosta Solís 5216 (US); Pichincha, "nankuchip" K.S. Lowell 488 (NY); Tungurahua, "carrecillo" M. Acosta

Solis 10263 (US); **Mexico:** Oaxaca, “con yana’, yaga bii, guichi yaa, xhaga la, copachil, bara seda xiñá, guie’ se’, yaga xuga, guichi bihui, sabi guini, guie’ niza, chumaga” F. Sánchez L. 170 (US); **Paraguay:** Santa Cruz, “tacuarilla” F. Mereles & L. Ramella 2717 & 2804 (G), “takua vovō”, “takuaní”, “takuapi”, “takuapi guasu”, “tacuarita” (Morrone and Zuloaga 1994); **Perú:** Amazonas, “nagkuship” E. Ancuash 562 (US); Maynas, “carrocillo” M. Rimachi Y. 1148 (US); Pasco, “caricillo morado” J. Salick 7319 (MO, NY); San Martín, “caricillo” J. Schunke Vigo 6138 (MO, NY); San Martín, “carrizo”, “huaymantillo”, J. Schunke Vigo 8241 (MO, NY); **Suriname:** Sipaliwini river, “síkiman ruwe” (Boejharat 2015); “nángkuchip” (Quattrocchi 2006).

Ethnobotanical and economic uses

Bolivia: Santa Cruz, “very palatable, a source of forage in the dry season” (Killeen (1990); **Colombia:** Meta, “mold for molten lead” X. Londoño & I. D. Quintero 283

(US); **Ecuador:** “cattle and guinea pig feed” (Bennet 1990); **Suriname:** Sipaliwini River “flutes and pan pipes” (Boejharat 2015).

Distribution

Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Haiti, Honduras, Jamaica, Leeward Islands, Mexico, Nicaragua, Panama, Paraguay, Perú, Puerto Rico, Suriname, Trinidad & Tobago, USA (Louisiana), Venezuela, Virgin Islands, Windward Islands. (Fig. 27).

Distribution (bibliographic references)

Hitchcock (1909) as *Panicum swartianum* Hitchc.; Hitchcock (1911, 1913) as *L. swartiana* (Hitchc.) Hitchc.; Hitchcock and Chase (1917); Hitchcock (1920, 1922, 1927a, 1930, 1936); Urban (1921: 32); Standley

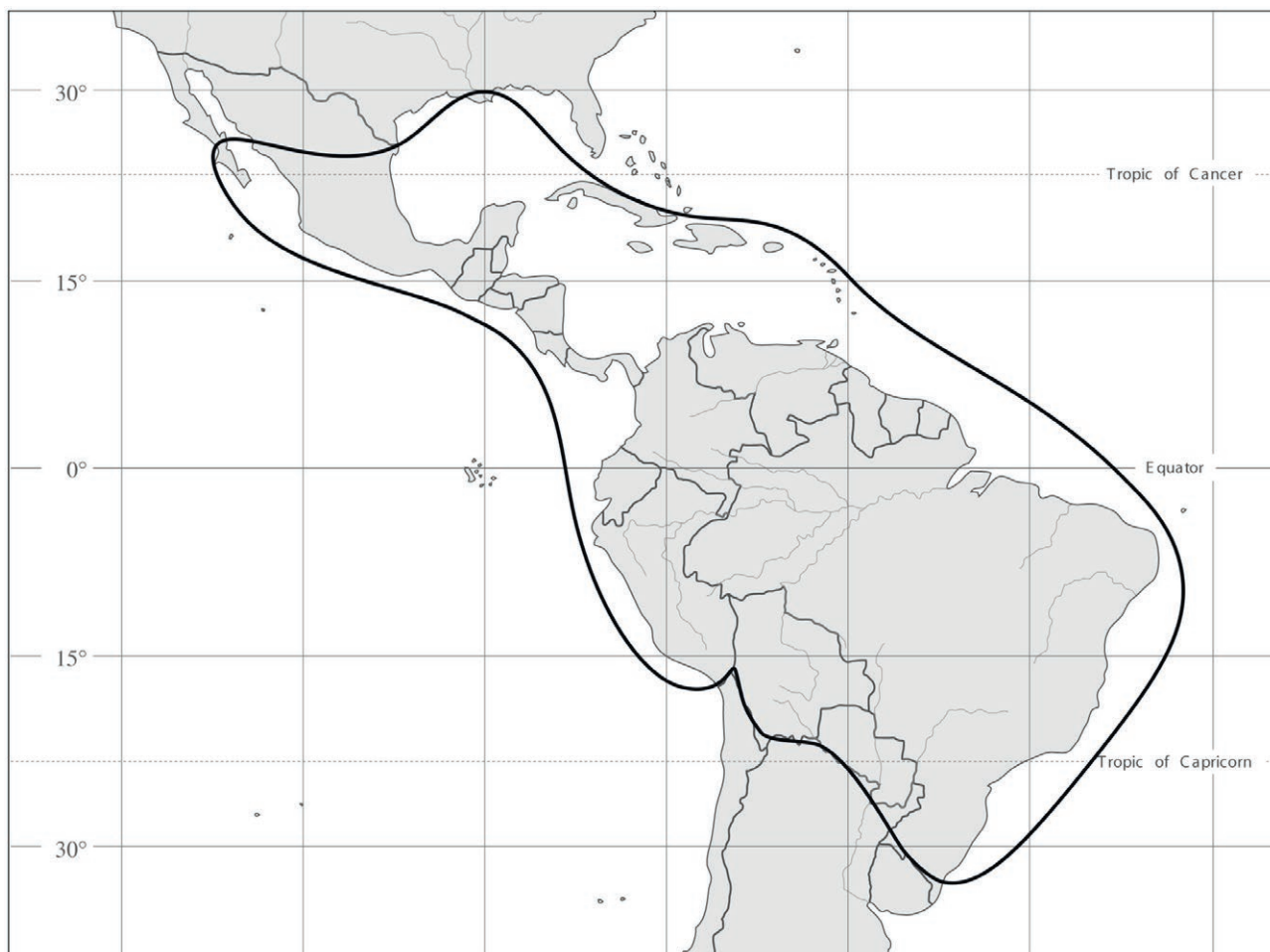


Figure 27. *Lasiacis maculata* (Aubl.) Urb.: general geographic distribution.

and Calderón (1925); Standley (1937); Amshoff and Henrard (1948); Swallen (1931, 1936, 1943, 1955b); Lemée (1955); Foster (1966); Pinto-Escobar (1966); Croat (1978); Beetle (1977); Steyermark and Huber (1978); Howard (1979); Pohl (1980); Smith et al. (1982); Hoyos (1985); Killeen (1990); D'Arcy (1987); Bono (1996); Cialdella and Vega (1996); Judziewicz (1990); Zuloaga and Morrone (1994); Morrone and Zuloaga (1994); Davidse (1978, 1994, 2001, 2004); Rogers and Holder (1999); Serna and Lopez-Ferrari (2000); Zuloaga et al. (2003); Renvoize (1984, 1998); Santos and Sano (2001); Morales (2003); Bussmann (2003); Correa et al. (2004); Acevedo-Rodríguez (2005); Ibáñez et al. (2005); Renvoize et al. (2006); Davidse et al. (2007); Sutherland (2008); Hokche et al. (2008); Morrone et al. (2008); Bono (2010); Giraldo-Cañas (2011); Morrone and Zuloaga (2012); Acevedo-Rodríguez and Strong (2012); Boejharat (2015); Villaseñor (2016); Sylvester (2017); Dávila et al. (2018); Furuya et al. (2019); Sánchez-Ken (2019), all as *L. sorghoidea* (Ham.) Hitchc. & Chase. or related synonyms.

Urban (1921: 751); Adams (1972); Baldini (2010), Catasús-Guerra (2012a) and Menjivar et al. (2012) use the correct applied name *L. maculata* (Aubl.) Urb., while Villavicencio et al. (2014) report erroneously this species either as *L. sorghoidea* or as *L. maculata*.

Ecology

Various types of habitats, predominantly along secondary forest edges, roadsides, edges of open areas into the forests, including xerophytic habitats at sea level (Mexico: Baja California, A. Carter & L. Kellogg 3110 (K, US), and edges of savannas. Mostly collected below 1000 m; in southern America up to 2550 m above sea level [Perú: Amazonas, C. Diaz & al. 3508 (MO)].

Phenology

October through May/June.

Remarks

L. maculata is certainly the species with the widest distribution in the genus with a high vegetative polymorphism regarding pubescence of leaf surface and the culm that would suggest describing many varieties or forms. *Lasiacis maculata* is typically a forest edge species and often acts as a pioneer species in secondary forest restoration as well as *L. ligulata* and *L. ruscifolia*. As in *L. procerrima* [see Stapf et al. 791 (FT, PMA, SCZ)], *L. maculata* bears solid prop roots at the base of the culm [see Stapf et al. 828 (FT, SCZ)]. The validity of the name *Lasiacis maculata* is discussed in Baldini (2010).

Selected Specimens

ARGENTINA. Corrientes. General Paz, Ita Ibate, 11 Jan. 1946, T. Ibarrola 4054 (FI); Mburucuyá, Estancia Santa Teresa, 9 May 1952, T.M. Pedersen 1717 (BR, C, G, NY, P, US); San Cosme, 20 Jun. 1973, A. Krapovickas & C.L. Cristobal 23624 (G, P); Capital, El Perichón, 1 Mar. 1976, C. Quarín 3388 (G, K, MO); Berón de Astrada, 15 Jan. 1977, A. Schinini 14045 (K); Formosa, Pirané, S de Pirané, 13 Jan. 1980, G. Guaglianone & al. 675 (K, US); Ituzaingó, 12 Apr. 1985, F.O. Zuloaga 2287 (K); Ituzaingó, Santa Rita, 3 Mar. 1987, A. Krapovickas & al. 41058 (K); **Formosa.** Pilcomayo, N de Puesto Porteño, 14 Apr. 1947, I. Morel 2505 (K); Pilcomayo, Formosa, La Laguna Blanca, 13 Mar. 1948, I. Morel 5041 (W); Formosa, Pilcomayo, Costa Alegre, N de La Primavera, 27 Jan. 1949, I. Morel 7088 (US); Formosa, Estancia El Ombu, 26°6'6"S, 58°48'6"W, 19 Dec. 2004, H. Maturo & D. Prado 282 (BM); **Jujuy.** Ledesma, camino al Arroyo Aguas Negras, 24 Feb. 1985, R. Kiesling 5644 (MO); Ledesma, Ruta Prov. 31, 2 km del desvío de la Ruta Prov. 1, camino a Vinalito, 540 m, 23°43'S, 64°30'W, 21 Feb. 1998, O. Morrone & al. 2882 (MO); **Misiones.** Posada Loreto, 30 Jan. 1908, E.L. Ekman 619 (G); Puerto Aguirre, 26 Jan. 1922, L.R. Parodi 4410 (US); La Grana, 31 Jan. 1922, L.R. Parodi 4452 (L); S. Ignacio, Puerto Viejo, 21 Mar. 1946, G.J. Schwarz 2290 (FI); Candelaria, Carpi, 21 Jan. 1946, B.S. Bertoni 2672 (W); La Mina-St. Juan, 26 Apr. 1946, J.E. Montes 2198 (K, US); Candelaria, San Juan, 6 Jun. 1947, E. Schwindt 297 (US); Candelaria, Santa Ana, 15 Jan. 1947, E. Schwindt 42 (FI); Candelaria, Santa Ana, 11 Nov. 1947, E. Schwindt 119 (BR, L); San Pedro, Caragatay, 25 Apr. 1949, J.E. Montes 1592 (US); San Ignacio, Parque Provincial Teyucuaré, 16°S, 55°33'W, 21 Apr. 1994, F.O. Zuloaga & al. 5689 (NY); Iguazú, Sendero Macuco, 28 Mar. 1995, R. Vanni & al. 3305 (K, MO); San Pedro, Parque Provincial Moconá, 230 m, 27°09'S, 53°53'W, 13 Apr. 1996, O. Morrone & al. 5455 (MO, NY); Iguazú, Parque Provincial Uruguai, 25°55'S, 54°15'W, 22 Apr. 1997, O. Morrone & al. 1989 (MO, NY); **Salta.** Oran, Ruta 18, a 3-4 km del Puente Internacional Argentina-Bolivia, 400 m, 22°43'S, 64°43'W, 1 May 2003, O. Morrone & al. 4530 (MO); **Santa Cruz.** Velasco, 63 km S de San Rafael, camino a San José, Serranía del Diablo, 17°11'33"S, 60°36'21"W, 327 m, 4 Apr. 2006, M. Dematteis & al. 2228 (G).

BELIZE. Cayo. Cayo, 20 Apr. 1931, H.H. Bartlett 12954 (NY, US); Vaca, 23 Feb. 1938, P.H. Gentle 2196 (K, NY, US); **Stann Creek.** Stan Creek-Mullins River Road, 21 Jan. 1937, P.H. Gentle 1910 (K, NY, US); Stann Creek Distr., near Hope Creek, 9 Feb. 1953, P.H. Gentle 7873 (G, NY, US); Stann Creek, Sapon Road, 5 Feb. 1954, P.H. Gentle 8118 (BM, G, NY, US); **Toledo.** Punta Gorda, 9 Jan. 1950, P.H. Gentle 6945 (BM, C, G, NY, US); Toledo, Union Camp, mixed hardwood forest on trail from Union Camp toward Little Quartz Ridge, 700-730 m, 16°23'53"N, 89°08'37"W, 10 Feb. 1997, T. Hawkins 1334 (MO).

BOLIVIA. Beni. Moxos, San Ignacio de Moxo, 65°35'W, 14°55'S, 12 Apr. 1979, A. Krapovickas & A. Schinini 34930 (K, US); Ballivián, Espiritu en la zona de influencia del Río Yacuma, 200 m, 29 Sep. 1979, S. Beck 2590 (K, US); San Borja 75 km hacia La Paz, 950 m, 12 Aug. 1981, S. Beck 6985 (K, US); Vaca Diez 7.7 km from the road between Riberalta and Guayaramerin, ca. 230 m, 11°05'S, 65°50'W, 17 Sep. 1981, J.C. Solomon 6297 (MO, NY); Ballivián, Rurrenabaque, 10 Jul. 1991, S. Beck 18633 (K); Santa Cruz, Guarayos, 6.6 km W of Yotañ, 250 m, 16°12'S, 63°04'W, 12 Jul. 1991, M. Nee & G. Coimbra 41680 (MO, NY); Ballivián, vicinity of Rurrenabaque, 350 m, 15°33'N, 67°33'W, 18 Aug. 2000, T.B. Croat & al. 84613 (MO); **Chuquisaca.** H. Siles, hillside right of and entering from the Toma de Agua del Río Limon, Mon-

- teagudo, 1375 m, 19°48'S, 63°57'W, 24 Jan. 2001, *K. Wendelberger* 398 (MO); Chuquisaca, Prov. Sud Cinti, camino de herradura de Río Nuevo-Altos del Rosal, en dirección a la Comunidad de Las Abras, 1800 m, 2053'S, 6415'W, 5 May 2005, *R. Lozano* 1275 (MO); **Cochabamba**. 1891, *M. Bang* 1289 (G, MO, NY, US, W), 1291 (US); Antahuacano, Nordyungas, Polo-Polo bei Coroico, Oct. -Nov. 1912, *O. Buchtien* 3635 (MO, NY, US, W); Espiritu Santo, Jun. 1909, *O. Buchtien* 161 (F, G, GH, MO, NY); **La Paz**. Guanai, 2000 ft, May 1886, *H.H. Rusby* 191 (US); Sur-Yungas, edge of forest Chulumani, 1600 m, 22 Dec. 1923, *A.S. Hitchcock* 22652 (US); Mapiro, San Carlos, 5 May 1927, *O. Buchtien* 89 (MO, NY); La Paz, Sud Yungas, Puerto Linares, 13 Jul. 1979, *S. Beck* 1668 (K); Nor Yungas, Coroico, 15 Feb. 1980, *T. Feuerer* 855a (K); Sud Yungas, Chulmani, 1700 m, 4 Jul. 1981, *S. Beck* 4727 (K, US); Nor Yungas, 950 m, 2 Jan. 1983, *S. Beck* 9177 (K, MO, US); Nor Yungas, Caranavi to Coroico, 1050 m, 10 Mar. 1987, *S.A. Renvoize* 4744 (K, MO, NY); Nor Yungas, Valle del Río Unduavi, entre Santa Rosa y Machacamarcá, arriba de Lamina San Silvestre, 1400 m, 4 Feb. 1988, *R. Seidel & E. Richter* 1185 (US); Inquisivi, on the slopes of both sides of the Río Suri between Puente Alegre and the mouth of the Río Khorí Camaña, ca. 12 km NE from Licoma Pampa, 1500 m, 16°42'S, 67°10'W, 16 Jun. 1988, *M. Lewis* 88843 (MO); Alto Madidí, 360 m, 13°35'S, 68°46'W, 28 May 1990, *A. Gentry & S. Estensoro* 70736 (MO); Sud Yungas, Alto Beni, 7 Jul. 1995, *R. Seidel & A. Carrizales* 7813 (K, MO); Nor Yungas, ca. 7 km from Coroico on road to Coricata, 25 Jul. 1996, *J.R. Wood* 11301 (K); Muñecas, antes de Marumpampa, subiendo ladera con pendiente fuerte al lado de arroyo, 1300 m, 15°13'22"S, 68°40'29"W, 20 Apr. 2005, *A. Fuentes & al.* 7041 (MO); **Santa Cruz**. Sará, Buena Vista, 450 m, 15 May 1925, *J. Steinbach* 7111 (BM, G, K, MO, NY, US); E of Puerto Suarez, near Brazilian frontier, 5 Mar. 1930, *A. Chase* 11154 (US); Ñuflo de Chavez, Concepción, 30 Apr. 1977, *A. Krapovickas & A. Schinini* 32064 (K); Sara, Buenavista junto al río Surutú, 8 May 1981, *M. Vazquez Avila* 390 (US); Velasco, ca. 122 km N of San Ignacio, 320 m, 15°30'S, 60°57'W, 26 Jul. 1983, *M.J.G. Hopkins & al.* #79 (K, MO); Ñuflo de Chavez, E Las Madres, 15 km N of Concepción, 500 m, 16°02'S, 62°00'W, 20 Feb. 1985, *T. Killeen* 883 (MO, NY); Ichilo, Parque Nacional Amboró, 700 m, 17°44'S, 63°40'W, 28 Aug. 1985, *J.C. Solomon & S. Urcullo* 14088 (K, MO); Ñuflo de Chavez, San Josecito, 2 km NW of Concepción, 500 m, 16°03'S, 62°05'W, 31 May 1986, *T. Killeen* 2099 (MO, NY, US, W); Santiesteban, 1.5 km SW of center of Montero, 295 m, 17°21'S, 63°16'W, 12 Jan. 1987, *M. Nee* 33436 (K, MO, NY); Andrei Ibanez, along Río Pirai, 495 m, 17°59'S, 63°23'W, 17 Jan. 1987, *M. Nee* 33617 (K, MO, NY); Ñuflo de Chavez, Rancho Puesto Nuevo, 40 km S of Concepción, 700 m, 16°25'S, 62°00'W, 26 Feb. 1987, *T. Killeen* 2332 (US), **2n = 36!** (Killeen 1990); Cerro San Miguel, 5 Mar. 1989, *L. Ramella & F. Mereles* LR2501 (G); Ñuflo de Chavez, Perseverancia, vecindad del Río Negro, tributario del Río Baures, a 75 km S del límite del Depto. de Beni y 150 km W del Río Paragvá, 200 m, 14°38'S, 62°37'W, 17 May 1991, *B. Mostacedo* 105 (F, MO); Ichilo, 2 km ESE of Santa Fé, 295 m, 17°24'S, 63°49'W, 26 May 1991, *M. Nee* 40568 (K, MO, NY); Guarayos, Río San Martín, 15°03'21"S, 61°48'12"W, 8-9 Sep. 1993, *I.G. Vargas* 2768 (NY); Velasco, Reserva Forestal, Bajo Paragvá, Laja Granítica, 250-500 m, 14°32'20"S, 61°30'00"W, 12 May 1994, *T. Killien & J. Wellens* 6308 (MO); Santa Cruz, Ñuflo de Chavez, ca. 25 km N of Estación Tres Cruces, 107 km E of Santa Cruz on railroad, 17°22'S, 62°13'W, 17 Mar. 1995, *J.R. Abbott* 16440 (FTG); Angel Sandoval, 3 km al S de la Comunidad San Fernando, 108 m, 17°16'37"S, 58°37'48"W, 2 May 1997, *M. Saldias & al.* 5029 (MO); Warnes, 4.3 km S of Highway from Puerto Nuevo to Colonia Okinawa, 17°14'S, 62°49'W, 11 Jan. 1998, *M. Nee* 47905 (NY); Cordillera, along road to San Joaquín, 1.3 km E of turnoff at La Mora from Highway from Santa Cruz to Abapó, 500 m, 18°27'30"S, 63°12'W, 14 Mar. 1998, *M. Nee* 48671 (G, MO, NY, US); Andrés Ibáñez, along new Highway from Santa Cruz to Abapó, 9 km S of Río Peji bridge, 500 m, 18°03'S, 63°12'W, 2 May 1998, *M. Nee* 49200 (MO, NY); Ichilo, Nacional Ambirò, Campamento Mataracú, 375 m, 17°33'S, 63°52'W, 2 Jun. 1998, *M. Nee* 49591 (MO, NY); Ñuflo de Chaves, 6-8 km de Concepción, camino a S.A. Lomerio, 478 m, 16°09'56"S, 62°01'20"W, 28 Mar. 2004, *O. Morrone & M.J. Belgrano* 4973 (MO); Ibáñez, 10 km by gravel road SE of San José and the turnoff from Santa Cruz-Samaipata Highway, 17°59'35"S, 63°17'37"W, 3 Apr. 2007, *M. Nee* 54974 (NY).
- BRAZIL. Alagoas.** Murici, Fazenda Boa Vista, 9°14'10"S, 35°50'10"W, 3 Aug. 2002, *M.R. Barbosa & al.* 2531 (NY); **Amapá**. 13 Jul. 1962, *J.M. Pires & P.B. Cavalcante* 52138 (K, MO, NY, US); **Amazonas.** Tabatinga, 27 Nov. 1945, *J.M. Pires & G.A. Black* 852 (US); **Bahia.** Valley of the Rio das Ondas, ca. 4 km of Barreiras, road to Santa Rita da Cassia, 550 m, 5 Mar. 1971, *H.S. Irwin & al.* 31599 (C, K, MO, NY); Islets and banks of the Rio Corrente, Correntina, 44°38'W, 13°20'S, 26 Apr. 1980, *R.M. Harley* 21784 (CEPEC, K, NY, US); Bahia, BR-101, próximo a Teixeira de Freitas, 13 Apr. 1992, *G. Hatschbach* 57047 (CEPEC); Prado, road from Itamaraju to Cumuruxatiba, 17°08'S, 39°25'W, 20 Oct. 1993, *W. Thomas & al.* 10027 (CEPEC, NY); Ilhéus, 3 km N of Rodoviária, Mata da Esperança, 14°46'55"S, 39°04'09"W, 27 Sep. 1994, *W.W. Thomas & al.* 10636 (NY); 5.3 km from Almadina on road to Ibatupa, 14°44'11"S, 39°41'57"W, 4 Apr. 1997, *W.W. Thomas & al.* 11423 b (NY); Oliveira dos Brejinhos, ca. 1.5 km da sede do Município, 16 Apr. 1999, *S. Sant'Ana & al.* 775 (CEPEC, NY); Encruzilhada, Rodovia Encruzilhada/Ribeirão do Lardo, 15°30'54"S, 40°48'51"W, 17 Aug. 2001, *A.M. de Carvalho* 6973 (CEPEC, NY); **Ceará.** Crato, 16 Apr. 1934, *J.R. Swallen* 4354 (US); Crato, Rodovia Crato-Exu, subida da Chapada do Araripe, 24 Jun. 1987, *Coradin & al.* 7787 (K); **Distrito Federal.** Ca. 30 km S of Brasília on road to Belo Horizonte, 700-1000 m, 26 Aug. 1964, *H.S. Irwin & T.R. Soderstrom* 5624 (G, P, US, W); Distrito Federal, Parque Nacional de Gama, 5 Mar. 1965, *W.D. Clayton* 4977 (K, NY); Distrito Federal, 3 km S of Sobradinho, 1000 m, 1 May 1966, *H.S. Irwin & al.* 15453 (US); **Espírito Santo.** Serra do Caiapó, cerrado island on slope, ca. 38 km S of Caiaponia on road to Jataí, 800-100 m, 17°12'S, 51°47'W, 18 Oct. 1964, *H.S. Irwin & T.R. Soderstrom* 7030 (G, K, MO, P, US); **Goiás.** Villa de Amayas, s.d., *G. Gardner* 4052 (BM, FI-Webb, P, US); Natividade, Jan. 1840, *G. Gardner* 3573 (BM, K, US); Serra Dourada, 30 Jul. 1952, *A. Macedo* 3734 (US); Araguaina, at Rio das Lontras, 300 m, 14 Mar. 1968, *H.S. Irwin & al.* 21180 (MO, NY, US); 2 km by road W of Monte Alegre de Goiás, 700 m, 13 Mar. 1973, *W.R. Anderson* 6950 (K, MO, NY, US); Serra do Caiapó, 5 km S of Caiapônia, 30 Apr. 1973, *W.R. Anderson* 9491 (MO, NY, US, W); Serra Dourada, ca. 17 km S of Goiás Velho, ca. 6 km NE of Mossamedes, 750 m, 9 May 1973, *W.R. Anderson* 9923 (MO, NY, US); Goiás, Niquelandia, ca. de 40 km em direção a Codemin, la entrada antes do posto na placa Rosariana, 15 Jun. 1996, *F.C.A. Oliveira & al.* 544 (MO, US); **Maranhão.** Barra do Corda to Grajahú, 1-5 Mar. 1934, *J.R. Swallen* 3623 (US); Carolina, 18 Mar. 1934, *J.R. Swallen* 3888 (US); Imperatriz, Fazenda Victoria, 6 Aug. 1949, *J.M. Pires & G.A. Black* 1696a (NY); Balsas, 23 Mar. 1994, *B. Nascimento & A.M. de Carvalho* 606 (K); **Mato Grosso.** Mato Grosso, in silva primaeva territorio "Praia" dicti, 19-20 Apr. 1894, *O. Malme* A.3185b (G); Mato Grosso, 20 Apr. 1894, *C.A.M. Lindmann* 3185b (P, UPS); Dourados, 4-5 Feb. 1930, *A. Chase* 11019 (BM, US, W); Santa Rita do Araguaia on Rio Ara-

guaya, 5–6 Apr. 1930, *A. Chase 11821* (NY); Xavantina-Cachimbo road, 600–1000 m, 31 May 1966, *D.R. Hunt & J.F. Ramos 5673* (K, NY, P, US); Ca. 270 km N of Xavantina, 12°54'S, 51°22'W, 6 Mar. 1968, *D.R. Gifford 671* (NY, P, US); Xavantina-São Felix road, 12°54'S, 51°52'W, 9 Apr. 1968, *J.A. Ratter & al. 939, 2120* (K, MO, NY, P, US); Ca. 30 km S of Xavantina on the Aragarças road, 14 Nov. 1968, *R.M. Harley & R. Souza 11074* (K, MO, P, US); Ca. 30 km ENE of Barra do Garças, 450 m, 5 May 1973, *W.R. Anderson 9777* (C, MO, NY, US); Ca. 5 km N of Barra do Garças, 7 May 1973, *W.R. Anderson 9878* (MO, NY); Cuiabá, Boa Esperança, garden ground of Rua 60, 130–150 m, 16°28'S, 56°02'W, 4 Aug. 1993, *M. Schessl 3410* (MO); Nova Xavantina, ca. 32 km de Nova Xavantina na estrada para Indianópolis, 17 Apr. 2005, *L.P. De Queiroz 10383* (HUEFS); **Mato Grosso do Sul**. 15 km N de Nioaque, Rod. BR-419, 11 Feb. 1993, *G. Hatschbach & al. 58900* (K, NY, W); Bonito, rotovia Bonito-Campos dos Índios, próximo de Três Morros, 10 Mar. 2003, *G. Hatschbach & al. 74460* (K); **Minas Gerais**. Between Uberlandia and Rio Paranaíba, 30 Mar. 1930, *A. Chase 11618* (US); Belo Horizonte, 7 km S of Belo Horizonte, 26 May 1945, *L.O. Williams & V. Assis 7136* (K, MO, NY, US); Serra do Espinhaço, ca. 10 km NE of Francisco Sá, road to Salinas, 1100 m, 12 Feb. 1969, *H.S. Irwin & al. 23138* (US); Serra do Espinhaço, 15 km N of São João da Chapada, 23 Mar. 1970, *H.S. Irwin & al. 28160* (C, US); Serra do Cipó at Cardeal Mota, 1000 m, 19 Feb. 1972, *W.R. Anderson & al. 36296* (C, K, MO, NY, P, US); Serra de Espinhaço, by Rio Jequití 2 km from Mendanha, 13 Apr. 1973, *W.R. Anderson 8787* (K, MO, NY, US); Ca. 15 km W of Pará de Minas along Highway 262 to Uberaba, 760 m, 28 Feb. 1976, *G. Davidse & T.P. Ramanamorthy 10816A* (MO); Joaquim Felício, entre Varzea da Palma e Joaquim Felício, 31 km E do Rio das Velhas, 17°35'S, 44°35'W, 12 Feb. 1988, *J.R. Pirani 2154* (NY); Belo Horizonte, Est. Ecologica UFMG, borda de mata, 19 Mar. 1991, *E. Tameirão Neto 439* (MO); Bandeiras, Fazenda Serra Azul, 525 m, 15°49'31"S, 40°31'21"W, 30 Jan. 2004, *W. Thomas & al. 13691* (CEPEC, MO, NY); **Pará**. Conceição do Araguaia, Alacilandia, 42 km W of Conceição do Araguaia along Highway Pa-287, at Rio Arraia do Araguaia, 300 m, 8°13'S, 49°36'W, 23 Feb. 1980, *T.C. Plowman & G. Davidse 9047* (MO, NY, US); Itaituba, estrada Santarém-Cuiabá, BR 163, km 877, Serra do Cachimbo, 8°45'S, 54°57'W, 3 May 1983, *M.N. Silva 214* (MO, NY); **Paraná**. Condria, near Rolandia, 6–8 Mar. 1946, *J.R. Swallen 8756* (MO, NY); Cascavel, prope flumen Paraná, 10 Jan. 1953, *B. Rambo 53497* (US); Parque Nacional di Iguaçu, 20 Feb. 1960, *E. Pereira 5374* (K); Umuarama, 9 Dec. 1965, *J.C. Lindeman & J.H. de Haas 13301* (K, L, NY); Xambrê, 15 Jun. 1966, *J.C. Lindeman & J.H. de Haas 1547* (K, NY); From Icaraima to Pôrto Camargo, 20 Jan. 1967, *J.C. Lindeman & J.H. de Haas 4290* (K, NY, US); Perola, Xambrê, 23 Jan. 1967, *G. Hatschbach 15844* (K, L, US); Barra da Felicidade, 20 Jun. 1967, *G. Hatschbach 16608* (C, K, NY); **Pernambuco**. Caruarú, Serra dos Cavalos, 8°22'S, 36°03'W, 15 Sep. 1981, *J.D.C. Arouck Ferreira 125* (US); **Rio de Janeiro**. Rio de Janeiro, 1835, *E.M. Gaudichaud 303* (FI-Webb); San Pedro, NW of Cabo Frio, 10 Dec. 1929, *A. Chase 10152* (US); Reserva Florestal de Itatiaia, Vêu de Noiva, 6 m, 21 Apr. 1972, *P.I.S. Braga 2465* (MO, US); **São Paulo**. Itapira, 13 May 1927, *F.C. Hoehne 20294* (US); 18 km N of Botucatu, along the S. Manuel-Piracicaba Highway, 550 m, 22°45'S, 48°25'W, 22 Apr. 1971, *I.S. Gottsberger 22* (US); São Paulo, Parque do Estado, Feb. 1988, *T. Sendulsky 1990* (HUEFS).

COLOMBIA. Nouvelle Grenade, 1862, *M. Lindig 1044* (MO, P); **Amazonas**. Trapezio amazônico, Loretayacu River, 100 m, Sep.-Nov. 1944, *R.E. Schultes 6006* (US); Leticia, Parque Nacional Natural de Amacayacu-Inderena, margen izquierdo del Río Amazonas, entre Mocagua y Macedonia, 80 m, 9 Nov. 1990, *X. Londoño*

& *M. Kobayashi 547* (US); **Antioquia**. Vicinity of Medellín, 20 Aug. 1927, *R.A. Toro 377* (US); Fredonia, 1850 m, 3 Aug. 1930, *W.A. Archer 522* (US); In camino between Argelia and Alto del Tigre, 1600 m, 31 May 1944, *E.L. Core 805* (US); Cerca de Santa Elena, camino entre Medellín y Río Negro, 2300–2500 m, 3 Sep. 1946, *J.D. Varela 16* (US); Antioquia, en los alrededores de Dabeiba, 20 Dec. 1947, *F.A. Barkley & G. Gutiérrez 1831* (US); San Luis, 4 km de San Luis, en la via San Luis-Autopista, 760 m, 75°10'W, 6°64'N, 23 Jun. 1987, *R. Callejas & al. 4050* (MO, NY, US); Frontino, km 28.8 of road Nutibara-La Blanquita, region of Murri, 1020 m, 06°40'N, 76°27'W, 5 Nov. 1988, *J.L. Zarucchi & al. 7174* (K, MO, NY, US); Frontino, road between Nutibara and La Blanquita, region of Murri, ca. 25 km from Nutibara, 1090 m, 06°40'N, 76°26'W, 8 Feb. 1989, *J.M. McDougal & al. 3757* (BM, MO); Amalfí, Veredas Chorrillos, La Maria, Montebello, S-NE de Amalfí, 6°40'–45'N, 74°52'W, 6 Dec. 1989, *R. Callejas & al. 9014* (NY); Cocorná, Vereda La Piñuela, Carretera a San Francisco, 700–800 m, 06°02'N, 75°08'W, 10 Nov. 1991, *D.A. Giraldo Cañas & al. 708* (MO); Maceo, Hacienda Santa Barbara, Parcela de don Cipriano, margen derecha de la quebrada “Guarda sol”, 550 m, 6°32'38"N, 74°38'24"W, 20 Nov. 2002, *R. Fonnegra & al. 7731* (MO); **Bolívar**. Badillo, Río Magdalena, 15 Jan. 1913, *F.W. Pennell 3916* (K); Along the Mompos-Juana Sanchez trail. Island of Mompos, Lands of Loba, Apr.-May 1916, *H.M. Curran 223* (MO, NY, US); Fra Squillo, Río Sinu, 90–120 m, 5–6 Mar. 1918, *F.W. Pennell 4605* (NY, US); Vicinity of Turbaco, 200–300 m, 6–22 Nov. 1926, *E.P. Killip & A.C. Smith 14681* (NY, US); **Caldas**. Chinchiná, Jun. 1952, *M. Koie 5311* (C); **Caquetá**. Inter Sucre et Cordoba, 11 Jul. 1925, *G.J.N. Woronow & S. Juzepczuk 5911* (US); Miramar, Río Orteguaza, short way beyond Río Peneya in direction toward Tres Esquinas, 340 m, 16 Jan. 1969, *T.R. Soderstrom 1394* (US); Morelia, Vereda de Santander, quebrada of Río Bodoquero (between Río Pescado and Río Guecochará), 430 m, 20 Jan. 1969, *T.R. Soderstrom 1407* (US), **n = 9!** (Gould and Soderstrom 1970); On road from Florencia to Neiva (near Sucre), 1080 m, 24 Jan. 1969, *T.R. Soderstrom 1413* (K, MO, NY, US); 55 km SE of Guadalupe, 9 Jan. 1974, *G. Davidse & al. 5629* (K), **n = 18!** (Davidse 1978); 15 km SW of Belen along road to San José de Fragua (SW of Florencia), 400 m, 10 Jan. 1974, *G. Davidse 5690* (MO), **n = 18!** (Davidse 1978), 5692 (K, US); 8 km SW of San José del Fragua (SW of Florencia), 11 Jan. 1974, *G. Davidse & al. 5727* (L, MO, NY), **n = 18!** (Davidse 1978); **Chocó**. Hoya del Río San Juan, Andagoya, 5°06'N, 76°42'W, 13 Apr. 1979, *E. Forero & al. 5173* (MO); Pizarro, margen izquierdo del Río Pepé, entre Boca de Pepé y Pié de Pepé, 19 Nov. 1985, *J. Espina 2010* (MO); Tadó, cerca de Agua Clara, 6 Dec. 1990, *J.L.F. Alonso & al. 8558* (FI, MA); **Cundinamarca**. Bayo Magdalena, Perrero, 17 May 1926, *G.J.N. Woronow & S. Juzepczuk 4868* (US); Cercanías de San Bernardo, hacia Sasaima, 1800–1900 m, 23 Jun. 1940, *J. Cuatrecasas 9624* (US); Abajo de Cachpay, camino que va a la hacienda “Las Mesitas”, 1620 m, 3 Nov. 1941, *G. Gutierrez 128* (NY, US); Quebrada Carmargo, N of Apulo, 460–480 m, 5 May 1944, *E.P. Killip & al. 38230* (US); 20 km NW of Villavicencio along the road to Bogotá, 800 m, 3 Jan. 1974, *G. Davidse & F. Llanos 5522* (K, MO, US), **n = 18!** (Davidse 1978); Poblado de Nariño, carretera de los Mmangos, 15 Feb. 1986, *J.L.F. Alonso & R. Jaramillo 5277* (FI, MA); **Huila**. Inter Guadalupe et La Resina, 8 Jul. 1926, *G.J.N. Woronow & S. Juzepczuk 5744* (US); 2–3 km above Finca Cedral, valley of Río Fortalecillas, 32–33 km E of Neiva, 1500 m, 2°58'N, 74°57'W, 18 Jan. 1943, *F.R. Fosberg 19777* (US); Huila, 25 Aug. 1944, *J.R. Swallen 1947* (K); 10 km SE of Guadalupe along road to Florencia, 1040 m, 9 Jan. 1974, *G. Davidse & al. 5605* (K, MO, US), **n = 18!** (Davidse 1978), 5629 (MO, US), 5585A (MO); 6 km SE of Altamira

along road to Florencia, 9 Jan. 1974, *G. Davidse & al.* 5585A (K); **Magdalena**. Santa Marta, 1898–1901, *H.H. Smith* 2147 (G, MO, NY, P, US), *H.H. Smith* 2148 (BM, G: *pro parte*; K, L, MO, NY, P, US: *pro parte*), *H.H. Smith* 2258 (MO: *pro parte*), Jul. 1903 *H.H. Smith* 2531 (K, NY); **Meta**. Near “Casa Papamene”, floor of valley of Río Papamene, Colombia-Urbe trail, 770 m, 3°12'N, 74°33'W, 23 Dec. 1942, *F.R. Fosberg* 19519 (US); Meta, Sierra de La Macarena, 13 Mar. 1956, *J.M. Idrobo & R. Jaramillo* 2176 (NY); Floodplain of Río Metica just E of Puerto Lopez, 210 m, 1 Jan. 1974, *G. Davidse & F. Llanos* 5469 (MO, US); Llanos area 4 km NW of Villavicencio towards Bogotá, 1130 m, 10 Jan. 1976, *J.L. Luteyn* 4799 (MO, NY, US); Villavicencio, Sitio Piperal, 27 Feb. 1987, *L. Quiñones* 982 (MO); Km 18 de la vía Granada-San Juan de Arama, 495 m, 16 May 1987, *X. Londoño & I. D. Quintero* 283 (US); **Nariño**. Inderena Station, km 55 from Timaco on road to Tuquerres, 23 Nov. 1981, *A. Gentry & al.* 34876 (MO); Tumaco, Río Chapul, 30 m, 78°28'W, 1°46'26"N, 19 Jun. 1989, *B. Madrigal & al.* 679 (MO, NY); **Norte de Santander**. Between Chinacota and La Esmeralda, 1000–1300 m, 19 Mar. 1927, *E.P. Killip & A.C. Smith* 20901 (US); Norte de Santander, Region del Sarare, Hoya del Río Chitagá entre Corro Colorado y Bata, 1300 m, 14–17 Oct. 1941, *J. Cuatrecasas & al.* 12239 (US); **Putumayo**. Mocoa, corregimiento de San Antonio, vereda Alto Campucana, finca La Mariposa, 1320–1420 m, 01°12'N, 76°38'W, 20–21 Apr. 1994, *J. Betancur & al.* 4975 (MO); **Santander**. Northern slope of Mesa de Los Santos, 1000–1500 m, 11–15 Dec. 1926, *E.P. Killip & A.C. Smith* 14992 (NY, US); Upper Río Lebrija, NW of Bucaramanga, 400–700 m, 29 Dec. 1926, *E.P. Killip & A.C. Smith* 16302 (US); Río Altura, 700 m, 21 Dec. 1948, *A. Molina & al.* 18 N.S. 070 (K, US); Ca. 10 km S of Socorro, 6 Nov. 1984, *J.R. Wood* 4583 (K, MO, US); **Tolima**. “La Trinidad”, Libano, 110–1400 m, 21–25 Dec. 1917, *F.W. Pennell* 3225, 3237 (MO, NY, US); Río Coello, New Quindío Trail, 100–1500 m, 13 Aug. 1922, *E.P. Killip* 9732 (US); Ibaqué, 8 May 1932, *J. Cuatrecasas* 2996 (MA); W of Chaparral, ca. 5 Km, 900 m, 29 Jul. 1950, *S.G. Smith* 1295 (US); On the Quindío pass, ca. 2 km below Cajamarca, 1600 m, 2 Nov. 1983, *J.R. Wood* 4088 (K, US); **Valle**. El Valle, Cordoba, 80–100 m, wooded cliffs of Río Dagua, 6–8 May 1922, *E.P. Killip* 5052 (US); Río Agua Bonita to Río Vieja, E of Zarzal, 1300–1400 m, 23 Jul. 1922, *F.W. Pennell & al.* 8567 (NY, US); Cali, Cerro de las Cruces, 26 May 1932, *J. Cuatrecasas* 2008 (MA); El Valle, Hacienda “El Trjo”, N of Palmira (Cauca Valley), 1050 m, 28 Dec. 1938–5 Jan. 1939, *B.H. Garcia* 6458 (US); El Valle, Río Dagua Valley, 675 m, 2–4 Apr. 1939, *E.P. Killip* 34837 (BM, US); El Valle, Cordillera Occidental, hoya del Río Calima, El Cairo, entre Darién y Mediacaño, 1650–1750 m, 6–7 Jan. 1943, *J. Cuatrecasas* 13884 (US); Cordillera Central, Hoya del Río Dagua, Piedra de Moler, 900–1180 m, 19–28 Aug. 1943, *J. Cuatrecasas* 15069 (P); El Valle, Cali, 1000 m, 3°27'N, 76°30'W, 30 Jun. 1944, *F.R. Fosberg* 21990 (US); El Valle, La Cumbre, 1680 m, 26 Feb. 1945, *J. Cuatrecasas* 19617 (US); Cordillera Occidental, Cali, Loma Los Cristales, 1300–1400 m, 25 Dec. 1959, *J. Cuatrecasas & al.* 25693 (US); El Valle, Tuluá, Mateguadua, Jardín Botánico, 1100 m, Apr. 1978, *H. Cuadros V.* 440 (MO); El Valle, Hacienda San Gerardo, cerca de Guabas, muy cerca de frontera con Guacarí, parte plana del Valle del Río Cauca, 950 m, 19 Dec. 1987, *F.A. Silverstone-Sopkin & al.* 3396 (MO); El Valle, Yotoco, Hacienda San Martín, ca. 1 hora de Media Canoa, 11 Nov. 1990, *J.E. Ramos & L.H. Ramos* 2909 (MO); Cauca, Km 5 on the Mojaras-Mercaderes road, 1000 m, 77°12'W, 1°50'N, 3 Feb. 1988, *X. Londoño & L.G. Clark* 373 (MO, US); Yumbo, Corregimiento de Mulaló, 3 km arriba del pueblo de Mulaló, por la Carretera del oleoducto del Pacífico, Carretera Panorama, 1300 m, 1 May 1990, *J.E. Ramos & al.* 2706 (MO); **Vichada**. Ca. 8 km E of Las Gaviotas

along road to Santa Rita, 25 Dec. 1973, *G. Davidse & F. Llanos* 5165 (K, MO); Vichada, ca. 35 km E of Las Gaviotas along unimproved dirt road to Santa Rita, 170 m, 26 Dec. 1973, *G. Davidse & F. Llanos* 5198 (K, MO, US).

COSTA RICA. Alajuela. Entre Ríos Itiquis y Poas, 29 Oct. 1933, *A.M. Brenes* 17331 (NY); San Miguel de San Ramon, 19 Jan. 1937, *A.M. Brenes* 21959 (NY); 1 km N of Atenas, 700 m, 31 Oct. 1968, *R.W. Pohl & G. Davidse* 11365 (US); Valley of Río Itiquis, ca. 4 km W of Alajuela, 800 m, 2 Dec. 1970, *G. Davidse & R.W. Pohl* 12544 (MO); Along Río Capote about 1 km from the small town of Capote, 10°45'N, 85°05'W, 5 Jan. 1975, *J. Taylor* 18156 (NY, US); Between Cerro Chato and Cerro de los Perdidos, 17 Feb. 1989, *G.F. Russell & al.* 769 (NY, US); Guatuso P.N. Volcán Tenorio, Cuenca del Río Frio, Alto Masis, 1200 m, 10°40'17"N, 84°59'25"W, 23 Jan. 2002, *J.L. Chaves* 1409 (MO); **Cartago**. San Rafael de Cartago, 28 Aug. 1892, *H. Pittier* 7110 (G); Atirro, Mar. 1894, *J. Donnell Smith* 4891 (US), 4991 (K, US); Tuquerrique, Dec. 1898, *A. Tonduz* 12858 (BM, G, L, P, US); Bouissons á Las Vueltas, Dec. 1899, *A. Tonduz* 12858 (G); Nicoya, Jan. 1900, *A. Tonduz* 13755 (BM, G, K, P, US); Vicinity of Pejivalle, 7–8 Feb. 1924, *P.C. Standley & J. Valerio* 47060, 46876, 47168 (US); Vicinity of Orosi, 30 Mar. 1924, *P.C. Standley* 39648 (C); Vicinity of Pejivalle, Jan. 1940, *A.F. Skutch* 4631 (MO, NY, US); **Guanacaste**. Vicinity of Cañas, Finca La Pacífica, 16 Dec. 1969, *R. Daurenmiere* 438 (US); Guanacaste, edge of Bosque Humedo ca. 1 km E of HQ of Santa Rosa Natural Park, 290 m, 25 Jan. 1983, *E.J. Judziewicz* 4283 (MO); Canton de La Cruz, P.N. Guanacaste, Cordillera, Estación Pitilla, 460–600 m, 11°01'35"N, 85°25'45"W, 20 Jan. 1996, *C. Moraga* 686 (MO); **Limón**. Barra del Colorado, N side between town and ocean beach, sea level, 10°47'N, 83°35'W, 26 Jan. 1986, *W.D. Stevens* 24108 (MO); **Puntarenas**. Forests de Boruca, Nov. 1891, *H. Pittier* 4455 (G, P, US, W); Vicinity of La Palma, on the road to La Honduras, 17–18 Jul. 1923, *W.R. Maxon & Harvey* 8050 (C); Peninsula Osa ad Golfo Dulce, circa Puerto Jimenez, 10 Apr. 1930, *G. Cufodontis* 180 (US, W); San Vito de Java, Aug. 1964, *H.S. McKee* 11182 (K, P, US); 20 miles NW of Golfito, 27 Feb. 1965, *E.W. Lathrop* 5580 (K); Peninsula de Osa, 28 Feb. 1965, *R.K. Godfrey* 66850 (US, USJ); Near Finca Las Cruces near San Vito de Java, 28 Jul. 1968, *R.W. Pohl & G. Davidse* 10790 (K, US), **n = 18!** (Davidse 1978); Buenos Aires, sabanas de Paso Real, 20 Dec. 1976, *J. Gómez Laurito* 1068 (USJ); La Vaca, frontera sur, 22 Dec. 1976, *J. Gómez Laurito* 1082 (USJ); Reserva Biológica Carara, sendero Quebrada Bonita a Bijagual, 8 Dec. 1980, *R. Zúñiga* 8 (K); Parque Nacional Corcovado, Dos Brazos de Río Tigre, Jimenez, Cuenca superior del Río Madrigal, 600 m, 8°29'50"N, 83°28'55"W, 1 Dec. 1990, *G. Herrera* 4735 (MO); Cantón de Osa, Los Mogos, 20 m, 8°45'00"N, 83°22'50"W, 14 Jan. 1991, *E. Castro* 100 (USJ); forests along S side of Quebrada Bonita, to ca. 1 km E of Costanera Highway, Carara Reserve, 30–40 m, 9°47'N, 84°37'W, 11 Jan. 1985, *M. Grayum* 4737 (MO); Puntarenas, Buenos Aires, Parque Nacional de La Amistad, Cuenca Terraba-Sierpe, 9°07'07"N, 83°05'07"W, 1600–1700 m, 24 Feb. 2008, *A. Rodriguez* 11939 (PMA); Reserva Forestal Golfo Dulce, cerca Banegas Los Charcos, 8°40'18"N, 83°30'17"W, 49 m, 29 Dec. 2008, *R. Aguilar* 11679 (NY); **San José**. Vicinity of El General, Dec. 1935, *A.F. Skutch* 2189 (K, MO, NY, US); Vicinity of El General, 670 m, Jan. 1939, *A.F. Skutch* 3817 (US), 3875, 3876 (MO, NY, US); Lower slopes of Cordillera de Talamanca, along Río Hermoso, Finca El Quizarrá, 28 Jan. 1965, *L.O. Williams & al.* 28449 (MO, NY, US).

CUBA. Oriente. Oriente, Sierra de Nipe, on limestone foothills near Sabana La Burra, 13 Nov. 1919, *E.L. Ekman* 10095 (G, NY, US); Oriente, Sierra de Nipe, Picote, on the southern slope, 14

Nov. 1919, *E.L. Ekman 10108* (US); Oriente, Papato, of the Sevilla tract, 11 Jan. 1920, *E.L. Ekman 10318* (US); Oriente, Sierra Maestra, Pinar de Bangamita, 12 Jan. 1920, *E.L. Ekman 10324* (G, US); Woods SE of Soledad, 30 Nov. 1926, *A.S. Hitchcock 23325* (US); **Santa Clara**. Hoyo de Manicaragua, 26–28 Feb. 1910, *N.L. Britton & al. 4694* (NY); Rincon to Banao, 3 Mar. 1912, *J.A. Shafer 12323* (BM, NY, US); Banao Mts., 1921, *A. Luna 1007* (NY); Lomas de Piguancia al Río Navarro, 3 Jun. 1922, *E.L. Ekman 13878* (US); San Blas, La Sierra, 8 Mar. 1929, *J.G. Jack 7053* (NY); San Blas-Buenos Aires, Trinidad Mountains, 6 Jan. 1942, *A. Gonzales 469* (MO, P, UPS, US).

DOMINICAN REPUBLIC. Santo Domingo, Jan.–Mar. 1871, *C. Wright & al. 614* (US); **Barahona**. Trail between Montecada Nuevo and La Lanza, 31 Jul. 1950, *R.A. Howard 12237* (BM, NY); 2 km norte de Paraiso, camino hacia Villa Niza, Valle de Río Nizaito, 18°00'N, 71°10'W, 3 Dec. 1981, *M. Mejía & J. Pimentel 18396* (FTG); **La Altagracia**. Isla Saona, 8 Jul. 1956, *Prof. Marciano & J. de Jesus Jiménez 3371* (US); **La Vega**. Cotuy, sea level to 300 m, 28 Jan. 1921, *W.L. Abbott 737* (US); Cerca de Río Grande, Constanza, 22 Oct. 1950, *J. de Jesus Jiménez 2123* (US); Between La Vega and Jarabacoa, 17 Mar. 1957, *J. de Jesus Jiménez 3468* (US); Jarabacoa, 4 May 1963, (NY); 12 km S of La Vega along the Santiago-Santo Domingo Highway, 150 m, 14 Aug. 1970, *G. Davidse 2680* (MO); Cabirma de La Loma, 20 Jun. 1973, *A.H. Liogier 18799* (NY); Loma del Puerto, Jarabacoa, 25 Jan. 1976, *A.H. Liogier 24732* (NY); Falmbridge Dominicana mine property, N of Río Yuna, N of Bonao, lowland broadleaf forest at base of Loma El Caribe, at W side in area called Jayaco relatively undamaged, 18°59'N, 70°25'W, 22 Apr. 1981, *T. Zanoni & al. 12877* (NY); La Vega, 7.7 km N of Buena Vista, 340 m, 19°12'N, 70°34'W, 10 Jan. 1991, *S.A. Thompson 8230* (MO). **Samaná**. Vicinity of Laguna, Samaná Peninsula, chiefly on the Pilón de Azúcar, 100–500 m, 19 Dec. 1920, *W.L. Abbott 332* (US); **San Juan**. Pietra del Aguacate to Río del Oro, 12 Oct. 1946, *R.A. Howard 9454* (BM, FI, NY, US); **Santiago**. Cordillera Central, Loma Diego de Orampo, 19 Jul. 1929, *E.L. Ekman 13200* (US); San José de las Matas, 24 Dec. 1929, *E.J. Valeur 307* (MO, US); Vicinity of Santiago, 200–500 m, 11 Jan. 1946, *H.A. Allard 14557* (US); Loma del Puerto, on road to Hotel Montaña, 9 Apr. 1964, *F.W. Gould & J. de Jesus Jiménez 10892* (US); Cordillera Septentrional, sobre Loma El Murazo, 19°41'N, 70°58'W, 18 Dec. 1984, *T. Zanoni & al. 32876* (MO, NY); Cordillera Central, en el poblado rural de Las Lagunas de Cenoci, 19°15'N, 71°18'W, 30 Nov. 1989, *T. Zanoni & al. 44044* (NY); **Santiago Rodríguez**. Aguacate, Monción, Nov. 1974, *G. Jürgens 6391B* (MO); **Santo Domingo**. Llanos Costero, St. Domingo City, 14 Jan. 1929, *E.L. Ekman 11157* (US); Santo Domingo City, banks of Río Ozama, 14 Dec. 1929, *E.L. Ekman 14219* (G, K, US); Vicinity of Ciudad Trujillo, 19 Nov. 1945, *H.A. Allard 13452* (NY); El Torito, Yuna, Rancho Arriba, 750 m, 20 Nov. 1976, *A. & P. Liogier 26054* (FTG); Llanura Costera, Distr. Nacional, Sierra Prieta en el poblado de Sierra Prieta, 18°39'N, 69°58'W, 8 Nov. 1984, *T. Zanoni & al. 32050* (NY); Nacional, base and lower southern slope of Sierra Prieta, 13.7 km N of Villa Mella, 14 Dec. 1986, *R. Carter & R. Garcia 5321* (MO).

ECUADOR. Ecuador, s.d., *H.F.A. von Eggers 15006* (K, L), 15421 (K); **Carchi**. Perhumid forest on wet plateau above San Marcos de los Coaquieres, on trail towards Gualpi Bajo, 1000 m, 78°17'W, 01°06'N, 7 Feb. 1985, *S. Lægaard & al. 57466* (MO, UPS); Carchi-(Esmeraldas) wet evergreen forest, near Lita, 600 m, 19 May 1987, *H. van der Werff & al. 9494* (MO); **Chimborazo**. Huigra, 1200 m, 16 Jul. 1923, *A.S. Hitchcock 20607* (US); Río Chanchan near Huigra, 14 May 1945, *W.H. Camp E-3039* (K, P, US, W); Road

General Elizalde (Bucay)-Pallatanga, 32 km from Pallatanga, 650 m, 79°02'W, 2°09'S, 29 Aug. 1976, *B. Øllgaard & H. Balslev 8994* (MO, NY); **Cotopaxi**. Road between Quevedo and El Corozon, 1.9 km NW of El Corozon, 67.5 km SE of Quevedo, 1225 m, 01°07'S, 79°06'W, 5 Apr. 1983, *T.B. Croat 55821* (MO); Km 60 Quevedo-Latacunga, 1150 m, 11 Mar. 1988, *S. Lægaard 71257* (G), *S. Lægaard 70774* (K); **Esmeraldas**. Quindindé, 21 Aug. 1950, *M. Acosta Solís 19613* (US); Virgin forest long trail Río Lita, 22 Jul. 1964, *C. Játiva & C. Epling 889* (NY); Hacienda Timbre, Hacienda Guayas, 20 km S Esmeraldas, 14 Apr. 1967, *B. Sparre 15516* (UPS); Lita-San Lorenzo road, 10 km NW of Lita, 800 m, 00°55'S, 78°35'W, 11 May 1991, *A. Gentry & al. 70169* (MO); **Guayas**. Guayaquil, 18–20 Jun. 1923, *A.S. Hitchcock 20133* (NY); Milagro, 30 Jun.–2 Jul. 1923, *A.S. Hitchcock 20295* (NY), 20236 (NY, US); Teresita, 3 km W of Bucay, 270 m, 5 Jul. 1923, *A.S. Hitchcock 20432* (US); Guayaquil, 26 Apr. 1939, *E. Asplund 5802* (FI, K, NY, P, UPS, US), 5810 (G, US); Bucay, 12 Aug. 1943, *M. Acosta Solís 5216* (US); Guayaquil, Cerro Azul, 29 Apr. 1959, *G. Harling 4836* (UPS); Cerro de Isera, Julio Moreno, 23 Jul. 1962, *C. Játiva & C. Epling 155* (NY); Capeira, km 21 Guayaquil to Daule, 20–200 m, 19 Sep. 1981, *C.H. Dodson & P.M. Dodson 11398* (MO); Guayaquil Canton, Carretera a salinas, km 15, 350 m, 02°10'S, 79°58'W, 15 Aug. 1991, *D. Rubio & al. 1776* (MO); Naranjal, Parroquia Taura, Reserva Ecológica Manglares-Churute, Cerro Perequetre Chico, 160–300 m, 02°27'S, 79°40'W, 26 Feb. 1992, *C.E. Cerón & al. 18279* (MO); **Imbabura**. 14 km W of the town of Apuela on the road to Selva Alegre, 1250 m, 16 Mar. 1980, *S.M. Young 75* (US); **Loja**. Cerro Gordo (Zaruma), 12 Aug. 1947, *R. Espinosa 1726* (K), 18 Aug. 1947, *R. Espinosa 1780* (US); Río Comunidades, between Vilcabamba and Yangana, along the river, 14 May 1967, *B. Sparre 16128* (P); Macara-Catacocha, 4°22'S, 79°57'W, 1100 m, 11 May 1988, *S. Lægaard & E. Kullberg 71223* (G); Las Chinchas-Portovelo ca. 18 km below Zumbé, 4 Jun. 1999, *S. Lægaard & al. 20237* (K); **Los Ríos**. Hacienda Clementina on Río Pita, 27 Mar. 1939, *E. Asplund 5494* (MO), 5496 (G, K, NY); Pichilingue, Cantón Ouvedo, 1 Aug. 1945, *M. Acosta Solís 10696* (US); Hacienda Clementina, 30 m, 10 Feb. 1947, *G. Harling 256* (US); 21 km S of San Carlos and 69 km N of Babahoya, 17 Feb. 1974, *A. Gentry 9992* (MO); On slopes and ridges near Río Palenque, Biological Station, between river and Pan Am Highway to Santo Domingo de los Colorados, 54 km N of Quevedo, 180 m, 00°38'S, 79°24'W, Jun.–Jul. 1977, *H.H. Iltis & M.G. Iltis 130* (MO, US); Quevedo Canton, Parroquia Centinela-La Piramide, Via Santo Domingo de Los Colorados-Quevedo entrando por Patricia Pilar km 41, 650 m, 01°40'S, 79°20'W, 25 Feb. 1992, *C. Quelal & G. Tipaz 264* (MO); **Manabí**. Ca. 20 km S of Jipijapa, 8 Mar. 1988, *S. Lægaard 70682* (K); **Morona-Santiago**. Along road S of Gualaquiza, 1000–1100 m, 78°33'W, 03°24'S, 3 Apr. 1985, *S. Lægaard 53994* (K, MO); Alrededores del puente sobre el Río Bombioza en la carretera Gualaquiza-Zamora y cerca la Parroquia de Bomboiza, 800 m, 26 Aug. 1985, *M.A. Baker 6307* (MO); Kankaim, 15 Sep. 1985, *K.S. Lowell 488* (NY); Centro Shuar Yukutais, 10 km S Sucua, Río Upano, 02°31'S, 78°09'W, 28 Sep. 1988, *P. Gomez 499* (MO, NY); Vieja Cordillera de Cutucú, km 19 on Mendez-Morona road paralleling the Río Namangoza, 2°43'S, 78°19'W, 16 Jun. 1989, *L.J. Dorr & I. Valdespino 6298* (NY); Morona Canton, Cordillera del Cutucú, Comunidad Angel Ruby, Pie de la Cordillera, 1064 m, 02°21'41"S, 78°02'24"W, 26 Mar. 2002, *L. Suin & al. 1266* (MO); **Oro**. Between La Chorita and Portovelo (Golden Mine near Zaruma), 1000–2000 m, 28 Aug. 1923, *A.S. Hitchcock 21196* (US); Leon, near Santa Rosa, Canton Pjili, 1000 m, 17–20 Nov. 1934, *Y. Mexia 6725* (BM, US); **Napo**. Napo (Pastaza), vicinity of Puyo, 750–1000 m, Aug. 1939, *A.F. Skutch*

4392 (K, MO, NY, US); Puerto Francisco de Orellana (Coca), 300 m, 76°52'W, 00°40'S, 4 Nov. 1976, *H. Balslev & E. Madsen 10593* (MO, NY); Road Coca-Auca oilfields, 3 km along the road to Yucca, 76°55'W, 00°28'S, 20 Aug. 1979, *L. Holm-Nielsen & al. 19624* (MO, NY); Cotundo, 18 May 1972, *H. Lugo 2357* (K, MO, NY); Morona-Santiago, road Sucua-Macas, 750 m, 24 Sep. 1979, *L. Holm-Nielsen & al. 20469* (K, US); 35 km N of Tena on the road to Baeza, 1150 m, 25 Mar. 1980, *S.M. Young 83* (MO, US); San Pablo at Río Aguatico, 5 May 1984, *S. Lægaard 52077* (K); Napo, Río Napo below Mishaualli, 14-15 Dec. 1985, *S. Lægaard 55839* (K); Reserva Biológica Jatun Sacha, 8 km de Puerto Misahualli, 450 m, 01°04'S, 77°36'N, 4 Sep. 1987, *C.E. Cerón & M. Cerón 2118* (MO, NY); Km 35 from junction Baeza-Tena road to Loreto, 77°36' W, 0°40'S, 25 May 1988, Estación Biológica Jatun Sacha, 450 m, 01°04'S, 77°36'W, 24 Aug. 1988, *C.E. Cerón & M. Cerón 4609* (MO); **Pastaza**. Colonia 24 de Mayo, side road to road to Puyo-Puerto Napo, 27 Jun. 1972, *H. Lugo 2497* (K, NY); Río Capahuari, ca. 12 km N of Puerto Sarayacu, 13 Aug. 1974, *H. Lugo 4114* (K, MO, NY); Near Puyopungu, 24 Nov. 1976, *H. Lugo 4985* (K, NY); Pacayacu on the Río Bobonaza, ca. 16 km NW of Sarayacu, 10 Aug. 1979, *H. Lugo 5211*, 12 Aug. 1979, *H. Lugo 5311* (K, MO, NY); Río Bobonaza, Quilloallpa, below Montalvo, ca. 300 m, 76°53'W, 2°10'S, 17 Jul. 1980, *B. Øllgaard & al. 34583* (K, MO, NY); Montalvo, on the Río Bobonaza, 300-350 m, 76°58'W, 2°5'S, 28 Jul. 1980, *B. Øllgaard & al. 35473* (K, MO, NY); Road Puyo-Macas, 2 Dec. 1984, *S. Lægaard & al. 53403* (K); Río Curaray, costado sur, boca del Río Querano, 230 m, 01°30'S, 76°32'W, 3 Sep. 1985, *D. Neill & W. Palacios 6840* (MO); Cantón, Simon Bolívar, bosque Protector Arutam, Km 47 on Puyo-Macas Highway, 01°46'53"S, 077°49'57"W, 800-950 m, 10 Aug. 2005, *J.L. Clark et al. 9117* (NY); **Pichincha**. Puente Gloria de Maria, W of Quito, 1200 m, 27 Jun. 1939, *E. Asplund 7272* (US); Between Chiriboga and Santo Domingo de los Colorados, 2000 m, Dec. 1952, *F. Fagerlind & G. Wibom 1961* (US); Road El Paraiso-Saguangal, 11 km from El Paraiso, 1200 m, 78°46'W, 0°12'N, 2 May 1982, *B. Øllgaard & al. 37710* (MA, MO, NY); NE of Vicente Maldonado, Reserva de ENDESA, 600 m, 79°02'W, 00°06'N, 7-10 Jul. 1984, *S. Lægaard 52471* (K, MO, NY, UPS); NE of Alluriquin, 1050 m, 00°19'S, 78°59'W, 21 Jul. 1985, *S. Lægaard 54712, 54713* (K, MO, NY, UPS); Carretera Quito-Chiriboga-Empalme, 1200-1300 m, 00°15'S, 78°50'W, 13 Dec. 1987, *V. Zak & J. Jaramillo 3206* (K, MO, NY, US); Canton Quito, Parroquia Nanegal, Reserva Maquipucuna, El Pacchal, N of Hacienda El Carmen, 1350 m, 00°08'N, 78°38'W, 7 Jan. 1995, *G.L. Webster 31039* (MO); **Santiago-Zamora**. Near Mendez, 1750-2500 ft, 5-6 Nov. 1944, *W.H. Camp 911* (US); **Tungurahua**. Valley of Patata River, between Banhos and Cashurco, 8 hours east of Banhos, 25 Sep. 1923, *A.S. Hitchcock 21808* (US); Valley of Río Pastaza, between Machai and La Victoria, ca. 1400 m, 24 Aug. 1939, *E. Asplund 8512* (MO); En e camino de Baños a Rioverde, entrada al Oriente, 10 Jul. 1945, *M. Acosta Solis 10263* (US); Along road from Río Negro to La Estancia and Parque Nacional Sangay, 1.8 km S of bridge over Río Pastaza, 1335 m, 01°25'24"S, 78°13'01"W, 4 May 2003, *T.B. Croat & al. 88484* (MO); **Zamora-Chinchipe**. 15.5 km N of Zumba on road to Loja, 1250 m, 1 Jun. 1990, *P.M. Peterson & E. Judziewicz 9439* (US); Ca. 15 km N of Yantzaza, 900 m, 3°49'S, 78°46'W, 15 Jun. 1998, *S. Lægaard 18895* (K, MO); El Pangui, Cordillera del Condor, arriba del valle del Río Quimi, 1300 m, 03°30'26"S, 78°25'15"W, 11 Dec. 2000, *J. Caranqui & al. 177* (MO); Along road from Zamora to Janeiro, vicinity of municipal garbage dump, along Quebrada Janeiro, 1.3 km NW of Bridge over Quebrada Janeiro, 1009 m, 4°02'53"S, 78°57'51"W, 22 Jul. 2004, *T.B. Croat 91906* (MO); Zamora, Cordillera del Condor, Parroquia San

Carlos de Las Minas, Nambija, San Carlos, 1100-1500 m, 04°00'54"S, 078°50'11"W, 30 Jan. 2005, *W. Quizhpe & al. 857* (MO, US); Vicinity of Ecuacorrientes mining company, Valley of Río Quime, trail along Río Waiwaime near its mouth at Río Quima, 1000 m, 03°33'45"S, 78°27'47"W, 23 Sep. 2007, *T.B. Croat & G. Ferry 99051* (MO).

EL SALVADOR. San Salvador. West side of Lake Ilopango, 23 Nov. 1911, *A.S. Hitchcock 8921* (NY, US); Tonacatepeque, 1922, *S. Calderón 509* (NY, US); San Salvador, 30 Mar.-24 Apr. 1922, *P.C. Standley 23117* (US); Lomas de Candelaria, 1929, *S. Calderón 2514* (K, US); Cabañas, A.P. Cinquera, La Torre y Campamento La Cascabel, 380 m, 13°53'N, 88°57'W, 23 Dec. 1997, *S. Henriquez & M. Cartagena 5174* (MO).

FRENCH GUIANA. s.l., 1842, *M. Melinon 397* (L, P, US); Route de Kourou, 1 Sep. 1955, *J. Hooek 83* (NY, P), 375 (CAY, US); Saül, 30 Jun. 1956, *J. Hooek 91* (CAY, P); Prés de Maripasonda, 1 Sep. 1961, *R. Schnell 11692* (US); Saül Region, along road between airport and Saül, 3°37'N, 53°12'W, 29 Oct. 1986, *L. Skog & C. Feuillet 7106* (CAY, NY); Savane Renner, 3 m, 52°53'N, 5°20'W, 18 Apr. 1996, *G. Cremers & J.J. de Granville 14455* (CAY); Mana, route d'Awala, 4 m, 53°48'0"N, 5°41'0"W, 20 Sep. 1999, *J.J. de Granville & F. Croizer 13812* (CAY); Monts d'Arawa, savane-roche centrale, 200 m, 53°22'00"N, 02°49'00"W, 11 Jul. 2002, *J.J. de Granville et al. 15207* (CAY); Mount Saint-Marcel, 27 Jul. 2002, *J.J. de Granville & al. 15518* (CAY, K); Inselbergs de la haute Wanapi, zone du dôme central, 170 m, 53°49'20"N, 02°31'00"W, 13 Apr. 2004, *J.J. de Granville et al. 15880* (CAY); Inselbergs du haut Marouini, Inselberg de la D.Z., 190 m, 2°36'30"N, 54°1'45"W, 21 Jun. 2004, *J.J. de Granville & F. Croizer 16318* (CAY); Saül, Crique Limonade dans les environs de la confluence avec la Crique Cochon, 180 m, 03°34'36"N, 53°12'48"W, 11 Dec. 2007, *O. Tostain et al. 1128* (CAY).

GUATEMALA. s.l., 1841, *E. Ritter von Friedrichsthal 549* (FI); **Baja Verapaz**. 16 miles from Salamá, 11 Nov. 1958, *J.G. Hawkes & al. 1921* (C, G, K); **Copán**. Pietra Blanca de Qualán, Jan. 1907, *H. Pittier 1787* (US); Livingstone, Río Dulce, 1889, *D. Smith 1852* (K); **Guatemala**. Guatemala City, 1-3 Dec. 1911, *A.S. Hitchcock 9036* (NY), 9053 (US); Damp wooded barranco 10 km S of San Raimundo, 18 Jan. 1939, *P.C. Standley 62914* (US); **Izabal**. Los Amates, 15 Feb. 1908, *W.A. Kellerman 7472* (NY, US); Quirigá, 2 Mar. 1932, *P. Weatherwax 94* (K); **Petén**. forest between Finca Yalpemech along Río San Diego and San Diego on Río Cacuen, 50-150 m, 25 Mar. 1942, *J.A. Steyermark 45402* (US); Petén, Dolores, E of village on Río Mopan trail, 12 May 1961, *E. Contreras 2283* (US); Petén, Tikal, 2 Mar. 1974, *W.C. Verboom 5035* (K); **Sacatepéquez**. Alotenango, 1300 m, 11 Nov. 2004, *M. Véliz 1586* (MO).

GUYANA. Berbice-Corentyne. Oreala, Corentyne River, Oct. 1879, *G.S. Jenman 256* (K, US); **Potaro-Siparuni**. Pakaraima Mts., Upper Ireng R. watershed, Malakwalai-Tipu summit on narrow ridge to SE escarpment, 1400 m, 04°48'N, 60°18'W, 13 Jul. 1994, *T.W. Henkel 5590* (CAY, MO, US); **Rupununi**. Western extremity of Kanuku Mts., 4-22 Mar. 1938, *A.C. Smith 3314* (G, K, MO, NY, P, US, W); Western extremity of Kanuku Mountains, in drainage of Takutu River, dense forest, 4-22 Mar. 1938, *A.C. Smith 3131* (G); 1 mile S of Emprensa, 500 ft, 14 Sep. 1963, *R. Goodland 715* (K, NY, P, US); Kanuku Mts., slope of Nappi Mt., 450 m, 03°20'N, 059°34'W, 8 Nov. 1987, *M.J. Jansen-Jacobs & al. 758* (CAY, K, MO, NY, US); Kanuku Mts., Maipama, 160 m, 03°22'N, 059°30'W, 17 Nov. 1987, *M.J. Jansen-Jacobs & al. 966* (K, US); Kanuku Mts., slope of Bank of Guyana, 140-320 m, 03°21'N, 059°29'W, 26 Nov. 1987, *M.J. Jansen-Jacobs 1274* (CAY, US); Karanambo, 3°45'N, 59°20'W, 1 Sep. 1988, *P.J.M. Maas & al.*

7150 (CAY, K, NY, US); Eastern Kanuku Mts., NE of Warimure, 200–500 m, 03°05'N, 059°20'W, 23 Jan. 1991, *M.J. Jansen-Jacobs* 2182 (CAY, K, MO, NY, P, US); Kanuku Mts., Crabwood Creek, 03°07'N, 059°06'W, 25 Jan. 1994, *M.J. Jansen-Jacob & al.* 3346 (CAY, K, MO, NY, P); NE slope of Mount Shiriri, 450 m, 02°53'N, 059°43'W, 18 Jun. 1995, *M.J. Jansen-Jacobs & al.* 4149 (US); **Upper Takutu-Upper Essequibo**. SE Kanuku Mts., Makaparima Mtn., foothills, 4 km NNE of Crabwood Creek camp, 400–450 m, 03°09'N, 59°16'W, 26 Oct. 1991, *B. Hoffman* 409 (CAY, US); Marudi Mt., 0.5 km NE of mine compound, 400 m, 02°14'N, 59°10'W, 11 Sep. 1993, *T.W. Henkel* 2831 (NY, US); Tautowan Mt., base & slope, 10 km E of Dadanawa Ranch Compound, 260 m, 02°53'N, 59°25'W, 4 Jun. 1997, *D. Clarke* 5145 (US); Wassari Mts., 275–400 m, 01°33'54"N, 059°14'18"W, 4 Sep. 1999, *D. Clarke* 8219 (NY, US).

HAITI. L'Artibonite. Vicinity of Kalacroix, Section Dessalines, 700 m, 11 Dec. 1925, *E.C. Leonard* 7810 (US); Vicinity of Ennery, 20 Jan. 1926, *E.C. Leonard* 9042 (NY, US); **Nord**. Vicinity of Plaisance, 28 Jun. 1920, *E.C. Leonard* 9352 (BM); Vard, Bayeux, N. Brigand at Thiband, 24 Nov. 1924, *E.L. Ekman* 2624 (G, K, US); Massif du Nord, slope of M. Palombal, 700 m, 19 Jun. 1925, *E.L. Ekman* 4330 (US); Vicinity of St. Michel d'Atalaye, 350 m, 18 Nov. 1925, *E.C. Leonard* 7158 (BM, US); Vicinity of St. Michel de l'Atalaye, 7 Dec. 1925, *E.C. Leonard* 7776 (NY, US); Vicinity of St. Michel de l'Atalaye, 350 m, 26 Dec. 1925, *E.C. Leonard* 8475 (US); Vicinity of Plaisance, 27 Jan. 1926, *E.C. Leonard* 9282 (US); Vicinity of Pilate, 325 m, 10 Feb. 1926, *E.C. Leonard* 9668 (P, US); Vicinity of St. Louis du Nord, 30 Mar.–7 Apr. 1929, *E.C. Leonard & G.M. Leonard* 14197 (NY, US); La Victoire, 3 Oct. 1943, *L.R. Holdridge* 1738 (BM, NY, US); **Ouest**. Vicinity of Mission, Fonds Varette, 1000 m, 18 Apr. 1920, *E.C. Leonard* 3670 (BM, NY, US); Vicinity of Furcy, 1300 m, 5 Jun. 1920, *E.C. Leonard* 11563 (US); Massif de La Selle, Port au Prince, Morne de l'Hôpital, 750 m, 21 Oct. 1924, *E.L. Ekman* 2224 (US); Vicinity of Mission, Fonds Varettes, 1000 m, 29 Apr. 1920, *E.C. Leonard* 3976 (US); Miragoane and vicinity, 20 Sep. 1927, *W.J. Eyerdam* 594 (NY, US).

HONDURAS. Atlantida. 17 km SSE of La Ceiba along Río Cangregal, 26 Jun. 1970, *G. Davidse & R.W. Pohl* 2197 (MO, NY, US); Jutiapa, 36 km E de La Ceiba, Corozales, 13–18 Apr. 1976, *C. Nelson & al.* 3436 (MO); **Cortés**. Montaña La Cumbre, 21 Mar. 1962, *A. Molina* 10566 (US); **Gracias a Dios**. Camp Tiro, 2 miles NW of Bulebar, on third northern branch of Quebrada Tiro, tributary of Río Platano, 15°43'N, 84°50'W, 4 Apr. 1981, *J. Saunders* 1216 (MO); **Olancho**. Along Río Olancho, on road between San Esteban and Bonito Oriental, 3.3 miles SW of border with Colón Department, along Río Grande, 20.8 miles SW of junction in Highway to La Ceiba and Trujillo, vicinity of Bonito Oriental, 350–400 m, 15°31'N, 85°42'W, 8 Feb. 1987, *T.B. Croat & D.P. Hanlon* 64486 (MO).

JAMAICA. Clarendon. Richmond Hill, Nov. 1900, *C.F. Mills* 1968 (US); Peckham Woods, 27 Dec. 1912, *W. Harris* 12768 (US); Upper west slope of Crofts Mountain, 2250–2500 ft, 4 Oct. 1968, *G.R. Proctor* 29244 (US); Clarendon, at top of N side Round Hill near Milk River, 300 m, 29 Dec. 1980, *V. Kapos* 1606 (MO). **Manchester**. New Forest, Southern Manchester, 8 Nov. 1912, *A.S. Hitchcock* 9893 (US); NW of Mandeville, Dec. 1956, *G.R. Proctor* 16025 (BM); **Middlesex**. Shaw Park, Ocho Ríos, 13 Jan. 1948, *F.W. Hunnewell* 18805 (NY); **St. Andrew**. Newcastle, 30 Sep. 1912, *A.S. Hitchcock* 9335 (US); Gordontown, 6 Oct. 1912, *A.S. Hitchcock* 9380, 9382 (US); Hills back of Barican, Ram's Horn Range, 19 Oct. 1912, *A.S. Hitchcock* 9569, 9570, 9571 (US); North slope of Catherine's Peak, 29 Oct. 1912, *A.S. Hitchcock* 593 (BM, C, G, K, L, MO, NY, P, US, W); New Castle, 3 Nov. 1912, *W. Harris*

11398 (BM, C, K, MO, NY); Salt Hill, 3 Nov. 1912, *W. Harris* 11410 (BM, K, US); Hope Grounds, 11 Nov. 1912, *W. Harris* 11405 (C, K, NY); Blue Mts., Robertsfield, 3 Dec. 1912, *W. Harris* 11491 (NY); Mt. Diablo, Feb. 1916, *H.N. Ridley* 24 (BM, US); Mt. Lebanon, 4 Jan. 1917, *W. Harris* 12488 (BM, K, MO, NY, US); Mt. Charles Distr. below Mavis Bank, 1800 ft, 14 Dec. 1954, *G.R. Proctor* 9626 (NY, US); Road to Bellevue, 17 Nov. 1957, *T.G. Yuncker* 17407 (BM, G, MO, NY); Hopewell, below Red Light, 10 Dec. 1957, *A.D. Skelding* 3481 (NY); Greenwich Bridle Path, 28 Feb. 1960, *C.D. Adams* 6399 (BM); Silver Hill, 3000 ft, secondary growth or mountain-side, 24 Nov. 1971, *G. Davidse & G. Proctor* 3247 (MO, US), **n = 18!** (Davidse 1978); Along road just above Gordon Town, 24 Nov. 1971, *G. Davidse & G.R. Proctor* 3250 (K, MO, NY, US), **n = 18!** (Davidse 1978); **St. Ann**. Near Faith's Pen, 14 Jan. 1958, *R.A. Howard & G.R. Proctor* 14990 (BM); James Webster Patent, 24 Nov. 1972, *G.R. Proctor* 33008 (BM, US); **St. Catherine**. Ewarton to Linstead, 9–11 Oct. 1912, *A.S. Hitchcock* 9409 (US); Ellis Mountain, Caymanas, Dec. 1954, *G.F. Asprey* 2222 (NY); 4 miles S of Ewarton near Riverhead, 1200 ft, 12 Feb. 1961, *C.D. Adams* 8946 (MO); **St. James**. Near Montego Bay, Mar. 1916, *H.N. Ridley* 34 (BM, US); Flamstead, 26 Nov. 1917, *W. Harris* 11469 (BM, K, NY); The Cockpit Country, near Flagstaff, 23 Dec. 1961, *C.L. Lundell* 16983 (MO); **St. Thomas**. 1–13 1909, *N.L. Britton* 4045 (NY); Vicinity of Creighton Hall, east side of Yallahs Hill, 500 ft, 24 Nov. 1963, *G.R. Proctor* 24243 (US); 2.4 miles SE of Cedar Valley along road to Saeforth, 350 m, 25 Nov. 1971, *G. Davidse & E. Convey* 3266 (MO); **Trelaway**. Troy, 6 Nov. 1912, *A.S. Hitchcock* 9808, 9813 (US); Troy, 19 Oct. 1917, *W. Harris* 12650 (K, MO, NY, US); Burnt Hill Between Albert Town and Troy, 560 m, 1 Feb. 1980, *A. Gentry & V. Kapos* 28320 (MO, NY).

LEEWARD ISLANDS. Antigua. Hills above Blubber Valley, 4–16 Feb. 1913, *J.N. Rose & al.* 3484 (NY, US); Antigua, 200–850 ft, 15 Oct. 1931, *H.E. Box* 115 (BM, K, MO, US); **Guadeloupe**. s.d., *C. Bertero s.n.* (FI-Webb, TO); Gourbeyre, 1893, *P. Duss* 3182 (NY); Morne Boucanier, 10 Feb. 1895, *P. Duss* 3613 (US); Forêt dense, bois traces, Malanga, 2 Jan. 1937, *H. Stehle* 1945 (US); Basse Terre, route menat a' la crete de village, 500 m, 10 Apr. 1974, *C.H.L. Sastre & F. Sastre* 2539 (MO); Basse-Terre, Côte sous le Vant, Crête de Village, 500 m, 11 Nov. 1976, *C.H.L. Sastre & al.* 4258 (P); Grands Fonds de Saint-Anne, 18 Dec. 1987, *Fournet* 4272 (P); Petit Bourg, Montebello, 16 Apr. 1989, *Fournet* 4482 (P); Pigeon (Bouillante), sous-bois de forêt littorale remaniée, 28 Jan. 2004, *P. Bamps s.n.* (BR); **St. Croix**. Christiansted, 20–24 Feb. 1913, *J.N. Rose & al.* 3624 (NY); **St. Kitts**. 13 Oct. 1919, *A.S. Hitchcock* 16353 (US); St. Kitts, 28 Jan. 1932, *H.E. Box* 160 (BM, K, MO, NY, US).

MEXICO. Baja California. Cañon del Caduco, E base of Cerro de la Giganta, Sierra de la Giganta, 7 Oct. 1951, *A. Carter & L. Kellogg* 3110 (K, US); **Chiapas**. Near the junction of the Río Perlas and Río Jataté at San Quintin and near Laguna Miramar, 18 Mar. 1955, *E.R. Sohns* 1617 (K, US); Sierra Madre, 3 Nov. 1960, *T. Tateoka* 1002 (K); Ixtapa, 7 Feb. 1981, *J. Bauml & al.* 586 B (US); Chichoa'sén, 8 Nov. 1988, *A. Reyes García & Urquijo* 1147 (BM); Chiapas, Ocosingo, al NO de Nuevo Guerrero, sobre el arroyo a 1 km del poblado, 193 m, 16°59'23"N, 91°17'27"W, 6 Jul. 2002, *D. Aguilar M.* 1719 (MO); Villa Corzo, La Cascada, Nuevo Refugio, 15°59'32"N, 93°26'50"W, 1 Aug. 2003, *E.M. López* 3072 (MO); **Morelos**. Salto de San Anton prope Cuernavaca, 19 Jan. 1926, *G.J.N. Woronow* 2460 (K); **Oaxaca**. Canyon of the Río Zavaleta near the village of San Pablo Quatro Venados, 15–18 km WSW of Oaxaca, 20–25 Jan. 1937, *W.H. Camp* 2461 (NY); 1.5 miles E of Ayautla on road to Tuxtepec, 31 Jan. 1981, *J. Bauml & M. Kimmach* 464 (US); Choapam, Yaveo, trail to San Juanito, 1

Apr. 1938, *Y. Mexia* 9252 (G, K, MO, NY, US); Oaxaca, San Carlos Yautepec, 6.4 km al SE del Camarón carretera a Tehuantepec. 1075 m, 20 Sep. 1988, *R. Torres C.* 12581 (MO); Istmo de Tehuantepec, Juchitán de Zaragoza, La Ventosa, 42 m, 16°34'03"N 94° 57'04"W, 24 Oct. 2013, *F. Sánchez* 170 (US); **Tabasco.** 12 km E of Tacotalpa toward Tapijulapa, 9 Mar. 1980, *C. Cowan* 2796 (MO, NY); **Veracruz.** Colipa, Mar. 1841, *F.M. Liebmman* 289 (C), 290 (K); Barranca de Jenampa, Zacuapan, Jan. 1912, *C.A. Purpus* 6206 (BM, MO, NY, US); Cerro San Cristóbal, frente a Orizaba, 17 Dec. 1970, *A. Lot* 1102 (US).

NICARAGUA. **Boaco.** Hacienda San Louis, ca 18 km al N de Camoapa, 400 m, 12°34'N, 85°30'W, 27 Dec. 1984, *D. Soza & al.* 295 (MO); **Carazo.** Jinotepe, 3-7 Dec. 1911, *A.S. Hitchcock* 8674, 8695 (NY, US); Jinotepe, Wiwili, Comunidad Boca de Plis, Reserva Bosawas, Territorio Misquito Indian Tasbaika Kun, parcela 1, Finca de Natividad Urbina, 500 m al S, 200-300 m, 7 Feb. 2008, *E.M. Urbina* 253 (MO); **Chontales.** Near Santo Domingo, 9 Apr. 1961, *G.S. Bunting & L. Licht* 1167 (NY); **Jinotega.** along Lago Apanás, 4 Dec. 1973, *L.O. Williams & A. Molina* 42756 (NY); Road between Río Bizcocho and Río El Jordan, 350-550 m, 12°16'N, 85°17'W, 18 Dec. 1983, *W.D. Stevens* 22598 (K, MO); Bocay, Reserva Natural Kilambé, Comunidad San Miguel de Kilambé, 700-900 m, 13°31'N, 85°37'W, 6 Jan. 2001, *R. Rueda & al.* 15294 (MO); **Matagalpa.** Cut-over hills about 15 km NE of Matagalpa along Río Las Cañas, 14 Jan. 1965, *L.O. Williams & al.* 27506 (MO, NY, US); Chontales, Santo Domingo, 13 Jan. 1970, *E. Narvaez* 3356 (BM, MO, NY); Matagalpa, Wet Montane Cloud Forest area, Finca Santa Maria de Osyuma, Cordillera Central de Nicaragua, 30 Nov.-4 Dec. 1973, *L.O. Williams & A. Molina* 42666 (NY); Matagalpa, Finca La Castilla, 20 km NE de la ciudad de Matagalpa, camino de entrada, 500-550 m, 13°01'N, 85°47'W, 22 Jan. 1982, *D. Castro* 2420 (MO); **Río San Juan.** 2 km NW of Sábalo, 23 Feb. 1984, *P.P. Moreno* 23302 (BM); Río San Juan, El Castillo, comunidad Che Guevara, 60 m, 11°03'33"N, 84°22'33"W, 8 Apr. 2005, *L. López* 547 (MO); **San Juan.** San Juan de Nicaragua, 1841, *Friedrichstahl* 549 (W); **Zelaya.** Vicinity of Wani including Río Uli, 90-110 m, 13°41'N, 84°50'W, 15 Mar. 1978, *W.D. Stevens & al.* 7214 (MO); Zelaya, Río Punta Gorda, al E de la Comarca del Salto del León, camino al caserio hacia la Gloria, 11°31'N, 84°20'W, 23 Feb. 1994, *R. Rueda & al.* 3355 (MO).

PANAMA. **Bocas del Toro.** Vicinity of Chiriquí Lagoon, 19 Feb. 1940, *H. von Wedel* 1856 (MO, US); 1 km NW of Bocatorito on SE side on island, 9 Feb. 1989, *P.M. Peterson & C.R. Annable* 6722 (MO); Approximately 3.5 km S of Tiger Key on the mainland, 0-100 m, 20 Feb. 1989, *P.M. Peterson & C.R. Annable* 6940 (MO); 5 km S of Tiger Key on the mainland near Cacao Boquete just N of Ensenada de Boquete, 5-110 m, 24 Feb. 1989, *P.M. Peterson & C.R. Annable* 7072 (MO); Carretera Fortuna-Chiriquí Grande, 8°50'49"N, 82°10'59"W, 129 m, 21 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 860, 861, 862 (FT, PMA, SCZ); **Chiriquí.** Rabo de Puerco, 8 km W of Puerto Armuelles, 50-150 m, 18 Feb. 1973, *T.B. Croat* 21968 (L, MO); Quebrada Quananito beyond La Represa 2 miles SW of Puerto Armuelles, 0-200 m, 20 Feb. 1973, *T.B. Croat* 22050 (K, MO, NY); Cañas das Gordas near Costa Rica Border on road to Volcano, 800-1200 m, 26 Feb. 1973, *R. Liesner* 267 (K, MO, NY, US); Guanabano, along Quebrada Guanabano, 0-100 m, 3 Mar. 1973, *T.B. Croat* 22513 (MO, US); 17 km NE of San Felix on new road to Cerro Colorado copper mines, 1000 m, 18-19 Mar. 1974, *M. Nee* 10759 (MO, PMA); Along road from Puerto Armuelles to San Bartolo Limite, 7 miles W of Puerto Armuelles, 120 m, 19 May 1976, *T.B. Croat* 36016 (MO); Santa Marta, Bugaba, 3 Dec. 1995, *A. Arauz*

103 (PMA); **Chorrera.** Río de Jesus, Los Diaz, muy cercano a Los Catillos, 24 Feb 2012, *O.O. Ortiz & al.* 516, 519 (PMA); **Coclé.** Valley of the upper Río Mata Ahogado, 350 m, 31 Dec. 1936, *P.H. Allen* 142 (MO, US); Coclé, road from La pintada to Coclesito, ca. 600 m, 8°45'N, 80°30'W, 7 Feb. 1983, *C. Hamilton & G. Davidse* 2835 (BM, MO); Coclé, Valle de Antón, 2 km del pueblo, 8°81'35"N, 80°06'51"W, 625 m, 16 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 828 (FT, SCZ); **Colón.** Between France Field and Catival, 9 Jan. 1924, *P.C. Standley* 30153 (US); Colón, Río Viejo, vicinity of Puerto Pilon, 2 Feb. 1947, *P.H. Allen* 4102 (G, NY, US); Camino a la zona maderera de Santa Rita, 28 Mar. 1968, *M.D. Correa & R.L. Dressler* 885 (MO, PMA); Nombre de Dios y San Antonio, 7 Feb. 1996, *C. Guerra & A. Espinosa* 595 (FT, PMA); Carretera Portobelo-Nombres de Dios, 9°33'33"N, 79°34'33"W, 40 m, 29 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 919 (FT, SCZ); **Darién.** Río Pinás, 2 Mar. 1967, *J.A. Duke* 10569 (MO); Forest near Yaviza, sea level, 8 Jan. 1975, *A. Gentry* 13488 (MO, PMA); Ensenada del Guayabo, 10 Jan. 1983, *N. Garwood & al.* 81 (BM); **Herrera.** 27 Aug. 1961, *J.E. Ebinger* 1067 (US); Disturbed area surrounding Chepo de Las Minas, 700 m, 19 Dec. 1977, *J.P. Folsom & al.* 7044 (MO); Herrera, road to 8 miles SW of Las Minas, 4 Nov. 1979, *W.G. D'Arcy & T. Antonio* 13493 (MO); Herrera, 3-7 km W of Las Minas on road to El Toro, 200-600 m, 23 Jan. 1981, *K. Systma & W.G. D'Arcy* 3188 (MO); **Panamá.** Canal Zone, 1850, *A. Fendler* 371 (K, MO, US); Canal Zone, Río Grande, near Culebra, Dec. 1910, *H. Pittier* 2118 (NY, US); Canal Zone, between Miraflores and Corozal, Jan. 1911, *H. Pittier* 2196 (BM, NY, US); Canal Zone, Gatún Lake, 15 Dec. 1911, *A.S. Hitchcock* 416 (BM, C, K, L, MO, NY, P, US, W), 417 (BM, C, G, K, L, MO, NY, US, W); Camino de Las Sabanca, Nov. 1921, *Bro. Heriberto* 257 (NY, US); Gatún, 21 Jan. 1922, *C.H. Ostenfeld s.n.* (US); Canal Zone, Chiva-Chiva Trail, Red Tank to Pueblo Nuevo, 1 Mar. 1923, *C.V. Piper* 5219 (US); Canal Zone, Ancon, 25 Feb. 1923, *C.V. Piper* 5281 (US); Canal Zone, Cerro Gordo, 5 Dec. 1923, *P.C. Standley* 25955 (C, US), 25987 (US); E of the Río Tecumen, 11 Dec. 1923, *P.C. Standley* 26651 (C); Canal Zone, Gamboa, 26 Dec. 1923, *P.C. Standley* 28320 (C, US); Balboa, Nov. 1923-Jan. 1924, *P.C. Standley* 26065 (K, MO, US); Canal Zone, 1924, *F.W. Popenoe* 47 (K, NY); Canal Zone, Las Cascadas Plantation, 4 Jan. 1924, *P.C. Standley* 29523 (C, US); Panamá, between Matias Hernandez and Juan Diaz, 21 Jan. 1924, *P.C. Standley* 32022 (US); Barro Colorado Island in Gatún, 18-24 Nov. 1924, *P.C. Standley* 40837 (US); San José Island Pellas Archipelago, Gulf of Panamá (about 55 miles SSE of Balboa); Barro Colorado Island, 4 Dec. 1931, *O.E. Shattuck* 528 (MO, P, STRI); Canal Zone, Las Cruces Trail, 25 Feb. 1935, *A.A. Hunter & P.H. Allen* 760 (MO, US); Met Road, erect, bambolo-like, 6 ft. tall, stems several, roadside, 8 Jan. 1946, *I.M. Johnston* 1078 (BM, FI, P, US); Valley in Area 11B, scrambling in ticket near open springy place, 28 Jan. 1946, *I.M. Johnston* 1272 (FI, US); Canal Zone, vicinity of Río Cocoli, Road K-9, 31 May 1959, *W.L. Stern & al.* 342 (MO); Canal Zone, 11 miles NE of Balboa, Finca Bergeron, 19 Feb. 1962, *W.J. Eyerdam* 12079 (US); Canal Zone, Fort Clayton, 1 mi E Tocumen airport on side road off of Inter-Amer Highway, 19 Dec. 1965, *K.E. Blum & E. Tyson* 1962 (MO, SCZ); Los Santos, 12 miles S Macaracas, 22 Jan. 1966, *E.L. Tyson & al.* 3078 (MO); Canal Zone, Chiva Chiva Trail near Miraflores Lake, 19 May 1966, *J.D. Dwyer & K. Blum* 4011 (MO, US); Canal Zone, Hill opposite Paraiso, 29 Nov. 1966, *J.D. Dwyer* 7150 (MO, NY); Pacora-Chepo Highway, vicinity of Pacora River, 7 Dec. 1966, *S. McDaniel* 8178 (MO); Barro Colorado Island, clearing at end of Harvard Trail, common, 12 Dec. 1967, *T.B. Croat*

4259 (MO, SCZ, STRI); Barro Colorado Island, 15 Apr. 1968, *T.B. Croat 4821* (MO); Barro Colorado, Burrunga Pt., 17 Feb. 1969, *T.B. Croat 8009* (MO, SCZ, STRI); Canal Zone, forest near Summit Golf Club, 13 Dec. 1970, *T.B. Croat 12791* (MO, SCZ); Panamá, Route T3, N of Buenas Aires, 27 Dec. 1970, *T.B. Croat 12924* (MO, NY, SCZ); Canal Zone, Barro Colorado island, Burrunga Point Clearing, 29 Dec. 1970, *T.B. Croat 12942* (MO); Bejuco, Los Pozos-Chame, 28 Nov. 1972, *M. Troetsch 22* (MO); Panamá, Río Tapia, Dec. 1923–Jan. 1924, *P.C. Standley 28142* (K) 3 km S of Alcade Diaz, 440 m, 18 Dec. 1973, *M. Nee 8857* (K, MO, NY); Canal Zone, junction of Chiva-Chiva and Gailard Highway, shores of Gatun Lake, 50 m, 9°00'N, 79°37'W, 26 Apr. 1982, *S. Knapp & R. Schmalzel 4869* (MO); Panamá, Cerro Cabra, small cut over hill just W of Canal Zone on the coast Veracruz, 1000 ft, 30 May 1978, *B. Hammel 3275* (MO); Panamá, Cerro Galera, just W of Tharcher Bridge, 100 m, 8°55'N, 79°35'W, 15 Feb. 1983, *C. Hamilton & Y. Palmer 2956* (MO); Barro Colorado Island, East shoreline of Fairchild Peninsula, 22 Mar. 1986, *N. Garwood 1741 A* (BM, PMA); Barro Colorado Island, near heliport, 3 Mar. 1988, *N. Garwood 2282 A* (PMA); Gamboa, area de rostrojo despues del puente sobre el Río Charges, en direcion a Gamboa, 9°06'49"N, 79°41'51"W, 49 m, 27 Jan. 2012, *M.N.S. Stapf & R.M. Baldini 917, 918* (FT, PMA, SCZ); **San Blas**. Soskatupu, island ca. 1.5 miles long, 0.5–0.7 miles broad, 0–150 m, 15 Aug. 1967, *T.S. Elias 1667A* (MO); Beginning of El Llano-Carti-Tupile road, 200–500 m, 8 Jan. 1974, *J.D. Dwyer & M. Nee 11994* (K, MO, US); Río Cangandí, 9°24'N, 79°24'W, 50–100 m, 18 Feb. 1985, *G. de Nevers 4927* (MO, PMA); **Veraguas**. Trail between Cañazas and the foot of the Cordillera Central, headwaters of Río Cañazas, 300–600 m, 8 Feb. 1937, *P.H. Allen 176* (MO, US); On Caribbean slope above Río Primero Brazo 5 miles NW of Santa Fé, 700–1200 m, 18–19 Mar. 1973, *T.B. Croat 23187* (K, MO, NY, US); Río Santa Maria along road to Santiago, 5 km S of Santa Fé, 250–300 m, 18 Nov. 1973, *M. Nee 8136* (L, MO, PMA); Open weedy roadside and open to brushy “savanna” pasture, 2 km NW of Atalaya, 19 Nov. 1973, *M. Nee 8201* (NY, PMA); Lower Montane Wet Forest, 6–7 km W of Santa Fé, 17 Feb. 1974, *M. Nee 9836* (MO, NY, PMA); Soná, Bahía Honda, Lerén, 30 Jan. 2002, *A. Ibáñez & al. 1516* (MA); Santa Fé, Alto de Piedra, Carretera Alto de Piedra-El Guabal, 8°31'38"N, 81°07'51"W, 617 m, 18 Jan 2012, *M.N.S. Stapf & R.M. Baldini 844* (FT, SCZ).

PARAGUAY. Alto Paraná. In regione fluminis Alto Paraná, 1909/10, *K. Fiebrig 6014* (G, K, US); Cerro Barrero, circa Fuente Olimpo, 28 Mar. 1980, *L. Bernardi 20372* (G, MO); Reserva Biológico Limoy de Itaipu Binacional, 24°51'S, 54°33'W, 18 Apr. 1986, *D.R. Brunner & S. Caballero 1850* (G, MO); Pto. Bertoni, 31 Mar. 1993, *A. Schinini & al. 28255* (G); Alto Paraná, Reserva Biológica Limoy, 10 Feb. 1997, *M. Dematteis & al. 559* (G); 95 km W of Ciudad del Oeste, km 235–238 near San Marcos, 25°24'S, 55°30'W, 17 Mar. 1999, *J.R. Grant & J.R. Rundell 3283* (US); Itaipu Binacional Paraguay-Brazil, Tati Yupi Biological Refuge, 220 m, 25°21'18"S, 54°37'54"W, 19 Jul. 2003, *E.M. Zardini & al. 60202* (MO); **Amambay.** Inter Río Apa & Río Aquidaban, San Luis, 1908–09, *K. Fiebrig 4710* (BM, G, K, L); Cerro Corá, collina circa Colonia Aceite, 13 Apr. 1980, *L. Bernardi 20561* (G, MO); Parque Nacional Cerro Corá, base del Cerro Muralla, 7 Feb. 1982, *J. Fernandez Casas & J. Molero 6039* (G, MO, NY); Parque Nacional Cerro Corá, 300 m, 22°39'S, 56°03'W, 11 Feb. 1982, *J.C. Solomon & al. 6863* (MO); Ruta 3, Arroto Negla., 16 Dec. 1983, *R. Vanni & al. 339* (G, MO); Parque Nacional Cerro Corá, Remonta Cué, 2240'S, 5605'W, 2 May 1992, *O. Morrone & J. Pensiero 542* (MO);

Parque Nacional Cerro Corá, Cerro Muralla, 250 m, 22°39'S, 55°59'W, 7 May 2001, *F.O. Zuloaga & O. Morrone 7310* (MO); **Boquerón.** Gran Chaco, ad ripam occidentalem flum. Paraguay, 5 Oct. 1905, *E. Hassler 2868* (BM, G, K); Puerto Casado & vicinity, Cerro Galvan, 23 Oct. 1956, *T.M. Pedersen 4155* (C); **Caaguazú.** In vicinity Caaguazú, Mar. 1905, *E. Hassler 9143* (BM, G, K, NY, W); **Caazapá.** Estancia Golondrina, Reserva Privada Ypeti, 2532°20'S, 5529°01'W, 22 Jul. 1998, *E.M. Zardini & G. Hellman 48926* (MO); **Canindeyú.** Canindeyú, camino Jejui-mi-Lagunita, km 8, 17 Apr. 1996, *G. Marín 146* (BM, MO); Jejui-mi, 14 Aug. 1996, *B. Jiménez & G. Marín 1379* (BM, MO); **Chaco.** Cerro León, del piede del Cerro hasta lomada al S de la meseta central, 16 May 1985, *A. Charpin & L. Ramella AC 21656* (G); S. Cruz, Cerro San Miguel, Fortin Raselo, 6 Mar. 1989, *F. Mereles & L. Ramella 2717* (G), *2804* (G); **Central Paraguay.** Central, in regione lacus Ypacaray, May 1913, *E. Hassler 12514* (G, K, L, MO, NY); Near Asuncion, 1888–90, *T. Morong 755* (G, K, MO, NY), *641* (G, K, MO, NY, US), *780* (NY); Central Paraguay, 15 Feb. 1874, *B. Balansa 40* (BM, G, K, L, US); Santa Barbara prés di Villa-Rica, 27 Feb. 1876, *B. Balansa 41* (L, P); Asunción, Colonia Elisa, Jul. 1893, *C.A.M. Lindman 1701* (UPS, US); Cordillera de Altos, 1898–1900, *E. Hassler 3731* (G, K, NY); Dep. Central, Villa Elisa, 12 Apr. 1961, *T. Pedersen 5899* (C, K, US); Asunción, Jardín Botánico, 5 May 1972, *A. Schinini 4728* (G, K, MO); Central, Tarumandy, 2 Apr. 1973, *A. Schinini 6200* (G); Central, 2.5 km W from entrance to Tavavory, 25°30'S, 57°30'W, 18 May 1992, *E. Zardini & T. Tilleria 31734* (MO); **Concepción.** 8–10 km al sur de l'Arroto Tagatiya-mi, 170 m, 22°42'S, 57°30'W, 5 Apr. 1986, *D.R. Brunner 1775* (G, MO); **Cordillera.** Caacupé, 11 Apr. 1950, *A. Burkart 18338* (MO, US); Serrania Tobatí, Meseta Ybitú Silla, 297 m, 25°12'S, 57°07'W, 25 Aug. 1988, *E. Zardini 6693* (MO); W side of Río Piribebuy basin, 27 km W of Arroyos y Esteros, 25°08'S, 57°18'W, 19 May 1990, *E. Zardini & C. Velázquez 20302* (MO); Cordillera, 5 km SE of Emboscada on road to Nueva Colombia, 25°08'S, 57°15'W, 9 Jun. 1990, *E. Zardini & E. Velázquez 21062* (BM, K, MO), *21155*, *21212*, *21255* (MO); Cordillera de Ybytyruzú, Melgarejo-Cerro Arati, 25°46'S, 56°16'W, 10 Jul. 1992, *E. Zardini & P. Aquino 32624* (K, MO); **Guairá.** Parque Nacional 7 Quedas, 24 Mar. 1977, *G. Hatschbach 39811* (G, NY); Colonia Independencia, 25°40'S, 56°15'W, 15 Apr. 1984, *W. Hahn 2250* (L, MO, NY); Cordillera de Ybytyruzú, Cerro Perú, 1 km W of Destacamento Torero, 25°55'S, 56°15'W, 17 Feb. 1989, *E. Zardini & C. Velázquez 10912* (BM, MO); Cordillera de Ybytyruzú, road Melgarejo-Antena, 5 km S of Melgarejo, 25°55'S, 56°15'W, 13 Mar. 1989, *E. Zardini & R. Velázquez 11455* (MO); Road Melgarejo-Antena, 25°55'S, 56°15'W, 5 Mar. 1989, *E. Zardini & C. Velázquez 11274* (K, MO), *11313* (MO); Col. Independencia, Ayo. Guazú, camino a San Gervasio, 27 Mar. 1993, *A. Schinini & al. 28045* (G), *28066* (G); **Paraguarí.** Yguarón, Cerro Curupaty, 5 May 1975, *P. Arenas 1197* (K); Parque Nacional Ybycui, 26°40'S, 55°10'W, 20 Apr. 1984, *W. Hahn 2302* (L, MO); Parque Nacional Ybycui, cuenca del Arroyo Minas, 26°05'S, 56°51'W, 15 Jun. 1985, *D.R. Brunner & L. Pérez 1200* (G, MO); Costa Segunda Cerro Palarios, 250 m, 25°25'S, 57°10'W, 31 May 1988, *I. Basualdo & al. 1551* (MA, MO); Cerro Palacios, 250 m, 25°25'S, 57°10'W, 3 Aug. 1988, *E. Zardini 6357* (MO); Arroyo Corrientes, National Park Ybycuti, 26°00'S, 56°46'W, 10 Feb. 1993, *E. Zardini & Guerrero 34980* (K, MO); **Presidente Hayes.** Villa Hayes, Estancia La Golondrina, 24°55'S, 57°40'W, 9 Sep. 1982, *W. Hahn 699* (L, MO); **San Pedro.** Primavera, Alto Paraguay, 24 Feb. 1956 *A.L. Woolston G. 87* (C, K, NY, US), 28 May 1956 *A.L. Woolston G146* (C, NY); Calle ovetense, 12 km al NE de Choré, 3 Oct. 1987, *E. Zardini & C. Benítez*

3399 (MO); Yaguareté forest, trail to Río Aguaray, 23°46'16"S, 55°59'37"W, 20 Jun. 1995, *E. Zardini & C. Balbuena* 42937 (MO); Yaguareté forest, Northern boundary, 23°46'49"S, 56°11'49"W, 27 May 1997, *E.M. Zardini & S. Zavala* 46707 (MO).

PERÚ. Amazonas. Bagua, valley of Río Maraño above Cascadas de Mayasi near Campamento Tte. Montenegro, 450 m, 3–4 Sep. 1962, *J.J. Wurdack* 1806 (K, US); Quebrada Huampami, Río Cenepa, Chacra, 15 May 1973, *R. Kayap* 744 (US); Quebrada Chichijam, Río Cenepa, 920 ft, 7 Jun. 1973, *E. Ancuash* 562 (MO, NY, US); Río Cenepa, 24 May 1973, *G. Davidse* 452 (K); Quebrada Satik, 16 Jul. 1974, *R. Kayap* 1096 (K, MO); Prov. Bongará, Distr. Sipabamba, along Quebrada Fortuna, 1300 m, 5 May 1981, *K. Young & M. Eisenberg* 333 (MO); Luya, Camporredondo, Fundo Cedro, 2450–2550 m, 24 May 1989, *C. Diaz & al.* 3508 (MO); Condorcanqui, Distr. El Cenepa, Region NE del Maraño, Comunidad de Kusu-kubaim, Río Comaina, 700 m, 04°25'S, 78°16'W, 17 Aug. 1994, *R. Vasquez & al.* 18830 (MO); Imaza, Kampaensa, NE del Maraño RENOM, 300–350 m, 04°55'S, 78°19'W, 21 Oct. 1995, *V. Quipuscoa* S. 316 (MO); Bagua, Aramago-Muyo, 380 m, 5°25'00"S, 79°30'00"W, 6 Nov. 1999, *R. Rojas & al.* 739 (MO); **Ayacucho.** Estrella, between Huanta and Río Apurimac, 8–14 May 1929, *E.P. Killip & A.C. Smith* 30674 (NY); **Cajamarca.** 2–8 km E of Chirinos, disturbed former *Podocarpus* forest, 1800 m, 05°25'S, 78°52'W, 3 Feb. 1988, *A. Gentry & al.* 61089 (MO); San Ignacio, Portachuelo, 1000–1500 m, 05°08'S, 78°57'W, 28 Jan. 1996, *J. Campos & O. Diaz* 2233 (MO); San Ignacio, Namballe, entre Pacashal y Las Abejas, 850–950 m, 04°58'00"S, 079°20'00"W, 9 Jul. 1997, *J. Campos & al.* 4105 (MO); Cutervo, 5 km N of Santo Domingo de la Capilla on road towards Chiple, 1400 m, 22 Mar. 2000, *P.M. Peterson* 15034 (US); Jaen, 11 km W of Highway 5N up Río Tabaconas and 4 km E of Tamborillo, 29 Mar. 2000, *P.M. Peterson & N. Refulio Rodriguez* 15096 (K, MO); **Cuzco.** Quispicanchi, Camanti, Maniri, 8 km W de Quincemil, en el camino hacia la represa de la quebrada Yanamayo, 720 m, 13°17'S, 70°48'W, 22 Jul. 1990, *M. Timaná & H. Astete* 705 (MO); La Convencion, Distr. Huayopata, San Luis, 1047–3200 m, 12°53'S, 72°44'W, 11 Apr. 2003, *W. Galiano & al.* 4864 (MO); La Convencion, Vilcabamba, Chivanquiri, 881 m, 12°45'16"S, 73°08'06"W, 18 Jul. 2004, *W. Galiano & al.* 6620 (MO); **Huanuco.** Churubamba, 1700 m, 24 Sep. 1936, *Y. Mexia* 8233 (BM, G, K, MO, NY, US); Huanuco, Tingo Maria, Valley of Río Huallaga, 11–14 Jul. 1937, *C.M. Belshaw* 3086 (C); Leoncio Prado, Rupa Rupa, 11 Jun. 1978, *J. Schunke Vigo* 10214 (K, MO, NY); Leoncio Prado, road between Tingo Maria and Pucallpa, km 32, 1350 m, 9°10'S, 75°50'W, 3 Jun. 1981, *G. Sullivan & K. Young* 1120 (MO, US); **Junín.** Colonia Perené, 23 Oct. 1923, *A.S. Hitchcock* 22118 (US); East of Quimiri Bridge, near La Merced, 1–3 Jun. 1929, *E.P. Killip & H.H. Smith* 23998 (MA, NY, US); Montayaco, W of San Ramon, 900 m, 27 Jun. 1976, *A. Gentry & G.T. Prance* 16430 (MO); N Umgebung von La Merced, Tal des Río Paucartambo, ca. 12 km N Puente Paucartambo, 960 m, 2 Jun. 1979, *H. Teppner* 316 (US); De Chanchamayo, La Merced-Puente Paucartambo road, 3 km from La Merced, 720 m, 11°05'S, 75°22'W, 17 May 1983, *D.N. Smith* 4050 (MO); **Loreto.** Leticia, Jul. 1902, *E. Ule* 6225 (G, K, L), 6226 (G, L); Santa Ana, 900 m, 21 Jun. 1915, *O.F. Cook & G.B. Gilbert* 1405 (US); Balsapuerto, lower Río Huallaga basin, 150–350 m, 28–30 Aug. 1929, *E.P. Killip & A.C. Smith* 28673 (NY, US); Lower Río Huallaga, Oct.–Nov. 1929, *L.O. Williams* 4939 (G, US); Quebrada Shanuce above Yurimaguas, 11 Jul. 1972, *T.B. Croat* 18083 (MO); Iquitos, trocha de la Astoria hasta el Río Mazan, near the mouth of Río Nanay, 29 May 1973, *S. McDaniel & M. Rimachi* 17368 (US); Maynas, Distr. Mazan, Río Amazonas, Varadero de Mazan,

140 m, 19 Aug. 1974, *M. Rimachi* 1148 (US); Iquitos, Carretera de Zungaro Cocha, cerca de la quebrada de Shushuna, ca. 150 m, 1 Sep. 1981, *M. Rimachi* 5634 (MO); Maynas, Dist. Punchana, Río Nanay, carretera del caseario de Santo Tomas, frente al Puerto de Bellavista, 120–140 m, 17 Aug. 1994, *M. Rimachi* 11045 (MO, US); Maynas, Dpto. Punchana, Río Nanay, 2 Nov. 1995, *M. Rimachi* 11452 (MO, NY); Prov. de Maynas, zona reservada Güeppí, Frontera con Ecuador, por el río Güeppí, arriba de la boca con el río Putumayo, 00°06'01.6"S, 75°10'04.7"W, 213–248 m, 22 Oct. 2007, *N. Dávila & al.* 4988 (F); **Madre de Dios.** Parque Nacional Manu, Pakitza, radial 4 a 0.8 km de la trocha Tachigali, 11°56'S, 71°15'W, 23 Apr. 1991, *X. Londoño* 613 (US); **Pasco.** Oxapampa, Central Selva, Palcazu Valley, Iscozacín above PEPP Project Camp, 27 Mar. 1986, *J. Salick* 7319 (MO, NY); Oxapampa, Distr. Palcazú, San Pedro de Pichanaz, Mirador Pichis, 700–1200 m, 10°30'15"S, 75°04'01"W, 10 Jun. 2004, *R. Rojas & al.* 2869 (MO); **San Martín.** San Roque, 1350–1500 m, Jan.–Feb. 1930, *L.O. Williams* 7184 (US); Juan Jui, Alto Río Huallaga, 400–800 m, May 1936, *G. Klug* 4372 (K, MO, NY, US); Tingo Maria, 625–1100 m, 30 Oct. 1949–19 Feb. 1950, *H.A. Allard* 20847 (US); Lamas, Alonso de Alvarado, W de San Juan de Pacayzapa, 800–900 m, 1 May 1973, *J. Schunke Vigo* 6138 (MO, NY); Mariscal Cáceres, Fundo Melodía, 800 m, 16 Jul. 1974, *J. Schunke Vigo* 7467 (K, MO, US); San Martín, Mariscal Cáceres, Distr. Tocache Nuevo, 7 Apr. 1975, *J. Schunke Vigo* 8241 (MO, NY); San Martín, Lamas, Alonso de Alvarado, San Juan de Pacayzapa, 1000–1050 m, 29 May 1977, *J. Schunke Vigo* 9550 (K, MO, NY); Mariscal Cáceres, Distr. Tocache Nuevo, Cerro Sinsin cerca a Bambamarca, 520–700 m, 20 May 1980, *J. Schunke Vigo* 11669 (US); Mariscal Cáceres, Tocache Nuevo–Juanjui road, 89 km from Tocache Nuevo, 810 m, 0743'S, 7640'W, 23 Jul. 1982, *D. Smith* 2145 (MO); Rioja, Distr. Pardo Miguel, entre Paraíso y Perla del Mayo a Aguas Verdes, 1080 m, 05°38'S, 77°36'W, 18 Jun. 1998, *I. Sánchez Vega & al.* 9429 (MO); **Tumbes.** Zarumilla, Matapalo, Bosque Nacional de Tumbes, 600–800 m, 19 Dec. 1967, *D.R. Simpson & J. Schunke Vigo* 423 (G, NY, US); **Ucayali.** Coronel Portillo, Bosque Nacional de von Humboldt, km 86, Pucalpa–Tingo Maria road, 270 m, 8°40'S, 75°00'W, 8 Aug. 1980, *A. Gentry & M. Horna* 29489 (MO).

PUERTO RICO. Porto Rico, 1820, *C. Bertero s.n.* (G); Maricao, 13 Nov. 1884, *P.E.E. Sintenis* 215 (G, L) *pro parte!*; Coamo, 13 Nov. 1885, *P.E.E. Sintenis* 3062 (G, K, NY, P, US, W); Aybonito, 25 Nov. 1885, *P.E.E. Sintenis* 2861 (K, NY, US); two miles NE of Mayagüez, 23 Jan. 1900, *A.A. Heller* 4375 (G, L, NY, US); Mount Morales, near Utuado, 15 Mar. 1906, *N.L. Britton & J.F. Cowell* 443 (NY); Maricao to Monte Alegrillo, 500–900 m, 3 Apr. 1913, *N.L. Britton & al.* 2623 (US); Vicinity of Maricao, 20–23 Oct. 1913, *A. Chase* 6218 (US); Vicinity of San Juan, 6 Nov. 1913, *A. Chase* 6412 (L); Vicinity of San Juan, 6 Nov. 1913, *A. Chase* 6419 (US); Vicinity of Arecibo, 8 Nov. 1913, *A. Chase* 6457 (NY); Sierra de Luquillo, 2000–2500 ft, 2 Dec. 1913, *A. Chase* 6728 (US); Vicinity of Mayagüez, Monte Mesa, 12 Dec. 1913, *A. Chase* 6824 (L), 6809, 6822, 6823, 6825 (US); Vieques Island, Cerra incanta, 28 Jan. 1914, *J.A. Shafer* 2570 (NY, US); Along the Guayama, Cayey Road, 5 Mar. 1922, *N.L. Britton & al.* 6450 (NY, US); Maricao, 3000 ft, 8 Jan. 1938, *F.H. Sargent* 10114 (MO, US); El Dunque–Luquillo, 1 May 1959, *L. Martorell & R. Woodbury* 546 (NY); Maricao, 29 Apr.–5 May 1964, *J.A. Duke* 7607 (MO); Guavate, Apr. 1968, *R.W. Woodbury s.n.* (NY, US); Cayey, Cerro Avispa, Cercadillo, 10 Feb. 1983, *A.H. Liogier & L.F. Martorell* 38886 (NY); Salinas, Barrio Lapa: W peak, Las Tetras de Cayey, 830–840 m 13 Dec. 1986, *G.R. Proctor* 42704 (FTG); Canon de San Cristobal Aibonito, 500 m, 23 May 1994, *A.H. Liogier* 37301 (MO); Caguas, Bairro Bor-

in, 16.9 km N of Guayama, 18°06'N, 66°05'W, 24 Nov. 1994, *D. Atha* 827 (NY); Maricao, Maricao Afuera, along Maricao River, 18°10.191'N, 66°59.163'W, 10 Jan. 1995, *P. Acevedo-Rodriguez & J.A. Cedeño* 7155 (NY); Maricao, Bairro Maricao Afuera, Río Maricao margins, 18°09'48"N, 66°59'20"W, 23 Dec. 1995, *J.A. Cedeño & H.E. de La Cruz* 637 (NY).

SURINAME. Voltzberg, 21 Aug. 1920, *A. Pulle* 227 (L); Granitic plateau +/- 8 Km in line from Paka Paka (Saramacca R.) to Ebbatop (v. Asch v. Wijck-Range), 19 Feb. 1951, *J. Florschütz* 1563 (C); Circa portum aeronauticum ad flumen Oelemari, 3°6'N, 54°33'W, 1 Apr. 1963, *J.G. Wessels Boer* 1158 (C); Lely Mts., 21 Nov. 1975, *J.C. Lindeman & al.* 158 (K, NY, P); Lely Mountains, 175 km SSE of Paramaribo, 500-700 m, 13 Oct. 1976, *S. Mori & A. Bolten* 8486 (MO, NY); Nickerie, area of Kabalebo Dam Project, roadside near ferry over Kabalebo Road, 30-130 m, 4°-5°N, 57°30'-58°W, 11 Nov. 1980, *J.C. Lindeman & al.* 336 (MO, NY, US).

TOBAGO. Tobago, 18-21 Dec. 1912, *A.S. Hitchcock* 10270 (US); Tobago, 19 Nov. 1913, *W.E. Broadway* 4841 (US); Pigeon Hill, 7 Apr. 1959, *R.S. Cowan* 1448 (K, NY); Parlatuvier-Roxborough Trace, Bloody Bay, 8 Apr. 1959, *R.S. Cowan* 1484 (K, NY, P, US); Between Studley Park and Hillsborough Dam, 24 Mar. 1993, *Clement & Ryves* 270 (BM).

TRINIDAD. Port of Spain, Fort Gorge Road, edge of jungle, 27 Nov. 1912, *A.S. Hitchcock* 592 (BM, C, G, K, L, MO, NY, W); St. Anns near Port of Spain, 28 Nov. 1912, *A.S. Hitchcock* 594 (BM, C, G, K, L, MO, NY, P, US, W); Chacachare, 4 Dec. 1912, *A.S. Hitchcock* 10064 (US); Tabaquite, 10 Dec. 1912, *A.S. Hitchcock* 10731 (US); St. Joseph, 17 Dec. 1912, *A.S. Hitchcock* 10170 (US); Manzanilla, 29 Dec. 1912, *A.S. Hitchcock* 10374 (US); Trinidad, 19 Nov. 1913, *W.E. Broadway* 4841 (K); Caparo, 3 Jan. 1915, *W.E. Broadway* 4924 (US); St. Francique, Oropuche, 11 Mar. 1915, *W.E. Broadway* 4976 (US); St. Ann, 17 Mar. 1920, *N.L. Britton & al.* 665 (K, NY); St. Anns Cascade, 4 Dec. 1923, *W.E. Broadway* 5170 (G, MO); Aripo Road, 15 Jan. 1926, *W.E. Broadway* 5991 (K, US); San Fernando Hill, 18 Jul. 1926, *W.E. Broadway* 6397 (US); Maraval, 9 Dec. 1928, *W.E. Broadway* 7067 (BM, K, MO, US); Maracas, 26 Jun. 1929, *W.E. Broadway* 7233 (BM, G, MO); St. Anns, 21 Feb. 1933, *W.E. Broadway* 9064 (BM, G, MO); Port of Spain, hillside along Botanic Garden, 15 Apr. 1933, *T.G. Tutin* 412 (US); 1 mile of Arima along eastern main road, 40 m, dense secondary forest, 30 Jul. 1970, *G. Davidse* 2446 (MO, US); Northern Range, 4 miles N of the intersection (along the Heights of Guanapo Road) of the Heights of Guanapo Road and Eastern main road (intersection 1 mile E of Arima), 200 m, 30 Jul. 1970, *G. Davidse* 2460 (MO); N of Port of Spain along North Coast Road, 420 m, 5 Aug. 1970, *G. Davidse* 2561 (MO); Tacarigua Co., trail in forest above St. Benedict's Monastery, trail goes through advanced secondary forest, 1 Jan. 1975, *S.H. Sohmer & S.D. Swanson* 9683 (US); Guanaco River 4 miles N de Maturita près Arima, 29 May 1975, *A.M. Raynal* 15598 (K).

USA. (Louisiana). New Orleans, s.d., s.coll. s.n. (Herb. H. van Heurck) (FI-Webb).

VENEZUELA. Amazonas. Orinoco, Lower Orinoco, May 1896, *H.H. Rusby & E.G. Squires* 358 (K); 20 km S of Puerto Ayacucho, 2 Nov. 1971, *G. Davidse* 2839 (K, MO), **n = 18!** (Davidse 1978); Selva Pintada a mas 20 km de Puerto Ayacucho, 11 Jan. 1978, *J. Bono* 184 (FT); Entre la Carretera hacia Samariapo y la pista de aterrizaje del Aereopuerto de Puerto Ayacucho, 75 m, 5°37'N, 67°36'W, 21 Jan. 1980, *O. Huber* 4786 (K, MO, NY); **Anzoátegui.** Freites, Burro trail between Sam Durrial and Los Pajariots, 30 airline km ENE of Bergatin and N of Mundo Nuevo, 1200-1400 m, 10°03'N, 64°06'W, 1 Dec. 1981, *G. Davidse & A.C.*

González 19795 (MO); **Apure.** 42 km NW of Achaguas along Highway to San Fernando de Apure, 110 m, 9 Nov. 1973, *G. Davidse, G. & T. Agostini* 3923 (K, MO), **n = 18!** (Davidse 1978); Entre el Samán y el Mantecal, Nov. 1976, *S. Castroviejo & Y. Ginéz López* 405 (MA); Páez, Selva de Cutufí, between Cutufí on the Río Cutufí and the Río Sanare, 300-350 m, 7°09'-11'N, 71°56'-58'W, 8-12 Nov. 1982, *G. Davidse & A.C. González* 21834 (MO); **Aragua.** Tovar, 1856-57, *A. Fendler* 2494 (K); Near Maracay, El Castaño, 2 Jan. 1942, *H. Pittier* 14968 (US); Carretera Las Tejerías-La Tiara, 4 Jan. 1978, *G.S. Bunting* 6046 (NY); Aragua, Distr. Ricaurte, 12-18 km al N de la Victoria, hacia la Colonia Tovar, 8 Dec. 1982, *J.A. Steyermark & G. Davidse* 127699 (MO, NY); **Bolívar.** Between La Paragua and El Cristo, 290 m, 25 Apr. 1943, *E.P. Killip* 37706 (US); E of Miamo Altiplanicie Nuria, 300-500 m, 8 Jan. 1961, *J.A. Steyermark* 88188 (K, NY, US); La Gran Sabana, 49 km W of the intersection of the main road to Santa Elena and road to Cabanayen hillside, 1360 m, 3 Dec. 1973, *G. Davidse* 4782 (NY, US); Bolívar, El Pao Viejo, 7 Dec. 1973, *G. Davidse & al.* 4968 (K, MO); 2 km E La Paragua, ca. 200 m, 6°56'N, 63°15'W, 23 Jul. 1978, *R. Liesner & A.C. González* 5459 (MO, NY); Cedeño, km 103 road Calcara-Puerto Ayacucho, Serranía la Caerbatana, 100-250 m, 07°00'N, 66°30'W, 5 Nov. 1985, *H. van der Werff & B. Holst* 7762 (MO); Piar Buen Retiro, 9 km por carretera desde Sabaneta, 330 m, 08°03'00"N, 62°38'00"W, 28 Feb. 1997, *W. Diaz & al.* 3134 (MO); 130 m, 5°20'N, 65°45'W, 12 Apr. 1998, *E. Zent & S. Zent* 2188 (MO); **Carabobo.** Above Maturin, near Las Trincheras, 21 Dec. 1938, *A.H.G. Alston* 5623 (P); Between Maracay and Valencia, south side of Lake Valencia, 4 Mar. 1940, *A. Chase* 12339 (K, US); Puerto Cabello, 3 Jan. 1955, *E. Asplund* 15118 (NY, UPS); Bejuma, Cordillera de la Costa, N de Bejuma, Palmichal, 10°19'N, 68°14'W, 800-1000 m, 1 Jan. 2010, *W. Meier & N. Flauger* 16387 (G); **Distrito Federal.** Cerro Naiguatá, 900-1100 m, 2 Nov. 1963, *J.A. Steyermark* 91813 (K, US); **Guárico.** San Juan De Los Morros, 29 Nov. 1938, *A.H.G. Alston* 5267 (BM); Monagas, Quiriquiri to Caripreto, 29 Apr. 1940, *A. Chase* 12580 (US); **Lara.** Around Palmasola, in forest along the Aroa River, 26-28 Jun. 1913, *H. Pittier* 6384 (NY, P, US); **Mérida.** Near Barinitas, 70°40'W, 8°45'N, 9 Dec. 1963, *F.J. Breteler* 3417 (G, MO, NY, P, UPS); **Miranda.** Petare and vicinity, near Caracas, 800 m, 30 Oct. 1921, *H. Pittier* 9893 (US); Las Mostazas on railroad beyond Los Teques, Nov. 1924, *H. Pittier* 211 (G); Los Chorros near Caracas, 950 m, 5 Dec. 1938, *A.H.G. Alston* 5332 (BM, NY, P, US); Santa Lucia, 150-200 m, 6-8 Mar. 1943, *E.P. Killip & F. Tamayo* 37030 (US); Parque Nacional de Guatopo, trail between carretera to summit of Morro de Aguaramal, passing Río Taquasito and Río San Lorenzo, 800 m, 25 Nov. 1961, *J.A. Steyermark* 90036 (US, VEN), 90044 (NY, US); **Monagas.** Brushy open slopes of Cerro de la Cueva de Doña Anita, south of and bordering valley of Caripe, 900 m, 7 Apr. 1945, *J.A. Steyermark* 61869 (US); N facing mountain slope SW of Caripe, 1030 m, 23 Jun. 1967, *R.A. Russell* 9388 (US); **Nueva Esparta.** Isla Margarita, Cerro Copey, 900 m, 19 Mar. 1983, *A.M. Sugden* 1123 (K, MO); **Portuguesa.** Distr. Guanare, 17 km NW of Tucupido by road, basin of Represa Tucupido amid lower forested, north slope of Fila Las Palmas, 200-400 m, 69°57'W, 9°01'N, 30 Oct. 1982, *G. Davidse & al.* 21470 (MO, US); Portuguesa, W side of Río Guanare, W and a little N of Guanare, 180 m, 9°02'N, 69°47'W, 15 Jan. 1993, *L.R. Phillipe & al.* 21252 (MO); **Sucre.** Limite distritos Bermudez-Benitez, Peninsula de Paria, al SE de Carupano, al NE de Maturincito, Cerro La Cerbatana, 700-800 m, 10°37'N, 63°10'30"W, 10 Jan. 2005, *W. Meier & al.* 11205 (MO); **Táchira.** Between Las Dantas and Las Adjuntas, 13 km NW of Rubio, 900-1050 m, 7°43'N, 72°25'W, 27 Jul. 1979, *J.A. Steyermark*

& *R. Liesner* 118776 (MO); 10 km E of La Fundacion, around Represa Dorada, 600–1000 m, 10–13 Mar. 1981, *R. Liesner* & *A. González* 10320 (MO, NY); El Zumbador, hacia Queniquea, 31 Jul. 1984, *J. Bono* 4075 (FI); Selva transicional y matorrales, Caserío de Tres Esquinas, arriba de El Valle, aldea Roscio, 1200 m, 5 Jul. 1985, *J. Bono* 4987 (FT); **Trujillo**. Selva de Galera a lo largo del Río Momboy cerca del Caserio de Agua Clara, entre Valera y Mendoza, 900–950 m, 12 Jan. 1982, *J. Bono* 2694 (FT); Valle del Río Momboy, entre Valera y Mendoza, arriba del Cucharito, hacia La Tapa, 1000–1100 m, 14 Sep. 1988, *J. Bono* 6954 (FT); Selva de Galeña y ciénagas a lo largo del Río Momboy, Alrededores de Carmania, subiendo de Valera hacia Mendoza Fria, 800 m, 7 Apr. 1989, *J. Bono* 8111 (FT); **Yaracuy**. Between Marin and Carbonero, 11 Apr. 1922, *H. Pittier* 11770 (NY, US); Vicinity of Cristobal Colón, 5 Jan.–22 Feb. 1923, *W.E. Broadway* 436 (NY, US), 164, 501, 607, 671, 716 (US), 720 (NY, US), 732 (NY, US); Yaracuy, Distr. San Felipe, Veroes, 5 km S de Bela Vista, 10°23'N, 68°24'W, 11 Jul. 1973, *G. Agostini* & *al.* 1808 (NY); **Zulia**. Carretera El Consejo-Palito Blanco-Sabana de La Plata, en km 6 al SW de El Consejo, 22 Dec. 1977, *G.S. Bunting* 6002 (NY); Mara, alrededores del Puesto “El Bosque” de la Guardia Nacional, 1300–1400 m, 10°47'35"N, 72°40'W, 10–15 Nov. 1982, *G.S. Bunting* 12242 (MO, NY); Reserva de Burro Negro, 350 m, 10°27'N, 70°49'W, 24 Nov. 1986, *O. Zambrano* & *L. Alfonso* 1406 (MO).

VIRGIN ISLANDS. **St. Croix**. Scenic Drive, W slope of Mt. Eagle, 12 Jan. 1980, *F.R. Fosberg* 59223 (BM, FTG, US); **St. John**. Maho Bay, jeep trail to Seiben, 12 Feb. 1988, *P. Acevedo-Rodriguez* 2638 (NY); Cruz Bay Quarter, road to Susannaberg, 212 m, 8 Jan. 1991, *P. Acevedo-Rodriguez* & *A. Siaca* 3844 (MO); **Virgin Gorda**. 5 Jan. 1919, *W.C. Fishlock* 140 (US).

WINDWARD ISLANDS. **Dominica**. 16 Oct. 1919, *A.S. Hitchcock* 16415 (US); Dominica, 20 Jan.–15 Mar. 1933, *G. Proctor Cooper III* 26 (US); South Chiltern Estate between Point Michel and Soufrière Bay, 1500 ft, rainforest and citrus plantation, 16 Apr. 1964, *W.R. Ernst* 1113 (US); Vicinity of Sophia Bay, 21 Jan. 1966, *K.L. Chambers* 2608 (BM, US); St. David near Madjini, 2 Feb. 1969, *R. De Filippis* 191 (BM, US); St. Peter, Sindicate Estate, 17 Jan. 1986, *C. Whiteford* 5163 (US); St. David Parish, trail to l'Escalier Tete Chien, Carib Territory, Sineku, 250 m, 27°35'N, 61°15'W, 3 Mar. 1997, *S.R. Hill* 28989 (MO); **Grenada**. Grenada, 6 Dec. 1889, *H.F.A. von Eggers* 6224 (P, US); Richmond Hill, 1905, *W.E. Broadway* 4674 (US); Bequia, 1950, *R.A. Howard* 11276 (BM, US); St. Patrick, Marli Hill, 1 Dec. 1957, *G.R. Proctor* 17293 (BM, US); **Martinique**. 1854, *C. Belanger* 71 (G); St. Pierre, Nov. 1857, *L. Hahn* 482 (BM, PI); Martinique, 1868, *T. Husnot* 94 (P); Vallée de St. Pierre, May 1870, *L. Hahn* 1057 (K, P); Martinique, 17 Oct. 1919, *A.S. Hitchcock* 16454 (US); Tivoli, bords Rivière Matane, 12 Dec. 1943, *H. & M. Stehle* 5436 (US); Case Pilote, rivière Case Pilote, 14°38'56.87"N, 61°08'06.19"W, 25 m, 21 Feb. 2017, *C. Delnatte* & *C. Potiron* 3674 (P); Le Vauclin, montagne du Vauclin, Lat. 728313, Long. 1610467, 17 Mar. 2021, *B. Ferlay* & *G. Viscardi* 1172 (P); **Montserrat**. 1879, *P. Duss* 769, 770 (NY); Montserrat, 8 Feb. 1907, *J.A. Shafer* 701 (NY, US); **St. Lucia**. Shores of Marigot Lagoon, west coast, 21 Mar. 1956, *A.C. Smith* 10199 (NY, US); Barre de l'Isle, Castries-Dennery Road, 350–400 m, 14 Apr. 1959, *R.S. Cowan* 1572 (NY, US); Mount Durocher 2 miles NW of Patience, 14°N, 61°W, 15 May 1984, *V. Slane* 121 (NY); Barre de l'Isle trail to Mt. La Comb, 24 Jan. 1985, *R.A. Howard* & *al.* 19888 (NY, US); **St. Vincent**. St. Patrick Parish, in steep wood of Cocoa, 18 Jan. 1962, *G.R. Cooley* 8182 (NY).

(10) *Lasiacis nigra* Davidse, *Phytologia* 29: 152. 1974. (Fig. 28).

Type: *Costa Rica, Alajuela, 3 km N of Palamares along the Carretera Interamericana, 800 m, edge of coffee plantation, culms 8 m tall, hanging from trees, 22 October 1968, R.W. Pohl & G. Davidse* 11272 (holotype: ISC [(photo!) barcode ISC-v-0000548]; isotypes F [(photo!) barcode F0046798F], K! [barcode K000309321], MO! [Acc. No. MO-128800], US! [barcode US00134116]).

(=) *Panicum divaricatum* L. var. *molle* Schlecht. & Cham., *Linnaea* 6: 33. 1831.

Type: “Mexico, in sylvis prope Jalapan, Deppe & Schiede 892” (holotype: HAL! [barcode HAL0106583]).

Description

Perennials, caespitose. *Culms* 1–8 m long, erect at the base, arching and clambering into vegetation; *internodes* 0.8–10 mm thick, lignified, glabrous-papillose-puberulent, sometimes papillose-pubescent, hollow; *nodes* glabrous. *Leaf sheaths* pilose or to completely glabrous, margins ciliate with hairs 0.8–3.0 mm long, *auricles* pilose with hairs varying from nearly glabrous to densely pilose; *collars* pilose to glabrous; *ligules* 0.5–2.0 mm long, usually glabrous or occasionally pubescent on the back, apex glabrous to ciliate with hairs 1.5–2.4 mm long; *blades* 5.0–15 cm long, 0.5–2.5 cm wide, linear to lanceolate, usually pilose, puberulent to densely pubescent, often glabrous, base asymmetrical, slightly lobed, clasping the culm, margins scabrid, apex acuminate. *Panicles* 3.0–15 cm long; branches ascending and diverging, up to 9.0–12 cm long, bearing few spikelets; *pedicels* scabrid, spreading at maturity. *Spikelets* (3.5)4.0–5.0(–5.7) mm long, 2.8–4.3 mm wide, obovate, purple when immature; *lower glumes* 1.5–3.0 mm long, 0.4–1.4 mm wide, 5–13-veined; *upper glumes* to 5 mm long, 7–13-veined; *sterile florets* sometimes staminate, *lemmas* 9–12-veined, *paleas* 2/3 to subequal to the length of the fertile floret; *fertile florets* 3.6–5.0(–5.2) mm long, 2.5–3.0 mm wide, brown, *anthers* 2.0–2.8 mm long, whitish, *stigmas* white; *caryopses* 2.5–2.8 mm long, 2.0–2.4 mm wide. *Chromosome number*: *n* = 18 (Davidse 1972, 1974, 1978).

Iconographs

Fig. 106 (Pohl 1980).

Vernacular names

Colombia: “*Guadua silvestre*” *E. Dryander* 1895 (US); **Costa Rica**: Cartago, “*caricillo trepador*” *A.*

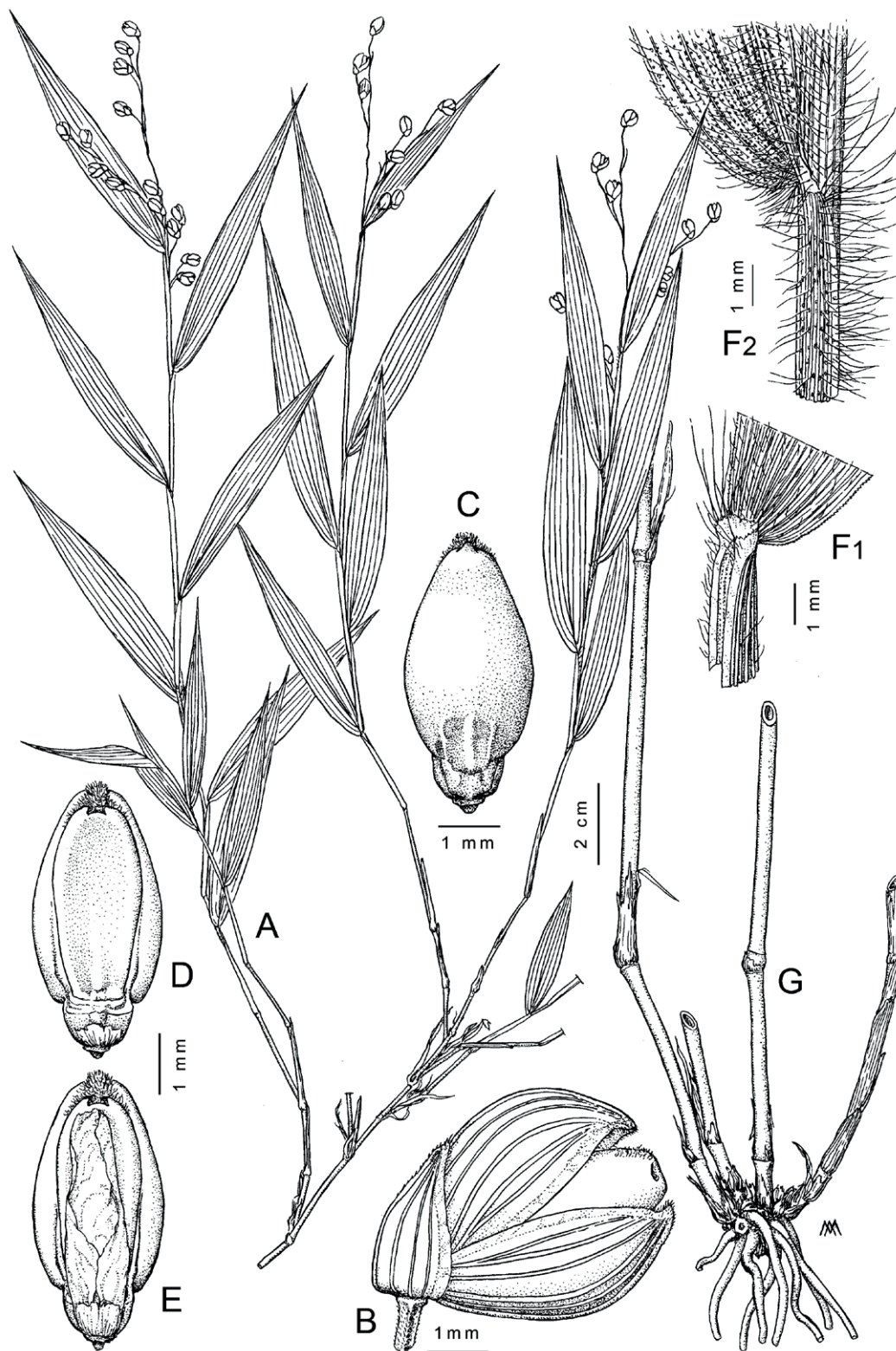


Figure 28. *Lasiacis nigra* Davidse: A. Habit. B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea; F1. Ligular area pilose [A-F1. from G.B. Hinton 6722 (K)]; F2. Ligular area densely pilose; G. Culm at the base with short persistent leaf sheaths [F2-G. from E.R. Sohns 1198 (K)]. A. Maury delineavit.

Tonduz 7234 (G, NY, US); **Ecuador**: Imbabura, “suri-llo” *A. Alvarez & al.* 626 (US); **El Salvador**: Chalatenango, “zacate grande” *D. Sloat* 354 (MO); **Guatemala**: Quezaltenango, “carrizo”, “cushcupé” *P.C. Standley* 68268 (US); **Honduras**: “yakut cincidl” *Lentz* 957 (*Lentz* 1986); **Mexico**: Colima, “carrizillo trepador” *F.J. Santana & al.* 5241 (US), “carricillo” (*Quattrocchi* 2006); **Nicaragua**: Managua, “carricillo” *A. Garnier* 1549 (US).

Distribution

Belize, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Perú, Venezuela. (Fig. 29).

Distribution (bibliographic references)

Davidse (1974, 1978, 1994, 2001, 2004); Steyermark and Huber (1978); Pohl (1980); McVaugh (1983); D’Arcy

(1987); Judziewicz (1990); Cialdella and Vega (1996); Serna and López-Ferrari (2000); Zuloaga et al. (2003); Morales (2003); Correa et al. (2004); Bono (1996); Renvoize et al. (2006); Ibáñez et al. (2005); Davidse et al. (2007); Hochke et al. (2008); Sutherland (2008); Bono (2010); Herrera Arrieta et al. (2010); Giraldo-Cañas (2011); Dorr (2014); Villavicencio et al. (2014); Villaseñor (2016); Sylvester (2017); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Montane and submontane vegetation; common in deciduous shade forest edges, in the underwood, and in pine-oak forests at high elevation (cf. Central America). Elevation between 500 up to 2500 m (Colombia: Antioquia, *R. Callejas* *P.* 11331 (MO); South American collections are often reported in subalpine páramo vegetation in the Andes.



Figure 29. *Lasiacis nigra* Davidse: general geographic distribution.

Phenology

Throughout the year, especially from May through February.

Remarks

Lasiacis nigra, clearly related to *L. maculata* (Davidse 1974, 1978), is more delicate and scandent than *L. maculata*, with a large, open panicle, and long-pedicelled spikelets. Leaves range from nearly glabrous [e.g., see *B. Stergios* 19993 (K, US)] to densely pilose [e.g., see *H.E. Stork* 2577 (US)]. Davidse (1978) distinguishes a “small-spikelet form” from the usual long and open form [e.g., see *G. Davidse* 3038 (MO)]. The distribution is more concentrated in Central America and Mexico and spreads in South America to Colombia, Venezuela, Ecuador, Bolivia and Peru, excluding Brazil.

The identification of *Panicum divaricatum* L. var. *molle* Schlecht. & Cham., is confirmed here, a heterotypic synonym of *L. nigra* previously hypothesized by Davidse (1978).

Selected Specimens

BELIZE. Cayo. Comune Ridge, Jun.-Aug. 1936, *C.L. Lundell* 6434 (C, NY, US); Cayo, Maya Mountains, Smokey Branch, 850 m, 16°33'N, 89°02'W, 18 Mar. 1994, *A. Monro & T. Helgason* 409 (BM, MO); March/4 way up Ceibo Chico track, 670 m, 16°32'N, 89°05'W, 1 Mar. 2000, *M. Short & al.* 222 (BM, MO); Maya Mountain divide in the vicinity of Doyle's Delight, the highest point in the Country, along North Ridge Trail, 1000-1100 m, 16°29'N, 89°02'W, 22 Aug. 2007, *B.K. Holst & C. Young* 9002 (MO); **Toledo.** Union Camp, 12 May 1979, *C. Whiteford* 1676 (BM); Little Quarz Ridge, 5.5 km E of Union Camp, 980-1035 m, 16°24'02"N, 89°06'40"W, 21 Feb. 1997, *T. Hawkins* 1531A (MO).

BOLIVIA. Cochabamba. Chapare, 29 Jan. 1929, *J. Steinbach* 8976 (G); **Chuquisaca.** Sud Cinti, Cañon Chapirenda, ca. 5 km al NW de la Comunidad de Las Abras, Camino a Candado Grande, 1372 m, 21°04'24"S, 64°15'35"W, 26 Jan. 2006, *R. Lozano & J. Peñaranda* 1922 (MO); **Cundinamarca.** Caqueza, Bogotá, s.d., *Karsten s.n.* (W); **Santa Cruz.** Florida, 10 km E of Samaipata, 23 Mar. 1981, *S.A. Renvoize & T.A. Cope* 4045 (US).

COLOMBIA. Antioquia. Quebrada de Musingita, W of Frontino, 1580 m, 27 Mar. 1944, *E.L. Core* 477 (US); Cerca al camino viejo a Ríonegro, 7 km E of Medellín, 2100 m, 13 Feb. 1949, *A. Molina & F.A. Barkley* 76 (BM); Jardín, Vereda Las Manguitas, 1500 m, 19 Sep. 1986, *R.W. Pohl & J. Betancur* 15567 (MA, MO, US); Sonson, km 18 of road Sonson-La Union, 2170 m, 05°49'N, 75°17'W, 8 Mar. 1987, *J.L. Zarucchi & N. Bedoya* 4594 (MO); Medellín, Via Santa Melena, 75°20'W, 6°10'N, 26 Mar. 1987, *R. Callejas & O. Escobar* 3311 (NY); Salgar, km 13.5 between Salgar-El Douro (Chocò), 05°59'N, 76°06'W, 30 Apr. 1987, *J.L. Zarucchi & al.* 6068 (NY); Andes, 6 km de Andes hacia Vereda Momblan, 1480 m, 23 Aug. 1988, *R. Fonnegra & al.* 2400 (MO); 8-15 km de Amalfi a Rumazon, sitio “Salazar” y “La Playa”, Cordillera Central, 1550 m, 06°56'N, 75°04'W, 28 Sep. 1988, *J. Betancur & al.* 767 (MO); Urrao, Corregimiento Santa Isabel, via a la Finca La Palma, 15 km E de Urrao en la Troncal a Medellín, 2020 m, 6°10'N, 76°15'W, 10 Apr. 1989, *R. Callejas &*

al. 7913 (MO, NY); Medellín, 8-12 km SE de Medellín en la via a la Cēja, alrededores del alto de la Pova, cuenca de quebrada “La Poblada”, 2350-2500 m, 06°13'N, 75°35'W, 13 Nov. 1994, *R. Callejas P.* 11331 (MO); Betania, Farallones del Citará, paraje Las Canos, 1730 m, 5°44'N, 76°00'W, 12 Nov. 1997, *R. Fonnegra & al.* 6603 (US); **Caldas.** Salento, 1600-1900 m, 25-31 Jul. 1922, *E.P. Killip & T.E. Hazen* 8770 (NY, US); **Cauca.** Hills of Miraflores above Palmira, Cordillera Central, 1200-1600 m, Jan. 1906, *H. Pittier* 886 (US); Río Sucio, Cauca Valley, 1500-1600 m, 27 Jun. 1922, *F.W. Pennell & E.P. Killip* 7223 (NY), 7227 (US); El Tambo, 1700 m, 25 Jul. 1934, *K. von Sneidern* 164 (US); **Chocó.** Carretera Ansermanuevo-San José del Palmar, límite con el Valle del Cauca, Alto del Galapago, 28 Aug. 1976, *E. Forero & R. Jaramillo* 2231 (MO, NY); **Cundinamarca.** Salto de Tequendama, dense forest of La Hondonada, 2250-2300 m, 2 Oct. 1938, *J. Cuatrecasas* 221 (US); 1 km S of Pandi, 12 Feb. 1983, *J.R. Wood* 4110 (K); Buenavista, NW of San Cajetano, 22 May 1983, *J.R. Wood* 3756 (K); By the Camino Road from Soacha to Santandecito, 19 May 1985, *J.R. Wood* 4392 (K, US); **El Valle.** Dagua, 11 May 1922, *E.P. Killip* 5444 (NY, US); Pavas, 1700-2100 m, 24-29 Sep. 1922, *E.P. Killip* 11649 (US); La Cumbre, 7-10 May 1922, *F.W. Pennell* 5025 (NY, US); Las Nieves, Cordillera Occidental, May 1937, *E. Dryander* 1895 (US); Cordillera Occidental, Hoya del Río Digua, pietra de Moler, 900-1180 m, 19-28 Aug. 1943, *J. Cuatrecasas* 14980 (US); El Valle, 8 Dec. 1943, *J. Cuatrecasas* 15358 (BM, US); El Valle, Cordillera Occidental, monte La Guarida, filo de la cordillera sobre La Carboneria (entre Las Brisas y Alban), 1950-2000 m, 16 Oct. 1946, *J. Cuatrecasas* 22174 (US); Valle del Cauca, Sevilla, Cordillera Central, Las Brisas, 2000 m, 10 Apr. 1979, *J. Cuatrecasas* 28941 (US); Bosque de Neblina, Finca Torremolinos, km 22 carretera entre Cali y Buenaventura, 13 Oct. 1982, *L. de Escobar & al.* 2690 (MO, NY); Ansermanuevo-San José del Palmar, 30-37 km W of Ansermanuevo, 1850-1875 m, 40°40'N, 76°25'W, 13 May 1984, *J.L. Luteyn & al.* 10396 (MO, NY); Restrepo, Vereda de Roman, cerca de Río Grande, por la carretera entre Pavas y Restrepo, en predios de la Familia Reyna, 22 May 1988, *J.E. Ramos & al.* 984 (MO); La Elvira, Finca Zingara, 1600-1700 m, 3°28'N, 76°37'W, 25 km W of Cali, 20 Apr. 1989, *J.L. Luteyn & al.* 12548 (K, MO, NY, US); N of Calima, 1700 m, 6 Sep. 1992, *S.A. Renvoize* 5370 (K, US); **Huila.** Cordillera Oriental, E of Neiva, 1300-1800 m, 1-8 Aug 1917, *H.H. Rusby & F.W. Pennell* 861 (MO), 963 (NY, US); Quebrada Ariari above Galilea, 23 km ENE of Colombia, 2000 m, 3°28'N, 74°38'W, 28 Dec. 1942, *F.R. Fosberg* 19635 (US); **Magdalena.** Santa Marta, 1898-1901, *H.H. Smith* 2144 (MO, US); Sierra de Perijá, E of Manaure, Hoya del Río Manaure, San Antonio, 1700 m, 14 Nov. 1959, *J. Cuatrecasas & R. Romero Castaneda* 25306 (US); Magdalena, Sierra Nevada de Santa Marta, along edge of Quebrada Indiana, 10°59'N, 73°58'W, 27 Aug. 1972, *J.H. Kirkbride* 1931 (NY); Magdalena, Sierra Nevada de Santa Marta, at the edge of forest between Quebrada Rotella and finca Los Arroyitos, 1650-1700 m, 10°56'N, 73°58'W, 27 Sep. 1972, *J.H. Kirkbride* 2223 (MO, US); **Nariño.** Pasto, 2600 m, 30 Apr. 1939, *A.H.G. Alston* 8292 (US); Buesaco, on Río Pajajoy, 22 km NE of Pasto, 2400 m, 1°22'N, 77°10'W, 24 Apr. 1943, *F.R. Fosberg* 20532 (US); Alrededores de Samaniego, 10 Jan. 1952, *A. Fernández & L.E. Mora* 1188 (NY); Entre Cartago y la Union, 1750 m, 27 Oct. 1962, *L.E. Mora* 2407 (US); Reserva La Planada, quebradas El Mar-La Calladita, 1500-1800 m, 01°10'N, 77°58'W, 30 Apr. 1988, *O. de Benavides* 9707 (MO); Ricaurte, vicinity of Ricaurte, along Río Imbí, 1150 m, 01°08'N, 77°56'W, 16 Mar. 1990, *T.B. Croat* 71510 (MO); **Risaralda.** Pereira, Hacienda Los Cristales, lomas en orilla derecha de Río Cauca, 1200 m, 04°53'N, 75°50'W, 1 Jan. 1995, *P. Silverstone-Sopkin & N. Paz*

7266 (MO); **Santander**. Vicinity of California, 2000 m, 11-27 Jan. 1927, *E.P. Killip & A.C. Smith 17013* (NY, US); **Tolima**. Libano, 1300-1500 m, 26-29 Dec. 1917, *F.W. Pennell 3415* (K, MO, NY, US); Tolima, Km 23 de la via Venadillo-Sta. Isabel, costado oriental de la Cordillera Central, 1710 m, 4°43'N, 75°5'W, 27 Jan. 1987, *X. Londoño & I.D. Quintero 56* (MO, US), 57 (MO).

COSTA RICA. Alajuela. Vicinity of Fraijanes, 12-13 Feb. 1926, *P.C. Standley & R. Torres 47507* (US); Vicinity of San Ramon, La Palms de San Ramon, 12 Jul. 1926, *A.M. Brenes 5191* (NY, US); Santa Clara Hills, 16 Jun. 1928, *H.E. Stork 2577* (US); Vicinity of San Ramon, Calera de San Ramon, 21 Jan. 1935, *A.M. Brenes 20314* (NY); Vara Blanca de Sarapiquí, north slope of Central Cordillera, Jul.-Sep. 1937, *A.F. Skutch 3148* (K, NY, US); San Luis de Zarcero, 11 Aug. 1938, *A. Smith 41015* (MO, NY); 6.5 km W of Varablanca, 1950 m, 10 Aug. 1966, *R.W. Pohl & C. Calderón 10280* (US); Cordillera Central, Volcán Potás, 10 km above Vara Blanca by road, 29 Sep. 1968, *R.W. Pohl & G. Davidse 11174* (K, US); 11 km S of Ciudad Quesada along Highway, 15 Oct. 1968, *R.W. Pohl & G. Davidse 11250* (K, US); 10 km N of San Ramón along Interamericana Highway, 22 Oct. 1968, *R.W. Pohl & G. Davidse 11275* (K, US), **n = 18!** (Davidse 1978); La Palma de San Ramón, 31 Oct. 1968, *R.W. Pohl & G. Davidse 11371* (K, US); San José, 2 km SE of Barbacoas, 7 Nov. 1968, *R.W. Pohl & G. Davidse 11403* (K, US); Along road from San Ramón northward through Balsa, ca. 5.7 km N of bridge over Quebrada Volio, SW of road, ca. 10°08'N, 84°29'W, 10 Sep. 1979, *W.D. Stevens 14103* (K, MO, NY); Monteverde Reserve, Atlantic slope, Río Peñas Blancas valley, 20 Oct. 1984, *W.A. Haber 718* (MO, NY); Reserva Biológica Monteverde, 1000 m, 10°18'58"N, 84°42'42"W, 25 Sep. 1990, *N. Obando 136* (US); **Cartago**. Cartago, Nov. 1887, *J.J. Cooper 98* (G); Cartago, Dec. 1896, *A. Tonduz 7234* (G, NY, US); Vicinity of Santiago, 20 Apr. 1906, *W.R. Maxon 128* (NY); Vicinity of Cartago, Feb. 1924, *P.C. Standley 33365* (NY, US); La Estrella, 26-27 Mar. 1924, *P.C. Standley 39215* (US); Along the Río Reventado, 26 Feb. 1926, *P.C. Standley & J. Valerio 49448* (US); Cordillera de Talamanca, S of Moravia de Chirripó, 9 Aug. 1968, *R.W. Pohl & G. Davidse 10870* (K, US), **n = 18!** (Davidse 1978); 12 km NE of Pacayas along Highway 230, 10 Aug. 1968, *R.W. Pohl & G. Davidse 10889* (F, K, US); Cordillera de Talamanca, 25 km SW of Tejar along the Carretera Interamericana, 24 Sep. 1968, *R.W. Pohl & G. Davidse 11134* (K, US), **n = 18!** (Davidse 1978); Canyon of the Río Grande de Orosí, 9 mi. S of Purasil, 3 Oct. 1968, *R.W. Pohl & G. Davidse 11198* (K, US); 3 km W of Grano de Oro, E of the Río Pacare, 21 Nov. 1968, *R.W. Pohl & G. Davidse 11477* (K, US); Edge of Río Naranjo, 3 km E of Cachí, 11 Jun. 1969, *R.W. Lent 1736* (NY); 3 km up mountain from Tejar, 10 Aug. 1972, *J. & C. Taylor 11866* (MO, NY, US); Hacienda Linda Vista, just S of Dulce Nombre de Culmi, SE of Cartago, 22 Nov. 1983, *E. Judziewicz 4377* (MO); Hills at N side of Río Navarro between Río Sombrero and Quebrada Solon, W of El Muñeco, 1260-1600 m, 9°55'N, 83°48'W, 15 Nov. 1987, *M. Grayum 8450* (MO); **Guanacaste**. Parque Nacional Rincon de la Vieja, the SE slopes of Volcán Santa Maria, above Estación Hacienda Santa Maria, 900-1200 m, 10°47'N, 85°18'W, 27-28 Jan. 1983, *G. Davidse & al. 23370* (MO); Cebadilla, Abangares, 1400 m, 21 Jul. 1985, *W.A. Haber & E. Bello C. 2266* (MO); Canton de Liberia, P.N. Rincon de la Vieja, Cordillera de Guanacaste, Sector Santa Maria, sendero La Plantacion, cabeceras Quebrada Zopilote, 950-1100 m, 10°46'50"N, 85°17'55"W, 14 Aug. 1996, *J. Morales 5654* (MO); Canton de Liberia, P.N. Guanacaste, cuenca del tempisque, 5 km antes de Cacao, a orilla de calle, 1100 m, 10°55'45"N, 85°29'05"W, 16 Jan. 1998, *A. Soto 112* (MO); **Heredia**. Cliffs above road to Puente Mulas, S of San Antonio, 27 Oct.

1968, *R.W. Pohl & G. Davidse 11351* (K, US); San José de la Montaña, Finca frente a la Lorena, 26 Nov. 1972, *M. Montiel 048156, 048157, 048158* (US); Santo Domingo, Cuenca del Tarcoles, Finca por el Río Tures, ca. 1 km linea recta al SE de San Francisco de San Isidro de Heredia, 1250 m, 9°59'53"N, 84°04'03"W, 19 Dec. 2004, *B. Hammel 23541* (MO); **Limón**. 19 miles by road below Turrial on road to Siquirres, 16 Aug. 1966, *R.W. Pohl 10310* (NY); Limón Z.P. Río Banano, cerca 11 km SW del pueblo de Aguas Zarcas, 9°49'35"N, 83°10'02"W, 1200-1300 m, 25 Oct. 2002, *D. Solano 4709* (PMA); Limón, Limon Z.P. Río Banano, Cuenca del Banano, 9°48'56"N, 83°09'35"W, 1200 m, 26 Oct. 2007, *A.K. Monro 5827* (PMA); **Puntarenas**. Peninsula Osa ad Golfo Dulce, circa Puerto Jimenez, versus Sto. Domingo, 10 Apr. 1930, *O. Porsch 180* (G, W); Cañas Gordas, 27 Sep. 1968, *R.W. Pohl & G. Davidse 11166* (K, US); Primary forest above coffee fincas along Río Coto Brus, near Coton, 23 km N of La Union (on Panamá border), 9 Aug. 1974, *T.B. Croat 26615* (MO); Monteverde, 20 Jun. 1976, *R.W. Pohl & R. Pinette 13250* (K, MO, NY); Isla Violín, Sierpe, 10 May 1977, *J. Gomez Laurito 2655* (US); Monteverde village, 25 Aug. 1981, *D.N. Hepper 13* (BM); Monteverde Village, Aug. 1981, *D.N. Hepper 54* (BM); Forest along trail between Las Alturas and Cotonsito, 1400 m, 08°56'30"N, 82°48'W, 31 Aug.-1 Sep. 1983, *G. Davidse 24655* (K, MO); Foothills of the Cordillera de Talamanca, lower montane forest in the area of Sitio Coton (Cotonsito), along the road to Sitio Coto Brus, 8°57'N, 82°46'W, 3-4 Sep. 1983, *G. Davidse 24620* (PMA, US); Monteverde, Cloud Forest Reserve, Cordillera de Tilaran, 1500-1620 m, 13 Jul. 1984, *W.Z. Pounds 270* (MO); Canton de Coto Brus, Z.P. Las tablas, Cordillera de Talamanca, Quebrada Pizote, Finca Cafrosa, San Vito, 1200 m, 08°54'40"N, 82°47'10"W, 22 Sep. 1990, *M. Ramírez 105* (MO); Coto Brus, Las Crucis Biological Station, San Vito, margins of trail to Río Jaba, 1275 m, 8°47'08"N, 82°57'27"W, 26 Jun. 1994, *W.J. Kress & C.M. Christy 94-3973* (US, USJ); Cantón de Buenos Aires, cuenca Terraba-Sierpe, 1766 m, 9°02'21"N, 83°00'35"W, 1 Jun. 1996, *J. Quesada 1646* (K, MO, NY); Canton de Coto Brus., Z.P. Las Tablas, cuenca Terraba-Sierpe, camino a Cotoncito, 1520 m, 8°56'25"N, 82°47'37"W, 15 Dec. 1997, *B. Gamboa R. 2064* (MO); Coto Brus. Z.P. Las Tablas, Cuenca Terraba-Sierpe, 26 Jul. 2000, *V. Ramírez 2231* (G); Estación Biológica de la Reserva de Monteverde, 1500 m, 23 Apr. 2001, *W.A. Haber 4/2001* (US); Buenos Aires, Parque nacional de La Amistad Cuenca Terraba-Sierpe, 9°07'07"N, 83°05'07"W, 1600-1700 m, 24 Feb. 2008, *A. Rodriguez 11956* (MO, PMA); **San José**. Uruca près San José, 26 Nov. 1892, *A. Tonduz 7207* (NY, P, US); Vicinity of La Palma, on the road to La Hondura, 17-18 Jul. 1923, *W.R. Maxon & A.D. Harvey 7998* (NY, US); Río Tirribi, 11 Feb. 1924, *A. Alfaro 33989* (US); Between San Pedro Montes de Oca and Curridabat, 5 Dec. 1925, *P.C. Standley 41296* (US); San José, vicinity of Santa Maria de Dota, 14-26 Dec. 1925, *P.C. Standley 41665* (US); Vicinity of Santa Maria de Dota, 26 Dec. 1925-3 Jan. 1926, *P.C. Standley & J. Valerio 43476* (US); San José, finca "Los Helechales", between Buenos Aires and Cerro Pittier, 1700 m, San José, minor road 4 mi SW of División, 1775 m, 13 Feb. 1966, *W.H. Hatheway 1689* (US); 16 Jul. 1966, *R.W. Pohl & C. Calderón 10070* (MO, USJ); San José, road between Aserri and Tarbaca, 1675 m, 22 Aug. 1966, *R.W. Pohl & C. Calderón 10388* (USJ); San José, 7 km S of Aserri, 6 Sep. 1968, *R.W. Pohl & G. Davidse 11041* (K, US); 2 km NNE of San Gabriel, 6 Sep. 1968, *R.W. Pohl & G. Davidse 11050* (US), 11051, (K, US), **n = 18!** (Davidse 1978); Río La Hondura below La Hondura, 4 Oct. 1968, *R.W. Pohl & G. Davidse 11214* (K, US); Near Terbaca at 1750 m, 30 Aug. 1971, *W.C. Burger & M. Burger 8402* (PMA); Forest on Cerro Pico Branco, 9°52'N, 84°08'W, 4 km S of Escazú,

2000 m, 12 Dec. 1976, *R.W. Lent* 3981 (PMA); Between Bajo La Hondura and Alto La Palma, 10°2'N, 83°59'W, 1400-1500 m, 17 Jul. 1983, *K. Barringer & al.* 3924 (PMA); Cerros de Escazú, El Mesón, 1550 m, 9°52'15"N, 84°05'50"W, 11 Sep. 1993, *J.F. Morales* 1673 (BM, MO); Dota, Santa Maria, 22 Oct. 1998, *A. Estrada* 1843 (K); Canton de Terrazu, cuenca del naranjo y Paquita, La Virgen, cabeceras Río Palo Seco, sector SW, 1100 m, 9°36'00"N, 84°08'25"W, 28 Apr. 1999, *J. Morales* 7065 (MO); Acosta, Sabanillas, 3 Oct. 2001, *R. Chacón* 146 (K); Turrubares, San Juan De Mata, 9°45'14"N, 84°35'35"W, 27 Nov. 2001, *R. Chacón* 213 (K, MO); **Turrialba**. Torre Alta, Fila Cruces, road to Paraguas, Finca Gamboa, 1450 m, 5 Mar. 2001, *F. Werner* 188 (US)).

ECUADOR. Azuay. Steep forested slopes bordering Río Norcay between Río Gamolotal and Río Norcay, 1095-1370 m, 7 Jun. 1943, *J.A. Steyermark* 52868 (US); **Carchi.** Cerro Golondrinas, Upper Río Pablo drainage, along crest of ridge to N of river, very wet, primary cloud forest, 1740-1780 m, 00°53'N, 78°10'W, 24 Apr.-2 May 1993, *B. Boyle & L. Dalmau* 1798 (MO); **Chimborazo.** Huigra, 1300 m, 20 Jul. 1923, *A.S. Hitchcock* 20754 (NY, US); **Cotopaxi.** 3 km E of El Palmar on road Quevedo-Latacunga, 800 m, 5 Apr. 1980, *C.H. Dodson & A. Gentry* 10230 (MO); Teneuerste, Río Pilalo, km 52-53, Quevedo, Latacunga, 750-1300 m, 7 Feb. 1982, *C.H. Dodson & A.H. Gentry* 12245 (MO, US); **Esmeraldas.** Quininde, Bilsa Biological Station, Montañas de Mache, 20 km NW of Quininde and 3 km W of Santa Isabela, 600 m, 00°22'N, 79°45'W, 14 Sep. 1994, *J.R. Abbott* 15140 (MO); Along road from Lita to San Lorenzo, vicinity of Alto Tambo, 841 m, 00°33'53"N, 78°32'36"W, 21 Feb. 2005, *T.B. Croat* 95117 (MO); **Imbabura.** Between Otavalo-Selva Alegre, 78°34'W, 00°15'N, 13 Mar. 1988, *S. Lægaard & S.A. Renvoize* 70821 (K); Along road Otavalo-Apuela, 3 Jul. 1991, *H. van der Werff & al.* 12172 (MO, US); Cotacachi, La Florida, 1900-2500 m, 00°23'S 78°28'W, 28 Aug. 1992, *A. Alvarez & al.* 626 (US); Cotacachi, Parroquia García Moreno, Reserva Biológica Los Cedros, 1690 m, 00°17'28"N, 78°47'13"W, 28 Oct. 2005, *H. Vargas & al.* 6355 (MO); **Loja.** Santiago Zamora, Canillones, Río San Francisco, 1700-1750 m, 3°56'S, 78°57'W, 20 Feb. 1945, *F.R. Fosberg* 23149 (US); Cerro Campana, 7 km from Vilcabamba, on road to Yangana, ca. 1900 m, 04°17'S, 79°16'W, 17 Jun. 1979, *B. Løjtnant & al.* 14986 (MO); Km 30 Malacatos-El Tambo-Catamayo, 4 Apr. 1998, *S. Lægaard* 18630 (K); Near Sozoranga, 30 Nov. 1999, *S. Lægaard & al.* 20856 (K); Vicinity of Mercadillo, at El Retiro, 1500-1700 m, 79°59'W, 04°00'S, 13 Aug. 2000, *J.E. Madsen & al.* 7085 (MO, NY); **Los Ríos.** 9 km E of Patricia Pilar, 58 km ENE of Quevedo, on Pan-American Highway to Santo Domingo de los Colorados, 00°36'S, 79°18'W, 1 Jul. 1977, *H.H. Iltis & M.G. Iltis* 86 (MO); **Napo.** Carretera Hollin-Loreto-Coca, 700-750 m, 00°40'S, 77°30'W, 8 Dec. 1987, *V. Zak & J. Jaramillo* 3124 (C, K, MO, NY, US, W); Napo, Archidona Canton, Parque Nacional Sumaco y Comunidad de Pacto Sumaco, 1550-1700 m, 00°38'56"S, 77°35'49"W, 26 Apr. 1997, *A. Alvarez & al.* 2019 (MO); Along road from Baeza to El Chaco, vicinity of Río Sardinas Grande, along Río Quijos, disturbed area, 6 km NNE of San Francisco Borja, 1767 m, 00°22'32"S, 077°49'01"W, 17 Apr. 2003, *T.B. Croat* 87675 (MO, US); **Oro.** Between La Chorita and Portobelo (Gold Mine near Zaruma), 1000-2000 m, 28 Aug. 1923, *A.S. Hitchcock* 21184 (US); **Pastaza.** Between Puyo and Canelos, 325-375 m, 1-3 Feb. 1935, *Y. Mexia* 6850 (US); Vicinity of Puyo, 750-1000 m, Aug. 1939, *A.F. Skutch* 4397 (K, MO, NY, US); 20 km S of Puyo on road to Macas, across from entrance to Colonia Ventana, ca. 1050 m, 01°34'S, 77°54'W, 8 Apr. 1989, *W.W. Thomas & M. Rios* 6682 (MO); Towards Arajuno, 19 Sep. 1998, *S. Lægaard & I. Grignon* 19171

(K); **Pichincha.** Chiriboga on road from Quito to Santo Domingo de los Colorados, 1800 m, 11 Nov. 1939, *E. Asplund* 8669 (G, K, NY, UPS, US); Pichincha, Nanegalito al NO de Tandayapa, 1300 m, 15 Jul. 1950, *M. Acosta Solís* 17148 (US); Road Nono-Pacto-Río Yacuambi, 5-10 km above Nanegalito, 21 Jul. 1980, *L. Holm-Nielsen & al.* 24430 (K); Km 15 on road Alluriquin-Chiriboga-Quito, 1350 m, 78°51'W, 00°17'S, 20 Oct. 1985, *S. Lægaard* 55479 (BM, C, G, K, MA, MO, NY, P, UPS, US, W); Carretera Quito-Aloag-Santo Domingo de los Colorados, 1400-2000 m, 00°21'30"S, 78°51'15"W, 7 Jun. 1986, *V. Zak* 1037 (K, MO, NY, US); Reserva Florística-Ecológica "Río Guajalito", km 59 de la carretera Antigua Quito-Sto. Domingo de los Colorados, 1800-2200 m, 78°48'W, 00°13'53"S, 22 Sep. 1986, *V. Zak* 1272 (G, MO, US); Carretera Antigua Quito-Santo Domingo, 1800-2200 m, 00°13'S, 78°48'W, 10 Oct. 1988, *V. Zak & J. Jaramillo* 3858 (BM, MO, NY); 13 km E of Alluriquin, 32 km E of Santo Domingo, on new road to Quito, 980 m, 5 Jun. 1990, *P.M. Peterson & E.J. Judziewicz* 9533 (MO); Canton Quito, Parroquia Nanegal, Reserva Maquipucuna, 00°08'N, 78°38'W, 7 Jan. 1995, *G.L. Webster* 31039 (MO, NY); Along road from Tandayapa to Nono, 1681 m, 00°00'18"N, 78°40'24"W, 13 Feb. 2005, *T.B. Croat* 94556 (MO, US); **Tungurahua.** Valley of Pastaza River, between Banhos and Cashurco, 8 hours E of Banhos, 1300-1800 m, 25 Sep. 1923, *A.S. Hitchcock* 21856 (US); Road Baños-Puyo, 22 km from tunnel at Agoyan 1370 m, 0124'S, 7813'W, 1 Dec. 1984, *S. Lægaard* 53395 (MO); **Zamora-Chinchipe.** E of Los Encuentros along the road to Jardin del Condor, 17 Jun. 1998, *S. Lægaard & al.* 18919 (K); Zamora-Chinchipe, along road from Zamora to Bombuscaro, 2 Sep. 1998, *S. Lægaard* 19099 (K); Zamora-Chinchipe, along road from Namirez to Nambija, 3 km above San Carlos, 762 m, 03°46'44"S, 78°38'30"W, 28 May 2003, *T.B. Croat & M. Menke* 89584 (MO).

EL SALVADOR. Ahuachapán. San Fco. Menendez, Hacienda San Benito, Cerro Davila, cafetal de Rafaela Davila, 13°49'N, 89°56'W, 15 Nov. 1991, *E. Sandoval* 13 (MO); El Impossible Reserva, Campana, 1400 m, 13°51'N, 89°54'W, 24 Jun. 1998, *A. Monro & al.* 1987 (BM, MO); **Chalatenango.** La Palma area, Caballero, 900-1500 m, 14°18'N, 89°08'W, 9 Nov. 2001, *D. Sloat* 354 (MO); **La Libertad.** Volcano of San Salvador, 20-26 Nov. 1911, *A.S. Hitchcock* 8925 (US), 8951 (K, NY, US), 8952 (NY, US), 8962 (US); Santa Tecla, slopes of Volcán San Salvador, 15 Jan. 1949, *L.O. Williams & A. Molina* 15100 (US); Volcán de San Salvador, ca. 1 km S of El Boquerón crater, 6 Jun. 1970, *G. Davidse & R.W. Pohl* 2025 (K, L, MO, NY, US), *n* = 18! (Davidse 1978); Volcán de San Salvador, 24 Jun. 1978, *R.W. Pohl & M. Gabel* 13661 (K, MO); Carretera a Comasagua, 10 Jan. 1996, *E.A. Montalvo* 6410 (K); La Libertad, Teotepique, 4 May 1996, *J. González* 334 (K); San Salvador, Volcán San Salvador, El Boquerón, 4 Feb. 1998, *A. Monro & al.* 2194 (BM); El Boquerón, Parque Nacional El Boquerón, falda volcán de San Salvador, 25 Oct. 2015, *J. Menjivar & R.M. Baldini* 3403 (FT, LAGU, MHES); **Morazán.** Summit of second peak from eastern end, Montes de Cacagatigue, 2 Jan. 1942, *J.M. Tucker* 693 (G, NY, US); NE of finca of General J.T. Calderón, Montes de Cacagatigue, 6 Jan. 1942, *J.M. Tucker* 733 (K, US); **Santa Ana.** E side of lago de Coatepeque, 900 m, 8 Jun. 1970, *G. Davidse & R.W. Pohl* 2035 (MO); Along dirt road between Metapán and Cerro Monte Cristo, 7 miles NE of Metapán between Administrative Office and Los Planes, 1200 m, 30 Jul. 1977, *T.B. Croat* 42290 (MO); Cerro Verde, 17 Jun. 1978, *R.W. Pohl & M. Gabel* 13594 (K, L, MO, NY); Cerro Verde National Park, 2300 m, 13°29'N, 88°32'W, 23 Jan. 1998, *K. Sidwell & al.* 407 (BM, MO); Parque Nacional Los Volcanes, Los Andes, sector Santa Elena, 1810 m, 13°51'N, 89°37'W, 18 Jul. 2006, *D. Rodriguez* 272 (MO); Parque Nacional Montecris-

to, El Murón, Cárcava No. 1, 14°23'36"N, 89°22'43"W, 1697 m, 10 Feb. 2016, *J. Menjívar & R.M. Baldini* 3517 (FT, LAGU, MHES); **San Miguel**. Volcán San Miguel, finca Mascota, 13°26'48"N, 88°15'92"W, 5 Feb. 1999, *K. Sidwell & al.* 887 (BM, MO); **San Vicente**. Volcán de San Vicente, 7-8 Mar. 1922, *P.C. Standley* 21508 (US); **Sonsonate**. Sierra Apaneca, cut over forest Cerro El Pilón, 23 Feb. 1968, *A. Molina & E.A. Montalvo* 21605 (NY).

GUATEMALA. Alta Verapaz. Coban, 14 Feb. 1941, *F.W. Hunnewell* 17091 (NY); 5 km NW de Cobán, 10 May 1963, *A. Molina & A.R. Molina* 11987 (US); 10 km S of Coban, 9 Mar. 1970, *W.E. Harmon & J.D. Dwyer* 4278 (MO); **Baja Verapaz**. Union Barrios, 10 Aug. 1975, *C.L. Lundell & E. Contreras* 19598 (MO, NY); **Chimaltenango**. Along road from Chimaltenango San Martin Jilotepeque, 25 Nov. 1938, *P.C. Standley* 57903 (NY); **Chiquimula**. Transecto La Hondonada, 300-400 m, 14°51'03"N, 89°31'08"W, 22 Sep. 2003, *M. Véliz* 14498 (MO); **El Progreso**. Hills around Baranquillo, 650 m, 17 May 1942, *J.A. Steyermark* 46406 (US); **Guatemala**. Guatemala City, 2 Feb. 1905, *W.A. Kellerman* 4735 (US); Guatemala City, 1-3 Dec. 1911, *A.S. Hitchcock* 9057 (US); 10 km S of San Raimundo, 18 Jan. 1939, *P.C. Standley* 62918 (US); Along River Villalobos, 12-23 Jan. 1966, *A. Molina & al.* 16067 (NY, W); Aldea Lo de Coy, km 21 on Highway between San Lucas and Guatemala City, 14 Nov. 1967, *A. Molina* 21108 (NY); Panajachel to Monte Mercedes trail, 9 Aug. 1979, *J.D. Boecke & S. Utschneider* 2862 (K, MO, NY); **Huehuetenango**. Along road 13 km W of Huehuetenango, near Puente de Xinaxó, 30 Dec. 1940, *P.C. Standley* 81531 (K); Near crossing of Rio San Juan Ixtán, E of San Rafael Pétzal, 1730 m, 9 Jan. 1941, *P.C. Standley* 82866 (US); Cerro Huitz, between Mimanhuitz and Yulhuitz, Sierra de los Cuchumatanes, 1500-200 m, 14 Jul. 1942, *J.A. Steyermark* 48627 (US); 10-20 km W of Huehuetenango, 3 Dec. 1963, *L.O. Williams & al.* 22295 (G, US); Near El Reposo, about 8 km from Mexican frontier, 900-1000 m, 14-18 Dec. 1972, *L.O. Williams & al.* 41246 (MO); Benediccion de Dios, Aldea, Montaña Virgen, remanente de Bosque en la Montaña Virgen, 1560 m, 16°01'18"N, 91°32'22"W, 12 Dec. 2006, *M. Garcia* 2401 (MO); Nebton, Aldea La Trinidad, roadside through moist forest along the road to Nuevo San José Frontera along crossing of Arroyo Salchila Creek, 1500 m, 15°59'N, 91°34'W, 6 Mar. 2009, *J.M. Maarten & al.* 5568 (MO); Puente Selegua II. Cerca Del Camino, Paredones de Piedras, Santa Ana Huista, Huehuetenango, 1500 m, 15°27'41"N, 91°46'31"W, 7 Dec. 2006, *A. Soto* 1463 (MO); **Izabal**. Livingston, Rio Dulce, Mar. 1889, *J. Donnell Smith* 1852 (US); Los Amates, 29 May 1919, *S.F. Blake* 7721 (US); Montañas del Mico, 11 km W of Santo Tomás de Castilla, 8 Sep. 1988, *W.D. Stevens & al.* 25492 (BM, MO); W of Santo Tomas de castilla, near Guatel antennas on one of the summits of Cerro San Gil, humid evergreen forest on slopes, 800-900 m, 15°40'N, 88°41'W, 21 Sep. 1997, *M. Nee & al.* 47330 (MO); **Quezaltenango**. Volcán Zunil, 5700 ft, 8 Aug. 1938, *A.F. Skutch* 986 (US); Finca Pireneos, below Santa María de Jesús, 1350-1380 m, 11 Mar. 1939, *P.C. Standley* 68268 (US); Along old road between Finca Pirineos and Patzulín, 9 Feb. 1941, *P.C. Standley* 87067 (K) 86807 (NY); Between Colomba and Las Mercedes, 600-900 m, 20 Feb. 1941, *P.C. Standley* 87968 (US); Mountains above Río Samalá, Sierra Madre Mts., 2 km W of Zunil, 14 Dec. 1962, *L.O. Williams & al.* 23032 (G, NY, US, W), 22982 (G); San José Buena Vista, Costa Cuca, 900 m, 26 Jan. 1980, *L. Rodríguez* 1777 (P); Along Highway Cito N of junction with CA2, toward Quezaltenango, in watershed reserve INDE "Santa María", km 199, loose gray soil, steep slopes W of Highway, 14°45'N, 91°32'W, 22 Jan. 1987, *T.B. Croat & D.P. Hannon* 63424 (MO); **Quiché**. By Río Cataratas, 3 km N of Nebaj, 26 Dec. 1978, *M.J. Metzler* 37

(MO); Chel, Camino a Amacchel, Bosque, ChaJul., Quiché, 1553 m, 15°41'16"N, 90°59'34"W, 26 Jul. 2006, *M. Garcia* 1818 (MO); **Sacatepéquez**. Above Pastores, 23 Dec. 1938, *P.C. Standley* 60762 (K); Sacatepéquez, barranco above Dueñas, 1590-1800 m, 21 Jan. 1939, *P.C. Standley* 63194 (MO); **San Marcos**. Between Finca El Porvenir to "Numero 6", lower South-facing slopes of Volcán Tajumulco, 1300-1500 m, 7 Mar. 1940, *J.A. Steyermark* 37137 (US); **Sololá**. Pine woods bordering Rio Bravo, in vicinity of Finca Mocá, South-facing slopes of Volcán Atlán, 100 m, 21 Jun. 1942, *J.A. Steyermark* 47982 (US); Sololá, above Lago de Atitlan, ½ km N of Panajachel on Highway 1, 14°45'N, 91°10'W, 1 Aug. 1965, *K. Roe & al.* 767 (US); **Zacapa**. Slopes of Monte Virgen, around summit of mountain, 2200-2400 m, 12-13 Jan. 1942, *J.A. Steyermark* 42603 (US).

HONDURAS. Atlántida. Tela, El Paguiles, Aldea San Antonio, 15°36'38"N, 87°36'04"W, 247 m, 12 Sep. 2002, *J. Pipoly* 24344 (FTG); **Comayagua**. Barranco de Trincheras, 8 Aug. 1948, *L.O. Williams & A. Molina* 14661 (BM, MO, US, USJ); Siguatepeque, 16 Aug. 1973, *D. Hartlett* 649 (MO); Comayagua, near Cerro Trincheras, N side of highest point on road between Siguatepeque and Lago Yojoa, 991 m, 14°40'N, 87°56'W, 11 Nov. 1988, *J.M. McDougal & al.* 3463 (MO); **Copán**. Between Santa Rita and Totiror Creek, 650 m, 25 Aug. 1975, *A. Molina* R. 30671 (MO); **Cortés**. Mountains on north side of Lake Yojoa, 10 Apr. 1951, *C.V. Morton* 7633 (US); Montaña La Cumbre, 21 Mar. 1962, *A. Molina* 10566 (US); Quebrada Cusuco on Cerro Cusuco, cloud forest, 1 Aug. 1982, *W.C. Holmes* 4269 (NY); **Distrito Central**. Cerro La Tigra, SW of San Juancito, 1970 m, 25 Dec. 1978, *R.W. Pohl & M. Gabel* 13796 (K, MO); **El Paraíso**. Mt. Yuscacán, 7 Dec. 1947, *A. Molina* 620 (MO, US); **Lempira**. (Río Naranjo), Parque Nacional de Celaque, bosque nublado latifoliado alrededor el Río Naranjo y bajo el Campamento Don Tomas, 1900 m, 14°33'N, 88°40'W, 27 May 1991, *P. House* 993 (MO); **Morazán**. Mt. Uyuca, 23 Oct. 1946, *L.O. Williams & A. Molina* 10722 (MO, US); Mt. Uyuca, 17 Jul. 1948, *S.F. Glassman* 1947 (NY); N of Mt. Uyuca, caminos Tatumbla, Labranza y Quebrada El Granadillo, sobre Mt. Uyuca, 4 Nov. 1948, *A. Molina* 1432 (US); Region of El Jicarito, above Zamorano, above Aqua Amarilla, along Río Triquilapa, 26 Sep. 1950, *P.C. Standley* 26837 (US); Mt. Uyuca, 19 Oct. 1951, *J.R. Swallen* 10904 (MO, US); San Antonio del Oriente, 20-21 Oct. 1951, *J.R. Swallen* 10973 (MO, US); Cloud forest, Mount Uyuca, 1500-1800 m, Aug. 1960, *H.W. Pfeifer* 1414 (US); Mt. Uyuca near Zamorano, 29 Jan. 1964, *H.S. MacKee* 11284 (P, US); Zamorano near Tegucigalpa, vicinity of Escuela Agrícola Panamericana, 1966, *G.F. Freytag* 319 (MO); Quebrada El Chorrillo, Cerro de Hule 20 km S of Tegucigalpa, 1968, *A. Molina* 18494 (BM, NY); Cerro Uyuca, ca. 8 km W of El Zamorano, 1670 m, 16 Jun. 1970, *G. Davidse & R.W. Pohl* 2098 (MO); Cerro La Tigra, ca. 10 km NE of Tegucigalpa, 17 Jun. 1970, *G. Davidse & R.W. Pohl* 2119 (MO, US), **n = 18!** (Davidse 1978); Between San Juancito & Valle de Angeles, 17 Jun. 1970, *G. Davidse & R.W. Pohl* 2126 (K, MO, NY, US); 29 km from Tegucigalpa along road to El Zamorano and Danli, 1400 m, 8 Oct. 1975, *G.E. Pilz & M. Pilz* 1313 (MO); Colonia Seyapa, Tegucigalpa, 1000 m, 4 Nov. 1981, *F. Espinal* 112 (MO); Enredadera, balneario San Matias, 20 km al N de Tegucigalpa, 25 Sep. 1983, *M.E. Lara* 60 (MO); **Ocatepeque**. At edge of forest El Portello on Cordillera Meredon, 20 km from Nueva Ocatepeque, 28 Aug. 1968, *A. Molina* 22361 (G, MO); Aldea de Belen Gualcho y alrededores, 40 km al E de Nueva Ocatepeque, 29 Jun.-03 Jul. 1976, *C. Nelson & al.* 3648 (MO); Ocatepeque, 15 Apr. 1977, *C. Nelson & al.* 4034 (BM); **Santa Barbara**. Lake Yoja, 7 Aug. 1948, *L.O. Williams & A. Molina* 14517 (BM, US); El Mochito, 1000 m, 29 Jun. 1970, *G. Davidse*

& R.W. Pohl 2209 (MO, US); Santa Barbara, Trinidad, Finca Las Colmenas, 480 m, 22 Jun. 1982, *J. Leonel Salguero* 11 (MO); **Yoro**. Río Pijol Valley, 6 to 7 km S of Nueva Esperanza, 1570–1670 m, 15°12'N, 87°35'W, 27 May 1993, *R.L. Liesner* 26580 (MO).

MEXICO. Alta Verapaz. A 2 km al S de Jolomylix, Telemán, Panzos, Sierra de Las Minas, 750 m, 20 Jul. 1988, *M. Esteban* & *al.* 22885 (MO); **Chiapas**. Mt. Ovando, 15–18 Nov. 1939, *E. Matuda* 3987 (NY); Km 1134, Pan-American Highway, 4 Jun. 1950, *J.T. Baldwin Jr.* 14342 (US); Above canyon El Sumidero, N of Tuxtla Gutierrez, 7 Oct. 1953, *N.C. Fassett* 29100 (US); Sierra Madre, near Mapastepec, 3 Nov. 1960, *T. Tateoka* 1003 (US); Tuxtla Gutierrez, 10 Nov. 1960, *T. Tateoka* 1004 (US); Tenejapa, along the Ala Shashib River above Habenal, paraje of Mahben Chauk, 14 Jul. 1964, *D.E. Breedlove* 6428 (US); Venusiano Carranza, 3 miles S of Aguacatenango along road to Pinola Las Rosas, 13 Oct. 1965, *D.E. Breedlove* & *P.H. Raven* 13121 (NY, US); 3 miles S of La Trinitaria, 14 Oct. 1965, *D.E. Breedlove* & *P.H. Raven* 13208 (US); Ocozocoautla de Espinosa, 19 km N of Ocozocoautla along road to Mal Paso, 28 Oct. 1965, *D.E. Breedlove* 13956 (NY); Zinacantàn, 7 Jul. 1966, *R.M. Laughlin* 1218 (NY); Tenejapa, in the paraje of Mahosik', 8 Aug. 1966, *D.E. Breedlove* 14829 (US); Along Mexican Highway 190 at the Zinacantàn paraje of Muctajoc, 18 Aug. 1966, *R.M. Laughlin* 1572 (US); Tenejapa, moist slope with *Quercus*, *Pinus*, *Nyssa* and *Liquidambar*, in the paraje of Mahosik', 12 Sep. 1966, *A.S. Ton* 1183 (NY); Ixtapa, along Highway 190 at the Zinacantàn paraje of Muk'tahok', 3 Oct. 1966, *R.M. Laughlin* 2289 (US); El Zapotal, along trail from Zinacantàn paraje of Pasté to San Lucas, 20 Oct. 1966, *R.M. Laughlin* 2553 (US); Tenejapa, along a small river in the barrio of Tih Ha', paraje of Mahbenchauk, 28 Oct. 1966, *A.S. Ton* 1446 (NY, US); Tenejapa, slope with *Quercus* and *Pinus* in the paraje of 'Oshewits', 22 Nov. 1966, *A.S. Ton* 1582 (NY, US); Acala, wooded slope along the Río Grijalva, 10 km S of Mexican Highway 190, along the road to Acala at Nandaburri, 24 Nov. 1966, *R.M. Laughlin* 2807 (US); Berriozabal, 6–8 km N of Berriozabal near Pozo Turipache and Finca El Suspiro, 10 Oct. 1971, *D.E. Breedlove* 20352 (NY); 17.5 km on the road to Mal Paso from Ocozocoatlá, 31 Jul. 1972, *H. Kennedy* 1398 (US); Cintalapa, SE of Cerro Baul on the border with the State of Oaxaca, 16 km NW of Rizo de Oro along a jogging road to Colonia Figaroa, 6 Sep. 1972, *D.E. Breedlove* 27616 (NY); Ocozocoautla de Espinosa, 18–20 km N of Ocozocoautla along road to Mal Paso, 27 Sep. 1972, *D.E. Breedlove* 28156 (NY); Tuxtla-Gutierrez, pressi de La Coyota, 18 Oct. 1974, *R. Bavazzano s.n.* (FT); Ca. 8 miles NE of Solistohucan along Highway 195 between Villa Hermosa and Tuxtla Gutierrez, 1800 m, 10 Aug. 1975, *G. Davidse* & *J. Davidse* 9458 (US), **n = 18!** (Davidse 1978); 30 miles W of San Cristobal de Las Casas on Highway 190, 13 Oct. 1976, *J. Brunken* & *C. Perino* 348 (US); 67 km from Route 190 toward Ocosingo, 1290 m, 6 Oct. 1984, *M.J. Huft* & *E. Cabrera* 2373 (MO); Tuxtla Gutierrez, El Zapotal, 25 Dec. 1984, *C. Cowan* 5033 (NY); Jitotol, 7 km of Jitotol on road to Pichucalco (Highway 195), 1660 m, 17°10'N, 92°51'W, 14 Oct. 1986, *B. Hammel* & *al.* 15696 (MO); Ocozocoautla, road Aeropuerto-Ocozocoautla-México, 19 Sep. 1988, *A. Reyes García* & *al.* 1023 (BM); Along Highway 190, 45 km N of El Jocote (empalme), 20 km from La Trinitaria, scrub forest on rocky limestone slope, 860 m, 19 Sep. 1988, *W.D. Stevens* & *E. Martinez* S. 25750 (MO); San Cristobal de Las Casas, Ocosingo, 1 km antes del Río Chancalà, vincendo desde Palenque, 27 Sep. 1989, *M. Gonzalez-Espinosa* & *al.* 865 (NY); 8 km from Ixtapa, 31 Jan. 1990, *P.J. Stafford* & *al.* 138 (BM); Villacorzo, Cerro Bola, al W del ejido Sierra Morena, 1750 m, 16°8'N, 93°36'W, 3 Aug. 2002, *A. Reyes-García* 5204 (MO); Ocosingo, Ejido Mariscal

(antes Santa Clara), 147 m, 16°58'45"N, 91°11'7"W, 16 Feb. 2003, *D. Alvarez* 3882 (MO); La Concordia, a 800 m al O del rancho Buenavista, 1640 m, 15°48'38"N, 93°03'15"W, 22 Sep. 2005, *J.M. Melendez* 1066 (MO); **Colima**. Camino Juluapan-Campo Cuatro, 700–800 m, 12 Aug. 1991, *F.J. Santana* & *al.* 5241 (US); Rancho El Jabali N of Colima in the SW foothills of the Volcán de Colima, 19°26.3'N, 103°42.5'W, 16 Sep. 1991, *A.C. Sanders* 11266 (K, MO); **Guanajuato**. 2–4 km E of Guanajuato, 16 Oct. 1952, *E.R. Sohns* 286 (US); Ocuilan, El Ahuehuate, 30 Nov. 1969, *J. Rzedowski* 26926 (US); Gentle slope of Cerro Capulin a large gentle hill just E of Mexico 43, ca. 8 km NNE of Uriangato on road to Salamanca, 1900–2100 m, 20°11'N, 101°6'W, 17 Sep. 1977, *H.H. Iltis* & *J.F. Doebley* 128 (MO); **Guerrero**. Along main road about 10 miles N of Taxco, 6 Sep. 1959, *O. Degener* & *I. Degener* 26291 (NY, US); Along Mex Highway 51, 17 km W of Teloloapan between km 77 and 78 at quarry, 18°25'N, 99°58'W, 22 Nov. 1971, *H.H. Iltis* & *T.S. Cochran* 44 (MO); La Unión, carretera Zihuatanejo-Cd. Altamirano, 34 km al NE de Vallecitos de Zaragoza, 24 Oct. 1982, *S.D. Koch* & *P.A. Fryxell* 82171 (MO, NY); Iguala y Buenavista, Canon de La Mano entre Los Amates y El Naranjo, 10 km al N de Iguala por el ferrocarril, 900–1000 m, 13 Sep. 1986, *C. Catalan* & *F. Teran* C. 114 (MO); **Hidalgo**. NW of Lake Atexca, 9 Nov. 1946, *H.E. Moore* 1951 (US); Metztlán, between Cerro Colorado, and head of descent into Barranca de Metztlán on road from Pachuca to Zacualtipán, 31 Jul. 1948, *H.E. Moore* 4235 (US); Puerto del Zopilote, 22 Sep. 1949, *H.E. Moore* 5076 (BM, G, US); **Jalisco**. San Nicolas, 25 Sep. 1910, *A.S. Hitchcock* 7207 (US); Guadalajara, La Barranca, 17 Nov. 1930, *M.E. Jones* 27414 (MO); Near El Molino, about 25 miles SW of Guadalajara, 2 Oct. 1952, *R. McVaugh* 13306 (G, K, US); Mountain summits 9–10 miles SE of Autlán, 1300–1600 m, 16 Nov. 1952, *R. McVaugh* 14232 (US); Barranca de Río Verde, ca. 20 km N of Tepatlán on road to Yahualica, 27–28 Aug. 1958, *R. McVaugh* 17363 (G, NY, US); Above the west end of Lake Chapala, Midway between Jocotepec and S. Juan Cosalá, precipitous rocky south-facing mountainsides and barrancas, 8 Nov. 1959, *R. McVaugh* & *W.N. Koelz* 360 (G); 10–16 miles NE of Autlán, on the cuesta above the river bridge at El Corcovado, 2 Oct. 1960, *R. McVaugh* 19756 (NY); Jalisco, 40 km al SWS de Guadalajara, El Molino, cerca de Huejotitán, 2 Nov. 1960, *J. Rzedowski* 14254 (US); Los Lles, 29 Sep. 1980, *A.A. Beetle* 5925 (MO); Purificación, 15.3 km SW of Autlán de Navarro on Highway 80, 8 Oct. 1985, *B. Bartholomew* 2769 (NY); Tuxcacuesco, Cerro del Palacio, 5–6 km al WSW de Tuxcacuesco, 5–6 km al ENE de Zenzontla, 1150 m, 18 Oct. 1991, *F.J. Santana* & *B. Benz* 5369 (US); **México**. Temascalpetec, 10 Sep. 1932, *G.B. Hinton* 1909 (K, NY, US); Temascalpetec, Limones, 10 Jul. 1934, *G.B. Hinton* 6722 (BM, K, MO, NY, US); Jilotepec, 21 Sep. 1952, *E. Matuda* 26752 (MO); Ixtapan, 2 km N of Ixtapan at km 145 on Highway 55, 18°50'N, 99°25'W, 9–10 Sep. 1965, *K. Roe* & *E. Roe* 1903 (US); **Michoacán**. Vicinity of Morelia, 26 Aug. 1909, *F. Arsène* 2976 (BM, NY, US); Rincón près Morelia, 8 Sep. 1910, *F. Arsène* 31 (G, L, US); Morelia, 8 Sep. 1910, *F. Arsène* 5287 (K, MO, NY); Vicinity of Morelia, 2 Jun. 1912, *F. Arsène* 8487 (MO, US); Apatzingán, Anguilla, 9 Dec. 1939, *G.B. Hinton* 15156 (MO, NY, US); Below Tecámbero on road to Chipio, 10 Nov. 1949, *H.E. Moore* & *al.* 5598 (BM, G, US); Lower north facing slopes of Cerro Santa Maria, in grassland with occasional shrubs, 8–10 km, SW of Jiquilpan and 5 km NE of Quitupan, 5–7 Aug. 1959, *C. Feddema* 131 (NY, US); West facing slopes of Cerro de Carboneras above the Río Cupatitzin, ca. 22 km S of Uruapan, 16–22 Oct. 1961, *R.M. King* & *T.R. Soderstrom* 4813 (NY, US); Ca. 1.7 mi. NW of Tuxpan, 19 Aug. 1975, *G. Davidse* & *J. Davidse* 9819 (K, MO, NY, US), **n = 18!** (Davidse

- 1978); 1.2 miles E of Tuxpan on Mex. 15, 1879 m, 20 Oct. 1976, *J. Brunken & C. Perino* 440 (MO); Aquila, 5 km carretera La Placita-Tecoman, 31 Aug. 1979, *B. Guerrero* 275 (NY); Ixtlán, Comaltepec, La Esperanza, 1600 m, 17°37'N, 96°21'W, 27 Jul. 1989, *R. López Luna* 493 (MO); **Morelos**. Barranca prèes Cuernavaca, 14 Nov. 1865, *E. Bourgeau* 1299 (P); Near Cuernavaca, 21 Aug. 1897, *C.G. Pringle* 6663 (G, K, MO, NY, P, US, W); **Nayarit**. Tepic, vicinity of Acaponeta, 11 Apr. 1910, *J.N. Rose & al.* 14459 (NY); Mountains 10 miles SE of Ahuacatlan, on the road to Barranca del Oro and Amatlán, 17-18 Nov. 1959, *R. McVaugh & W.N. Koeltz* 828 (US); Ahuacatlán, 10 km al S de Ahuacatlán, camino a Amatlán de Cañas, 21°00'N, 104°30'W, 19 Oct. 1986, *O. Téllez* 9882 (MO); Km 2-5 por el camino del Cangrejo a la Mesa del Nayar por la barranca, en la caras S y E de la montaña, 1100 m, 22°14'N, 104°39'W, 17 Sep. 1989, *O. Téllez* 12194 (MO); **Nuevo León**. Mina Gro., Manchon, 25 Sep. 1936, *G.B. Hinton* 9581 (BM, K, MO, NY, W); Mina, Chilacayote-Mangito, 30 Nov. 1939, *G.B. Hinton* 14932 (NY); Villa Santiago, trail between Potremo Redondo and Las Ajuntas, 24 Aug. 1939, *C.H. Muller* 2961 (MO, US); **Oaxaca**. s.d., *H. Galeotti* 5725 (W); Mirador, Jul. 1841, *F.M. Liebmman* 6317 (C, L, MO, NY); Tomellin Canyon, 17 Jul. 1897, *C.G. Pringle* 6701 (BM, G, K, P, MO, NY, US, W); Alturas San Pablo Arritzo, 25 Aug. 1897, *C. Conzatti* 2012 (US); Cafetal Montecristo, 30 Sep. 1917, *B.P. Reko* 3474 (US); Ubero, Jun. 1937, *L.O. Williams* 9468 (G, US, W); Cañon of the Rio Zavaleta near the village of San Pablo Cuatro Venados 15-18 km WSW of Oaxaca, 20-25 Jan. 1937, *W.H. Camp* 2461 (MO); 24 Aug. 1974, *J. Conrad & R. Conrad* 3064 (K, L, MO); Along Highway 175 through Sierra de Juarez between Tuxtepec and Oaxaca, 1400 m, 19 Feb. 1979, *T.B. Croat* 48019 (MO); Near San Miguel de Tlacotepec at San Antonio Tonuchi, 22 Jun. 1980, *A.A. Beetle* 4617 (MO); Ca. 4 miles E of San Juan Coatzacoapan, 31 Jan. 1981, *J. Bauml & M. Kimmach* 453 (US); Juchitan, "Arroyo Pita", 23 km al N de Lazaro Cardenas, brecha a Santa Maria Chimalapa, 320 m, 14 Mar. 1983, *P. Tenorio & al* 3503 (MO); Ixtlán, Sierra de Juarez, ruta 175 Tuxtepec a Oaxaca, 5 km al NE de Vista Hermosa, 28 May 1983, *R. Cedillo* 2351 (US); 97 km by road S of Teotitlán on road to Oaxaca, 10 Oct. 1983, *W.R. Anderson* 12995 (MO, NY); 8 km W of Chiapas border on Highway 190, 19 Oct. 1983, *W.R. Anderson* 13221 (MO, NY); Ixtlan de Juarez, rio que pasa por San Pedro, sobre la carretera Ixtlan-Zoogocho, 19 Jul. 1985, *M. Gonzalez L. & al.* 166 (MO); Totopalan, 3 km de Portello San Dionisio, carretera Oaxaca-Iehuantepec, 29 Jun. 1987, *G. Manzanero* 1141 (NY); Ixtlan, Santiago Comaltepec, Puerto Eligio, 17°45'N, 96°30'W, 8 Dec. 1987, *E. López Garcia* 56 (MO, NY); 28.2 km NE of Ojo de Agua on MEX Highway 131 towards Oaxaca, 1750 m, 7 Sep. 1990, *P. Peterson & al.* 9819 (FT, US); Tlaxiaco, San Pedro Molinos, km 64 carretera Tlaxiaco-Putla, 17°13'0"N, 97°43'04"W, 16 Oct. 1994, *J.L. Panero* 5060 (MA, NY); Ixtlan de Juarez, 2 Aug. 1999, *J. Garcia* R. 388 (MO); Santiago Chazumba, 20 Nov. 2005, *J.I. Calzada* 24618 (K); **Puebla**. At and near the summit of El Cerro de Cuhuatepetl, Tehuacan, 31 Aug. 1944, *J.V. Santos* 3347 (US); Caltepec, ladera N de la Mesa de Pala, al SE de Acatepec, 2180 m, 14 Aug. 1984, *P. Tenorio & al.* 6899 (MO); Tlatlauquitepec, 7 Oct. 1998, *E. Contreras* 5972 (K); **San Luis de Potosí**. Las Canoas, 15 Aug. 1891, *C.G. Pringle* 3808 (BM, G, K, NY, P, US, W); San Luis Potosí, Jul. 1911, *C.A. Purpus* 5440 (NY); Between Puerta Huerta and Rioverde in the Sierra de Alvarez, 11 Sep. 1954, *E.R. Sohns* 1198 (K, P, US); In the Sierra de Guadalcázar between Charco Blanco and Aguaje de Garcia, 20 Sep. 1954, *E.R. Sohns* 1378 (K, US); San Luis de Potosí, in the Sierra de Alvarez along the route, Cerritos-La Joya-Montaña-Villar, 21 Sep. 1954, *E.R. Sohns* 1390 (K, US); 34 miles E of San Luis Potosí on the Rioverde Highway, Sierra de Alvarez, 6 Nov. 1960, *M.C. Johnston* 6028 (US); S13 km W of Santa Catarina on Highway 86 at km 58, 22°05'N, 100°35'W, 29 Sep. 1965, *K. Roe & E. Roe* 2207 (US); 41 miles W of San Luis Potosí on the road to Rioverde, 20 Oct. 1966, *J.R. Reeder & C.G. Reeder* 4765 (US), **n = 18!** [Reeder 1968 as *L. sloanei* (Griseb.) Hitchc.]; **Sinaloa**. Along the road to Micro Ondas la Palma, 6 Oct 1975, *J.L. Reveal & R.M. Harley* 4020 (K, NY); **Tabasco**. Tenosique, a 15 km arriba de la palma por rio a 5 km del Rancho Punta de Montaña del Sr. Angel Zubieta, 4 Jul. 1981, *C. Cowan* 3374 (NY); **Tamaulipas**. 22 km SE of Miquihuana, 12 Aug. 1941, *L.R. Stanford & al.* 870 (MO, NY); En route to Pena Nevada out of Hermosa, 16 Jul. 1949, *L.R. Stanford & al.* 2502 (US); Gomez-Farias, environs de Casa de Piedra, 1400 m, 9 Aug. 1969, *H. Puig* 5167 (P); **Veracruz**. Orizaba, Aug. 1854, *M. Botteri* 149 (BM); Córdoba, 21 Feb. 1866, *E. Bourgeau* 1936 (P, US); Orizaba, 12 Jul. 1866, *E. Bourgeau* 2648 (G, L, K, NY, P, US); La Luz prèes de Córdoba, 2 Oct. 1882, *E. Kerber* 74 (BM, C, G, P, UPS); Orizaba, Córdoba, 20 Aug. 1891, *H.E. Seaton* 393 (NY); Zacuapan, Nov. 1908, *C.A. Purpus* 3779 (NY, US); Veracruz, 25 Aug. 1910, *A.S. Hitchcock* 415 (BM, C, G, K, L, MO, NY, P, US, W); Córdoba, 27 Aug. 1910, *A.S. Hitchcock* 409 (G, K, L, MO, NY, US, W); Near Coatepec, 2-4 Sep. 1910, *A.S. Hitchcock* 6680bis (US); Orizaba Temascalpetec, Tejupilco, 10 May 1933, *G.B. Hinton* 4958 (BM, K, NY, W); Near San Martín, 1933, *H.W. von Rozynski* 589 (G, NY); Córdoba, 28 Jul. 1935, *G.L. Fisher* 35298 (MO, NY); From El Rancho de Sacatalica to El Municipio de Zongolica, 23-25 Jun. 1944, *J.V. Santos* 3076 (NY, US); Along the Trans-Isthmian Highway (route 185), 4 km NE of Minatitlán, 3 Aug. 1958, *R.M. King* 1057 (US); Orizaba, Cerro de Cuauhtlapan, 26 Nov. 1967, *M. Rosas* 830 (BM, P, UPS); Near Jalapa, La Piramida de Macuiltepec, 12 Dec. 1972, *A.A. Beetle* 2216 (MO); Sierra San Cristobal between Ciudad Mendoza and Orizaba, along autopista ca. 3 km SW of Orizaba, S of autopista ca. 1/2 km, 1260-1400 m, 27 Jun. 1977, *T.B. Croat* 39510 (MO); Huatusco, Dos Puentes, carretera Huatusco-Totutla, 19°12'N, 96°57'W, 11 Jul. 1979, *S. Avendano & al.* 351 (NY); Near "La Calavera", 10 km N of Altotonga, 19°51'N, 97°13'W, 28 Jun. 1980, *M. Nee & B.F. Hansen* 18645 (BM, MO); Soteapan, along trails to base of Volcán Santa Marta, 0-3 km E of village of Santa Marta, 1100-1200 m, 18°21'N, 94°52'W, 29 Jun. 1982, *M. Nee & al.* 24676 (MO); Rio Blanco, a 1 km de Rio Blanco por el camino a El Cerro del Cristo, 1250 m, 18 Jul. 1984, *H.M. Hernández & A. Chacón* 479 (MO); Gutierrez Zamora, E of Rio Tecolutla and S of Highway Mex. 180, 3 km E of Gutierrez Zaora, 20°25'N, 97°04'W, 19 Aug. 1986, *M. Nee* 32791 (MO, NY); Soteapan, 6 km al NE de Ocotal Chico, 13 Jul. 1987, *R. Acosta & L. Ceja* 1652 (NY); 1.4 miles N on Mex 125 from its junct. with the road to Ixhuatlan, S of Huatusco, 10 Jul. 1990, *S. & G. Jones* 5385 (NY); El Esquilon, on the road from Xalapa to Naolinco de Victoria, 09°65'W, 19° 39'N, 7 Nov. 1993, *M. Sparrow & P. Brewster* 27 (K); **Yucatán**. 3 km al W de Koncal, 21°06'N, 89°42'W, 16 Oct. 1993, *L. Rico* 1177b (NY, US).
- NICARAGUA**. **Carazo**. Jinotepe, 3-7 Nov. 1911, *A.S. Hitchcock* 8665 (BM, K, NY, US); **Estelí**. Reserva Natural Mirafior, Comarca de Sontule, 1050-1200 m, 13°12'N, 86°20'W, 8 Jul. 1999, *R. Rueda & al.* 115551 (MO); Mirafior, 910 m, 13°12'43"N, 86°19'50"W, 13 Oct. 2007, *R.A. Rugama* 22 (MO); **Granada**. Volcán Mombacho, 1400 m, 11°50'N, 85°57'W, 11 Jan. 1981, *W. Hahn* 374 (MO); **Jinotega**. La Bastilla, 10 km NE of Jinotega, 11 Jan. 1969, *F.C. Seymour* 2120 (MO); Along Lago Apanas, near Jinotega, 1000 m, 4 Dec. 1973, *L.O. Williams & A. Molina* R. 42756 (MO); Along Highway 3 ca. 1.9 km NW of Aranjuez road entrance, 1460-1480 m, 13°02'N, 85°56'W, 31 Oct. 1982, *W.D. Stevens* 21913

(MO); Wiwili, zona de Amortiguamiento de Bosawas, macizos del Cerro Kilambé, 13°33'N, 085°41'W, 10 Aug. 1998, *R. Rueda & al.* 8475 (MO); Reserva Natural Kilambé, Comarca Aguas Rojas, 13°22'N, 085°41'W, 18 Mar 2001, *R. Rueda & al.* 15800 (BM, MO); **Madriz**. Cerro Volcán de Somoto (Tepesomoto), cerca la cima, 1500-1600 m, 13°25'N, 86°34'W, 16 Apr. 1980, *P.P. Moreno* 2145 (MO); **Managua**. Casa Colorada and vicinity, 850 m, 27 Jun. 1923, *W.R. Maxon & al.* 7408 (US); Río Las Nubes, Feb. 1936, *A. Garnier* 1549 (US); Ca. 0.6 km from 2 (Carretera Sur) on road along ridge of Sierra de Managua from Highway 2 to Highway 12 (Carretera vieja a León), near El Pescado, 800 m, 12°00'N, 86°19'W, 19 Oct 1977, *W.D. Stevens & al.* 4730 (MO); **Masaya**. Miravalle, a 4 km de Las Nubes, 700-800 m, 12°00'N, 86°16'W, 11 Dec. 1980, *P.P. Moreno* 5185 (MO); **Matagalpa**. Sta. María de Ostuma, 8-15 Jan. 1963, *L.O. Williams & al.* 23340 (G, NY, US, W); Cloud forest area about 5 km N of Matagalpa, Cordillera Central de Nicaragua, 13 Jan. 1963, *L.O. Williams & al.* 23739 (US); Between Matagalpa and Jinotega, 8-15 Jan. 1963, *L.O. Williams & al.* 23316 (G, NY, US, W); Matagalpa, N of Santa María de Ostuma, 28 Nov. 1973, *L.O. Williams & A. Molina* 42666 (BM, US); Matagalpa, El Ocotil, 4 km al S de la ciudad de Matagalpa, 900-1000 m, 12°52'N, 85°55'W, 5 Oct. 1982, *P.P. Moreno* 17664 (MO); Behind La Selva Negra Hotel, slopes of Cerro Picacho, near the border with Dept. Jinotega, 1200-1540 m, 13°00'N, 85°55'W, 23-25 May 1985, *G. Davidse & al.* 30443 (MO); **Nueva Segovia**. Jalapa, Cerro de Jesús, 1255-1660 m, 13°58'50"N, 86°10'54"W, 17 Jul. 2006, *D. Paguaga* 4 (MO); **Rivas**. Isla Omotepe, Volcán Maderas, 800-1200 m, 11°26'N, 85°30'W, 19 Sep. 1984, *W. Robledo* 1151 (MO).

PANAMA. Bocas del Toro. Along trail on divide separative Chiriquí and Bocas del Toro, 08°45'N, 82°15'W, 1150 m, 22 Oct. 1985, *G. MacPherson* 7220 (MO, PMA); Bocas del Toro, Cerro Colorado, ca. 8.6 miles W of Chamé, ca. 3 miles beyond junction of road which goes S to old construction camp for copper ore exploration, along trail N of divide toward Atlantic slope which leads down a rocky stream, 1450-1480 m, 8°35'N, 81°50'W, 7 Jul. 1988, *T.B. Croat* 69119 (MO); **Chiriquí**. Cerro Vaca, E of Chiriquí, 25-28 Dec. 1908, *H. Pittier* 5331 (NY, US); Vicinity of El Boquete, 28 Sep.-7 Oct. 1911, *A.S. Hitchcock* 8269 (US), 8270 (NY, US), 8286 (US), 8311 (US), 8315 (US); Boquete, 29 Mar. 1938, *M.E. Davidse* 710 (MO, US); Vicinity of Boquete, Finca Colina, 5800-6700 ft, 13 Mar. 1963, *W.L. Stern & al.* 2032 (MO, US); Vicinity of Boquete, 12-13 Dec. 1966, *W.H. Lewis & al.* 569 (K, MO, NY, US); Along road between Boquete and Cerro Horqueta, scandent grass, fruits green, 2 Aug. 1967, *J.A. Duke* 13704(4) (MO, SCZ); Chiriquí, 1.5 miles W of Cerro Punta, valley of Río Chiriquí Viejo, 20 Jan. 1968, *S. McDaniel* 10158 (NY, US); N of San Felix at Chiriquí-Bocas del Toro border, on Cerro Colorado, copper mine road along continental divide, lower montane rain forest, 5 May 1975, *S. Mori & J. Kallunki* 5916 (MO, US); E slope of Volcán de Chiriquí (Barú) WNW of Boquete, 19 Nov. 1975, *G. Davidse & W.G. D'Arcy* 10155 (K, MO, US), **n = 18!** (Davidse 1978); NE del campamento de Fortuna (Hornito), 08°45'N, 82°15'W, 26 Sep. 1976, *M. Correa & al.* 2869 (K, MO, NY, PMA, US); 10 km N of Los Planes de Hornito, 1150 m, 18 Jun. 1982, *S. Knapp & M. Vodicka* 5623 (MO); Vicinity of Fortuna Dam, along Quebrada Arena, just south of continental divide, 1050 m, 8°45'N, 82°15'W, 8 Sep. 1987, *G. MacPherson* 11692 (MO); Large meadow adjacent to Río Caldera just N of Boquete, 1060 m, 9 Mar. 1989, *P.M. Peterson & C.R. Annable* 7382 (MO); Near Costa Rican border, 13 km by road S of Río Sereno, Finca Hartmann, 1800 m, 8°50'N, 82°45'W, 13 May 1991, *N. Hensold & G. MacPherson* 1035 (MA, MO, NY, PMA); Near Costa Rica border, 1550-1750

m, 08°50'N, 82°45'W, ca. 13 km from Río Sereno, 23 Oct. 1992, *G. MacPherson* 15958 (BM, MO, PMA); Finca de la Familia Herrera, 5 Nov. 1994, *R. Castello* 47 (US); Chiriquí, Pietra Candela, 18 May 1996, *M. Ramirez* 98 (PMA); Bajo Morro (Boquete), 8°48'18"N, 82°26'96"W, 1319 m, 4 Oct. 2009, *A. Gómez* 99 (PMA); Reserva Forestal Fortuna, sendero al E del Centro para la ICBT, 8°43'59"N, 82°14'16"W, 1110 m, 20 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 858 (FT, PMA, SCZ); Bugaba, orillas de la carretera entre Bijao y Volcán, 8°43'54"N, 82°37'32"W, 1201 m, 22 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 867 (FT, PMA, SCZ); Chiriquí, Volcán, carretera a Aguacatal, SW del Volcán Barú, 8°47'36"N, 82°34'54"W, 2079 m, 23 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 871, 872, 874, 875, 878 (FT, PMA, SCZ); Carretera Volcán-Río Sereno, Puente sobre el Río Chiriquí Viejo, 8°48'27"N, 82°40'W, 1338 m, *M.N.S. Stapf & R.M. Baldini* 897 (FT, SCZ); Carretera Boquete-Palo Alto, 847°43'N, 82°26'26"W, 1227 m, 24 Jan 2012, *M.N.S. Stapf & R.M. Baldini* 900 (FT, PMA, SCZ); Reserva Forestal Fortuna, primer puente despues de la Estación Biologica del STRI, 8°44'02"N, 82°15'02"W, 1307 m, 10 Jul. 2012, *O.O. Ortiz & al.* 776 (PMA); Reserva Forestal Fortuna, Hornito, Valle La Mina, hacia Pueblo Nuevo, 8°39'26"N, 82°12'54"W, 1174 m, 2 Feb. 2014, *O.O. Ortiz & R.M. Baldini* 1989 (FT, PMA); **Coclé**. 5 km W of El Valle, 3000 ft, 26 Feb. 1978, *B. Hammel* 1765 (MO); Bugaba, Santa Clara, 08°50'N, 82°44'W, seasonally dry forest near Santa Clara, 1 Mar. 1985, *H. van der Merff & J. Herrera* 7316 (MO, PMA); **Darién**. Darién, Cerro Sapo, 2500 ft, 1 Feb. 1978, *B. Hammel* 1209 (MO); Trail along ridge S of Río Setigandi, almost on Colombian border, 700-1000 m, 21 Apr. 1980, *A. Gentry & al.* 28731 (MO, PMA); Serranía de Canazas, Reserva privada Chucantí, Cerro Chucantí, 8°47'45"N, 78°27'47"W, 1325 m, 29 Aug. 2014, *O.O. Ortiz & al.* 2446 (FT, PMA); **Panamá**. Canal Zone, 1 mile N of Madden Dam on the Colon Highway, edge of "higher forest", 30 Apr. 1969, *R.L. Lazor* 2945 (SCZ); Majé, up Río Majé about 5 miles, steep forested ridge above Chocó Indian trail, 18 Nov. 1970, *H. Kennedy & R. Foster* 677 (NY); Canal Zone, along road to Gamboa airport, 13 May 1971, *T.B. Croat* 14603 (NY); Altos de Campana, Monte Sulin, 3 Dec. 1977, *R. Mendez* 98 (PMA); Parque Nacional Altos de Campana, carretera a Chica, 8°40'29"N, 79°55'45"W, 798 m, 14 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 813 (FT, PMA, SCZ); **Veraguas**. Río Segundo Brazo, 8 Sep. 1974, *P.J.M. Maas & R.L. Dressler* 1635 (K, MO, NY); Trail up E side of Cerro Tute, 1200 m, 25 Oct. 1975, *J.T. Whitherspoon & al.* 8866 (MO); Mountains W of Alto de Piedras Junior High School N of Santa Fé, slopes and peak of Cerro Arizona, 300-4700 ft, 11 Sep. 1978, *B. Hammel* 4701 (MO); Mountains of southern Azuero Peninsula Los Santos, near proposed route of road from El Cortezo to Arenas, ca. 10 km SW of El Corezo, 1500-3800 ft, 27 Oct. 1978, *B. Hammel* 5370 (MO); Veraguas, Cerro Tute, W of Santa Fé, beyond Alto da Pedra, 08°30'N, 81°7'W, 600-800 m, 17 Oct. 1985, *G. MacPherson* 7179 (MO, PMA); Soná, Bahía Honda, entre Playa del Sol y Salmonete, intorno del Río Luis, 7° 48'N, 81° 35'W, 5 Jul. 2001, *S. Castroviejo & al. s.n.* (MA, PMA); Santa Fé, Alto de Piedra, camino hacia Cerro Tute en las faldas del Cerro Mariposa, 8°30'35"N 81°06'57"W, 858 m, 19 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 847, 849 (FT, PMA, SCZ).

PERÚ. Amazonas. Chachapoyas, Leimebamba-Chilchos trail, 2 Jul. 1977, *J.D. Boeckle* 2095 (MO, NY); Bagua, 12 km E of La Peca, 9 Jul. 1978, *P.J. Barbour* 2693 (MO, NY); Bongara, traila bove Highway to Chiclayo and Río Utcubamba, 3-10 km NW of Pedro Ruiz Gallo, ca. 1300-1400 m, 4 May 1981, *K. Young & M. Eisenberg* 293 (MO); **Cajamarca**. Santa Cruz, Catache, upper Río Zaña, ca. 5 km above Monte Seco on path to Corro Blanco, 1500-

2000 m, 16-18 Mar. 1986, *M.O. Dillon & al.* 4360 (MO, NY, US); Jaen, Colasay, 1600 m, 05°55'00"S, 79°10'00"W, 8 Dec. 2001, *R. Vasquez & al.* 27196 (MO); **Cuzco**. Urubamba, ruinas de Machu Picchu, a ca. 112 km de Cuzco, en el camino ferroviario Cuzco-Quillabamba, 2000 m, 24 Mar. 1987, *P. Nuñez* 7545 (MO); Paucartambo, Kosñipata Valley, km 150, San Pedro, Río Union and Río Kosñipata junction, 800 m, 20 Mar. 1990, *P. Nuñez* 11946 (MO); **Oxapampa**. Villa Rica, Centro poblado, Palma (Centro Bocaz), Camino a Alto Atarraz, 1515 m, 10°39'17"S, 75°11'35"W, 14 Jan. 2005, *L. Franco Mellado & al.* 2559 (MO); **San Martín**. Rioja, montane forest along road Rioja-Pedro Ruiz, 1350 m, 25 Mar. 1998, *H. van der Werff & al.* 15616 (MO).

VENEZUELA. **Aragua**. Tovar, 29 Aug. 1855, *A. Fendler* 1619 (K, MO); Aragua, high pass between Chroní and Maracay, 6500 ft, 5-6 Apr. 1962, *T.R. Soderstrom* 974 (MO, NY, P, US); Near Maracay, Parque Nacional Rancho Grande, near field station, 8 Jun. 1967, *T.R. Soderstrom* 1357 (US); Parque Nacional Henry Pittier NW of Maracay, Rancho Grande, 1150 m, 13 Nov. 1971, *G. Davidse* 3033 (MO, US), **n = 18!** (Davidse 1978), 3038 (MO); High pass Aragua, Alto de Coroni, ca. 28 km N of Maracay, 1500 m, 14 Nov. 1971, *G. Davidse* 3100 (L, MO, US), **n = 18!** (Davidse 1978); Cordillera Interior, faldas que miran al N a lo largo del camino entre El Pauji y El Socorro, hacia la represa, al S de El Consejo, 1350-1400 m, 10°11'N, 67°15'W, 16 Jul. 1979, *J.A. Steyermark & A. Stoddart* 118178 (MO); Parque Nacional Henri Pittier, along the road from Maracay to Coroni, 1595-1640 m, 11 Nov. 1984, *A.L. Weitzman & B.M. Boom* 145 (MO, NY, US); **Bolívar**. Savannas vicinity of Mission Santa Teresita de Kavanayén, 1200-1300 m, 11 Dec. 1952, *B. Maguire & J.J. Wurdack* 33758 (NY, US); **Distrito Federal**. Umgebung von Maracay und Caracas, 1930-1934, *P.C. Vogl* 944 (G); Sabana de Cortina, 11 Mar. 1940, *A. Chase* 12408 (US); Distrito Federal, S and SW facing densely wooded slopes of Cordillera del Avila, above Caracas, between Los Venados and Papelon, 1585-1820 m, 30 Dec. 1943, *J.A. Steyermark* 55106 (US); Caracas, La Guaira, 23 Jun. 1946, *A. Burkart* 17001 (K); Cerro Naiguatá, laderas pendientes del lado del mar que miran hacia el Norte, arriba del pueblo de Naiguatá, bosque humedo denso, Lomas de Las Delicias, entre Quebrada de Basenilla y Quebrada Guayoyo, 9-12 km SE de Hacienda Cocuizal, 1000-1300 m, 15-19 Nov. 1963, *J.A. Steyermark* 92125 (US); Between El Junquito and Colonia Tovar, 2100 m, 27 Oct. 1972, *J.J. & M.L. Wurdack* 2674 (US, VEN); Distrito Federal, intersection road between El Junquito and Tovar and road to Carayaca, 1770 m, 13 Nov. 1973, *G. Davidse* 3999 (K, MO), **n = 18!** (Davidse 1978), 4032 (MO, US); Capital, Libertador, Parque Nacional Waraira Repano (El Ávila), 10°30'55"N 66°53'09"W, 1090-1150 m, 3 Dec. 2015, *R. Gonto et al.* 6633 (NY); **Falcón**. Sierra de San Luis, Montaña de Paraguariba, 23 Jul. 1967, *J.A. Steyermark* 99450 (NY); Sierra San Luis, Paraguariba, ca. 2-3 km NNE de la cumbre del Cerro Galicia, 1300 m, 24 Feb. 1985, *R. Wingfield* 13695 (MO); **Lara**. Jiménez, hills along road between Alto del Viento to Cerro Pando, 1000-1700 m, 69°34'W, 9°39'N, 26 Oct. 1982, *G. Davidse & A.C. González* 21206 (MO, NY); **Mérida**. Rich forest above Hacienda Agua Blanca, above La Aulita, 1375-1920 m, 25 Apr. 1944, *J.A. Steyermark* 56098 (US); 66 km NE of Merita along Merita-Azulita road, 1900 m, 20 Nov. 1971, *G. Davidse* 3240 (L, MO, NY, US), **n = 18!** (Davidse 1978); Elfin Forest, Estanques-Paramos de los Colorados, 12 Mar. 1980, *G.L. Sobel & J. Strudwick* 2155 (MO, NY); Libertador, vía al Páramo de la Culata, 08°39'12"N, 71°07'57"W, 1900-2000 m, 20 Jun. 2007, *N. Gutiérrez* 538 (NY); **Miranda**. Between Las Canales and El Eucanto, Nov. 1942, *T. Lasser* 665 (G); Laderas y quebradas con restos de selva transicional al SE de

Urb. Vista Linda, al E de Urb. Alto Hatillo, en las cabeceras del Río Guarita, 10°26'N, 66°49'W, 10 Aug. 1975, *J.A. Steyermark & P. Berry* 111910-A (NY); Los Salias, Carretera Panamericana, km 11, Altos de Pipe, 10°23'55"N, 66°58'27"W, 1565 m, 9 Nov. 2014, *R. Gonto & Á. Fernández* 5902 (NY); **Monagas**. Cerro La Cueva, 1000 m, 29 Nov. 1987, *J. Bono* 7230 (FT); **Táchira**. Entre Valle Paez y Betania, cerca la frontera con Colombia, 15 Nov. 1975, *G.S. Bunting* 4901 (NY); Sierra El Casadero, along Highway between Las Dantas and Las Adjuntas, 7°45'N, 72°25'W, 12 Nov. 1979, *J.A. Steyermark & al.* 120079 (MO), 120152 (MO, NY); Parque Cazadero, Quebrada Cazadero, 16 km NW of San Cristóbal, 400-650 m, 7°54'N, 72°18'W, 2 May 1981, *R. Liesner & M. Guariglia* 11694 (MO, VEN); Junín, Quebrada Agua Blanca, near La Rochela, along Delicias-Rubio Highway, 1850-2000 m, 72°26'W, 7°35'N, 15 Nov. 1982, *G. Davidse & A.C. Gonzalez* 22347 (MO, NY); **Trujillo**. 34 km from Valera along road to Timotes, 14 Aug. 1964, *F.J. Breteler* 4136 (US); Boconó, P.N. Guaramacal, vertiente nord a altura de 2100 m, bosque húmedo montano alto, Mar. 2003, *B. Stergios* 19993 (K, US).

(11a) *Lasiacis oaxacensis* (Steud.) Hitchc. var. *oaxacensis*, Proc. Biol. Soc. Wash. 24: 45. 1911. (Fig. 30).

Bas.: *Panicum oaxacense* Steud., Syn. Pl. Glum. 1: 73. 1854.

Type: Mexico, Oaxaca, Lenormand s.n. (holotype: P! [barcode P00633942]).

Description

Perennials, caespitose. *Culms* 0.5-2.0 m tall, creeping and rooting at the nodes, widely branched; *internodes* 2-5(-6) mm thick, partially hollow, glabrous, herbaceous; *nodes* glabrous. *Leaf sheaths* glabrous, one or both margins ciliate; *collars* usually puberulent or pubescent along the margins, hairs 0.5-2.0 mm long; *ligules* 2.0-6.0 mm long, prominent brown, appressed puberulent, sometimes hispid on the back, margins ciliate with hairs up to 2 mm long, apex ciliate and usually lacerate; *blades* 15-30 cm long, 1.5-2.5 cm wide, prominent, narrowly linear-lanceolate, acuminate, base asymmetrical, glabrous and scabrous along the midribs. *Panicles* 15-30 cm long, usually terminal; *branches* spreading, naked on the lower ½ or 2/3, bearing pedicellate spikelets usually in clusters at the end of the branchlets. *Spikelets* 3.6-4.5 mm long; *lower glumes* 1.5-2.4 mm long, 4-8-veined; *upper glumes* 2.5-3.5 mm long, 7-11-veined; *sterile florets* staminate, *lemmas* 8-10-veined, *paleas* ¾ to equal the fertile floret, *anthers* 1.0-2.3 mm long, *fertile florets* 3.5-3.8 mm long, 1.8-2.3 mm wide, *anthers* 1.6-2.3 mm long, white; *stigmas* purple; *caryopses* ca. 2.0 mm long, 1.5 mm wide. *Chromosome number*: $2n = 36$ (Davidse 1972, 1978).

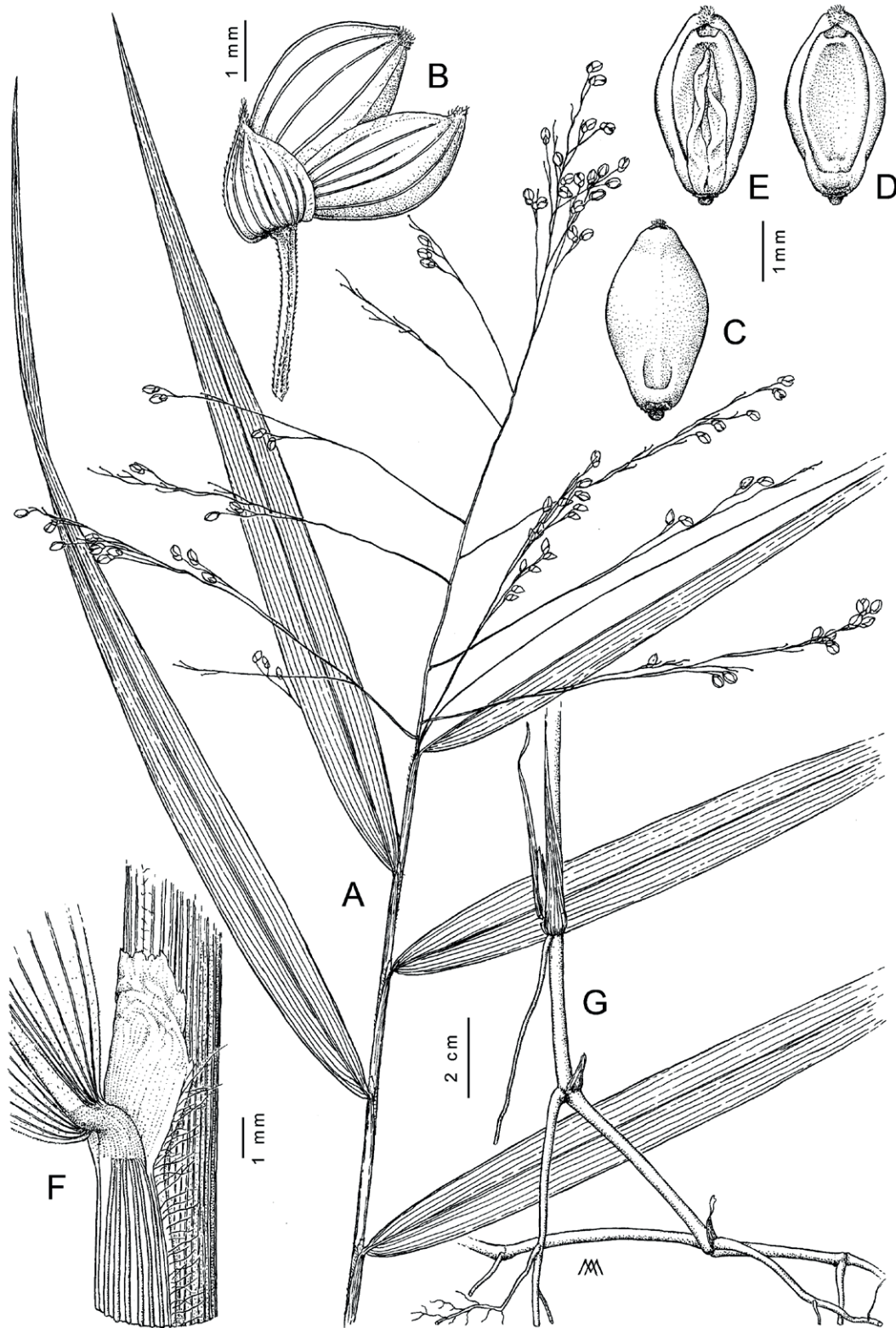


Figure 30. *Lasiacis oaxacensis* (Steud.) Hitchc. var. *oaxacensis*: A. Habit; B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea; F. Ligular area [A-F. from T. Koyama & G.S. Bunting 14098 (NY)]; G. Culm rooting at the nodes [G. from J.G. Hawkes & al. 2131 (G)]. A. *Maury delineavit.*

Vernacular names

Belize: Toledo, “rat rice” P.H. Gentle 3937 (NY, US); **Ecuador:** Chimborazo, “tundilla” M. Acosta Solís 5176 (US), Los Ríos, “paja de saino” M. Acosta Solís 19481 (US); **Honduras:** Comayagua, “zacate” A.I. Hernández 119 (MO); **Mexico:** Oaxaca, “zacate de escobe” Souza 525 (Davidse 1978); **Perú:** San Martín, “carricito castillo” J. Schunke Vigo 7001 (MO, US) .

Distribution

Belize, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Perú, Venezuela. (Fig. 31).

Distribution (bibliographic references)

Hitchcock (1913); Hitchcock and Chase (1917); Hitchcock (1920, 1927a, 1930, 1936); Swallen (1931,

1936, 1943, 1955b); Standley (1937); Beetle (1977); Davidse (1978, 1994, 2001); Croat (1978); Pohl (1980); McVaugh (1983); D’Arcy (1987); Cialdella and Vega (1996); Serna and López-Ferrari (2000); Morales (2003); Zuloaga et al. (2003); Correa et al. (2004); Renvoize et al. (2006); Hokche et al. (2008); Giraldo-Cañas (2011); Acevedo-Rodríguez and Strong (2012); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019); Menjívar et al. (2021).

Ecology

Forest edges and open areas inside the forest, roadsides and edges of plantations. From sea level to 1500 m.

Phenology

November through May. In southern America highlands mostly May through October/November.



Figure 31. *Lasiacis oxacensis* (Steud.) Hitchc. var. *oxacensis*: general geographic distribution.

Remarks

Lasiacis oaxacensis var. *oaxacensis* is closely related to *L. linearis* Swallen, but with a solid and procumbent culm, long and narrow leaves, robust midveins, and conspicuous ligules up to 6 mm long. Adventitious roots are more solid and developed than in *L. linearis*. The panicles are very large and with open, spreading branches. The distribution of *L. oaxacensis* var. *oaxacensis* goes from Mexico southward throughout Central America – including the Caribbean area (Jamaica and Haiti) – to South America in Colombia, Venezuela, Ecuador and Peru.

Selected Specimens

BELIZE. **Belize.** Tracie Rock, Sibun River, 21 Jan. 1936, *P.H. Gentle* 1769 (K, NY); **Cayo.** Mt. Pine Ridge, 12 miles S of Georgeville, 600 m, 24 Jan. 1974, *R. Liesner & J. Dwyer* 1588 (MO); **Stann Creek.** Near Hope Creek, 9 Feb. 1953, *P.H. Gentle* 7874 (G, NY, US); In acahual, Tipparery Road, 12 miles Section, Stann Creek-Middlesex Road, 4 Feb. 1957, *P.H. Gentle* 9331 (G); **Toledo.** Temash River, 4 Mar. 1935, *W.A. Schipp* 1368 (BM, G, K, NY, US); Monkey River, 4 Mar. 1942, *P.H. Gentle* 3937 (NY, US); On creekside, Crique Negro, Edwards Road beyond Columbia, 14 Feb. 1951, *P.H. Gentle* 7205 (G, NY, US); Bladen Natire Reserve, NW BNR near the Bladen River, 45 m, 16°33'N, 83°43'W, 16 Feb. 1997, *S.W. Brewer* 171 (MO).

COLOMBIA. **Chocó.** Novita, vereda Curundó, margen izquierda del Río Ingará, 550 m, 1 Dec. 1983, *P. Franco & al.* 1056 (MO); **Nariño.** Isla El Moro Grande, Pacific Coast near Tumaco, Jan. 1942, *E. Dryander* 2555 (G); Santa Marta, ¿Nov.?, *H.H. Smith* 2142 (BR, COL, G, K, L, MO, NY, US, W); **Risaralda.** Periera, Hacienda Alexandria, km 8 Cerritos-La Virginia, extremo norte de parte ancha del Valle del Río Cauca, 175 m, 04°51'N, 75°52'W, 6 Jan. 1995, *P. Silverstone-Sopkin & N. Paz* 7401 (MO).

COSTA RICA. **Alajuela.** Carrillos de Poas cerca de Río Poas, 19 Nov. 1933, *A.M. Brenes* 17380 (NY); In canyon, 1.5 km S of San Pedro de Poás, 1000 m, 3 Dec. 1968, *R.W. Pohl & G. Davidse* 11522 (US); Between Cerro Chato and Cerro de Los Perdidos, 17 Feb. 1989, *G.F. Russell & al.* 769 (MO); **Guanacaste.** El Arenal, 485–600 m, 18–19 Jan. 1926, *P.C. Standley & J. Valerio* 45151 (US); **Heredia.** Finca La Selva, Río Puerto Viejo just E of its junction with the Río Sarapiquí, 7 Apr. 1980, *B. Hammel* 8479 (MO); **Limón.** Guapiles, edge of rainforest, Aug. 1964, *H.S. McKnee* 11101 (K, P, US); Canton de Talamanca, Cuenca del Sixaola, San Miguel, de la Estación Asacode, 100 m, 09°34'30"N, 82°40'00"W, 20 Jan. 1997, *J. Gonzalez* 1688 (MO); Cuenca del Estrella, Reserva Biológica Hitoy Cerere, 100–200 m, 09°40'40"N, 83°01'25"W, 12 May 1999, *A. Rodríguez & al.* 4896 (G, MO); **Puntarenas.** 12 km by road SE of Paso Real Ferry, E side of Río Terraba, 31 Dec. 1974, *R.W. Pohl* 13121 (K); Monteverde, Cloud Forest Reserve, Cordillera de Tilamán, 1500–1620 m, 26 Sep. 1983, *W.Z. Pounds* 74 (MO); Forests along S side of Quebrada Bonita, to ca. 1 km E of Costanera Highway, Carara Reserve, 30–40 m, 9°47'N, 84°37'W, 11 Jan. 1985, *M. Grayum* 4736 (MO); Cantón de Osa, Los Mogos, 20 m, 8°45'00"N, 83°22'50"W, 12 Jan. 1991, *V. Ramírez* 59 (MO, USJ); Cantón de Golfito, Jiménez, Río Piro, 50 m, 08°24'08"N, 83°20'25"W, 18 Jan. 1991, *E. Castro* 168 (MO, USJ); Buenos Aires, Cuenca Terrabazierpe, Sendero a Cerro Cabecar, 2000 m, 9°19'15"N 83°23'21"W,

10 Sep. 2000, *E. Alfaro* 3416 (MO); **San José.** Santa María de Bota, 4 Apr. 1890, *H. Pittier* 2247 (G); San José, 22–24 Oct. 1911, *A.S. Hitchcock* 8488, 8496 (US); Vicinity of El General, Jan. 1939, *A.F. Skutch* 3821, 3863 (K, MO, NY, US).

ECUADOR. **Chimborazo.** Hacienda Rosa Mercedes, sobre Bucay, 500–850 m, 12 Aug. 1943, *M. Acosta Solís* 5176 (US); **Esmeraldas.** Midway between Santo Domingo de los Colorados and Quinindé, 16 May 1955, *E. Asplund* 16365 (G, K, NY, P, UPS, US); El Vichi, 11 Apr. 1981, *F.M. Valverde* 6504 (MO); **Guayas.** Milagro, 50 m, 30 Jun.–2 Jul. 1923, *A.S. Hitchcock* 20299 (NY, US); Panigón Plantation, 8 miles S of Milagro, 12 Jul. 1923, *A.S. Hitchcock* 20568 (US); Vicinity of Guayaquil, Cerro Azul forest, 14 Jun. 1955, *E. Asplund* 16632 (NY, UPS); Naranjal, Reserva Ecológica Manglares-Churute, Parroquia Taura, 100–350 m, 02°27'S, 79°40'W, 26 Sep. 1992, *C.E. Cerón & al.* 20374 (MO); **Los Ríos.** Canton Vices, 50 m, Oct. 1934, *Y. Mexia* 6581 (BM, US); Pichilingue, 90 m, 12 Sep. 1950, *M. Acosta Solís* 19481 (US); Between Babahoyo and Montale, secondary monsoon forest and cultivated land, 4–7. Aug. 1967, *B. Sparre* 17983 (UPS); **Manabí.** s.d., *H.F.A. von Eggers* 15572 (K, P); Vicinity of Ventura, 23–24 Oct. 1918, *J.N. Rose & G. Rose* 23525 (NY, US); **Oro.** Between Santa Rosa and La Chorrera, 0–100 m, 27 Aug. 1923, *A.S. Hitchcock* 21131 (US); **Pichincha.** Along bank N of river 3 km W of Alluriquin, 800 m, 20 Oct. 1981, *L. Werling & S. Leth-Nissen* 517 (MO, NY).

EL SALVADOR. **Ahuachapán.** San Benito, al E de las escaleras, 950 m, 13°49'N, 89°56'W, 8 Oct. 1993, *E. Sandoval* 1467 (MO); San Benito, la Reforma, 23 Oct. 1994, *L.E. Escobar & E. Sandoval* ISB00748 (K); **La Libertad.** Santa Tecla, 15 Jan. 1949, *L.O. Williams & A. Molina* 15089 (US); Volcán de San Salvador, ca 2 km & below the crater, 1400 m, 6 Jun. 1970, *G. Davidse & R.W. Pohl* 2026 (MO), **n = 18!** (Davidse 1978); Parque Nacional El Boquerón, El Boquerón, falda volcán de San Salvador, 13°44'03"N, 89°16'45"W, 1766–1831 m, 25 Jun. 2015, *J. Menjívar & R.M. Baldini* 3404 (FT, MHES); **Morazán.** Montes de Cacaguatique, 2 Jan. 1942, *J.M. Tucker* 694 (K); San Salvador, 20–26 Nov. 1911, *A.S. Hitchcock* 8877 (NY, US); **San Miguel.** Volcán Cochagua, 1050 m, 13°16'N, 87°50'W, 31 Jan. 1998, *A. Monro & al.* 2103 (BM, MO); **Santa Ana.** 15–18 Nov. 1911, *A.S. Hitchcock* 8853 (BM, US); **San Salvador.** San Salvador, 1922, *S. Calderón* 507 (NY, US); Santo Tomás, 1922, *S. Calderón* 1324 (MO, NY, US); Near bottom of crater of Volcán San Salvador, 8 Jan. 1951, *N.C. Fassett* 28590 (US).

GUATEMALA. **Alta Verapaz.** Cubilquitz, Mar. 1904, *H. von Tuerckheim* 8623 (K); **Guatemala.** Guatemala City, 1–3 Dec. 1911, *A.S. Hitchcock* 9045, 9080, 9107 (NY, US); Guatemala City, 11 Nov. 1916, *F.W. Popenoe* 735 (L, US); Guatemala, on dry hillside of River Villalobos, 12–23 Jan. 1966, *A. Molina & al.* 16075 (NY, W); **Izabal.** Between Los Amates and Izabal, Sierra del Mico, 15 Feb. 1908, *W.A. Kellerman* 7486 (NY, US); Vicinity of Quiriguá, 15–31 May 1922, *P.C. Standley* 24122 (NY, US); North of Quiriguá, 2 Mar. 1932, *P. Weatherwax* 1715 (BM); **Jutiapa.** Between Jutiapa and La Calera, SE of Jutiapa, 2 Nov. 1940, *P.C. Standley* 76153 (K); **Petén.** Río Pasión, Altar de Sacrificios, 7 Feb. 1964, *C.L. Lundell* 17788 (US); Petén, Sacate, fruto verde, en foresta alta, Dolores, en orillando el camino para caserio Sabaneta, a km 70, lado norte, 17 Feb. 1971, *R. Tún Ortiz* 1598 (US); **Quetzaltenango.** In dumetis, Mazatenango, Nov. 1870, *G. Bernoulli* 1189 (FI, G, NY); Mountains near Santa María, S of Quetzaltenango, 25 Mar. 1932, *P. Weatherwax* 180 (K); **Sacatepéquez.** Near Las Lajas, 1200 m, 28 Nov. 1938, *P.C. Standley* 58104 (US).

HAITI. **L'Artibonite.** Vicinity of Kalacroix, Section Dessalines, 700 m, 12 Dec. 1925, *E.C. Leonard* 7997 (US); **Nord.** Massif du Nord, Morne Brigand, 10 Dec. 1924, *E.L. Ekman* 2841 (US);

Vicinity of Marmelade, 800 m, 19 Aug. 1925, *E.C. Leonard* 8192 (MO, US); Vicinity of Dondon, 6 Jan. 1926, *E.C. Leonard* 8572 (NY, US); Vicinity of Plaisance, 400 m, 28 Jun. 1926, *E.C. Leonard* 9391 (US); **Sud.** Massif de la Hatte, Marne Rochelois, Miragoane road, Buttlet to Etang-Ray, 3 Nov. 1926, *E.L. Ekman* 7153 (US); Morne Rochelois, 3 Nov. 1926, *E.L. Ekman* H7153 (K).

HONDURAS. **Atlántida.** Common on Pajuiles riverbank, between Tela and Pajuiles, 11 Apr. 1970, *A. Molina & al.* 25714 (NY, US); 7 miles E of Tela along road to La Ceiba, 28 Jun. 1970, *G. Davidse & R.W. Pohl* 2205 (NY, US); **Comayagua.** Esquias, 75 km E de Comayagua, 550 m, 28 Dec. 1981, *A.I. Hernández* 119 (MO); **Yoro.** 15 km SSE of Río Viejo along road to Olanchito, 27 Jun. 1970, *G. Davidse & R.W. Pohl* 2199 (US); **Morazán.** Puente Colorado N of T. Large vine, 7 Dec. 1949, *P.C. Standley* 24910 (NY); Montaña La Tigra, Presa La Tigra, 29 Nov. 1958, *J.G. Hawkes & al.* 2131 (C, G); 12 km E of El Zamorano along Highway 4, 800 m, 18 Jun. 1970, *G. Davidse & R.W. Pohl* 2127 (MO, US); **Olancho.** Poncaya, Pena Blanca Mountain, 4 Mar. 1982, *S. Blackmore & G.L.A. Heath* 2014 (BM, MO). **Santa Barbara.** San Pedro Sula, Jul. 1888, *C. Thieme* 5585 (US); Santa Barbara, 1 km de Santa Barbara, 11 Dec. 1950, *A. Molina* 3676 (US); Between Zacapa and El Monchito, 30 Dec. 1978, *R.W. Pohl & M. Gabel* 13827 (K, MO).

JAMAICA. **Clarendon.** Peckham, Upper Clarendon, 29 Dec. 1917, *W. Harris* 12828 (K, MO, NY, US); **Portland.** Nanny Town site, 12 Dec. 1973, *C. Whiteford* 490 (BM, MO); **St. Ann.** Mt. Diablo, Feb. 1916, *H.N. Ridley* 27 (MO); **St. Elizabeth.** Near Ipswich, 21 Oct. 1912, *A.S. Hitchcock* 9608 (US); Hanover, Delphin Head, 21 Dec. 1960, *C.D. Adams* 8632 (BM); **Trelawny.** Troy, 6 Nov. 1912, *A.S. Hitchcock* 9800 (US); Teyre near Troy, 18 Oct 1917, *W. Harris* 12615 (NY, US); **Westmorland.** Lindo's Hill, 18 Dec. 1914, *W. Harris* 11832 (C, K, MO, NY, P, US).

MEXICO. **Chiapas.** Chiapas, Jilguero, Escuintla, 27 Nov. 1947, *E. Matuda* 17286 (K, NY); Near the junction of the Río Perlas and Río Jataté at San Quintin and near Laguna Miramar, 22 Mar. 1955, *E.R. Sohns* 1685 (K, US); Tuxtla Gutierrez, 17 km N of Tuxtla Gutierrez along road to El Sumidero, 27 Oct. 1965, *D.E. Breedlove* 13903 (US); Ixtapa, near the Zinacantan, paraje de Muctajoc, 29 Oct. 1981, *D.E. Breedlove* 54023 (NY); Angel Albino Corzo, slopes of Río Cuxtepec, below Finca Cuxtepec, 4 Nov. 1981, *D.E. Breedlove* 54688 (NY); Mapastepec, Sierra de Soconusco, road to Tuxtla Gutierrez, 15°32'N, 92°48'W, 20 Jan. 1987, *T.B. Croat & D.P. Hannon* 63325 (BM, MO, NY); San Fernando, 21 Oct. 1989, *J.C. Soto & al.* 13327 (BM); Ocosingo, en Crucero de Lancanja-Tzeltal, camino Nuevo Guerrero a Santo Domingo, 340 m, 16°56'N, 91°14'W, 31 Jan. 2002, *E. Martínez* S. 35169 (MO); **Colima.** Rancho El Jabali, 25 km NNW of Colima in the SW foothills of the Volcán de Colima, 1400 m, 19°26'N, 103°40'W, 9 Jan. 1991, *A.C. Sanders* 10476 (MO); **Jalisco.** Wooded hills 2 miles above N of La Cuesta, road to Talpa de Allende, 19 Nov. 1960, *R. McVaugh* 21157 (NY); Puerto Vallarta, 14 km al SE de P. Vallarta, 10 Nov. 1978, *J. Garcia & al.* 929 (NY); **Michoacan.** Sierra Madre, 4 Nov. 1898, *E. Langliss* 556 (G, K, P, US); **Nayarit.** Mountains 9 miles N of Compostela, steep heavily forested stream valley in oak zone, 12 Nov. 1959, *R. McVaugh & W.N. Koelz* 510 (G, NY, US); **Oaxaca.** Tuxtepec, Chiltepec and vicinity, Jul. 1940-Feb. 1941, *G. Martinez-Calderón* 483 (US); Santa Maria Jacatepec, Tuxtepec, subida al Predio del Aquila, en San Augustin, 25 km al Ovest de la Reforma, carretera a Ayoazintepec, 17°50'N, 096°06'W, 21 Feb. 1988, *R. Torres* C. 11549 (US); **Veracruz.** Vallée de Cordoba, 1865-66, *E. Bourgeau* 1461 (G, K, L, P), 1865-66, *E. Bourgeau* 2648 (L); Vicinity of Zacuapan, Nov. 1906, *C.A. Purpus* 2157 (MO,

NY, US); Fortuño, Coatzacoalcos River, Mar. 1937, *L.O. Williams* 8271 (G, P, US); Ca. 5 km S of Catamaco on Highway 180, 20 Feb. 1969, *M.L. Smith* 1710 (VPI); Ixtaczoquiátlán, ca. 2 km E of town of Orizaba, S of old road between Fortín and Orizaba, 18°51'N, 97°03'W, 7 Dec. 1983, *M. Nee* 23843 (MO, NY); Hidalgotitlán, 1 km SE of Agustin Melgar, 17°15'N, 94°33'W, 2 Mar. 1984, *M. Nee* 29773 (MO, NY); Las Choapas, 18 km E of Campamento La Laguna and 3 km ESE of bridge over Río Grande on main gravel road of Uxpanapa area, 17°16'N, 94°20'W, 4 Mar. 1984, *M. Nee & K. Taylor* 29907 (MO, NY).

NICARAGUA. **Carazo.** Jinotepe, 3-7 Nov. 1911, *A.S. Hitchcock* 8672, 8698 (NY, US); **Chinandega.** Volcán Chonco, 700-1100 m, 12°41'N, 87°02'W, 30 Oct. 1984, *P.P. Moreno* 25020 (MO); Chinandega, Chichigalpa, Volcán Casita, sobre la loma El Coyol, 1320 m, 4 Feb. 2004, *I. Coronado & N. Gutierrez* 454 (MO); **Chontales.** 2 km from Villa Sandino along road to Bulun, heavily disturbed evergreen forest, 310 m, 12°03'59"N, 84°58'51"W, 18 Jan. 2009, *W.D. Stevens & O.M. Montiel* J. 27794 (MO); **Estelí.** Condega, Comunidad El Bramadero, Bosque Los Alpes, 400-500 m, 13°23'07"N, 86°15'42"W, 26 Jan. 2008, *J.G. Calderón Vindell* 217 (MO); **Granada.** Volcán Mombacho, costado oeste, entre la hacienda El Progreso y las torres e comunicaciones, 700-1000 m, 7 Jan. 1983, *A. Grijalva & al.* 2094 (MO); Granada, Reserva Natural Mombacho, Hacienda Cutirre, 400 m, 11°49'55"N 85°55'57"W, 23 Jan. 2004, *R. Rueda & D. Paguaga* 17748 (M); **Jinotega.** Bocay, Reserva Natural Kilambé, San Miguel de Kilambé, 800-1100 m, 13°31'N, 85°37'W, 6 Jan. 2001, *R. Rueda & al.* 15225 (MO); Wiwili, Comunidad La Esperanza, Reserva Bosawas, Territorio Miskito Indian Tasbabay Kum, parcela 1, 1 kn al W de la finca de Leonidas Bodin, 60-70 m, 23 Feb. 2008, *J. Prado* M. 223 (MO); **Managua.** Sierra de Managua, s.d., *Bro. A. Garnier* 39 (US); **Matagalpa.** Macizos de Penas Blancas, SE side, drainage of Quebrada El Quebradon, slopes N and W of Hacienda San Sebastian, 800-1100 m, 13°14'N, 85°38'W, 20-21 Jan. 1982, *W.D. Stevens & al.* 21238 (MO); **Rivas.** Isla Omotepe, Volcán Maderas, subiendo por la hacienda de Merida, 600-1000 m, 11°26'N, 83°31'W, 16 Jan. 1985, *W. Robleto* 1711 (MO); **Río San Juan.** El Castillo, Río Romeron, 1 km al W de la comunidad Las Maravillas, 100 m, 11°07'15"N, 84°21'04"W, 25 Jan. 2005, *R. Guzmán* 765 (MO); **Zelaya.** Vicinity of La Luz-Siuna, 11 Mar. 1961, *G.S. Bunting & L. Licht* 527 (NY); Zelaya, Intersection of road to Puerto Cabezas-Waspan & Río Lecus, 100 m, 14 Jul. 1970, *G. Davidse & R.W. Pohl* 2346 (MO); Zelaya, Suna, Caño El León, Carretera al Hormiguero, 2 Feb. 1983, *F. Ortiz* 738 (MO).

PANAMA. **Bocas del Toro.** 8 Feb. 1911, *M.A. Carleton* 166 (NY); Almirante, 1928, *G. Proctor* 105 (NY, US); Old Bank Island, 14 Feb. 1941, *H. von Wedel* 2086 (MO, US); Islas San Cristobal, Cerro de Bocatorito, 11 Feb. 1989, *P.M. Peterson & C.R. Annable* 6767 (US); Approximately 3.5 km S of Tiger Key on the mainland, 100 m, 23 Feb. 1989, *P.M. Peterson & C.R. Annable* 7032 (MO); 5 km S of Tiger Key on the mainland near Cacao Boquete just N of Ensenada de Boquete, 5-110 m, 24 Feb. 1989, *P.M. Peterson & C.R. Annable* 7071 (MO); 2 km W of Bocatorito, 5-80 m, 3 Mar. 1989, *P.M. Peterson & C.R. Annable* 7312 (MO); **Chiriquí.** Chiriquí Volcán, 29-30 Sep. 1911, *A.S. Hitchcock* 8199, 8201 (NY); Edge of open pasture and thicket of trees along creek, Monte Verde, 2.5 km W of Puerto Armuelles, 80 m, 18 Feb. 1973, *R.L. Liesner* 64 (MO); Large meadow adjacent to Río Caldera just N of Boquete, 1060 m, 9 Mar. 1989, *P.M. Peterson & C.R. Annable* 7377 (US); Boquete, road Boquete-Bajo Mono-Alto Chiquero, entrance to Sendero Los Quetzales, Alto Chiquero, by the roadside, cloud forest, 08°50'34"N, 82°28'56"W, 2532 m, 20 Jan. 2011, *A. Freire-Fierro* 3613 (PMA); Carretera de Alto Boquete-El Salto,

8°46'30"N, 82°27'28"W, 1437 m, 24 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 904 (FT, SCZ); **Colón**. Between France Field and Catival, 9 Jan. 1924, *P.C. Standley* 30230 (US); 4 km ENE of Buena Vista, along road to Sardinilla, 100 m, 30 Dec. 1973, *M. Nee* 9124 (MO); **Darién**. Clearing at confluence of Río Chucanaque and Río Canclones, 5 Jul. 1962, *J.A. Duke* 5107A (MO); **Herrera**. Middle area of Río Guanaco, 8 Feb. 1966, *J.S. McCorkle* C-126 (US); **Panamá**. Canal Zone, Hilly Foresta round the Agua Clara Reservoir, near Gatún, 5 Feb. 1911, *W.R. Maxon* 4653 (L, NY, US); Canal Zone, forest above Sabana de El Salto, on the trail to Camp Aguacatal, eastern slope of Chiriquí Volcán, 10–13 Mar. 1911, *W.R. Maxon* 5266 (NY); Canal Zone, Gatún Lake, 15 Dec. 1911, *A.S. Hitchcock* 412 (BM, F, G, K, L, P, MO, NY, US, W); Canal Zone, vicinity of Frijoles, *E.P. Killip* 4284 (US); Canal Zone, along the Río Chilibre, 26 Feb. 1923, *C.V. Piper* 5288 (US); Canal Zone, Cerro Gordo, near Culebra, 5 Dec. 1923, *P.C. Standley* 26009 (MO, US); Canal Zone, Gamboa, 26 Dec. 1923, *P.C. Standley* 28535 (US); Canal Zone, Darién Station, 19 Jan. 1924, *P.C. Standley* 31609 (US); Canal Zone, Banks of Chagres, 18 Dec. 1924, *F.W. Popenoe* 32 (NY); Canal Zone, Armour Trail, 10 Jan. 1940, *F.W. Hunnewell* 16395 (NY); San José Island, Pearl Archipelago, 18 Jun. 1945, *C.O. Erlanson* 308 (G, NY, US); San José Island, Perlas Arch., 55 mi. SSE of Balboa, 26 Dec. 1945, *I.M. Johnston* 904 (BM, US); Canal Zone, Fort Clayton, vicinity W end Gatun Lake dam, 22 Dec. 1965, *J. Dwyer* 1967 (MO); Canal Zone, Albroke forest, TTC tower site, 20 Jun. 1966, *K.E. Blum & J.D. Dwyer* 2089 (MO, SCZ); Perlas Islands, Sunny river bank, Playa Grande, San Jose Island, 18 Dec. 1968, *E.L. Tyson & H. Loftin* 5061, 5070 (MO, SCZ); Canal Zone, Barro Colorado Island, 10 Jan. 1969, *T.B. Croat* 7081 (MO, SCZ); Panamá, near TV tower on Continental Divide on ridge of Cerro Penon, 3 km S of Alcade Diaz, 440 m, 18 Dec. 1973, *M. Nee* 8853 (MO, PMA); Panamá, base of Serranía de Cañazas, ca. 15 km SW of Cañaza near Río Torti, 150 m, 8°52'N, 78°22'W, 15 Jan. 1983, *B.A. Stein* 1376 (MO); Canal Zone, secondary forest across from Curundu High School, 9°02'N, 79°31'W, 19 Jan. 1990, *T.B. Croat* 69848 (MO, PMA); Panamá, Parque Nacional Soberanía, camino del Oleoducto, 9°07'11"N, 79°42'52"W, 78 m, 27 Jan 2012, *M.N.S. Stapf & R.M. Baldini* 915 (FT, PMA).

PERÚ. Huanuco. Tingo Maria, 12 Aug. 1940, *E. Asplund* 12197 (G, K, UPS, US); **Junín**. Along Río Perene, near "Hacienda 3", Colonia Perene, 16–18 Jun. 1929, *E.P. Killip & A.C. Smith* 25170 (NY, US); **San Martín**. Mariscal Cáceres, Quebrada de Huaquisha (margen Izquierda del Río Huallaga), 400 m, 25 Jun. 1974, *J. Schunke Vigo* 7001 (K, L, MO, US); Mariscal Cáceres, Tocache Nuevo, Fondo Miramar along Río Huallaga, 450 m, 3 Jul. 1978, *T.C. Plowman & J. Schunke Vigo* 7558 (K, US); Lamas, Alonzo de Alvarado, Comino a Roque, 3–4 km de San Juan de Pacaizapa, 3 Jul. 1977, *J. Schunke Vigo* 9758 (K, MO).

VENEZUELA. Aragua. Guamitas, 29 Dec. 1938, *A.H.G. Alston* 5766 (BM); Aragua, Guamitas, Parque Nacional, 780 m, 21 Jan. 1946, *H. Pittier* 15209 (US); Aragua, Parque Nacional Rancho Grande, on Rd. 3 to Pto. Cabello, ca. 16 miles from Maracay, 4 Dec. 1969, *T. Koyama & G.S. Bunting* 14098 (MO, NY, US); Aragua, 8 km NW of Rancho Grande along road to Cata, cloud forest, 720 m, 15 Nov. 1971, *G. Davidse* 3113 (MO); Aragua, Parque Nacional Henri Pittier, Rancho Grande, 1150 m, 12 Dec. 1973, *G. Davidse & M. Ramia* 4980 (MO, US); **Barinas. Carabobo**. Chemnin de Valencia, Dec. 1843, *N. Funck* 813 (G); Bejuma, Cordillera de la Costa, N de Bejuma, Carretera via Palmichal, 10°17'N, 68°15'W, 720–750 m, 27 Dec. 2010, *W. Meier & N. Flauger* 16899 (G, US); **Guárico**. Roscio, Monumento Natural Cerro Platillón (Juan Germán Roscio), W de San Juan de Los Morros,

9°51'N, 67°30'W, 14 Dec. 1999, *W. Meier & D. Elsner* 6212 (G); **Mérida**. Tycoporo forest reserve, 70°35'W, 8°15'N, 11 Dec. 1963, *F.J. Breteler* 3 (G, NY, P, UPS); **Miranda**. Parque Nacional Guatopo, 13 Feb. 1973, *T.B. Croat* 21700 (MO); Cerros del Bachiller, near E end, semi-deciduous forest between Quebradas Corozal and Santa Cruz, S of Santa Cruz, 8–20 m, 10°09'N, 65°48'W, 18–19 Mar. 1978, *J.A. Steyermark & G. Davidse* 116381 (MO); **Yaracuy**. Bruzual, Montaña de Maria Lionza, 250–260 m, 10°07'N, 68°55'W, 12 Mar. 1981, *J.A. Steyermark & al.* 124922 (MO); **Zulia**. Entre Las Tres Marias, y el Río Chiquito, 10°25'N, 70°55'W, 14–16 Feb. 1980, *G.S. Bunting* 8990 (MO, NY).

(11b) *Lasiacis oaxacensis* (Steud.) Hitchc. var. *maxonii* (Swallen) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977.

Bas.: *Lasiacis maxonii* Swallen, Ann. Missouri Bot. Gard. 30: 231. 1943.

Type: "Panamá, Chiriquí, vicinity of El Boquete, in thickets along wet trail, 1000–1300 m, 2–8 Mar. 1911, *W.R. Maxon* 4999" (holotype: US! [barcode US00134115]; isotype MO! [Acc. No. MO128806]).

Description

Perennials, caespitose. *Culms* 0.5–2.0 m tall, creeping and rooting at the nodes, widely branched; *internodes* 2–5(–6) mm thick, partially hollow, glabrous, herbaceous; *nodes* glabrous. *Leaf sheaths* glabrous; *collars* glabrous or puberulent; *ligules* 0.5–1.0(–2.0) mm long, apex ciliate, or ciliate with small hairs 1.0 mm long, margins ciliate; *blades* 15–25 cm long, 1.0–2.6 cm wide, acuminate, glabrous or scabrous on both surfaces, margins scabrous. *Panicles* 20–35 cm long, open, loosely flowered. *Spikelets* 3.5–4.0 mm long, distally paired in the branchlets, spreading, often purple; *lower glumes* 1.6–2.4 mm long, 4–8-veined; *upper glumes* 2.4–3.4 mm long, 7–11-veined; *sterile florets* staminate, *lemmas* 7–8-veined, *paleas* $\frac{3}{4}$ to equal the fertile floret, *anthers* 1.0–2.3 mm long; *fertile florets* 3.5–3.8 mm long, 1.8–2.3 mm wide, *anthers* 1.6–2.3 mm long, whitish, *stigmas* purple; *caryopses* ca. 2.0 mm long, 1.5 mm wide. *Chromosome number*: $2n = 36$ (Davidse 1972, 1978).

Distribution

Costa Rica, Honduras, Mexico, Nicaragua, Panama.

Distribution (bibliographic references)

Swallen (1943); Davidse (1977, 1978, 1994, 2001); Pohl (1980); D'Arcy (1987); Morales (2003); Zuloaga et al. (2003); Correa et al. (2004); Dávila et al. (2018); Sánchez-Ken (2019).

Ecology

Forests edges, a pioneer species in open areas inside cloud forests. Elevation between 500–1400 m.

Phenology

October through January, occasionally June (Honduras).

Remarks

Lasiacis oaxacensis var. *maxonii* differs from var. *oaxacensis* in having shorter ligules up to 1.0 mm long (rarely to 2.0 mm long), scandent culms, and loosely flowered panicles. I agree with Davidse (1978) to consider *L. maxoni* Swallen at infraspecific rank of *L. oaxacensis*. The distribution of var. *maxonii* (Swallen) Hitchc. is limited to Central America including Honduras, Nicaragua, Costa Rica, Panama, within the range of *L. oaxacensis*. In Panama this taxon is very frequent in Chiriquí, at the border with Costa Rica.

Selected specimens

COSTA RICA. Alajuela. In canyon, 1.5 km S of San Pedro de Poas, 1000 m, 3 Dec. 1968, R.W. Pohl & G. Davidse 11522 (MO); **Cartago.** Tucurrique, à Las Vueltas, Dec. 1890, A. Tonduz 12858 bis (G, NY); **Guanacaste.** Vicinity of Tilaran, 10–31 Jan. 1926, P.C. Standley & J. Valerio 44523 (US); **Puntarenas.** Quebrada Seca, Cerro Zapotal Miramar, 18 Sep. 1985, L.G. Gomez & al. 24501 (MO); Canton de Puntarenas, Monteverde, pacific slope, moist forest, 1350 m, 10°18'N, 84°48'W, 17 Dec. 1989, W.A. Haber 9616 (MO); **San José.** Río Torres à San Francisco de Guadalupe, Dec. 1895, A. Tonduz 7199 (US); San Pedro, 25 Jan. 1922, J.M. Greenman & M.T. Greenman 5289 (US); San José, vicinity of El General, Dec. 1935, A.F. Skutch 2226 (K, MO, US); Along the Río Birillo about 1 km S of Santa Domingo, 21 Dec. 1974, J. Taylor 17404 (NY).

HONDURAS. El Paraíso. Montaña Agua Fria, 14 Mar. 1963, A. Molina 11338 (US); **Yoro.** 15 km SSE of Río Viejo along road to Olanchito, 27 Jun. 1970, G. Davidse & R.W. Pohl 2199 (MO, NY), **n = 18!** (Davidse 1978).

MEXICO. Jalisco. Guadalajara, 30 Oct. 1888, C.G. Pringle 1732 (G, K, UPS); **Morelos.** Salto de San Anton prope Cuernavaca, 9 Jan. 1926, G.J.N. Woronow 2460 (US); **Tabasco.** Huimanguillo, SO of Malpasito, 1 Feb. 2002, Calónico & al. 21308 (BM); Tabasco, Teapa, 1 km NE of Puyacatengo, 4 Feb. 2002, Martínez 34872 (BM).

NICARAGUA. Carazo. Jinotepe, 5–7 Nov. 1911, A.S. Hitchcock 8695 (BM, US); **Jinotega.** Macizos de Penas Blancas, vicinity of Finca de Manuel Estrada (El Cielo), 1200–1400 m, 13°15'N, 85°41'W, 13–18 Jan. 1979, W.D. Stevens & al. 11474 (MO); **Matagalpa.** Sta. Maria de Ostuma, Cordillera Central de Nicaragua between Matagalpa and Jinotega, Dept. Matagalpa, 19–21 Feb. 1963, L.O. Williams & al. 24776 (G); 7 km al SE de la ciudad, 1100 m, 12°52'N, 85°53'W, 9 Jan. 1981, M. Guzmán & D. Castro 1614 (MO); **Rivas.** Isla Omotepe, Volcán Concepcion, lava del volcán en el sector de Santa Rosa, 700–900 m, 11°32'N, 85°36'W, 30 Oct. 1984, W. Robleto 1494 (MO).

PANAMA. Chiriquí. Vicinity of El Boquete, 1000–1300 m, Sep. 28–Oct. 7 1911, A.S. Hitchcock 8281 (US); Between Hato del

Jobo and Cerro Vaca, 700–1000 m, 25–28 Dec. 1911, H. Pittier 5422 (US); Planos de Hornitos, orillas de la carretera Gualaca-Fortuna, 8°38'13"N, 82°12'41"W, 1024 m, 20 Jan. 2012, M.N.S. Stapf & R.M. Baldini 854, 856 (FT, SCZ); Volcán, carretera Aguacatal, SW del Volcán Barú, 8°47'36"N, 82°34'54"W, 2079 m, 23 Jan 2012, M.N.S. Stapf & R.M. Baldini 878 (FT, SCZ); Carretera Volcán-Río Sereno, puente sobre el Río Chiriquí Viejo, 8°48'27"N, 82°40'W, 1338 m, 23 Jan. 2012, M.N.S. Stapf & R.M. Baldini 898 (FT, SCZ); Carretera Boquete-Alto Quiel, 8°48'03"N, 82°27'26"W, 1313 m, 24 Jan 2012, M.N.S. Stapf & R.M. Baldini 899 (FT, SCZ); **Coclé.** El Valle de Antón, 1000–2000 ft, 2–3 Dec. 1967, W.H. Lewis & al. 2594 (MO); Coclé, village of El Valle, 4 Jan. 1974, J.D. Dwyer & M. Nee 11942 A (MO, NY); **Panamá.** Camino Chiva-Chiva, entre Ave. Gaillard y Ave. Centenario, 9°01'15"N, 79°35'44"W, 62 m, 27 Jan. 2012, M.N.S. Stapf & R.M. Baldini 911, 913 (FT, SCZ).

(12) *Lasiacis pohlii* (Davidse) Baldini, stat. nov. (Fig. 32, 33).

Bas.: *Lasiacis rugelii* (Griseb.) Hitchc. var. *pohlii* Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977. -

Type: “Costa Rica, Cartago, 1 km NE of Pejibaye, along Río Pejibaye, growing at base of tree, ca. 700 m, 2 Nov. 1968, Pohl & Davidse 11478” (holotype: ISC (photo!); isotypes CR (n.v.) [Acc. No. 50468], EAP (n.v.), MO! [barcode MO128803]).

Description

Perennials, caespitose. *Culms* 1–5 m long, glabrous, not conspicuously zigzagging (as in *L. rugelii*), erect at the base, arching and climbing upward into vegetation; *internodes* 3–6(–7.0) mm thick, hollow, glabrous or with a tight line of hairs on one side; *nodes* glabrous. *Leaf sheaths* pubescent, overlapping margin with hairs 1.0 mm long, auricular hairs 1.5–1.8 mm long; *collars* hairy at the base, hairs up to 1.0–1.3 mm long, collars forming a pseudopetiole 1.4 mm long; *ligules* inconspicuous, 0.2–0.5 mm long, membranous, glabrous; *blades* 4–8 cm long, 0.7–1.5 cm wide, ovate-lanceolate, acuminate, base asymmetrical, narrowed to truncate, adaxial surface glabrous, abaxial surface glabrous or minutely puberulent, margins scabrid. *Panicles* 3–8 cm long, usually not completely exserted; *branches* ascending to spreading; *pedicels* usually scabrid. *Spikelets* 3.5–4.4 mm long, globose, deep purple at maturity; *lower glumes* 1.7–2.5 mm long, 7–9-veined; *upper glumes* 2.3–3.3 mm long, 9-veined; *sterile florets* without flowers, *lemmas* 9-veined, *paleas* ½ to 2/3 the length of the fertile floret, pilose at the apex; *fertile florets* 3.8–4.5(–4.8) mm long, 2.4–2.8 mm wide, brownish, *anthers* 2 mm long, whitish, *stigmas* white; *caryopses* 2.2–2.5 mm long, 2.0–2.2 mm wide. *Chromosome number*: unknown.

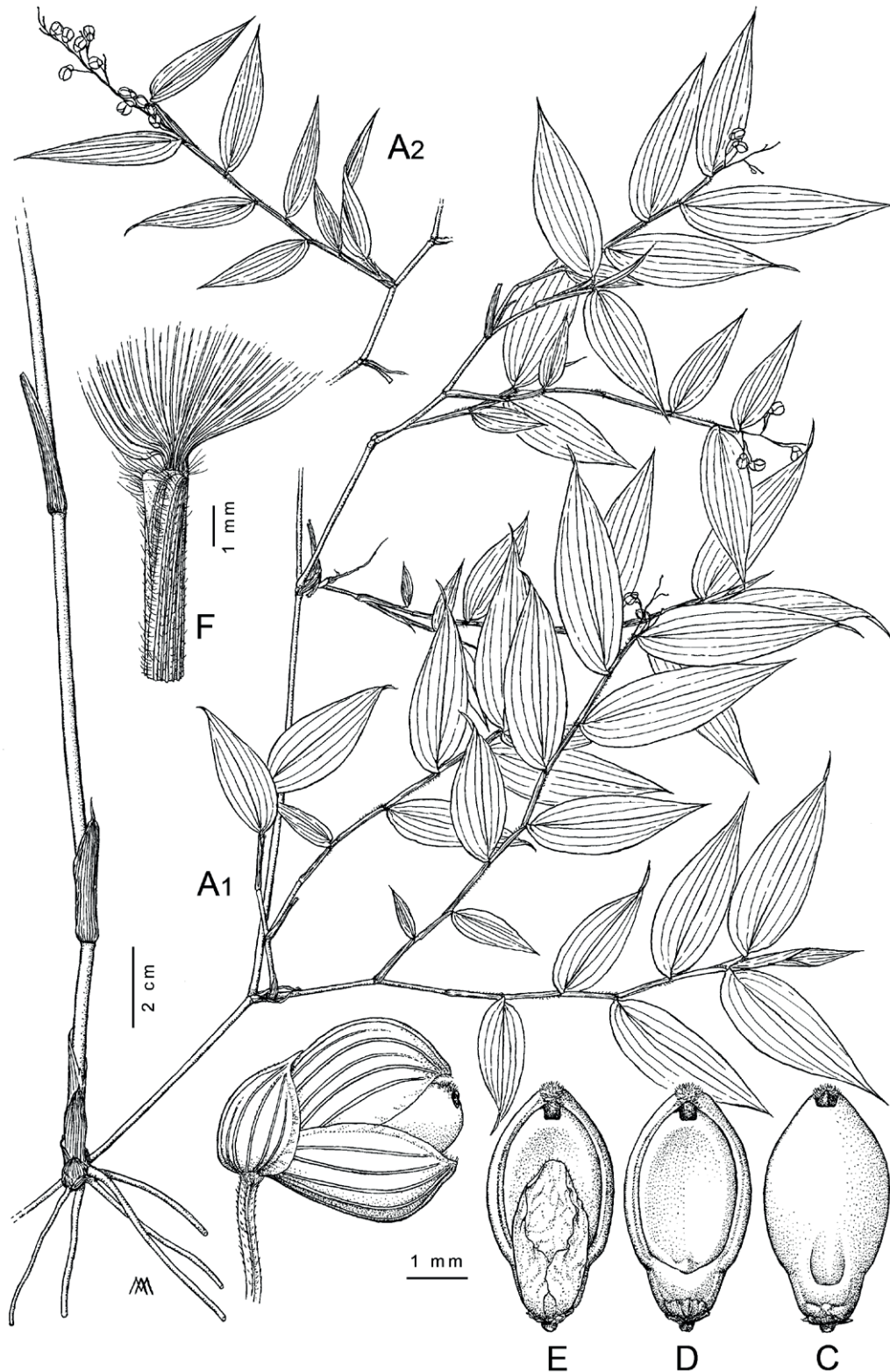


Figure 32. *Lasiacis pohlii* (Davidse) Baldini: **A1.** Habit with fertile branches; **A2.** Lateral terminal branch [A1-A2. from T.R. Soderstrom 2012 (K)]; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area [B-F. from T.B. Croat 25353 (K)]. A. Maury delineavit.



Figure 33. *Lasiacis pohlii* (Davidse) Baldini: habit and mature black spikelets. (Panama, Cerro Jefe, photo R.M. Baldini).

Iconographs

Fig. 108 as *L. rugelii* (Griseb.) Hitchc. var. *pohlii* Davidse (Pohl 1980).

Distribution

Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Panama. (Fig. 34).

Distribution (bibliographic references)

Davidse (1977, 1978, 1994, 2001); Pohl (1980); D'Arcy (1987); Serna and López-Ferrari (2000); Zuloaga et al. (2003); Correa et al. (2004); Dávila et al. (2018); Sánchez-Ken (2019). All references as *L. rugelii* (Griseb.) Hitchc. var. *pohlii* Davidse.

Ecology

Edges of cloud forests, sometimes edges of open cultivated areas (Panama). Sea level up to ca. 900 m [Panama: M.D. Correa & al. 7365 (MO, SCZ)].



Figure 34. *Lasiacis pohlii* (Davidse) Baldini: general geographic distribution.

Phenology

April through January.

Remarks

Lasiacis pohlii is related to *L. rugelii* and easily recognizable and distinct from the latter in having glabrous or short puberulent culms not conspicuously zigzagging, smaller panicles, and globose spikelets. Originally described as a variety (Davidse 1977), it is here elevated to the rank of species. *L. pohlii* is more widespread in Central America than in Mexico, with most finds in Costa Rica and Panama whereas *L. rugelii* is more common in northern Central America and the Caribbean (see also Davidse 1978). No isotype (R. J. Soreng *pers. comm.*) was found at US contrary to what stated in Davidse (1978).

Selected Specimens

COSTA RICA. **Alajuela.** Canton de San Carlos, Cordillera de Tilarán, 3–4 km W of La Tigra, 400–600 m, 10°21'00"N, 84°37'00"W, 18 Nov. 1993, *W. Haber 11702* (MO); **Cartago.** Basin du Reventazon, bords du Río Tuís, Sep. 1893, *A. Tonduz 8186* (G); Buissons et broussailles de Tuís, Nov. 1897, *A. Tonduz 11397* (G); Vicinity of Pejivalle, 600–850 m, Jan. 1940, *A.F. Skutch 4655* (MO, US); Canyon of Río Reventazón near Turrialba, 6 Aug. 1968, *R.W. Pohl & G. Davidse 10829* (K, US); Turrialba, 20 Oct. 1974, *M. Montiel 20 (pro parte)* (US); Valle du Reventazon, 19 Nov. 1890, *Biolley 3114* (G); **Guanacaste.** Canton de La Cruz, P.N. de Guanacaste, Estación Pitilla, 700 m, 11°02'N, 85°24'30"W, 7 Oct. 1990, *P. Rios 80* (MO); **San José.** Vicinity of El General, Jan. 1939, *A.F. Skutch 3862, 4040* (K, MO, NY, US).

GUATEMALA. **Alta Verapaz.** Cubilquitz, Aug. 1903, *H. von Tuerckheim 8620* (K, NY); Alta Verapaz, Cubilquitz, Oct. 1906, *H. von Tuerckheim 1481* (BM, FI, G, L, MO, P, US); **Izabal.** Bois de Las Pavas, vallée du Raventazon, Nov. 1890, *H. Pittier 3114* (US); Vicinity of Quiriguá, 15–31 May 1922, *P.C. Standley 23712* (US); **Guatemala.** Baja Verapaz, Purulha, along Highway CA14 between El Progreso and Cobán, 3 miles S of Purulha, 17 miles N of junction with Highway 17 to Salamá and San Jerónimo, vicinity km/ marker 160, 1620–1720 m, 15°13'N, 90°12'W, 26 Jan. 1987, *T.B. Croat & D.P. Hannon 63734* (MO).

HONDURAS. **Comayagua.** Quebrada el Agua Helada, 25 km NE de Comayagua, 13 Apr. 1985, *H.J. Ramos 187* (NY); Comayagua, La Misión, 10 km NW of Siguatepeque, 22 Oct. 1988, *Montoya 42* (BM); **Morazán.** Alrededores Col. Kennedy, 30 Jan. 1985, *V.M. Figueroa 164* (NY).

MEXICO. **Chiapas.** Ocosingo, 5 km SW of Santo Domingo, 13 May 1982, *G. Davidse & al. 20402* (BM, MO); Chiapas, Tuxtla, Gutiérrez Mirador, 20 Oct. 1989, *A. Reyes Garcías & al. 1278* (BM); **Tabasco.** Teapa, NE of Cocona, 2 Feb. 2002, *Martínez 34852* (BM).

NICARAGUA. **Jinotega.** Wiwili, Comunidad Boca de Plis, Reserva Bosawas, Territorio Indian Tasbaika Kun, parcela 1, finca de Natividad Urbina, 500 m al sur de la comunidad, 200–300 m, 4 Nov. 2007, *G.M. Martínez 45* (MO); Wiwili, Reserva de la Biosfera de Bosawas, Comunidad de Inipuwas, alrededor del transecto Yalu, 250 m, 14°24'N, 85°08'W, 24 Nov. 2008, *I. Coronado & al.*

4974 (MO); **Zelaya.** Bosque lluvioso de montañas de Esquipulas y Aleman, drenaje de Río Aleman, 27–29 Nov. 1951, *P.J. Shank & A. Molina 4755* (US).

PANAMA. **Bocas del Toro.** Almirante, just N of Dos Mila, hillside, high climbing vine, 20 Aug. 1967, *S. McDaniel 5121* (MO); **Coclé.** La Mesa, 5 miles N El Valle, 10 Nov. 1965, *E.L. Tyson & al. 2422* (NY, SCZ); El Valle de Antón at the foot of Cerro Pilon, ca. 2000 ft, 15 Aug. 1967, *J.D. Dwyer & A. Correa 7974* (K, MO, US), 7978 (MO, US); La Mesa above El Valle de Antón, 1000 m, 14 Sep. 1968, *R.E. Weaver & R.B. Foster 1657* (MO, US); Hills above El Valle de Antón, 13 Aug. 1972, *W.G. D'Arcy & J.J. D'Arcy 6748* (C, MO, PMA); El Valle, 800 m, 17 Jan. 1973, *T.R. Soderstrom 2012* (K, MO, US); Coclé, tropical wet forest, La Mesa, 4 km N of El Valle, 875 m, 12 Feb. 1974, *M. Nee & M. Hale 9616* (MO); La Mesa above El Valle, in forest on both sides of junction with road to Cerro Pilon, 800 m, 21 Jul. 1974, *T.B. Croat 25353* (K, MO, US); La Mesa, above El Valle de Antón, ca. 2 km W of Cerro Pilon on slopes of steep hill, 860–900 m, 21 Jul. 1976, *T.B. Croat 37418* (MO); 700 m, 7.2 km from El Valle, main road along the Mesa Road, 18 Dec. 1977, *J.P. Folsom & al. 6932* (MO, US); La Mesa road N of El Valle, along stream gorge, 2700 ft, low cloud forest, 6 May 1981, *K. Systma & al. 4358* (F, MO); El Valle de Antón, La Mesa, faldas de Cerro Pilon, 8°38'29"N, 80°06'48"W, 825 m, 16 Jan. 2012, *M.N.S. Stapf & R.M. Baldini 820* (FT, SCZ); **Panamá.** 2–3 miles S of Goofy Lake, road to Cerro Jefe, 2000–2200 ft, 10 Dec. 1966, *W.H. Lewis & al. 244* (K, MO, US); Cerro Campana, vicinity of Fla. State building, 10 Sep. 1970, *T.B. Croat 12142* (MO, NY, SCZ); Cerro Campana at end of road beyond Su Lin Hotel, 9 Apr. 1971, *T.B. Croat 14221* (MO); Cerro Azul, in forest, 23 Jun. 1972, *T.B. Croat 17287* (MO); Cerro Jefe, 700 m, 17 Nov. 1975, *G. Davidse & W.G. D'Arcy 10103* (K, MO, US); In ridge top forest remnant 10 km N of Margarita (near Chepo) on road to Madrono, 1400 ft, 14 Oct. 1978, *B. Hammel & W.G. D'Arcy 5125* (MO); Cerro Jefe, 1.5 miles down right turnoff 6.7 miles past Goofy Lake, disturbed cloud forest, 700 m, 27 Dec. 1980, *K. Systma & W. Hahn 2901* (BM, K, MO, NY); Cerro Campana, 2500 ft, 17 Aug. 1982, *W.G. D'Arcy & C. Hamilton 14961* (MO); Cerro Campana, 700 m, 8°40'N, 79°55'W, 8 Sep. 1982, *C. Hamilton & al. 1189* (MO); Parque Nacional Cerro Campana, 2 km N of Highway 707, cloud forest, 850 m, 842'N, 7955'W, 1 Jan. 1983, *B.A. Stein & C.W. Hamilton 1134* (MO); W of Inter-American Highway near Capira, Cerro Campana, ca. 900 m, 8°40'N, 79°50'W, 11 Nov. 1985, *G. MacPherson 7459* (MO, PMA); Parque Nacional La Campana, Cerro Campana, Sender de Interpretation, 1 km al E del Campamento de los guardabosques de INRENARE, 8°40'N, 79°55'W, 800–900 m, 30 Aug. 1990, *M. Correa & al. 7365* (MO, SCZ); Parque Nacional La Campana, Cerro Campana in the Mirador on La Cruz trail, tropical rain forest, 780 m, 8 Apr. 2002, *J.G. Sánchez-Ken 678* (BR, PMA, MO, US); Cerro Jefe en el camino a las cabañas 4 x 4, 9°13'30"N, 79°21'42"W, 767 m, 13 Jan. 2012, *M.N.S. Stapf & R.M. Baldini 799* (FT, PMA, SCZ); Panamá Parque nacional Altos de Campana, alrededores de la intersección del sendero Cerro de la Cruz con el Sendero Panamá, 8°41'13"N, 79°55'16"W, 960 m, 14 Jan. 2012, *M.N.S. Stapf & R.M. Baldini 810* (FT, PMA, SCZ); Cerro Jefe a Altos de Pacora, 9°13'51"N, 79°21'28"W, 742 m, 12 May 2012, *M.N.S. Stapf & al. 921* (FT, SCZ).

(13) *Lasiacis procerrima* (Hack.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911. (Fig. 35).

Bas.: *Panicum procerrimum* Hack., Oesterr. Bot. Z. 51: 431. 1901.

Type: "Costa Rica, inter frutices ad fluvium Tilirí rope La Verbena et Alajuelita, 1000 m, Aug. 1894, Pittier 8819" (holotype: W! [Acc. No. W19160024376]; isotypes: BR [(photo!) barcode BR000000686254], G! [barcode G00614228], US! Fragment from W [barcode US00139895], US! Three sheets [barcode US00147980, US00956499, US00956500 as collection number "A. Tonduz 8819"]).

Nomina nuda

Panicum scariosum Trin. ex Steud., Nomencl. Bot., ed. 2, 2: 263. 1841, *nom. nud.*

The specimen at G! [barcode 00614207]: "Mexico, Hacienda de la Laguna" in sched. "*Panicum scariosum* Trin. in Litt., an varietas *P. latifolium*? Leg. Schiede et Depper, Communicavit Schhetendal ["Schlechtendal"] 1842", confirms the correct correspondence of *P. scariosum* to *L. procerrima* (Hack.) Hitchc.

Description

Perennials, often short-lived, caespitose. *Culms* 1.0–6.0(–6.5) m long, unbranched, with prop adventitious roots at the base or in clumps, decumbent, rooting at the nodes below; *nodes* 5–12(–14) mm thick, hollow, glabrous, or often puberulent lower at the nodes, herbaceous to lignified. *Leaf sheaths* glabrous or slightly puberulent, sometimes hispid, overlapping sheath margins ciliate at the apex with hairs 0.8–2.3 mm long, rarely glabrous, sheath auricles up to 2.3 mm long, pubescent to ciliate; *collars* glabrous to slightly pubescent; *ligules* 0.5–2.0 mm long, glabrous and slightly ciliate; *blades* 15–40(–45) cm long, 1.5–4.5(–5.0) cm wide, linear-lanceolate glabrous, slightly hispid, often abaxially velutinous and glaucous, acuminate, base cordate, clasping the stem, glabrous, often ciliate with hairs up to 2.5 mm long, margins scabrid. *Panicles* 20–120(–130) cm long, conspicuous, peduncles exserted; *branches* diffuse, glabrous, scabrous, bearing few spaced sessile or short-pedicelled spikelets; *pedicels* slightly scabrid. *Spikelets* 3.0–4.0(–5.0) mm long, 1.5–2.8 mm wide, ovate, suberect; *lower glumes* 1.5–2.4 mm long, 0.7–1.0 mm wide, 7–11-veined; *sterile florets* staminate, rarely perfect, *lemma* 9–11-veined, *paleas* $\frac{3}{4}$ the length of fertile floret, *anthers* 1.8 mm long, sometimes rudimentary; *fertile florets* 3.0–3.5 mm long, 1.6–2.0 mm wide, ovate,

black to brownish at maturity, *lemmas* upper margins not enrolled, *anthers* up to 2.0 mm long, usually yellowish, *stigmas* white; *caryopses* 2.3 mm long, 1.8 mm wide. *Chromosome number*: $n = 18$, $2n = 36$ (Davidse 1972, 1978).

Iconographs

Fig. 107 (Pohl 1980); Fig. 98 (Davidse 2004).

Vernacular names

Belize: "rat rice" P.H. Gentle 3632 (NY, US); **Brazil**: "capim" R. de Lamos Froes 21119 (NY, US); **Colombia**: Boyaca, "cañuela" Lawrance 795 (G, K, MO, US); "cañuela trepadora" (Quattrocchi 2006); **Costa Rica**: Alajuela, "cañuela" Jiménez 532, "trompilla" Jiménez 886 (Davidse 1978); **El Salvador**: San Salvador, "carrizo de cohete" S. Calderón 849 (US), "carrizo" P.C. Standley 23576 (US), "carrizo de cohetera" (Quattrocchi 2006); **Guatemala**: Huehuetenango, "cañuela" J.A. Steyermark 49201 (F), Boyaca, "cañuela" A.E. Lawrence 795 (G, K, MO, US), Izabal, "cola de venado" S.F. Blake 7836 (US); **Mexico**: Chiapas "zacatón" Chavelas & al. 1649 (Davidse 1978); Guerrero: "akat" M. Jiménez & M. Gorostiza S. 31045 (US); Jalisco, "carricillo" F.J. Santana M. & D. De Niz 5494 (US); Nayarit: Jalisco, "otacillo" R.S. Ferris 5848 (US); Oaxaca, "Am ay Carizo" S. Matthias & S. Geck 186 (G), "cordoncilla" Chavelas & Perez 6 (Davidse 1978), Tabasco, "zacate cenizo" Dioscoreas 11507 (Davidse 1978); "carricillo", "carricillo de la sierra" (Quattrocchi 2006); **Venezuela**: Anzoátegui, "pito-pito" J.A. Steyermark 61115 (US); Bolívar "aré-ré-aketene" B. Boom & M. Grillo 6418 (MO, NY).

Ethnobotanical and economic uses

Colombia: Boyaca, "Horse and cattle feed" A.E. Lawrence 795 [G, K, MO, US]; **Guatemala**: Ixcán, "decoction of leaves used for eyes diseases" J.A. Steyermark 4901 (F); **Mexico**: Oaxaca, "decoction of stem, orally against urinary tract disorders" S. Matthias & S. Geck 186 (G); **Venezuela**: Anzoátegui, "forage for domestic animals" J.A. Steyermark 61115 (US). Davidse (1978) reports its use for broom making in the Caribbean area.

Distribution

Belize, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras Mexico, Nicaragua, Panama, Perú, Venezuela. (Fig. 36).

Distribution (bibliographic references)

Hitchcock (1913, 1920, 1922, 1930); Standley and Calderón (1925); Schipp (1933); Standley (1937); Swallen

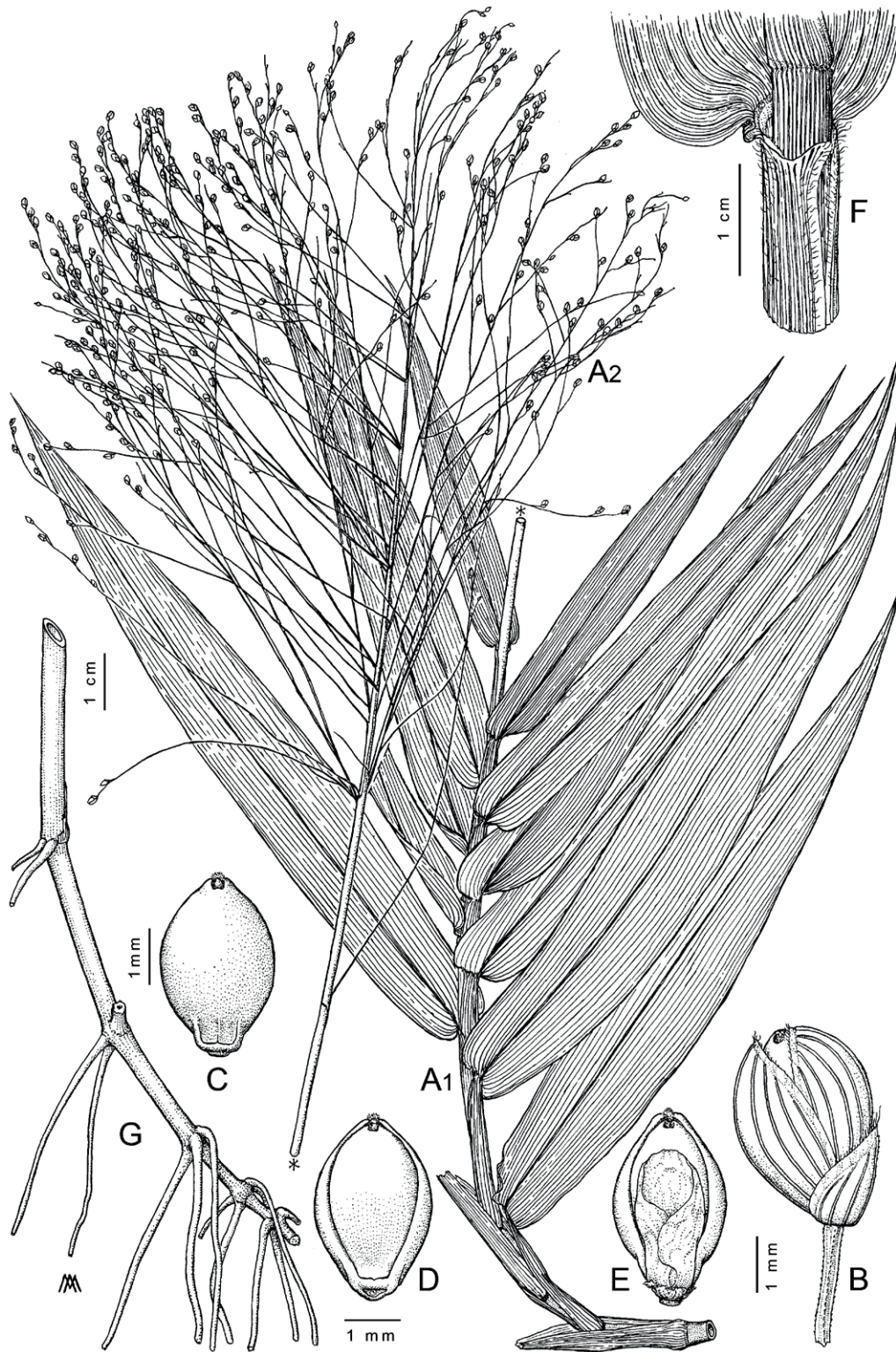


Figure 35. *Lasiacis procerrima* (Hack.) Hitchc.: A1. Habit at medium length with persistent leaf sheaths and blades cordate clasping; B. Erected spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea. [A1-E. from C. Whitefoord & C.A. Yacob 9331 (BM)]; A2. Apical part of the culm with dense fertile branches; F. Ligular area. G. Culm toward the base rooting at the nodes, and prop roots [A2 & G. from G. Davidse 2161 (L)]. A. Maury delineavit.



Figure 36. *Lasiacis procerrima* (Steud.) Hitchc.: general geographic distribution.

(1931, 1936, 1943, 1955b); Beetle (1977); Davidse (1978, 1994, 2001, 2004); Croat (1978); Pohl (1980); McVaugh (1983); D'Arcy (1987); Judziewicz (1990); Zuloaga et al. (2003); Morales (2003); Hollowell et al. (2003); Correa et al. (2004); Renvoize et al. (2006); Davidse et al. (2007); Hokche et al. (2008); Sutherland (2008); Bono (2010); Giraldo-Cañas (2011); Dorr (2014); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Roadsides and embankments, edges of secondary vegetation, open and disturbed areas, savannas, woodlands, and along trails in montane forests. Sea level up to 2400 m [Colombia: Magdalena (W. Seifriz 165 (US))].

Phenology

June through January.

Remarks

Hackel (1901) cited the type collection as *H. Pittier* 8819, while isotypes at G and US bear labels “Costa Rica, Buissons au bord du Tilirí près La Verbena et Alajuelita, 1000 m, Aug. 1894, A. Tonduz 8819”.

L. procerrima is the most distinctive species in the genus, and rarely misinterpreted. Many herbarium specimens are still confused with *Stephostachys mertensii* (Roth) Zuloaga & Morrone ($\equiv$ *Panicum mertensii* Roth), as pointed out by Davidse (1978).

Lasiacis procerrima has mainly glabrous leaves, however, it is possible to find puberulent sheaths and densely pubescent blades in Mexico and other areas in Central America such as in Honduras (e.g., G. Davidse & R.W. Pohl 2161 (K, L, NY, US) and in Panama (G. MacPherson 11298 (MO, PMA). Culms can be tall up to 4-5 m (G. Davidse 2910 (MO, NY, US)). The species is used by local people either as animal food, or for ethnomedical purposes.

The distribution is principally in Central America but the species ranges into South America in Colombia, Guyana, Venezuela, Ecuador, Peru, and northern Brazil.

Selected specimens

BELIZE. **Belize.** Gracie Rock, Sibun River, 2 Aug. 1935, *P.H. Gentle* 1743 (K, NY, US); **Cayo.** Mountain Pine Ridge, San Agustín, Jul.-Aug. 1936, *C.L. Lundell* 6571 (NY, US); Augustine, Mountain Pine Ridge, 1959, *D.R. Hunt* 268 (US); Smokey Branch River, 14 May 1995, *C. Whiteford* & *C.A. Yacab* 9331 (BM); Along Hummingbird at mile 28, 26 Jun. 1973, *J.D. Dwyer* 11416 (MO, NY); Chiquibil, Ceibo Grande, 700 m, 16°33'59"N, 89°05'52"W, 27 Aug. 1998, *S. Cafferty* & *A. Monro* 33 (BM, MO); Ceibo Grande, 930 m, 16°31'25"N, 89°05'36"W, 9 Mar. 2000, *M. Peña* & *al.* 1055 (MO); Maya Mountain divide in the vicinity of Doyle's Delight, the highest point in the Country, 900 m, 16°29'N, 89°04'W, 25 Aug. 2007, *B.K. Holst* & *al.* 9069 (MO); **Stann Creek.** Stann Creek Valley, 8 Sep. 1938, *P.H. Gentle* 2638 (K, NY); **Suchipéquez.** Mazatenango, Nov. 1870, *G. Bernoulli* 1189 (K); s.l., 17 Jan 1931, *W.A. Schipp* 785 (G, NY); **Toledo.** Monkey River, 8 Oct. 1941, *P.H. Gentle* 3632 (NY, US); Blanden Nature Reserve, slopes above Blanden River, E and N of Solomon Camp, 16°32'N, 88°45'W, 4 Aug. 1995, *D. Atha* & *al.* 1245 (MO, NY).

BRAZIL. Brasília, s.d., *L. Riedel* 1239 (FI); **Amazonas.** Amazonas, São Gabriel, Río Negro, 23 Feb. 1944, *J.T. Baldwin* 3538 (US); Amazonas, São Gabriel, Río Negro, base da Serra de São Gabriel, 8 Oct. 1945, *R. de Lemos Fróes* 21119 (NY, US); Río Negro, Serra de S. Gabriel, 2 May 1948, *G.A. Black* 48-2495 (US); Río Negro, road from Tapuruquara to airport, 25 Oct. 1971, *G.T. Prance* & *al.* 15832 (NY, US); **Roraima.** Serra dos Surucucus, S of Mission Station, 2°42'N, 63°33'W, 18 Feb. 1969, *G.T. Prance* & *al.* 10052 (MO, NY, US).

COLOMBIA. **Antioquia.** Malena, 12 Jan. 1918, *F.W. Pennell* 3777 (NY, US); Carretera al mar en los alrededores del Río Ampurrumiadó, 200 m, 11 Oct. 1947, *G. Gutierrez* & *F.A. Barkley* 170145 (US); Remedios, Sitio Otú, 3 km del Corregimiento Santa Isabel, Vereda Los Lagos, 820 m, 74°45'W, 6°56'N, 14 Jul. 1987, *J. Callejas* & *al.* 4728 (K, MO, NY, US); Puerto Berrio, margen izquierda de la quebrada "Malena", 170-200 m, 20 Oct. 1999, *R. Fonnegra* & *al.* 6954 (MO); **Boyuca.** El Humbo, 130 miles N of Bogotá, 3000 ft, 11 May 1933, *A.E. Lawrence* 795 (G, K, MO, US); **Caquetá.** Morelia, Verda de Santander, quebrada of Río Bodoquero (between Río Pescado and Río Guecochará), 430 m, 20 Jan. 1969, *T.R. Soderstrom* 1402 (US); El Recluta, 10 km north of Florencia along road to Neiva, 22 Jan. 1969, *T.C. Plowman* & *H. Kennedy* 2246 (US); 23 km N of Florencia along main road to Garzon, E slope of Eastern Cordillera, 560 m, 12 Jan. 1974, *G. Davidse* & *al.* 5764 (MO, US); Km 26.7 via Florencia-Guadalupe, 10 Feb. 1987, *X. Londoño* & *I.D. Quintero* 145 (US); **Chocó.** Río San Juan just below Tado, 100 m, wet forest, 15 Aug. 1976, *A. Gentry* & *M. Fallen* 17724 (MO); **Cordoba.** Carretera Tierralta-Frasquillo, 5 km en la desviación a Chibogadó, 250 m, 23 Jul. 1986, *R. Bernal* & *al.* 1127 (MO, NY); **Cundinamarca.** Icononzo, 1-4 Dec. 1917, *F.W. Pennell* 2870 (NY); 20 km NW of Villavicencio, along the road to Bogotá, 800 m, 3 Jan. 1974, *G. Davidse* & *F. Llanos* 5523 (K, US), **n = 18!** (Davidse 1978); **Huila.** E of Neiva, 31 Jul. 1917, *H.H. Rusby* & *F.W. Pennell* 516 (NY); **Magdalena.** Santa Marta, Jul. 1903, *H.H. Smith* 117 (G, K, MO, NY, P, US); Cordillera de Santa Marta, S. Andrés de La Sierra, 12 Jul. 1906, *H. Pittier* 1645 (US); Magdalena Valley, near Lake Sapatona, Rincon Hondo, 9

Aug. 1924, *P.H. Allen* 367 (K, MO); Mt. San Lorenzo, near Santa Marta, 1900-2400 m, Jul. 1932, *W. Seifriz* 165 (US); Parque Nacional Sierra Nevada de Santa Marta, Cuchilla de San Lorenzo, headwaters of Río Guachacas, 1300 m, 14 Jul. 1989, *X. Londoño* & *L. Clark* 459 (MO); Alto Río Frio, Cabeceras del Río Congo, Ciudad Antigua, por el camino al Alto del Chimborazo, 1100-1200 m, 10°59'N, 74°04'W, 26 Jul. 1989, *S. Madriñan* & *C.E. Barbosa* 513 (MO); **Meta.** Villavicencio to Buenavista, 4 Sep. 1917, *F.W. Pennell* 1648 (NY); Meta, near Villavicencio, 500 m, 18-19 Mar. 1939, *E.P. Killip* 34505 (BM, US); Llanos de San Martín, Guamal, orillas del Río Humadea, 500 m, 10 Sep. 1958, *R. Jaramillo-Mejía* & *al.* 1019 (MA, US); Sierra de La Macarena, Río Guapaya, 30 Nov. 1949, *Philipson* & *al.* 1651 (BM); San Juan de Arama, 26 Feb. 1969, *G. Pinto* & *C. Sastre* 1105 (P); Sierra de La Macarena, Vereda El Tablazo, a orilla del Caño Diamante, afluente del Río Güjar, 550 m, 29 May 1973, *M.L. Chaparro* & *al.* 107 (MO); Guayabetal-Villavicencio, 10 Jun. 1983, *J.R. Wood* 3801 (K); In the Río Guatiqua, ca. 5 km above Villavicencio, 26 Feb. 1984, *J.R. Wood* 4260 (K); Restrepo, Salinas, 600-700 m, 12 Jun. 1989, *F. Zuloaga* 3933 (US); Mesetas, 450 m, 74°15.5'W, 3°8.2'N, 11 Aug. 1989, *J. Betancur* 1341 (MO, NY); **Valle.** Santa Rosa to Cisneros, Dagua Valley, 250-350 m, 10 May 1922, *E.P. Killip* 5366 (NY, US); Santa Rosa, Dagua Valley, 200-300 m, 22 Sep. 1922, *E.P. Killip* 11564 (US); Dagua, Buenaventura, 540 m, 6 Feb. 1961, *J.M. Idrobo* 4274 (US); Valle, Dagua, corregimiento El Danubio, Alto Anchicayá, 200 m, 19 Jun. 1984, *W. Devia* A. 579 (MO); **Vaupés.** Mitú and vicinity, along lower Río Kuduyarí, 26 Jun. 1976, *J.L. Zarucchi* 1739 (K, MO, US).

COSTA RICA. **Alajuela.** Cerro de Espiritu Santo, 1-3 km SW of Naranjo, 2 Sep. 1966, *A.S. Weston* 2099 (US); Cordillera Central, along road between Puerto Viejo and San José, 760 m, 10°18'N, 84°11'W, 28 Sep. 1987, *T.B. Croat* 68210 (MO); Cantón de San Ramón, Cord. de Tilarán, 10°13'00"N, 84°37'00"W, 800-850 m, 27 Aug. 1995, *J. Gomez Laurito* 12813 (USJ); **Cartago.** Turrialba, 23 Jul. 1949, *J. León* 1702 (US); Turrialba, 600 m, 18 Aug. 1966, *R.W. Pohl* & *C. Calderón* 10356 (USJ); 18 km N of Turrialba, 6 Aug. 1968, *R.W. Pohl* & *G. Davidse* 10824 (K, US); Turrialba, Capote, 29 Jun. 1976, *J. Gomez Laurito* 1703 (USJ); Turrialba, camino a Siquirres, Pavones, 21 Aug. 1977, *J. Gomez Laurito* 3049 (USJ); Cartago, La Unión, Dulce Nombre de Tres Ríos, 2000 m, 18 Oct. 2004, *G. Barrantes* s.n. (USJ); **Guanacaste.** 10 km NE of Las Juntas, 19 Aug. 1968, *R.W. Pohl* & *G. Davidse* 10960 (C, K, US) **n = 18!** (Davidse 1978); Vicinity of Cañas, 12 Dec. 1969, *R. Daubennire* 399 (USJ); Camino de entrada al Parque Nacional Sta. Rosa, 12 Oct. 1974, *J. Gomez Laurito* 262 (USJ); Santa Rosa National Park, 30 km NW of Liberia, 300 m, 10°50'N, 85°35'W, 27 Jan. 1985, *D.H. Janzen* 12426 (MO); La Cruz, P.N. Guanacaste, Volcán Oroquí, 9 km S de Santa Cecilia, 700 m, 10°59'25"N, 85°25'37"W, 14 Jul. 1997, *C. Moraga* & *P. Rios* 914 (MO, NY); La Cruz, P.N. Santa Rosa, Golfo de Papagayo, Sector Murcielago, Paya Blanca, Bosques de galería aguas Arriba de la Quebrada Grande, 100 m, 10°51'24"N, 85°55'09"W, 13 Jan. 2003, *J. González* & *al.* 2576 (MO); **Heredia.** About 35 km NE of Alajuela, 18 Aug. 1967, *R.J. Taylor* 4520 (MO, NY); Heredia-San José, Río Virilla, 4 km N of San José, 22 Sep. 1971, *R.W. Lent* 2154 (NY); **Limón.** 4 km SW of Río Hondo, 11 Jul. 1966, *T.R. Soderstrom* & *al.* 1212 (US); 6 km W of Guapiles, wooded hills E and W of bridge over Río Toro Amarillo, 9 Jul. 1966, *R.W. Pohl* & *C. Calderón* 10016 (MO); 1 km SW of Pueblo Nuevo, 17 Sep. 1968, *R.W. Pohl* 11096 (K, US); Cimarrones, ca. 10 km E of Siquirres, 5 Aug. 1974, *P.J.M. Maas* 1132 (K); **Puntarenas.** 26 Oct. 1911, *A.S. Hitchcock* 8572 (US); Along road from Boruca to the Carretera Interamericana, 22 Aug. 1968, *R.W. Pohl* & *al.* 10993 (K, US); 2 km NE of Escuela Santa Constanza, N of San Vito de

Java, 27 Sep. 1968, *R.W. Pohl 11163* (K, US) **n** = 18! (Davidse 1978); **San José**. El General, Valle du Diquis, 700 m, 3 Feb. 1898, *H. Pittier 12057* (BR, P, US); Vicinity of El General, Dec. 1935, *A.F. Skutch 2167* (BM, K, MO, NY, US); El General Valley, vicinity of San Isidro El General, 2 Mar. 1966, *A. Molina & al. 18221* (NY, US); Along Río Conejo in the Valley of the Río Al Umbre, 6 Sep. 1968, *R.W. Pohl & al. 11055* (K, US); Cantón de Mora, Zona Protectora El Rodeo, Rserve de la Universidad para la Paz, bosque humedo montano, 850-900 m, 09°54'20"N, 84°16'30"W, 11 Aug. 1998, *A. Cascante 1436* (USJ); Tarrazu, Estribaciones del Cerro Diamante, 09°32'30"N, 84°01'20"W, 700 m, 24 Sep. 1998, *A. Estrada 1783* (USJ); Acosta, Cuenca del Pirris-Damas, Acosta, Colorado, Filia San Jónimo, Río Colorado, 16 Oct. 2000, *J. Morales 7382* (G); Puriscal, Cuenca del Pirris-Damas, Concepcion, a orillas del camino, 28 Apr. 2001, *Bustamante 35* (G); Acosta, Cuenca del Pirris-Damas, Acosta, Filia San Jeronimo, camino a Fila Pital, por Quebrada San Jeronimo, 300-1100 m, 9°41'30"N, 84°12'50"W, 9 May 2004, *J. Morales 10597* (MO).

ECUADOR. Napo. On the road from Napo to Puyo, 600 m, 10 Dec. 1970, *H. Ellenberg 290* (MO); **Pastaza**. ca 40 km along road towards Arajuno, 01°57'S, 77°52'W, 19 Sep. 1998, *S. Læggaard 19171* (K), *19172* (MO).

EL SALVADOR. Ahuachapán. San Benito, San Alfonso, 12 Aug. 1994, *Chinchilla Peña & al. ISB00584* (K); **Chalatenango**. Pass 7 km SSE of La Palma along Highway 4, 1050 m, 11 Jun. 1970, *G. Davidse & R.W. Pohl 2072* (MO), **n** = 18! (Davidse 1978); **Morazán**. About 4 km E of finca of General J.T. Calderón, Montes de Cacaguatique, 12 Jan. 1942, *J.M. Tucker 777* (K, US); **Morazán**. A.P. Río Sapo, cuenca de Río Talchiga, 700 m, 13°55'N, 88°6'W, 6 Feb. 2004, *R.A. Carballo 1042* (MO); **Santa Ana**. Parque Nacional Montecristo, 14°23'22"N, 89°23'15"W, 1416 m, 10 Feb. 2016, *J. Menjivar & R.M. Baldini 3482* (FT, MHES); **San Salvador**. 1922, *S. Calderón 849* (NY); San Salvador, vicinity of Ayutuxtepeque, 3 Feb. 1922, *P.C. Standley 20512* (US); Vicinity of San Salvador, Mar. 1922, *P.C. Standley 23576* (US).

GUATEMALA. Alta Verapaz. Alta Verapaz, Cubilgüitz, Oct. 1906, *H. von Türckheim 1028* (G, L, MO, US); Cubilquitz, 1906, *H. von Türckheim 8781* (FI, L, US); 1841, *E. Ritter von Friedrichsthal 549* (FI); **Guatemala**. Guatemala City, 1-3 Dec. 1911, *A.S. Hitchcock 9067* (US); Guatemala, 10 km S of San Raimundo, 18 Jan. 1939, *P.C. Standley 62914* (NY); **Huehuetenango**. Around Ixcán at "Pat-cushín", Sierra de los Cuchumanates, 500 m, 22 Jul. 1942, *J.A. Steyermark 49201* (F); Malpais, orilla del camino, Barillas, 1250 m, 15°51'31"N, 91°13'40"W, 22 Sep. 2006, *Dasa 4911* (MO); **Izabal**. Bank along shore of Lake Izabal, 1 Jun. 1919, *S.F. Blake 7836* (US); Vicinity of Quiriguá, 15-31 May 1922, *P.C. Standley 24244* (NY, US); Slopes WNW of (above) El Estor, along margin of open pit nickel mine, 410 m, 30 Aug. 1988, *W.D. Stevens & E. Martinez S. 25234* (MO); El Estor, 10 Nov. 2005, *F. Ramirez & M. Cano 1570* (MO); **Quezaltenango**. Colomba, 24 Sep. 1934, *A.F. Skutch 1298* (US); **San Marcos**. Near San Rafael, 600 m, 11 Jul. 1977, *T.B. Croat 40779* (MO); **Santa Rosa**. Mar. 1892, *J.D. Smith 3906* (US); Santa Rosa, Cenaguilla, Sep. 1892, *E.T. Heyde & Lux 3906* (BM, US); Between Taxisco and Guazacapán, 3 Dec. 1940, *P.C. Standley 79136* (K); **Zacapa**. Between Santa Rosalia and first waterfall, 1200-1500 m, 9 Jun. 1942, *J.A. Steyermark 42250* (F, US).

GUYANA. Potaro-Siparuni. Kaieteur Savannah, 1881, *G.S. Jenman 813* (US); Kaieteur Savannah, 1200 ft, 3 Sep. 1937, *N.Y. Sandwith 1322* (NY, US); Southern Pakaraima Mts., Kamaná Falls, 25 Aug. 1961, *B. Maguire & al. 45951A* (NY); Kaieteur Plateau, vicinity of Kaieteur Falls and along western rim of Potaro Gorge, 1400 ft, 18 Feb. 1962, *R.S. Cowan & T.R. Soderstrom 1889*

(C, NY, US); Kaieteur Falls National Park, along rim downstream from the falls, 500 m, 5°10'N, 59°29'W, 13 Apr. 1988, *W. Hahn 4520* (US); Approx. 1 km N of Kato, along trail to Paramakatoi, 750 m, 4°40'N, 59°55'W, 14 Mar. 1989, *W. Hahn 5715* (CAY, NY, US); 2-3 km N of Kato Village store-airstrip, along trail off Kato-Kurukabaru road, 690-750 m, 4°41'N, 59°48'W, 17 Mar. 1989, *L.J. Gillespie 866* (CAY, US).

HONDURAS. Atlantida. About 15 miles E of Ceiba, 21 Jul. 1938, *T.G. Yuncker 8594* (NY); **Colón**. Barrio Central Trujillo, 9 Nov. 1980, *J. Saunders 700* (NY); Sacate, Cerro Calentura, 3 km SE de Trujillo Colón, 29 Sep. 1989, *D. Clarke 30* (BM); **Comayagua**. Near El Achote, above the plains of Siguatepeque, 15 Jul. 1936, *T.G. Yuncker & al. 5898* (G, NY, US); **Gracias a Dios**. La Mosquitia, 17-21 Jul. 1977, *C. Nelson & Romero 4182* (BM); **Lempira**. Along trail from old electricity generation plant to Camp Don Tomas, ca. 10 straight line WSW of Gracias Parque Nacional Celaque, 1850 m, 14°33'N, 88°40'W, 11 Feb. 1993, *R. Evans 1163A* (MO); **Morazán**. Santa Clara, 23 Aug. 1946, *L.O. Williams & A. Molina 10408* (US); San Antonio del Oriente, 20-21 Oct. 1951, *J.R. Swallen 10970* (US); Foothills of Mt. Uyuca beyond Las Floras, 4 Nov. 1951, *J.R. Swallen 11303* (US); 8 km E of El Zamorano, 14 Jun. 1970, *G. Davidse & R.W. Pohl 2081* (MO, NY, US); Between El Zamorano and San Antonio de Oriente, 21 Jun. 1970, *G. Davidse & R.W. Pohl 2161* (K, L, NY, US); **Yoro**. Cerro between Río Guan Guan and Río Texiguat, E of Cerro Guan Guan, S of San José in the Río Lean Valley, W end of the Cordillera de Nombre de Dios, 700-870 m, 15°29'30"N, 87°27'00"W, 6 Nov. 1988, *J.M. McDougal & al. 3240* (MO).

MEXICO. Chiapas. 10 km S of Pueblo Nuevo Solist, 28 Jul. 1965, *E. Lathrop 6006* (US); Tabasco border, 33 km S of Sureste on road to Mal Paso, 17°25'N, 93°35'W, 23 Aug. 1965, *K. Roe & al. 1367* (US); Tenejapa, in the paraje de Mahosik', 28 Nov. 1966, *A.S. Ton 1653* (NY); Simojovel de Allende, along the road from El Bosque to Simojovel, 10 Oct. 1967, *A.S. Ton 3077* (NY); Ocozacoatlá de Espinosa, SW side of the Presa de Malpaso, 5 Dec. 1967, *A.S. Ton 3294* (US); Villa Corzo, at the E base of Cerro Tres Picos near Cerro Bola, 9 Feb. 1972, *D.E. Breedlove 24080* (MO, NY); Motozintla, Belisario Domínguez, 19 Nov. 1977, *J.I. Calzadoc & al. 3964* (NY); Ixtapa, carretera Tuxtla Gutiérrez-Pichucalco, 28 Dec. 1984, *C. Cowan 5047* (NY); Road from Tuxtla Gutiérrez to Ixtapa, 31 Jan. 1990, *P.J. Stafford & al. 154* (BM); La Concordia, Finca Custepec, c. 1180 m, 15°44'N, 92°58'W, 12 Jul. 1990, *R.J. Hampshire & al. 1267A* (BM, MA); Ocosingo, a 5 km de San Javier, al S del crucero, 387 m, 16°46'N, 91°06'W, 14 Sep. 2002, *G. Aguilar M. 2799* (MO); Villacorzo, Zona Nucleo Cerro Bola, 1700 m, 16°08'N, 93°35'W, 14 Jul. 2004, *A. Reyes-García 7284* (MO); **Durango**. Road to Durango, 1.8 miles W of La Guayanerga, 30 Sep. 1971, *D. Jackson 134* (NY); **Guerrero**. Road between Acahuitzotla and Agua de Obispo on Highway to Acapulco, 1 Oct. 1949, *H.E. Moore Jr. 5149* (BM, G, US); Guerrero 10 miles N of Taxco, 6 Sep. 1959, *O. Degener & I. Degener 26290* (NY); E of El Aguacate, km 88 on Mexico 51 Iguala to Arcelia, 17 km by air WNW of Teleoapan, 1500 m, 18°23'N, 100°01'W, 23 Sep. 1977, *H.H. Iltis & J.F. Doebley 349* (MO); Cuauhtémoc, Puebla, en un lugar llamado Totoapan, 21 Oct. 2015, *M. Jiménez & M. Gorostiza S. 31045* (US); **Jalisco**. Río Blanco, Oct. 1886, *E. Palmer 535* (K, MO, NY, P, UPS, US); Near Guadalajara, 30 Oct. 1888, *C.G. Pringle 1732* (BM, G, K, MO, NY, P, US, W); Michoacán et Guerrero, El Ocote, Cerro Pedregoso, 29 Oct. 1898, *E. Langlássé 540* (G, K, P, US); Barranca de Guadalajara, 25 Oct. 1903, *C.G. Pringle 11760* (K, L, US); 8 miles W of Guadalajara, 13 Sep. 1959, *T.R. Soderstrom 611* (US); 4 miles NNE of Talpa de Allende, 12-13 Oct. 1960, *R.*

McVaugh 20155 (NY, US); Tamazula, cerca de Agua Hedionda, ca. 45 km al E de El Aserradero, 26-27 Oct. 1973, R. McVaugh 21152 (NY); Along road to San Cristobal de la Barranca, 2 Nov. 1975, P.M. Peterson 371 (K); Villa Guerrero, 25 Sep. 1980, A.A. Beetle 5790 (MO); Zapolitlan, East side of Lago La Maria, 22 km NNW of Colima in the SW foothills of the Volcán de Colima, 1250 m, 19°27.6'N, 103°42.5'W, 7 Jan. 1991, A.C. Sanders 10349 (MO, US); Autlán, 11-12 km al S de Autlán, 2 km al SW de Ahuacapán, 1500 m, 3 Oct. 1991, F.J. Santana M. & D. De Niz 5494 (US); 8 km al W de Xalisco, camino de terracería de Xalisco al Malinal, bosque de *Pinus-Quercus*, 21°25'56"N, 104°57'26"W, 1500 m, 16 Oct. 1994, G. Flores-Franco 4007 (BR); **Michoacán**. Prope Uruapan, 22 Jan. 1926, G.J.N. Woronow 2706 (US); Uruapan, near Zaratracua Falls, 7 miles SW of Uruapan, 30 Jul. 1941, C. Leavenworth 1255 (US); Road from Temascal to Huetamo, 13 Nov. 1949, H.E. Moore Jr & al. 5697 (BM, G, US); On steep slopes of barrancas on road from Uruapan to Nueva Italia, 5 Oct. 1953, E.R. Sohns 864 (K, US); West facing slopes of Cerro de Carboneras above the Río Cupatitzio, ca. 22 km S of Uruapan, 16-22 Oct. 1961, R.M. King & T.R. Soderstrom 4802 (NY, US); **Nayarit**. Vicinity of Jalisco, 8 Nov. 1925, R.S. Ferris 5848 (US); Trail from Tepic to Santiago, 15 Sep. 1926, Y. Mexia 628 (MO, NY, US); About 10 road-miles E of Jalocotán, on road to Tepic, 4 Oct. 1952, R. McVaugh 13357 (K, US); Nayarit, 9 miles N of Compostela, 12 Nov. 1959, R. McVaugh & W.N. Koeltz 500 (US); 2 miles W of Mazatan, 17 Sep. 1960, R. McVaugh 19101 (NY, US); Valle de Banderas, 1 km N de El Cuatante, 17 Nov. 1963, J. Rzedowski 17844 (US); Nayar Cerro Cangrejo, camino de Herradura a El Cañaveral y/o a Jesus Maria, 1200-1400 m, 22°15'N, 104°37'W, 17 Sep. 1989, P. Tenorio 16092 (MO); Xalisco, 4 km del camino de terraciera de Xalisco a la Estación de Microondas Cerro Boludo, 21°27'N, 104°56'W, 3 Oct. 1993, O. Tellez & al. 12998 (US); Tepic, 10 km al E de la Yerba, carretera La Yerba-Tepic o al SE de la desviación La Peñita, bosque de *Pinus-Quercus*, 21°31'20"N, 105°00'57"W, 945 m, 15 Sep. 1994, G. Flores-Franco 3673 (BR); **Oaxaca**. Tuxtepec, Chiltepec and vicinity, Jul. 1940-Feb. 1941, G. Martinez-Calderon 239 (US); Ixtlan-Tuxtepec road, 21-23 km S of Valle Nacional, 26 Jul. 1964, J.T. Mickel 1463, 1485 (NY); San Juan Guichicovi, carretera a Uxpanapa, 3 km al E de Sarabia, 12 Nov. 1978, S.D. Koch & al. 78235 (NY); Ixtlan, Comaltepec, La Esperanza, 1600 m, 17°37'N, 96°21'W, 2 Aug. 1988, R. López Luna 338 (MO); Santa Maria Chimalapa, on gravel along road 2 km from Escolapa towards El Mezquite, 16°50'02.3"N, 94°45'30.6"W, 220 m, 5 Aug. 2014, S. Matthias & S. Geck 186 (G); **Orizaba**. 1866, E. Bourgeau 2971 (L, P); **Puebla**. Nauzontla, 20°01'N, 97°38'W, 6 May 1989, P. Tenorio 15802 (NY); **San Luis de Potosí**. 1878, C.C. Parry & E. Palmer 535 (BM); **Sinaloa**. S. Ignacio, Valley of Río Piaxtla, Nov. 1917, A.E. Salazar 31 (US); Cerro Colorado, 5 Dec. 1939, H.S. Gentry 5126 (MO, NY, US); 16 miles NE of Concordia, 18 Oct. 1966, F.W. Gould 12250 (US); Along the dirt road from Rosario to Plomosas, 7 Oct. 1975, J.L. Reveal & R.M. Harley 4043 (K, US); Concordia, km 228 from Durango on the Mazatlan to Durango road, 1 Oct. 1985, B. Bartholomew 2538 (MO, NY); Concordia, El Capomito, Ejido Los Ciruelos, 23°18'10"N, 105°56'12"W, 7 Jan. 2006, A.L. Reina & al. 124 (US); **Temascaltepec**. Rincón del Carmen, 1 Oct. 1932, G.B. Hinton 1948 (BM, K, MO, NY); Temascaltepec, Temascaltepec, 15 Nov. 1932, G.B. Hinton 2408 (K, NY, US); **Veracruz**. Mirador, Jul. 1838, J.J. Linden 72 (FI-Webb, G); 1840, H. Galeotti 5717 (G, NY, P, US, W); Mirador, 1841-43, F.M. Liebmann 14195 (C, US); Orizaba, Aug. 1910, A.S. Hitchcock 6385 (L, US); Córdoba, Aug. 1910, A.S. Hitchcock 6422 (BM, G, K, L, MO, NY, P, US, W); Zacuapan, Dec. 1916, C.A. Purpus 7813 (MO, NY, US); La

Barranca de las Flores, about 10 km W of Cordoba, 23 Aug. 1943, J.V. Santos 2500 (US); Along trail leading to base of the large tropical Teocello Canyon, near Teocello, 25 Aug. 1959, T.R. Soderstrom 469 (US); Las Chiapas, Ceiba Blanca, 25 Oct. 1973, J. Dorantes & al. 2261 (NY); Tlapacoyan, about 6 km (by air) S of Tlapacoyan on road to Altolonga, 800 m, 19°55'N, 97°13'W, 11 Jul. 1982, M. Nee & G. Giggs 24870 (MO).

NICARAGUA. Atlántico Nord. Río Leicus, la Tronquera, SW de Waspan, 18 Aug. 1965, A. Molina 14904 (NY); **Carazo**. Jinotepe, 3-7 Nov. 1911, A.S. Hitchcock 8694 (US); **Chontales**. E of El Narajal, between Juigalpa and La Libertad, 500 m, 12°11'N, 85°15'W, 6 Aug. 1983, W.D. Stevens 22444 (MO); **Estelí**. N slope of Cerro El Fraile, 1160-1200 m, 13°25'N, 86°15'W, 28 Sep. 1980, W.D. Stevens & al. 18061 (MO); **Jinotega**. Wiwili, Comunidad La Esperanza, Reserva Bosawas, Territorio Miskito Indian Tasbabay Kum, parcela 1, 1 km al oeste de la finca de Leonidas Bodin, 60-70 m, 14°23'02"N, 85°32'09"W, 7 Sep. 2007, D. Prado G. 95 (MO); **León**. San Nicolas, El Barro, 5 km al SE de San Nicolas, 1200 m, 12°55'N, 86°18'W, 12 Jan. 1984, P.P. Moreno 22726 (MO); **Matagalpa**. El Ocotal, 4 km al S de la ciudad, 900-1000 m, 12°52'N, 85°55'W, 5 Oct. 1982, P.P. Moreno 17704 (MO); **Nueva Segovia**. Jalapa, Cerro de Jesus, 1133 m, 13°56'51"N, 86°08'26"W, 14 Sep. 2010, I. Coronado & al. 5488 (MO); **Río San Juan**. El Castillo, Reserva Indio-Maiz, Cerro El Diablo, 350-609 m, 11°01'N, 84°12'W, 9 Dec. 1998, R. Rueda & al. 9639 (MO); Río San Juan, San Carlos, Reserva Esperanza Verde, 60 m, 11°04'N, 84°44'W, 15 Sep. 2001, R. Rueda & al. 16543 (MO); **Zelaya**. Intersection of road to Puerto Cabezas-Waspan & Río Lecus, 14 Jul. 1970, G. Davidse & R.W. Pohl 2347 (MO, NY, US), **n = 18!** (Davidse 1978); Zelaya, W of Bluefields, 3 Mar. 1971, J.T. Atwood 4182 (NY); Zelaya, Monkey Point, 5 m, 11°35'N, 83°39'W, 20 Oct. 1981, P.P. Moreno & J.C. Sandino 11935 (MO).

PANAMA. Chiriquí. 4.1 miles from Boquete on the road to David, 6 Aug. 1967, J.H. Kirkbride 90 (MO, NY, SCZ); Chiriquí, Llanos Francia, ca. 400 feet, 19 Jul. 1968, J.D. Dwyer & Lallathin 8724 (MO, SCZ); Chiriquí, along road in vicinity of branch in road to Cerro Colorado and Escopeta, above Río San Felix near town of San Felix, ca. 13 miles N of Río San Felix bridge, 800-1200 m, 15 Mar. 1976, T.B. Croat 33410 (MO); Chiriquí, NO del campamento de Fortuna (Hornito), sitio de presa, 1000-1200 m, 12 Aug. 1976, M. Correa & al. 2262 (FT, MO, PMA); Chiriquí, vicinity of Gualaca ca. 10.7 miles from Planes de Hornito, 11 Jul. 1980, T. Antonio 5145 (BM, MO); Chiriquí, Orillas de la carretera Dolega-Boquete, 8°39'17"N, 86°26'24"W, 902 m, 24 Jan. 2012, M.N.S. Stapf & R.M. Baldini 902 (FT, PMA, SCZ); **Coclé**. El Valle, ca. 2500 ft, 27 Aug. 1961, J.D. Dwyer 1820 (MO); About 8 miles north of El Vallé de Antón, 2 Aug. 1970, J.L. Luteyn & H. Kennedy 1687 (F); Road from El Valle to La Mesa, 2600 ft, 10 Aug. 1971, D. Spellman & al. 559 (MO); Area surrounding Rivera Sawmill, 7 km N of El Copé, 750-850 m, 24 Nov. 1977, J.P. Folsom & L. Collins 6431 (MO); Parque Nacional Omar Torrijos Herrera, 8°39'49"N, 80°35'28"W, 758 m, 17 Jan. 2012, M.N.S. Stapf & R.M. Baldini 841 (FT, SCZ); **Colón**. Near Old Fort Lorenzo, mouth of Río Chagres, 8 Mar. 1923, C.V. Piper 5948 (US); Maria Chiquita, E of Río Piedras toward Portobello, 9 Aug. 1967, J.D. Dwyer & J.H. Kirkbride 7800 (MO); Donoso, camino a quebrada Canoa, 11 Jul. 1996, J. Polanco & al. 2013 (PMA); Colón, Quebrada Nicaragua, Coclé del Norte, UTM 981643N, 565216E, 25 m, J. Mendieta 689 (PMA); Colón, Santa Maria, El Guacimo. UTM 987432N, 576939E, 140 m, 15 Oct. 2001, J. Mendieta 927 (PMA); Lago Gatún, Ciricito, UTM 996639N, 600658E, 40 m, J. Mendieta 531 (PMA); Orillas de la carretera Portobelo-Nombres de Dios,

933°33'N, 79°34'33"W, 40 m, 29 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 919, 920 (FT, PMA, SCZ); **Darién**. Cana and vicinity, 1908, *R.S. Williams* 773 (NY); Gold mine at Cana, 480 m, 26 Jul. 1976, *G.A. Sullivan* 634 (MO); Río Cocalito, 9 Feb. 1982, *C. Whiteford & A. Eddy* 114 (BM); S of El Real, region called Alturas de Nique, near Cana mine, 550 m, 7°45'N, 77°40'W, 20 Aug. 1987, *G. McPherson* 11499 (MO); **Herrera**. Carretera Chepo-Las Minas, sea level, 8°2'N, 80°29'W, 30 Sep. 1994, *C. Galdames* 1811 (PMA); **Panamá**. Between Pedro Miguel and Corozal, 30 Aug. 1911, *A.S. Hitchcock* 7961 (US); Canal Zone, between Frijolea and Bohio, 13 Oct. 1911, *A.S. Hitchcock* 8393 (K, NY, US); Between Corozal and Ancon, 7 Sep. 1914, *H. Pittier* 6774 (US); Canal Zone, W side of Canal opposite to Balboa, 7 Sep. 1920, *W.W. Rowlee & H.E. Stork* 945 (NY, US); Ancon Hill, 17 Oct. 1922, *E.P. Killip* 12066 (US); Taboga Island, Dec. 1923, *P.C. Standley* 27055 (US); Barro Colorado Island, 4 Dec. 1931, *O. Shattuck* 528 (STRI); Vicinity of Arenoso, lower Río Trinidad, 7-10 Aug. 1935, *R.J. Seibert* 628 (K, MO, NY, US); Panamá, near Arraiján, 21 Jul. 1938, *R.E. Woodson Jr. & al.* 1399 (MO, NY, US); Isla Toboga, 23-24 Jul. 1938, *R.E. Woodson Jr. & al.* 1453 (NY, US); Canal Zone, 18 Jan. 1940, *F.W. Hunnewell* 16394 (NY); San José Island, about 55 miles SSE of Balboa, 10 Nov. 1944, *I.M. Johnston* 442 (P, US); San José Island, Pearl Archipelago, 26 Jun. 1945, *C.O. Erlanson* 383 (NY, US); Toward top of Cerro Campana, along road, 22 Oct. 1962, *J.A. Duke* 5959 (MO); Fort Clayton, Chiva Chiva Trail near Miraflores Lake, 30 Sep. 1965, *E.L. Tyson* 1378 (SCZ); 5 miles N Cerro Azul on road to Cerro Jefe, 13 Nov. 1965, *K.E. Blum & al.* 1734 (US); Fort Clayton, 10 km SW of Canazas, 15 Apr. 1966, *J.S. McCorkle* 199 (US); Canal Zone, Fort Sherman on Pena Road, 13 Oct. 1965, *E.L. Tyson & al.* 1689 (PMA); Altos del Río Pacora, 2500 ft, 9 Jun. 1967, *W.H. Lewis & al.* 2301 (MO); Canal Zone, Barro Colorado Island, E of Slothia Isle, 16 Sep. 1968, *T.B. Croat* 6108 (MO, NY, SCZ); 1.5 miles above Interamerican Highway on road to Cerro Campana, 10 Sep. 1970, *T.B. Croat* 12037 (MO, NY); Canal Zone, Frijoles, near end of Sniffer Road, spur of Pipeline Road, 21 Nov. 1970, *R. Foster* 2026 (MO, PMA); Canal Zone, pipeline road app. 12 miles N of Gamboa, 1 Sep. 1972, *E.L. Tyson* 6656 (MO); Panamá, E side of Cerro Campana, 8 Sep. 1973, *M. Nee* 6870 (MO, NY); Canal Zone, Summit Gardens, 12 Oct. 1973, *M. Nee* 7386 (K, MO, PMA); Canal Zone, secondary tropical moist forest at top of Cerro Pelado, 1 km N of Gamboa, 200-220 m, 3 Nov. 1973, *M. Nee* 7766 (MO, PMA); Canal Zone, at end of Pipeline Road, 15-20 miles NW of Gamboa, 0-100 m, 7 Sep. 1974, *S. Mori & J. Kallunki* 1731 (MO); El Llano-Cartí road, 12 Sep. 1980, *K.J. Sytsma* 1062 (BM, MO); El Llano-Cartí road, 300-400 m, 9°20'N, 79°00'W, 300-400 m, 28 Aug. 1982, *C. Hamilton & H. Stockwell* 1037 (MO, PMA); Cerro Jefe, near area called Los Nubes, 650 m, 9°15'N, 79°30'W, 650 m, 19 Jul. 1987, *G. MacPherson* 11298 (MO, PMA); Carretera El Llano-Cartí, km 8, 9°16'42"N, 78°57'35"W, 408 m, 12 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 791 (FT, PMA, SCZ); Panamá, Parque Nacional Campana, Carretera a Chicá, 8°41'13"N, 79°55'W, 2 Feb. 2013, *M.N.S. Stapf & R.M. Baldini* 940 (FT, PMA); Cerro Azul, camino hacia Cerro Jefe, 20 Jun. 2015, *Z. Mijango et al.* 132 (FT, PMA); **San Blas**. In forest near waterfalls, ca. 3 miles inland Aligandí, 7 Oct. 1978, *W.G. D'Arcy & B. Hammel* 12254 (MO); San Blas, El Llano-Cartí Road, 350 m, 9°19'N, 78°55'W, 20 Nov. 1984, *G. de Nevers & H. Herrera* 4350 (MO); **Veraguas**. Alto de Piedra, carretera Alto de Piedra-El Guabal, Km 3, 8°31'38"N, 81°07'51"W, 617 m, 18 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 843 (FT, PMA, SCZ).

PERÚ. **Huanuco**. Province Pachitea, Bosque Nacional de Iparia, 400-500 m, 15 Jan. 1969, *J. Schunke Vigo* 2989 (US); **Lore-**

to. Maynas, Iquitos, along the Río Nanay near the Boca toma of Iquitos, 15 Feb. 1968, *D.R. Simpson & J. Schunke Vigo* 658 (G, US); Río Loreto-Yacu (affluent de l'Amazone), Tierra Amarilla, 6 Feb. 1969, *C. Sastre & R. Echeverry* 629 (P, US); Maynas, Río Nanay, cerca de Santa Clara, vicinity of Iquitos, 13 Jan. 1977, *J. Revilla* 2136 (MO); Mayanas, Iquitos, Río Momon, vicinity Balcon, 100 m, 1 Mar 1980, *S. McDaniel & M. Rimachi Y.* 23266 (MO); **San Martín**. Tarapote, 750 m, Dec. 1929, *L.O. Williams* 6081 (US).

VENEZUELA. **Amazonas**. Santa Elena, Mata Cutia, 2 Nov. 1979, *N.A. Rosa & O. Cardoso* 3193 (NY); Amazonas, Atabapo, extremo S de Sierra Parima, al N del Río Orinoco y al W del Río El Ejercito, 1215-1225 m, 02°19'N, 63°51'W, 8 Nov. 1982, *F. Guanchez* 2101 (MO); **Anzoátegui**. Forested slopes, Cerro La Danta, bordering tributary of Río León, NE of Bergantín, 800-1100 m, 22 Feb. 1945, *J.A. Steyermark* 61115 (US); **Aragua**. Rainforest on road Maracay-Ocumara, 1 Aug. 1925, *H. Pittier* 11854 (G, NY, US); Parque Nacional, 16 Mar. 1940, *A. Chase* 12464 (US); Parque Nacional Henry Pittier NW of Maracay, Rancho Grande, 1150 m, 13 Nov. 1971, *G. Davidse* 3022 (MO); Aragua, Autonomo Mora, Parque Nacional H. Pittier, 1050 m, 10°20'N, 67°39'W, 22 Aug. 1989, *F. Zuloaga & R. Ortiz* 4510 (K, MO, US); **Barinas**. 43 km NW of the Merida intersection along road to Merida, 1000 m, 19 Nov. 1971, *G. Davidse* 3193 (MO); **Bolívar**. Prope coloniam Tovar, between Coroni & Maracai, 1856-58, *A. Fendler* 2495 (K); Cerro Bolívar, 1200 m, 1 Dec. 1951, *B. Maguire* 32663 (NY, US); Alto Caroni, alrededores de Sta. Elena de Uairen, 25 Apr. 1946, *T. Lasser* 1534 (NY, US); Sierra de Lema, cabeceras de Río Chicanán, 80 km al SE de El Dorado, 500 m, 6°5'N, 62°W, 27 Aug. 1961, *J.A. Steyermark* 89542 (NY, US); Uaipán-tepui, 5 Mar. 1967, *T. Koyama & G. Agostini* 7500 (MO, NY); La Gran Sabana, 49 km W of the intersection of the main road to Santa Elena and road to Cabanayen hillside with savanna on upper slope, forest in gully, 1360 m, 3 Dec. 1973, *G. Davidse & al.* 4783 (MO), (Davidse 1978); Cedeño vicinity of Panare Village of Corozal, 6 km from Maniapure toward Calcara, 300 m, 6°55'N, 66°30'W, 16 Oct. 1985, *B. Boom & M. Grillo* 6418 (MO, NY); Cedeño, Serranía de Los Pijiguas, 500-600 m, 06°33'N, 66°46'W, 29 Jan.-1 Feb. 1989, *N. Cuello* 685 (MO); **Carabobo**. Autonomo Mora, 750-1000 m, 10°17'N, 68°10'W, 17 Aug. 1991, *W. Diaz* 532 (MO); **Distrito Federal**. Hacienda Puerto La Cruz, coastal range, 28 Aug.-10 Sep. 1918, *H. Pittier* 8059 (US); Distrito Federal, Colonia Tovar, 1400 m, 24 Jul. 1993, *F. Zuloaga & al.* 4746 (MO); **Mérida**. Santo Domingo, 28 Sep. 1953, *L. Bernardi* 993 (NY); **Miranda**. 34 km Nw of Santa Lucia along road, 200 m, 7 Nov. 1971, *G. Davidse* 2910 (MO, NY, US); Mérida, on slope above dam site on Río Caparo, 31 km ESE of Santa Barbara, ca. 100-250 m, 07°41'N, 71°28'W, 9 Mar. 1980, *R. Liesner & A. Gonzalez* 9256 (MO); **Portuguesa**. Bosque transicional entre La Estación y La Laguna, 15-18 km NNW de Ospino, 700-800 m, 09°25'N, 69°30'W, 1 Nov. 1982, *J.A. Steyermark & al.* 127004 (MO); **Sucre**. Between Zurita and El Naranjo and Agua Colorada, N of Quebrada El Naranjo and W of Río Santa Fé, 18 Aug. 1973, *J.A. Steyermark & al.* 107806-A (NY); Bermúdez, Península de Paria, al SE de Carupano, al NE de Maturincito, Cerro La Cerbatana, 700-750 m, 10°38'N, 63°10'30"W, 9 Jan. 2005, *W. Meier & al.* 11168 (MO); **Táchira**. Uribante, Empresa Las Cuevas near La Fundación, 900 m, 08°50'N, 71°47'W, 6 Jul. 1983, *H. van der Werff* 4901 (MO); **Trujillo**. 37 km from Trujillo along road to Boconó, 13 Aug. 1964, *F.J. Breteler* 4128 (MO, NY, US); **Yaracuy**. Nirgua, 5 km N of Nirgua by road, 1200 m, 10°12'N, 68°34'W, 21 Oct. 1982, *G. Davidse & al.* 20890 (MO).

(14) *Lasiacis rhizophora* (E.Fourn.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911. (Fig. 37).

Bas.: *Panicum rhizophorum* E.Fourn., Mex. Pl. 2: 31. 1886.

Type: "Mexico, region d'Orizaba, 10 Sep. 1866, Bourgeau 3025" (lectotype, designated by Hitchcock 1913: 253; P! [barcode P00633945] isoelectotypes, BR (photo!) [barcode BR0000006862831], C! [barcode C10017035], F (photo!) Three sheets [Acc. No. 0361411F, 0046894F], G! two sheets [barcode G00099140, barcode G00099141], K! [barcode K000309322], L! [barcode L0797263], MO! [Acc. No. MO128804], GH (photo!) [barcode GH00024122], P! Four sheets [barcode P00633943, P00633944, P00633946, P0063347], US! Fragment from P [barcode US00139935], US! [barcode US00147998].

Nomina nuda

Panicum rhizophorum E.Fourn. ex Hemsl., Biol. Cent.-Amer. Bot. 3: 495. 1885, *nom. nud.*

Description

Perennials, semi-caespitose. *Culms* 1.0–1.5 m high, creeping, slender, rooting at the lower nodes, freely branching forming tangled colonies, erect; *internodes* 2–4 mm thick, herbaceous, puberulent, often restricted to the apex; *nodes* glabrous to puberulent. Leaf sheaths shorter than internodes, puberulent, sometime hispid, rarely glabrous, overlapping, margins usually ciliate at the apex and below, with auricular hairs prominent, 1.5–4.0 mm long; *collars* glabrous and ciliate on the margin; *ligules* 0.5–1.0 mm long, membranous, ciliate with hairs up to 3.5 mm long; *blades* 7.0–18 cm long, 1.5–4.0 cm wide, elliptic-lanceolate, adaxial surface slightly hispid, scabrid, rarely glabrous, the abaxial surface puberulent to hispid, rarely glabrous, apex acuminate, base asymmetrical. *Panicles* 10–30 cm long; *branches* ascending and spreading, scabrous to puberulent, bearing spikelets clearly clustered in pairs or small groups terminally. *Spikelets* 3.0–4.0 mm long, 2.8–3.5 mm wide; ovoid; *lower glumes* 1.5–2.0 mm long, 0.8–1.0 mm wide, 5–7-veined; *upper glumes* 2.7–3.0 mm long, 1.7–2.0 mm wide; *sterile florets* rarely staminate, *lemmas* 7–9-veined, *paleas* 2/3 of the fertile floret; *fertile florets* 3.0–3.8 mm long, 1.6–2.0 mm wide, black, *anthers* 1.5–1.8 mm long, whitish; *stigmas* purple; *caryopses* 2.0–2.3 mm long, 1.5–2.0 mm wide. *Chromosome number*: $2n = 36$ (Tateoka 1962); $n = 18$, $2n = 36$ (Davidse 1972, 1978).

Vernacular names

Colombia: Magdalena, "arrocito" J. Cuatrecasas & R. Romero Castaneda 25383 (COL, US).

Distribution

Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Venezuela. (Fig. 38).

Distribution (bibliographic references)

Hitchcock (1913) as *L. liebmanni* (Four.) Hitchc. and *L. rhizophora* (Four.) Hitchc.; Hitchcock (1920, 1930, 1936); Swallen (1931, 1943, 1955b); Standley (1937); Beetle (1977); Davidse (1978, 1994, 2001); Pohl (1980); D'Arcy (1987); Serna and López-Ferrari (2000); Zuloaga et al. (2003); Morales (2003); Correa et al. (2004); Hokche et al. (2008); Sutherland (2008); Acevedo-Rodríguez and Strong (2012); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Lower montane wet and lower montane rain forest zones and cloudy forests, edges of forests and trails, and along streams, also in pastures and remnant montane evergreen forests. Elevation 300–1900 m.

Phenology

July through May.

Remarks

Lasiacis rhizophora is a procumbent species with culms rooting at the nodes, broad leaves, and panicles with naked branches with spikelets in small clusters. Davidse indicated it can be confused with *L. ruscifolia* but the latter never produces roots at the nodes. Contrary to what Davidse (1978) reports, I have found specimens occurring from Venezuela. *Lasiacis rhizophora* is distributed in Central America including El Salvador to northwestern South America limited to Colombia, Venezuela, and Ecuador. It is often confused in Cuba, Jamaica, and Hispaniola with *Lasiacis grisebachii*.

Selected specimens

COLOMBIA. Cesar. Sierra de Perijá, eastern Manaure, Hacienda Nuevo Horizonte, El Podrido, 1550–1600 m, 15–16 Nov 1959, J. Cuatrecasas & R. Romero Castaneda 25383 (COL, US); **Valle**. La Cumbre, Cordillera Occidental, 1700–2100 m, 25–27 Sep. 1922, E.P. Killip 11607 (NY, US).

COSTA RICA. Alajuela. San Miguel de San Ramon, A.M. Brenes 20300 (NY); **Cartago**. About 4 km SW of El Tejar, 20 Aug. 1967, R.J. Taylor 4577 (MO, NY); Along road between Navarro and El Muneco, along S side of Río Navarro, 1150 m, 9°48'N, 83°54'W, 15 Nov. 1987, M. Grayum 8430 (MO); **Guanacaste**. Vicinity of Tilaran, 10–31 Jan. 1926, P.C. Standley & J. Valerio 44236 (US); Los Ayotes, near Tilaran, 600–700 m, 21 Jun. 1926, P.C. Standley & J. Valerio 45498 (US); Parque Nacional Rincon

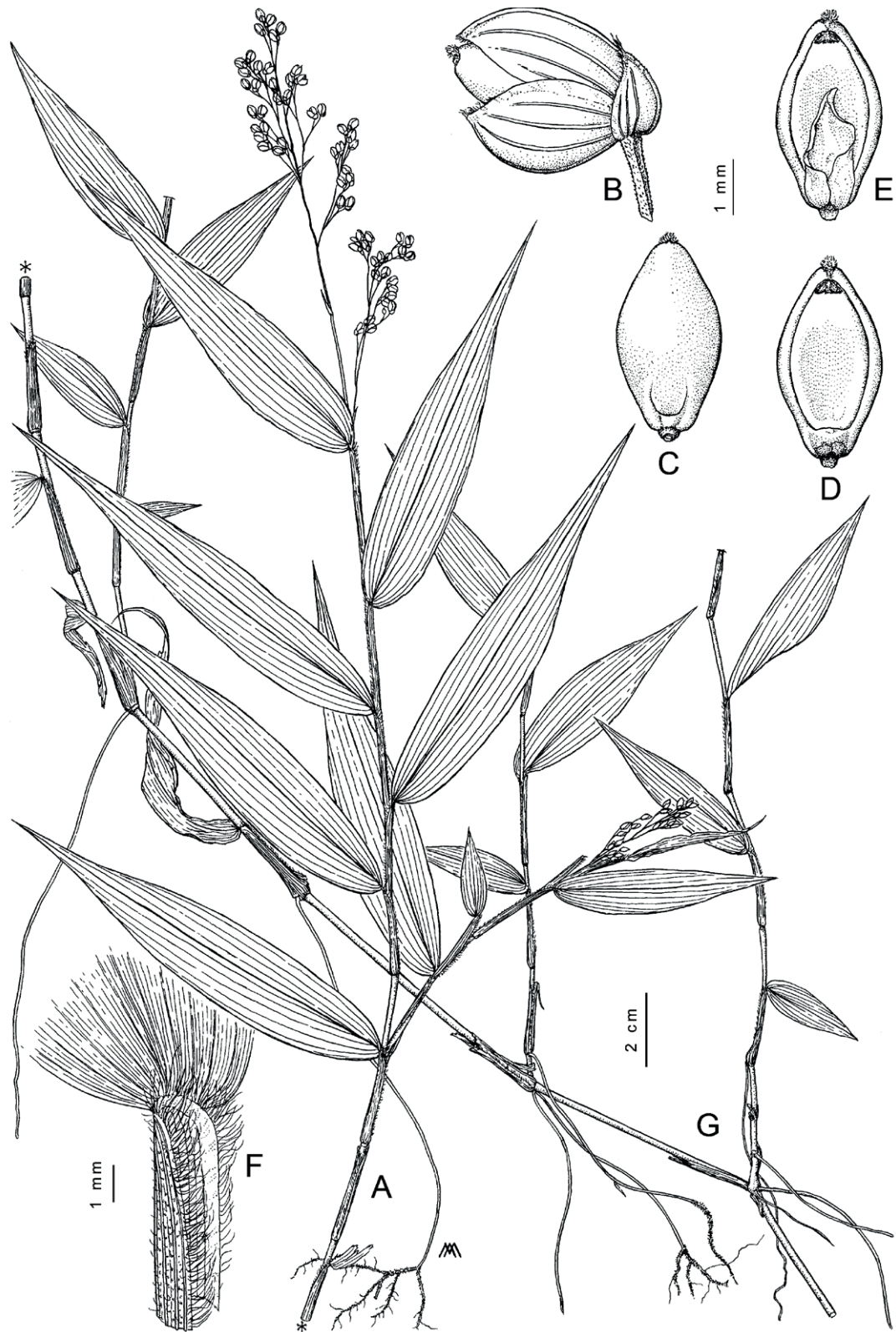


Figure 37. *Lasiacis rhizophora* (E.Fourn.) Hitchc.: **A.** Habit; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral floret with lower persistent palea; **F.** Ligular area; **G.** Culm at medium length rooting at the nodes (A-G. from R.W. Pohl & G. Davidse 11481 (K)]. *A. Maury delineavit.*

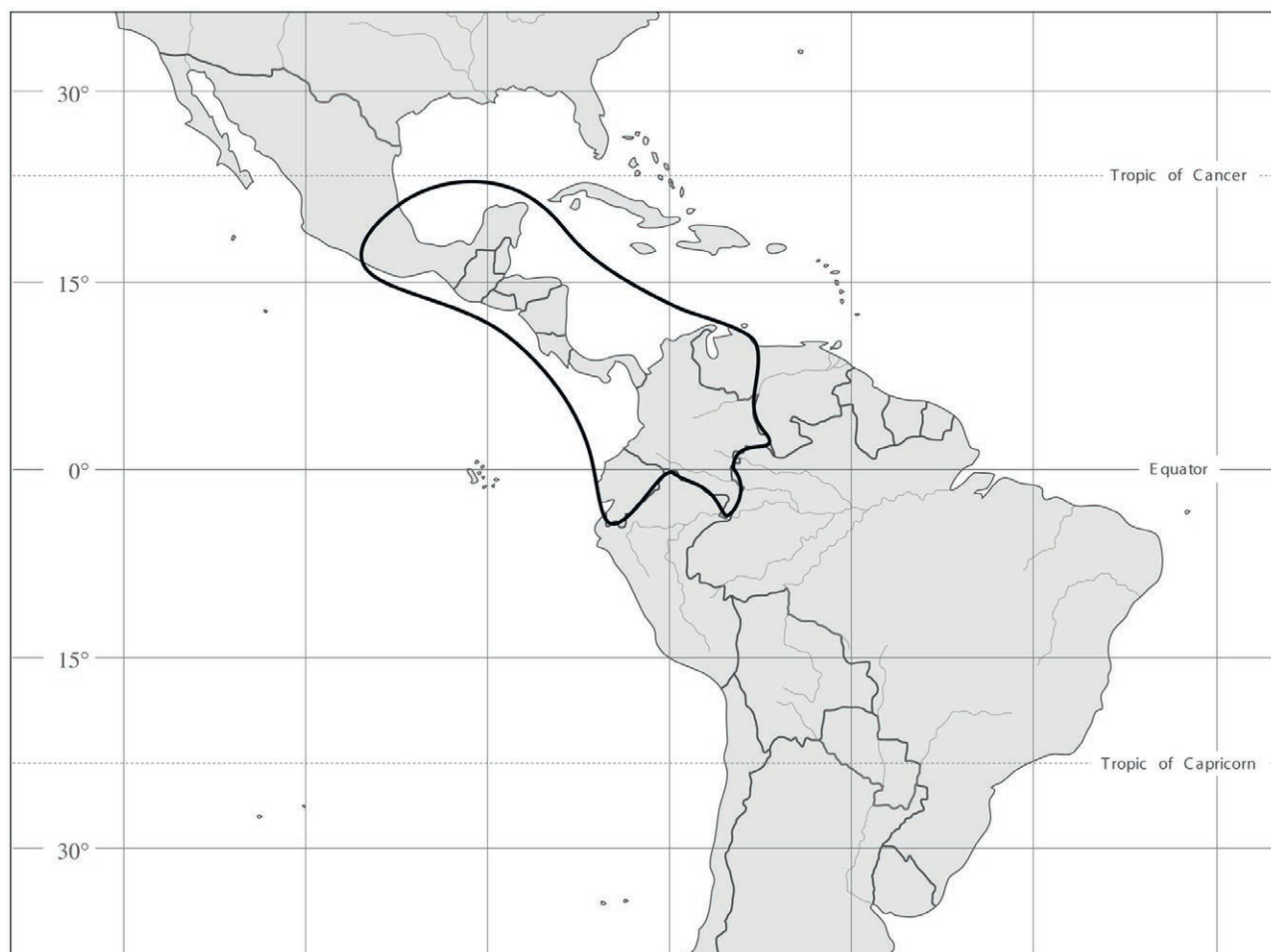


Figure 38. *Lasiacis rhizophora* (E.Fourn.) Hitchc.: general geographic distribution.

de la Vieja, the SE slope of Volcán Santa María, above Estación Hacienda Santa María, 900–1200 m, 10°47'N, 85°18'W, 27–28 Jan. 1983, G. Davidse & al. 23385 (MO); Along trail, in opening, Sendero Las Pailas, ca. 2 km W of Hacienda de Las Santa María, Rincon de la Vieja Nat. Park, 900–1000 m, 27 Jan. 1983, E. Judziewicz 4295 (MO); **Puntarenas.** Monteverde, 22 Oct. 1963, A. Jiménez 1271 (NY); Just N of the Carretera Interamericana along road to Baruca, 22 Aug. 1968, R.W. Pohl & G. Davidse 10994 (K), **n** = 18! (Davidse 1978); Just E of Monteverde on the Pacific watershed, 10°18'N, 84°48'W, 1300–1450 m, 29 Oct.–2 Nov. 1975, W. Burger & R. Baker 9629 (SCZ); Monteverde, 1350 m, 9 Feb. 1981, O. Tellez 4330 (MO); Canton de Buenos Aires Ujarras, El Carmen, Sabanas de Murur Bisuk, estribaciones de Cerro Amú, 1900 m, 9°20'10"N, 83°17'40"W, 29 Sep. 1989, G. Herrera 3601 (MO); Monteverde, pacific slope hillside 2 km below community, 1200 m, 10°17'N, 84°48'W, 2 Jan. 1990, W. Haber 9716 (MO); Coto Brus, Parque Inter. de la Amistad, 1500–1700 m, 8°57'N, 82°50'W, 19 Nov. 1994, S. Martén 656 (USJ); **San José.** Forests de l'Alto del Rodeo, 28 Dec. 1889, H. Pittier 1616 (G, US, W); San José, 22–24 Oct. 1911, A.S. Hitchcock 8502 (NY, US); Vicinity of Santa María de Dota, 1500–1800 m, 26 Dec. 1925–3 Jan. 1926, P.C. Standley & J. Valerio 44071 (US); 1 mile N of San Gabriel, 29 Sep. 1968, R.W.

Pohl & G. Davidse 11179 (K, US), **n** = 18! (Davidse 1978); Along South side of canyon of the Río Birillo, near Puentes Mulas, S of San Antonio, 28 Nov. 1968, R.W. Pohl & G. Davidse 11481 (K, US); S of Curridabat on hills, 2 Feb. 1969, R.W. Pohl & G. Davidse 11694 (K, US), **n** = 18! (Davidse 1978); Escazú, 3 Nov. 1979, M. Elizondo 20 (USJ).

ECUADOR. Los Ríos. (Pichincha?), 9 km E of Patricia Pilar, 58 km ENE of Quevedo, on Pan Am Highway to Santo Domingo de los Colorados, 300–400 m, 0°36'S, 79°18'W, 1 Jul. 1977, H.H. Iltis & M.G. Iltis 86 (US).

EL SALVADOR. Ahuachapán. El Impossible Reserve, 1400 m, 89°54'W, 13°51'N, 24 Jan. 1998, A. Monro & al. 1992 (BM, MO); Laguna Verde, 26 Jan. 1999, R. Villacorta 2718 (BM); Laguna Verde, 31 Jan. 1999, K. Sidwell & al. 819 (BM); **Chalatenango.** La Palma area, Caballero, 900–1500 m, 14°18'N, 89°08'W, 19 Oct. 2001, D. Sloat 217 (MO); **Santa Ana.** Cerro Verde National Park, 2300 m, 13°29'N, 88°32'W, 23 Jan. 1998, K. Sidwell & al. 411 (BM, BR, MO); Parque Nacional Montecristo, Cordillera de Matapan, 1900–2000 m, 14°27'N, 89°22'W, 27 Jan. 1998, G. Davidse & al. 37158 (BM, MO); Parque Nacional Montecristo, 1800 m, 14°24'N, 89°27'W, 30 Nov. 2004, R.A. Carballo 1142 (MO); Parque Nacional Montecristo, km 12 sobre la calle hacia Los Planes, 14°23'22"N,

89°23'15"W, 1416 m, 10 Feb. 2016, *J. Menjívar & R.M. Baldini* 3481 (FT, MHES); Parque Nacional Montecristo, alrededores de la zona límite por el área de acampar 3, 14°24'29"N, 89°22'51"W, 2187 m, 12 Feb 2016, *J. Menjívar & R.M. Baldini* 3654 (FT, LAGU, MHES).

GUATEMALA. Alta Verapaz. Coban, Sep. 1885, *H. von Tuerckheim* 715 (G, K, MO, NY, P, UPS, US); Alta Verapaz, 10 km S of Coban, 1300 m, 3 Sep. 1970, *W.E. Harmon & J.D. Dwyer* 4280 (MO); Along the Highway ca. 14.5 miles of Coban, 1300 m, 17 Jul. 1977, *T.B. Croat* 41390 (MO); **Guatemala.** Guatemala City, 1-3 Dec. 1911, *A.S. Hitchcock* 9051 (K, L, NY, US); Aldea Lo de Coy, between San Lucas and Guatemala City, 14 Nov. 1967, *A. Molina* 21091 (BM, NY); 7 miles E of Guatemala City, 7 May 1970, *W.E. Harmon* 2935 (NY); Vicinity of San Andrecillo, 26 Sep. 1972, *A. Molina* 27554 (BM, MO, NY, US); Guatemala, El Hippodromo, 27 Nov. 1989, *L. Rodríguez* 1235 (P); **Petén.** Laguna Macanché, Flores, 181 m, 16°58'25"N, 89°37'23"W, 23 Oct. 2008, *J. Morales* 4947 (MO); **Quezaltenango.** Along old road between Finca Pirineos and Patzulín, 9 Feb. 1941, *P.C. Standley* 86730 (US), 86758 (K); Along the Highway Cito N of junction CA2, toward Quezaltenango, in watershed reserve INDE, Santa Maria, km 199, loose gray soil, steep slopes W of Highway, 14°45'N, 91°32'W, 22 Jan. 1987, *T.B. Croat & D.P. Hannon* 63145 (MO); **Sacatepéquez.** Nacimiento del Cangrejal, Cuestas de Las Cañas, 3 Feb. 1949, *A. Molina* 15446 (US); **San Marcos.** Between San Rafael Pie de la Cuesta and Palaco Gordo, Sierra Madre Mts., 10-18 Dec. 1963, *L.O. Williams & al.* 26039 (NY, US, W); **Santa Rosa.** Chupadero, Oct. 1892, *E.T. Heyde & Lux* 3915 (BM, G, K, US).

HONDURAS. El Paraíso. Monserrat Mountain, 12 Aug. 1971, *A. Molina* 26149 (BM, NY, US); El Paraíso, Monserrat Mountain, 6 Aug. 1972, *A. Molina* 27483 (BM, US); **Lempira.** Near Gracias, Montaña de Celaque, 20 Sep. 1991, *M. Chorley* 342 *pro parte* (MO); **Morazán.** About 6 km W of Siguatepeque, 8 Aug. 1936, *T.G. Yuncker* 6388 (NY); Caminos Tatumbla, Labranza y Quebrada El Granadillo, sobre la Mt. Uyuca, 4 Nov. 1948, *A. Molina* 1433 (US); Cerro de Uyuca, trail between Las Flores and La Labranza, 22 Aug. 1949, *P.C. Standley* 23109 a (NY, US); Mt. Uyuca, 20 Sep. 1949, *L.O. Williams* 16851 (BM); Mt. Uyuca entre Quebrada Granadillo Y Labranza, 27 Jul. 1950, *A. Molina* 2766 (BM, US); Mt. Uyuca, 19 Oct. 1951, *J.R. Swallen* 10903 (MO, US); Morazán, Río Rancho Quemado, SE of Tegucigalpa, 9 Nov. 1966, *A. Molina* 18651 (BM, NY, US, W); Between La Vuelta del Zope and San Juan del Rancho, 20 Sep. 1970, *A. Molina & al.* 25824 (MO, NY, US); El Zamorano, Escuela Agrícola Panamericana, Cerro Uyuca, 1600 m, 17 Nov. 1970, *G. Davidse & R.W. Pohl* 12489 (MO), **n = 18!** (Davidse 1978); Quebrada Hierba Buena, Valle de Angeles, 15 km NE de Tegucigalpa, 24 Sep. 1983, *C. Calderón* 83 (K, MO); Los Limones, 21 km N of Tegucigalpa, 22 Oct. 1988, *Murillo* 134 (BM); **Santa Barbara.** Vicinity of Sta. Barbara, 22 Aug. 1968, *A. Molina* 22013 (NY).

MEXICO. Chiapas. Between Escupulas and Cañada Honda, 5 Nov. 1945, *E. Hernandez Xolocotzi* 309 (US); Sierra Madre, 1300 m, 3 Nov. 1960, *T. Tateoka* 1030 (US); Trinitaria, Lago de Monte Bello, 25 miles E of La Trinitaria, 17 Aug. 1966, *D.E. Breedlove* 14999 (US); La Trinitaria, along the Comitán River at its sumidero, Lagos de Montebello, 42 km NE of La Trinitaria, 1300 m, 23 Oct. 1971, *D.E. Breedlove* 21101 (MO); Cintalapa, 16 km NW of Rizo de Oro along logging road to Colonia Figaroa, 1600 m, 3 Nov. 1971, *D.E. Breedlove* 21703 (MO); Ocosingo, 6-8 km N of Ocosingo along road to Bachajon, 24 Sep. 1972, *D.E. Breedlove* 27923 (MO, NY); Tenejapa, Pocolum, 15 Sep. 1982, *A.M. Ton* 4609 (US); Tuxla-Gutierrez, El Sumidero (Coyota), 18 Oct. 1974,

R. Bavazzano s.n. (FT); San Fernando, 4-6 km W of Mirador Los Chiapas in Parque Nacional del Sumidero, 14 Nov. 1984, *G. Davidse & al.* 29728 (K); **Guerrero.** Galeana, 15 Oct. 1937, *G.B. Hinton* 10809 (NY), 16 Oct. 1937, 10809a (K); Vallecitos, Montes de Oca, 10 Sep. 1937, *G.B. Hinton* 11381 (MO); Galeana, Carrizo-Molino, 14 Oct. 1939, *G.B. Hinton* 14633 (NY, US, W); **Oaxaca.** Putla, a 14 km al N de Putla de Guerrero, 28 Oct. 1980, *O. Tellez* 3940 (MO); 15 km E of San Gabriel Mixtepec, 18 Sep. 1973, *S.R. Hill* 1681 (NY); Pluma Hidalgo, Pochutla, Cerro Espino, al E de la finca cafetalera Monte Cristo, 1250 m, 15°52'N, 96°24'W, 2 Oct. 1988, *A. Campos V.* 2503 (MO); **San Luis de Potosí.** Salina, Montecristo, Jan. 1938, *E. Matuda* 1939 (K, US); **Veracruz.** Orizaba, Aug. 1854, *M. Botteri* 150, 151 (BM, US, P); Córdoba, 27 Aug. 1910, *A.S. Hitchcock* 413 (BM, BR, C, G, K, L, MO, NY, P, US, W).

NICARAGUA. Estelí. Cerro Quiabú, 8 Km NO de la ciudad de Estelí, 1500-1600 m, 19 Oct. 1979, *A. Grijalva & M. Araquistain* 623 (PMA); Cerro Quiabú (Cerro Las Brisas), 24 Nov. 1979, *W.D. Stevens & al.* 16212 (BM); Condega, Comunidad Venecia, del albergue Cantagallo 250 m al Norte, 600-800 m, 13°24'60"N, 86°14'25"W, 8 Jan. 2008, *C.A. Padilla Gomez* 132 (MO); **Granada.** Summit of Mt. Mombacho, near Grenada, 18 Dec. 1940-9 Feb. 1941, *V. Grant* 821 (US); W del Volcán Mombacho al tope del camino de Finca El Progreso, 11°50'N, 85°59'W, 1250 m, 22 Nov. 1981, *J.C. Sandino* 1584 (MO); **Jinotega.** 142 km from Managua to La Fundadora, 7 Dec. 1958, *J.G. Hawkes* 2192 (C, G, K); Carretera Matagalpa-Jinotega, 1300 m, 13°03'45"N, 85°59'W, 2 Nov. 1983, *S. Vega & B. Quezada* 19 (MO); **Madriz.** Carretera a Cusmapa, a 17 km de Somoto El Silencio, 1200-1300 m, 13°20'N, 86°37'W, 18 Sep. 1982, *P.P. Moreno* 17603 (MO); **Matagalpa.** La Harmonia and lower S slope of Cerro El Picacho, 1200-1350 m, 13°00'N, 85°55'W, 15 Sep. 1984, *W.D. Stevens* 23104 (MO).

PANAMA. Bocas del Toro. Campamento de Lucho, 09°05.052N 082°44.733W, 1850 m, bosque nuboso, muy humedo, 17 Mar. 2004, *E. Alfaro & A.K. Monro* 5597 (PMA); **Chiriquí.** E slope of Volcán de Chiriquí (Barú), WNW of Boquete, 19 Nov. 1975, *G. Davidse & D'Arcy* 10158 (K, MO, US), **n = 18!** (Davidse 1978); Cerro Colorado mining road 15.6 miles above bridge over Río San Felix, 1330 m, 21 Nov. 1979, *T. Antonio* 2568 (MO); Road between Finca Lerida and San Ramon, along Quebrada El Velo, 8 Mar 1989, *P.M. Peterson & C.R. Annable* 7369 (MO); Orillas de la carretera Gualoca-Fortuna, a 500 m despues de los Planos de Hornitos, 8°12'13"N, 82°12'41"W, 1024 m, 20 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 855, 856 (FT, PMA, SCZ); Carretera a Aguacatal, SW del Volcán Barú, 8°47'36"N, 82°34'54"W, 23 Jan. 2012, *M.N.S. Stapf, & R.M. Baldini* 873, 876, 877 (FT, PMA, SCZ); Carretera Volcán-Río Sereno, puente sobre al Río Chiriquí Viejo, 848'27"N, 8240'W, 1338 m, 23 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 896 (FT, PMA, SCZ); Carretera de Alto Boquete-El Salto, 846'49"N, 82°27'52"W, 1520 m, 24 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 903, 905 (FT, PMA, SCZ); Gualaca, Reserva Forestal Fortuna, Sendero Hornitos, 8°40'53"N, 82°13'05"W, 1346 m, 5 Nov. 2013, *O.O. Ortiz & al.* 1757 (FT, PMA); **Los Santos.** Guararé, a 300 mts. de la carretera Nacional, 23 Jul. 1974, *F.M. Saavedra* 13 (PMA); **Veraguas.** El Cuchillo near Cerro Tute, up from Santa Fé, 1300 m, 8°32'N, 81°07'W, 8-9 Sep. 1982, *C. Hamilton & al.* 1244 (MO).

VENEZUELA. Lara. Jimenez, Parque Nacional Yacambú, 3km E of Park headquarters, Quebrada El Blanco, 09°43'N, 69°34'W, 1300-1400 m, 24 Oct. 1982, *G. Davidse & A.C. González* 21089 (MO); **Portuguesa.** Selva bordeando una laguna natural en la fila de la cumbre, 17.8 km de La Estación, 30 km al Norte de Ospino, 1 Nov. 1982, 1170 m, *J.A. Steyermark & al.* 126948 (MO).

(15) *Lasiacis rugelii* (Griseb.) Hitchc., Bot. Gaz. (Crawfordsville) 51: 302. 1911. (Fig. 39).

Bas.: *Panicum rugelii* Griseb., Cat. Pl. Cub. 233. 1866.

Type: “Cuba, in montibus Mantanzas, scandens in fruticibus, 1849, Rugel 188”. Lectotype, designated by Hitchcock 1909: GOET! (photo) [Acc. No. GOET009532]; isoelectotypes, BM! Two sheets [barcode BM000938723, BM000938724], GH! (photo) [barcode GH00023863], GOET (photo!) [Acc. No. GOET009533], L! [barcode L0044661], NY! [barcode NY00071073], US! Fragment from GOET [barcode US00139946].

(=) *Lasiacis papillosa* Swallen, Publ. Carnegie Inst. Wash. 436: 349. 1934.

Type: “Mexico, Yucatán, Peto, erect in bush, 26-27 July 1932, J.R. Swallen 2707 (holotype: US! [barcode US00134117]; isotype K! [barcode K000309324], MO! [Acc. No. MO128802]).

(=) *Lasiacis lancifolia* Swallen, Publ. Carnegie Inst. Wash. 436: 349. 1934.

Type: “Mexico, Yucatán, Muna, along trail in hills, culm erect, 22-23 July 1932, J.R. Swallen 2664” (holotype: US! [barcode US00134107]; isotypes, GH (photo!) [barcode GH00023859], MICH (photo!) [Acc. No. MICH1108700], K! [barcode K000309323], US! Five sheets [barcode US00134103, US00134104, US00134105, US001334106, US00134103]).

Description

Perennials, caespitose. Culms 0.5-3(-4.0) m long, erect, clambering and climbing, prostrate, upper part usually strongly zigzag, older culms branched; *internodes* 2-5 mm thick, hollow, mostly lignified, papillose-puberulent with appressed hairs, rarely glabrous or shortly pubescent; *nodes* usually glabrous. *Leaf sheaths* spreading puberulent, sometimes the lower margins ciliate, auricles with hairs 2 mm long; *collars* puberulent; *ligules* 0.2-0.3(-0.4) mm long, inconspicuous, glabrous, or ciliate with hairs 0.5 mm long; *blades* 2.5-5.5(-8.0) cm long, 0.5-1.5(-2.0) cm wide, lanceolate, or oblong-lanceolate, hispidulous or puberulent on both surfaces, base asymmetrical, apex acute to acuminate, margins scabrid. *Panicles* 4-12 cm long, few-flowered; *branches* bearing few spikelets, proximal branches and most branchlets reflexed; *pedicels* finely pubescent. *Spikelets* 4.5-5.0(-7.0) mm long, 2.0-2-4 mm wide; obovate; *lower glumes* (1.8) 2-2.5 mm long, 1.3-1.5 mm wide,

7-9-veined; *upper glumes* 3.5-4.8 mm long, 1.8-2.0 mm wide, 9-11-veined; *sterile florets* without flowers, *lemmas* 9-11-veined, *paleas* $\frac{3}{4}$ to subequal to the length of the fertile floret; *fertile florets* 4.0-5.0 mm long, 2.0-2.5 mm wide; *anthers* 2 mm long, whitish; *stigmas* white; *caryopsis* 2.4-2.7 mm long, 2.0 mm wide. *Chromosome number*: unknown.

Iconographs

Lámina 154 (Catasús Guerra 2012b).

Vernacular names

Cuba: “pitilla” (Acevedo-Rodríguez and Strong 2012; Roig 1963; Catasús Guerra 2012a).

Distribution

Belize, Cuba, Dominican Republic, Guatemala, Haiti, Honduras, Mexico. (Fig. 40).

Distribution (bibliographic references)

Hitchcock (1909) as *Panicum rugelii* Griseb.; Hitchcock (1911, 1920); Hitchcock and Chase (1917); Swallen (1934) as *L. lancifolia* & *L. papillosa*; Swallen (1936, 1955b) as *L. papillosa* Swallen; Beetle (1977); Davidse (1978, 1994); Serna and López-Ferrari (2000); Zuloaga et al. (2003); Morales (2003); Sutherland (2008); Acevedo-Rodríguez and Strong (2012); Catasús-Guerra (2012a); Sylvester (2016); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019).

Ecology

Edges of forests, trails, in thickets; frequent in secondary forests and in pine forests (Cuba). Sea level to 800 m.

Phenology

Throughout the year, more frequent June through March.

Remarks

Lasiacis rugelii, as pointed out above, is related to *L. pohlii*. It has erected culms, rarely prostrate, and forms a zigzag stem pattern resembling *L. divaricata* but differing from the latter in having shorter and wider leaf blades and puberulent culms and leaves. Davidse (1978) gives a detailed summary of the synonyms of this species, such as *L. papillosa* Swallen, and *L. lancifolia* Swallen, both described from Mexico, while Beetle (1977) and Ulloa Ulloa et al. (2025), erroneously, consider them as valid species. *Lasiacis rugelii* is typically a northern Central American species extending to the Caribbean

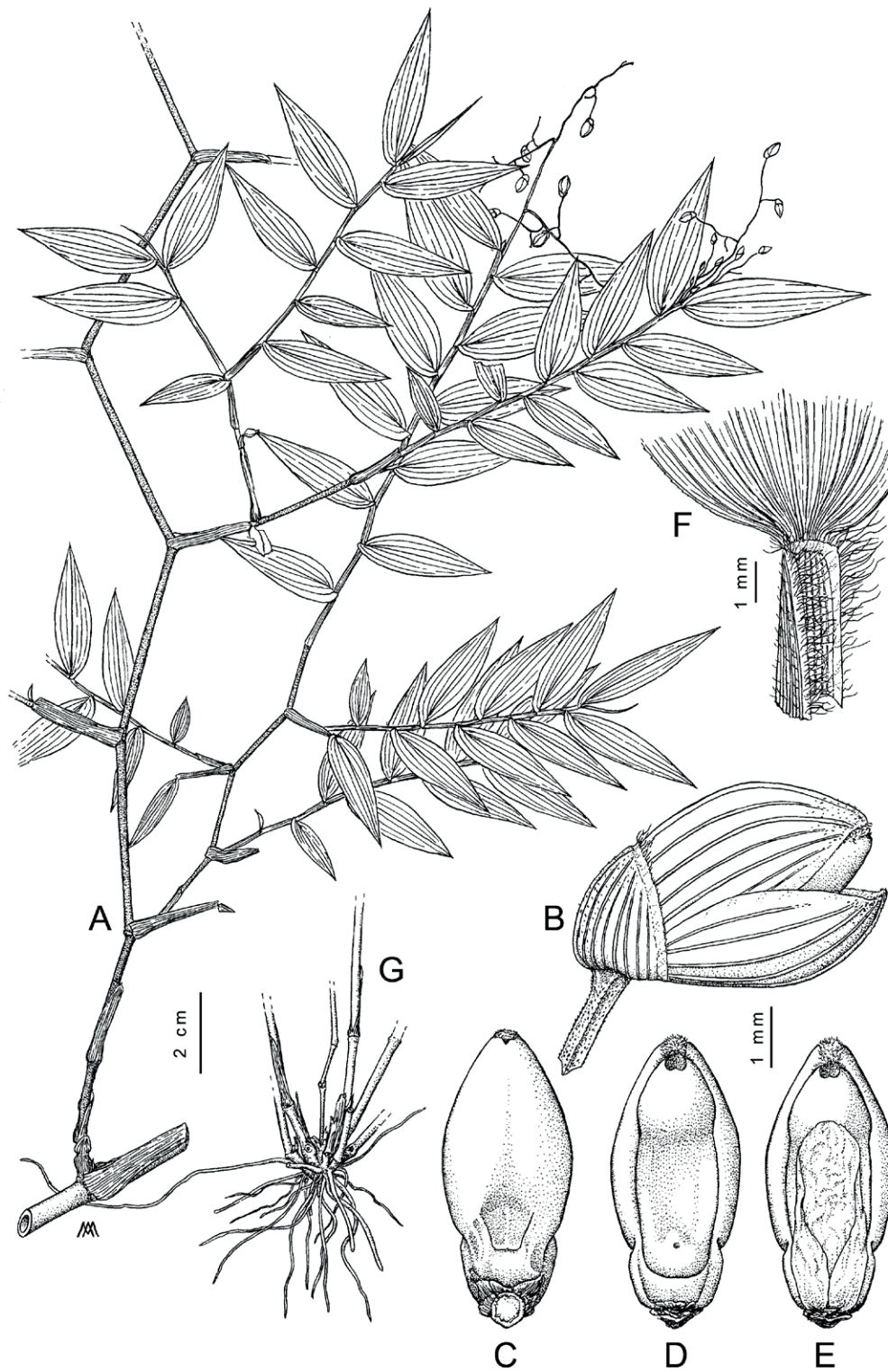


Figure 39. *Lasiacis rugelii* (Griseb.) Hitchc.: A. Habit. B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea; F. Ligular area [A-F. from *P.H. Gentle* 1218 (K)]; G. Base of the culm [G. from *E.L. Ekman* 12845 (K)]. A. *Maury delineavit*.



Figure 40. *Lasiacis rugelii* (Griseb.) Hitchc.: general geographic distribution.

whereas *L. pohlii* is definitely more common in Costa Rica and Panama (see also Davidse 1978).

Selected specimens

BELIZE. **Belize.** 21 Jun. 1973, T.B. Croat 24770 (K, L, MO, NY, US); **Cayo.** Mountain Pine Ridge, Jul.-Aug. 1936, C.L. Lundell 6840 (BM, C, MO, NY); Hummingbird Highway, 8 Dec. 1955, P.H. Gentle 8974 (BM, G, NY, US); El Belize-Cayo Road, 26 Mar. 1958, P.H. Gentle 9691 (G, MO, NY, US); Cayo-Belize road, 17°17'N, 88°39'W, 28 Nov. 1968, R.R. Innes 49 (K); Millionario, 12 Dec. 1968, G.R. Proctor 29865 (BM); Mountain Pine Ridge, Blancaneaux Lodge, 17 Aug. 1970, J.R. Wiley 400E (MO); Macal (Macaw) River, Guacamallo Bridge, 29 Jan. 1974, J.D. Dwyer & R. Liesner 12284 (MO); S of Guacamallo Bridge, 10 May 1981, C. Whiteford 2826 (BM, K); Near Terra Nova Forest Reserve, ca. 21 km N of Black Man Eddy Village and Belize River, 100 m, 17°21'N, 88°55'W, 6 Jul. 1995, D.E. Atha & al. 1013 (MO, NY); **Maskall.** 16 Apr. 1934, P.H. Gentle 1218 (K, MO, NY, US); **Orange Walk.** Honey Camp, 1928, C.L. Lundell 91 (K); Orange, Honey Camp, Oct. 1929, C.L. Lundell 550 (BM, K, MO, NY, UPS, US); Orange Walk District: Blue Creek-Gallon Jug Road, 1 Nov. 1989,

P.W. Alcorn 786 (FTG); **Stann Creek.** Commerci Bight Pine Ridge, 12 Nov. 1953, P.H. Gentle 8094 (NY); **Toledo.** Near Macaca, 13 Dec. 1949, P.H. Gentle s.n. (BM, G); Lower slopes of Richardson Peak, Maya Mountains, directly N of the junction of R. Creek and Blanden Branch, 300-620 m, 16°33'N, 88°46'30"W, 4, 6, 8, Mar. 1987, G. Davidse & A.E. Brant 31968 (MO); Las Sierritas, 20 km W of Big Creek Settlement, S slopes of the western most range of the Las Sierritas hills, 40-80 m, 16°31'30"N, 88°37'30"W, 5 Dec. 1997, T. Hawkins 1669 (MO).

CUBA. 1860-1864, C. Wright 3465 (G, MA, NY, P, US, W); **Habana.** Habana, San Antonio, 20 Mar. 1906, A.S. Hitchcock 176 (US); Habana, Marianao, 23 Oct. 1921, E.L. Ekman "Amer. Gr. Nat. Herb. no. 795" (BM, C, G, K, L, NY, P, US, W); Lomas de Camoa, 22 Nov. 1921, E.L. Ekman 13516 (US); Habana, Loma della Pita, San Miguel de Casanova, 6 Dec. 1923, Bro. León 12462 (US); **Mantanzas.** Vicinity of Mantanzas, Playa, 12 Mar. 1903, N.L. Britton, & al. 106 (NY); NW of Pan de Mantanzas, S of Canasí, 31 May 1923, E.L. Ekman 16489 (US); **Nueva Gerona.** Isle de Pines, Coe's Camp, Ensenada de Siguanea, 25 Feb. 1916, N.L. Britton & P. Wilson 14860 (NY, US); Isles of Pines, Cayo del Res, on the southern side of Cienaga Panier, 2 Dec. 1920, E.L. Ekman 12446 (US); **Oriente.** Guantanamo, Norte Libanon, 700 m, 25

Dec. 1919, *E.L. Ekman 10306* (US); Sierra de Nipe, 24 Nov. 1922, *E.L. Ekman 15242* (G, US); Península de Cabo Cruz, S of Viquero between Río Nuevo and the coast, 16 Jan. 1923, *E.L. Ekman 16157* (NY, US); **Pinar del Río**. Mts. Near Taco Taco, 28 Oct. 1904, *C.F. Baker 3790* (NY, W); Pinar del Río, Sierra Anafe, 20 Dec. 1911, *P. Wilson 11449* (NY, US); San Cristobal, Loma del pimento, 29 Nov. 1920, *E.L. Ekman 11526* (G); San Cristobal, 2 Jun. 1921, *E.L. Ekman 12845* (G, K).

DOMINICAN REPUBLIC. Cordillera Septentrional, Prov. Puerto Plata, Sosña, coastal thickets at La Goleta, 26 Mar. 1930, *E.L. Ekman 14531* (C, K, NY, US); Cordillera Septentrional, Prov. Monte Cristi, Sabana Cruz (Puerto Rico), en una loma al norte de la carretera, suelo pedregoso, zona seca con vegetación original poco alterada, abundante *Coccoloba* y *Diospyros*, 19°49'N, 71°22'W, 5 Dec. 1985, *R. García & J. Pimentel 840* (NY).

GUATEMALA. **Alta Verapaz**. Along the Río Polochic below Tamahù, 975 m, 10 Apr. 1941, *P.C. Standley 91779* (US); Finca Argentina above Papalha, 15 miles W of Teleman on road from Tucuru to El Estor, 550–650 m, 19 Jul. 1977, *T.B. Croat 41538* (MO); **Izabal**. WNW of (above) El Estor, along margin of open pit nickel mine, 410 m, 30 Aug. 1988, *W.D. Stevens & E. Martinez S. 25220* (MO); El Estor, La Llorona, 300 m, 23 Aug. 1998, *M. Véliz 7024* (MO); **Petén**. Tikal National Park, in secondary growth bordering airfield, 13 Feb. 1959, *C.L. Lundell 15531* (US), 15713 (G), 2 Jul. 1959, *C.L. Lundell 16106* (C, G); Tikal National Park, in secondary growth bordering airfield, 23 Jun. 1960, *E. Contreras 1151* (G, US); Dos Lagunas, 22 Dec. 1960, *E. Contreras 1738* (US); Santo Toribio, 27 Jul. 1961, *E. Contreras 2692* (US); Tikal National park, Tikal, on Temple IV, 17 Jan. 1962, *C.L. Lundell 17145* (US); Santa Ana, 20 km E de Santa Elena, 13 Nov. 1965, *A. Molina 15680* (US); 6 km SE de la aldea Uaxactum, 25 May 1973, *R.T. Ortiz 2648* (US); 2 miles south of entrance of Tikal National Park, 500 ft., 19 Jun. 1973, *T.B. Croat 24709* (F); Lago Petén, Itzá, 260 m, 17°07'N, 89°53'W, 20 Aug. 1993, *B. Wallnöfer & al. 5981* (K, MO, W); Parque Nacional Laguna del Tigre, 27 Jun. 1999, *M. Peña-Chocarro & al. 554* (BM, MO).

HAITI. **Nord Ouest**. Nord of Montry, Ile la Tortue, in limestone rock, 7 Jun. 1925, *E.L. Ekman 4254* (G, MO, K).

HONDURAS. Along Yragua Creek, 1 mile W of Copan Ruinas, 500 m, 29 Aug. 1975, *A. Molina R. 30846* (MO); Río Frio at edge of tall bunch-grass pine savanna, 1450', sandy soil, 16°34'N, 88°54'W, 13 Dec. 1959, *D.R. Hunt 266* (BM); Islas da Bahía, Guajaj, 9 Mar. 1988, *Vásquez 107* (BM).

MEXICO. **Campeche**. Campeche, 8 Nov. 1931, *C.L. Lundell 918* (BM, NY, US); Champoton, a 38 km al S del km 98 de la carretera Escarsega a Chetumal, sobre el camino a las ruinas de Calakmul, 200 m, 4 Feb. 1983, *E. Martinez S. 2960* (MO); Camino a Palizada entre Santa Adelaida a Santa Elena, 5 m, 28 Jan. 1986, *C. Chan 6049* (F); Calakmul, 9 km S of La Nueva Vida, on road Xpujil-Campeche, 22 Nov. 1997, *E.M. Lira 368* (BM); Calakmul, 10 km SE from Dos Naciones, road to El Civalito, 4 Dec. 1998, *E. Martínez 31463* (BM); Calakmul, a 3 km al E de 16 de Septiembre, camino a Santa Rosa, 299 m, 18°05'N, 89°14'W, 5 Dec. 1998, *E. Martínez 31503* (MO); Calakmul, a 11 km al S de San Antonio Soda, camino a Los Angeles, 200 m, 18°19'31"N, 89°10'30"W, 21 Feb. 2002, *E. Martínez 35000* (MO); Calakmul, a 3 km al NE de Conchuas, camino a Nadzacaan, 195 m, 18°33'21"N, 89°53'49"W, 23 Oct. 2002, *D. Alvarez 2211* (MO); **Quintana Roo**. Chichancanab (Laguna Chan-kabnab), 28–29 Jul. 1932, *J.R. Swallen 2761* (K, US); San Miguel, Cozumel Island, 6–8 Aug. 1932, *J.R. Swallen 2879, 2887, 2902* (US); Quintana Roo, Tancah, 4 Aug. 1932, *J.R. Swallen 2824* (US); Lake Tabasco, Bal-

ancan, 29 Oct. 1975, *A. Novelo & al. 30* (K, MO); Road between Mérida and Chunchuhub, 14 Oct. 1980, *O. Téllez 3669* (BM); Sobre el Km 4 de la Brecha, camino del Norte, 6 Nov. 1980, *E. Cabrera 99* (NY); Vallarta, 2 km S of Puerto Morelos, 13 Feb. 1981, *E. Cabrera 1129* (BM); 20–22 km W of Puertos Morelos, 5 May 1982, *G. Davidse & al. 20094* (BM, MO); 8 km N of Unión, 7 May 1982, *G. Davidse & al. 20142* (BM, MO); Near San José de la Montaña, on road to Tomás Garrido, W of Chetumal, 9 May 1982, *G. Davidse & al. 20261* (BM, MO); Othon P. Blanco, a 12 km al NO del poblado Río Verde, camino al Rancho El Vergel, 87 m, 19°04'N, 89°06'W, 30 Apr. 2004, *D. Alvarez 8769* (MO); **San Luis de Potosí**. Rascon, Río de Los Gallures, Aug. 1911, *C.A. Purpus 5438* (BM, L, MO, NY, US); **Tabasco**. Quintana Roo, S of F. Carrello Puerto, 8 Aug. 1980, *O. Téllez 3021* (BM); **Veracruz**. Vicinity of Río Tonto, Ejido de Almilinga, 6 km W of Campo Experimental de Hule El Palmar, Zongolica, 30 Jul. 1943, *J.V. Santos 2269* (NY); Panuco, Cerro de Topila, ladera de Santa Fé, 160 m, 22°06'N, 98°00'W, 26 Nov. 1985, *C. Gutierrez B. 1614* (MO); **Yucatán**. Izamal, s.d., *G.F. Gaumer 1032* (C, G, P, NY); Lak Chichankanab, Apr. 1917, *G.F. Gaumer & al. 23685* (G, NY, US); Chichen Itzá, 7–13 Jul. 1932, *J.R. Swallen 2445* (K, US), 2464 (US); Tizimin, 14–16 Jul. 1932, *J.R. Swallen 2518* (US); Peto, 26–27 Jul. 1932, *J.R. Swallen 2677* (K, US), 2713 (K, US), 2716 (K), *J.R. Swallen 2696, 2697, 2698, 2712, 2713* (MO, US); Muna, 22–23 Jul. 1932, *J.R. Swallen 2665* (US); 3 km W de Koncal, 16 Oct. 1993, *L. Rico & G. Campos 1177c* (K, US).

(16) *Lasiacis ruscifolia* (Kunth) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911. (Fig. 41).

Bas.: *Panicum ruscifolium* Kunth, Nov. Gen. Sp. Pl. 1: 101. 1816.

Type: “In aprici set aridis regni Mexicani, ad mont. Jorullo, alt. 490 hexap” (lectotype, designated here: P! [barcode P00128869] isolectotypes BM! [barcode BM000938728], P! Three sheets [barcode P00128868, P00128870, P00128871]).

[*Lasiacis ruscifolia* (Kunth) Hitchc. & Chase, Contr. U.S. Natl. Herb. 18(7): 339. 1917, *isonym*.].

(=) *Panicum compactum* Swartz, Adnot. Bot. 14. 1829, non Kit. (1814).

Type: “Jamaica, Swartz s.n.” (holotype: S [Acc. No. S06-633]; isotype BM ! [barcode BM000938725]).

(≡) *Lasiacis compacta* (Swartz) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911.

(=) *Panicum liebmannianum* E.Fourn., Mex. Pl. 2: 33. 1886.

Type: “Mexico, Consoquitla, Aug. 1841, Liebmann 299” (lectotype, designated here: C! [barcode C10017037];

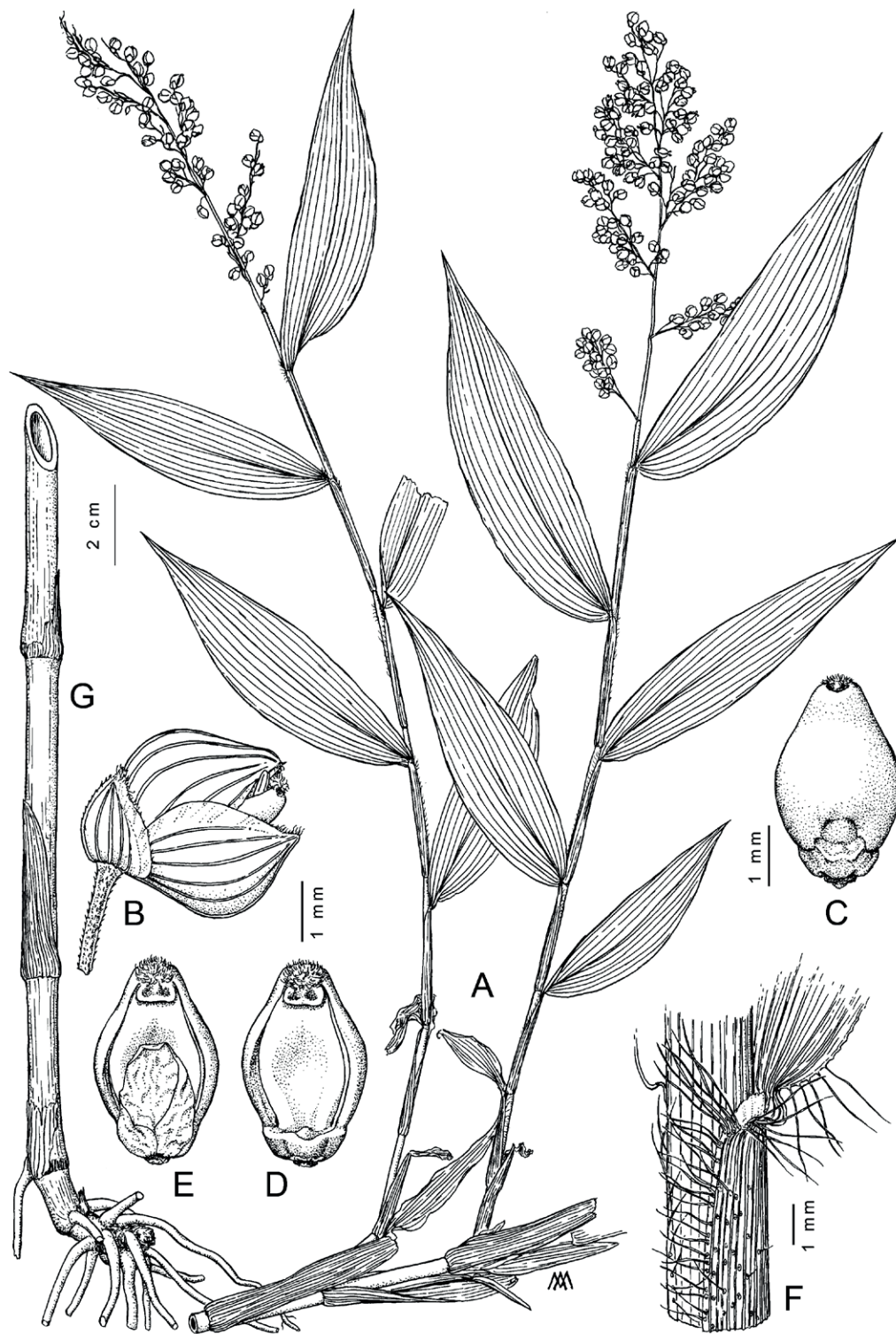


Figure 41. *Lasiacis ruscifolia* (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.: **A.** Habit with terminal fertile branches; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area **G.** Culm towards the base with persistent leaf sheaths and prop roots [A-G. from V. Nilsson & R. Manfredi 536 (K)]. *A.* Maury delineavit.

isoelectotypes: C! [barcode C10017036], US! Fragment from C [barcode US00148246]).

(=) *Lasiacis liebmannaiana* (E.Fourn.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911.

(=) *Panicum liebmannaianum* Fourn, var. *depauperatum* E.Fourn., Mex. Pl. 2: 33. 1886.

Type: “Mexico, inter Guatulco et S. Miguel del Puerto, Oct. 1842, Liebmanna 280” (lectotype, designated by Davidse 1978: C! [barcode C10017040]).

(=) *Panicum ruscifolium* Kunth var. *amblyoides* E.Fourn., Mexic. Pl. 2: 34. 1886.

Type: “Mexique, San Louis de Potosí, Virlet 1299” (**lectotype designated here**: P! [barcode P00642279]; syn-types: “Mexico, Consoquilla Mar 1842, Liebmanna 292”. C (n.v.); US! Fragment from C [barcode US00139950]; Cuernavaca, 14 Janv. 1865, Bilimek 449 P! [P00642280, P00642281, P02256074]).

(=) *Lasiacis globosa* Hitchc., Contr. U.S. Natl. Herb. 17: 251. 1913.

Type: “Mexico, Acapulco and vicinity, October 1894-March 1895, Dr. Edward Palmer 114” (holotype: US! [barcode US00134102]; isotypes GH (photo!) [barcode GH00023858], MO! [Acc. No. MO703510], US! [barcode US00134101]).

(=) *Lasiacis glabra* Swallen, Ceiba 4: 287. 1955.

Type: “Honduras, El Paradiso, road to Danlí, moist shady banks near Río San Francisco, 1 November 1951, J.R. Swallen 11193” (holotype: US! Three sheets [barcode US00134098, US00134099, US00134100]; isotypes G! [barcode G00099139], NY! [barcode NY00381280], P! [barcode P00633951]).

Nomina nuda

Panicum ruscifolium Kunth var. *amblyoides* E.Fourn. subvar. *glabra* E.Fourn., Mex. Pl. 2: 34. 1886. *nom. nud.*

Panicum ruscifolium Kunth var. *amblyoides* E.Fourn. subvar. *pilosa* E.Fourn., Mex. Pl. 2: 34. 1886. *nom. nud.*

Description

Perennials caespitose. *Culms* 1-8 m long, robust, erect at the base, arching, leaning on vegetation; *internodes* 5-14 mm thick, hollow, lignified, glabrous to puberulent,

sometimes pubescent; *nodes* glabrous. *Leaf sheaths* usually hispid, with hairs up to 3.5(-3.8) mm long, sometimes puberulent to glabrous, overlapping margins ciliate with hairs 0.5-2.3 mm long, auricles hairy with hairs up to 3 mm long; *collars* puberulent or glabrous, rarely pubescent; *ligules* 0.3-1.0 mm long, semi-inconspicuous, glabrous or ciliate with small hairs 0.5-0.8 mm long; *blades* 4.0-15 cm long, 1.5-6.0 cm wide, ovate to ovate-lanceolate, glabrous, puberulent to villous, base asymmetrical, enrolling the culm, margins scabrid, apex acute to acuminate. *Panicles* 5-25 cm long, dense to open and widely spreading at maturity, scabrous. *Spikelets* 2.5-4.0 mm long, 2.3-3.8 mm wide, ovate-globose; *lower glumes* 1.4-2.0 mm long, 0.8-1.5 mm wide, 9-13-veined; *upper glumes* 3.0-4.0 mm long, 1.8-2.5 mm wide, 11-13-veined; *sterile florets* without flowers, *lemmas* 11-14-veined, base of the fertile lemma with a clear protecting shelf, *paleas* 2/3 the length of the fertile floret, deeply concave; *fertile florets* 2.7-4.0 mm long, 2.0-3.0 mm wide, ovoid, darkish to black, *anthers* 1.5-2.2 mm long, whitish, *stigmas* white; *caryopses* 2.0-2.5 mm long, 1.5-2.0 mm wide. *Chromosome number*: $2n = 36$ (Tateoka (1962); $2n = 36$ (Reeder 1967); $n = 18$, $2n = 36$ (Davidse 1972, 1978).

Iconographs

Fig. 87 A-B (Renvoize 1998); Davidse (2003: 391); Lámina 158 (Catasús Guerra 2012b).

Vernacular names

El Salvador: “carrizo”, “carrizo montés”, “cebadita”, “arrocillo” (“padilla”) (Standley and Calderón 1925); **Mexico**: “carricillo”, “carrillo”, “kcuá”, “mehesit”, “otatillo”, “pacab”, “sit”, “thimaloon pakab”, “tsahib kw’a”, “tsakam pakamb”, “tsay’kw’s”, “tseey kw’a pulik”, “tsooy kw’a”, “tzaicuo” (Quattrocchi 2006), “zit”, (Steggerda 1943), “mehen zit” (Standley 1930; Roys 1931), “carrizito” (Rebman et al. 2016); **Nicaragua**: Managua, “caricillo” (Bro. A. Garnier 1241 (US); **Panama**: “carrizo” (Swallen 1943), “lágrimas de le Virgen”, S. Knapp 1241 (MO); **Puerto Rico**: “carrucillo”, “pito de alfombra” (Acevedo-Rodríguez and Strong 2012).

Ethnobotanical and economic uses

“Stems are used as whistles by Maya boys, water sucking stick, and for carpet weaving” (Staggerda 1943); “construction and technical uses, and in the thatching of huts” (Lipp 1971).

Distribution

Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Curaçao, Ecuador, El Salvador, Guatemala,

Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Perú, Uruguay, USA (Florida), Venezuela. (Fig. 42).

Distribution (bibliographic references)

Hitchcock (1911); Hitchcock (1913) as *L. liebmanni* (Four.) Hitchcock; Hitchcock and Chase (1917); Hitchcock (1920, 1927a, 1930); Standley and Calderón (1925); Standley (1937); Swallen (1931, 1934, 1936, 1943, 1955b); Pinto-Escobar (1966); Adams (1972); Beetle (1977); Fournet (1978); Steyermark and Huber (1978); Davidse (1978, 1994, 2001, 2003, 2007); Pohl (1980); Wiggins (1980); Gould and Moran (1981); MacVaugh (1983); D'Arcy (1987); Cialdella and Vega (1996); Renvoize (1998); Morales (2003); Zuloaga et al. (2003); Correa et al. (2004); Renvoize et al. (2006); Rodríguez et al. (2006); Davidse et al. (2007); Sutherland (2008); Hokche et al. (2008); Catasús-Guerra (2012a); Acevedo-Rodríguez and Strong (2012); Reberman et al. (2016); Villaseñor (2016); Arrieta Herrera

and Peterson (2018); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Deciduous and semi-deciduous forests, coastal vegetation, edges of sandy savannas, associated with shrubs. From sea level up to 1600 m [cf. Costa Rica: Nayarit, *M. de J. Sepulveda* S. 558 (MO)].

Phenology

June through February.

Remarks

Davidse (1978) cites as holotype the specimen P00128868, not reporting the other three specimens, all original material (P00128869, P00128870, P00128871). The fertile specimen (P00128869), here selected and designated as the lectotype matches better with the protologue (Kunth 1816) and the original description.



Figure 42. *Lasiacis ruscifolia* (Kunth in F.H.W. von Humboldt, A.J. Bonpland & C.S. Kunth) Hitchc.: general geographic distribution.

Lasiacis ruscifolia is closely related to *L. maculata* and the two species are often confused. *Lasiacis ruscifolia* is distinguished in having extremely broad ovate leaves, short ligules, and dense panicles with globose spikelets. The pubescence of the leaves is very variable from glabrous to densely pubescent plants in the same population (*pers. obs.* in Panama and El Salvador). The leaf width can range from 1 cm [J.D. Dwyer 2598 (MO)] to 5 cm [E. Asplund 5807 (FI, G, NY, P, UPS, US)]. The morphological polymorphism exhibited by this species has probably led to the high number of synonyms. Direct examination of the types states its gradual variation difficult to be expressed taxonomically either at species or infraspecific level. *Lasiacis ruscifolia* is widely distributed from the southern USA (Florida) throughout Central America and West Indies to South America to Argentina, one of the most widespread species in the genus. Beetle (1977) considered the synonym *L. globosa* as distinct species.

Selected specimens

ARGENTINA. Misiones. Matto Quemado, (Alto Uruguay), 27 Jan. 1947, B.S. Bertoni 3231 (P); Misiones, Iguazu, 25-30 Jun. 1963, Del Puerto & Brescia 2648 (US); Misiones, Iguazú, Puerto Bosetti, 13 Mar. 2003, H.A. Keller & F. Moskovich 2100 (G).

BELIZE. Cayo. Central Farm, Sep. 1964, R.H.L. Disney A380/D.2 (BM); El Cayo, Xunantunich, 2 Dec. 1968, R.R. Innes 92 (K); Altun Ha, 24 Aug. 1970, J.R. Wiley 562 (US); Belize Dustr., mile 42.5 on Northern Highway, N of Maskall River, 7 Jun. 1973, J.D. Dwyer 11005 (MO); **Corozal.** Port Sal, Aug. 1933, P.H. Gentle 104 (P); **Orange Walk.** Between Orange Walk and San Roman, 20 Aug. 1980, C. Whitefoord 2138 (BM, MO); Orange Walk, New River Lagoon, 13 Sep. 1992, C. Whitefoord 8163 (BM).

BOLIVIA. Santa Cruz. Prov. Andrés Báñez, 12 km E of center of Santa Cruz on road to Cotoca, 375 m, 17°46'S, 63°04'W, 9 Feb. 1987, M. Nee 34030 (G, NY, US).

BRAZIL. Amazonas. Río Branco, Serra do Mel, Aug. 1909, E. Ule 8017 (G).

COLOMBIA. Antioquia. Medellín, 5 Dec. 1930, W.A. Archer 756 (MA); Puerto Colombia, Oct. 1933, Bro. Elias 1098 (G, NY); Amalfi, Veredas Chorritos, La Maria, Montebello, km 15-35 en la vía a Chorritos-Los Monos, S-NE de Amalfi, 1180-1550 m, 06°40'N, 74°52'W, 6 Dec. 1989, R. Callejas & al. 9014 (MO); **Bolívar.** La Popa, near Cartagena, 50-175 m, 2 Nov. 1926, E.P. Killip & A.C. Smith 14082 (NY, US); Tierrabomba Island, Cartagena Bay, 4 Nov. 1926, E.P. Killip & A.C. Smith 14126 (MO, US); N of Arjona, 30-50 m, 15 Nov. 1926, E.P. Killip & A.C. Smith 14513 (NY, US); **Boyacá.** Santa Marta, 1898-1901, H.H. Smith 174 (G, L, MA, MO, NY, P, US); **Cundinamarca.** Vicinity of Apulo, 455 m, 5 May 1944, E.P. Killip & al. 38261 (US); Fusagasugá, 1952, Kœie s.n. (C); **Guajira.** Barrancas, cercanías al Tajo Oeste, 3 Mar. 1980, R. Fonnegra G. 1459 (MO); **Isla de San Andrés.** 15 Oct. 1956, A. Fernandez-Pérez 5194 (US); Providence, near the airport (Bailey), 10 m, 2 Sep. 1985, J.R.I. Wood 4734 (US); **Magdalena.** Magdalena, 24 Aug. 1943, O.L. Haught 3633 (BM); Hoya del Río Cesar, Hoya del Río Azucarbuena, El Callao Region, Hacienda Santa Marta, 200 m, 30 Oct. 1959, J. Cuatrecasas & R. Romero Castañeda 24922 (US); Pivijay, 22 Oct. 1961, R. Romero Castañeda 9096 (MO); **San-**

tander. Vicinity of Surata, 1700 m, 4-10 Jan. 1927, E.P. Killip & A.C. Smith 16476 (NY, US); **Valle.** Alto del Dinde, entre Cartago y Alcalá, 1200-1260 m, 16 Nov. 1946, J. Cuatrecasas 22909 (US).

COSTA RICA. Alajuela. Las Ventanas, Río Virilla, 31 Dec. 1950, J. León 2926 (US); Zurrúcare arretnc del Río zigate, 600 m, 20 Sep. 1992, C.O. Morales 414 (US); **Guanacaste.** Vicinity of Libano, 15 Jan. 1926, P.C. Standley & J. Valerio 44888 (US); Bebedero, 3 Feb. 1926, P.C. Standley & J. Valerio 46695 (US); 5-15 km S of La Cruz, 1 Jan. 1964, L.O. Williams & al. 26436 (US); Savanna near Río Guajiniquil on Bahía de Sta. Elena, 5 Jan. 1964, L.O. Williams 26703 (NY, US, W); Taboga, near Cañas, 13 Apr. 1966, R.W. Pohl & C. Calderón 9826 (US); Along Carratera Interamericana, 21 km N of Liberia, Curatella-Byrsonima savanna, 75 m, 31 Jul. 1966, R.W. Pohl & C. Calderón 10161 (US); 41 km NW of Liberia, along Carretera Interamericana, Curatella-Byrsonima savanna, 210 m, 2 Aug. 1966, R.W. Pohl & C. Calderón 10192 (US); Nicoya Peninsula, hills near 27 Abril and along the road to Playa Tamarindo, 20-80 m, 10°16'N, 85°46'W, 28 Dec. 1966, W. Burger & W. Ramirez 4117 (US); 5 km N of Cañas, Finca La Pacifica, 50 m, 24 Jun. 1968, R.W. Pohl & G. Davidse 10541 (MO); 5 km N of Cañas, Finca La Pacifica, 25 Oct. 1968, R.W. Pohl & G. Davidse 11335 (K, US); Puerto Castillo, 5 Dec. 1968, R.W. Pohl & G. Davidse 11562 (K, US), n = 18! (Davidse 1978); Vicinity of Cañas, 12 Sep. 1969, R. Daubenmire 169 (US); Hacienda Santa Rosa, 20 Jul. 1971, R. Callaway 10898 (US); About 8 km N of Liberia, 10°42'N, 85°27'W, 2 Aug. 1971, W.C. Burger & M. Burger 7855 (NY); Hacienda Santa Rosa, 1972, M. Montiel 20 (US); Orilla del camino a Playa Naranjo, Parque Nacional Santa Rosa, 1 Aug. 1974, J. Gómez Laurito 136 (US); Parque Nacional Santa Rosa, 12 Oct. 1974, J. Gómez Laurito 258 (US); Along the Río Corobici about 4 km NW of Cañas, 4 Jan. 1975, J. Taylor 18043 (US); Santa Rosa National Park, along dried up stream below Nature Trail, 100 m, 10°50'N, 85°37'W, 23 Jan. 1978, R. Liesner 4422 (MO); Santa Rosa National Park, 15 Jul. 1989, D.G. Furth 10 (MO); Area Conservacion Tempisque, Estación Palo Verde, bosque secundario, 10-100 m, 10°20'00"N, 85°21'10"W, 12 Dec. 1990, U. Chavarria 208 (MO); Parque Nacional Santa Rosa, 15 Jul. 1992, J.R. Grant & J.R. Rundell 92-01974 (MO, NY); Colorado de Abangares, 21 Oct. 1993, R. Chacón 75 (K); Cañas, 10°42'N, 85°25'W, 11 Nov. 1994, V. Nilsson & R. Manfredi 536 (K); Curú, road to Punta Quesera, 0-200 m, 9°46'N, 84°54'W, 16 Aug. 1995, A.C. Sanders & al. 17582 (MO); Cantón de Bagaces, Cuenca del Tempisque, 10°20'40"N, 85°20'28"W, 9 Dec. 1996, A. Rodriguez 1801 (NY); San Miguel, Laguna de Aramuaca, 22 Jan. 1999, R. Villacorta & al. 2693 (BM); Cantón de Bagaces, Cuenca del Tempisque, 10 m, 10°21'00"N, 85°17'55"W, 8 Dec. 1999, L. Acosta 188 (MO, NY); Bagaces, Parque Nacional Palo Verde, Cuenca del Tempisque, Estación Palo Verde, Camino a Sendero Las Colmenas, 10 m, 10°21'55"N, 85°22'40"W, 7 Dec. 1999, J.L. Chaves & al. 15 (MO); **Puntarenas.** 26 Oct. 1911, A.S. Hitchcock 8570 (US), 8571 (NY, US), 8577 (NY, US), 8581 (US); 3 km E of Barranca, 22 Oct. 1968, R.W. Pohl & G. Davidse 11278 (K, US), n = 18! (Davidse 1978); Islas San Lucas, Golfo de Nicoya, 5-25 m, 9°57'N, 84°54'W, 18 Oct. 1984, M. Grayum & al. 4157 (MO); Reserva Absoluta Cabo Blanco, Estación Cabo Blanco, 20-100 m, 9°35'N, 85°06'W, 4 Nov. 1991, U. Chavarria 287 (MO); Cantón de Aguirre, Cuenca del Naranjo y Paquita, Quebrada Grande Y Río Cotos, 30 Dic 1997, J. Morales 6336 (K); Puntarenas, Chomes, 10°7'15"N, 84°53'2"W, 14 Jan. 2002, R. Chacón 383 (K); **San José.** 1 km SW of Chimalir, 10 km NE of San Isidro del General, 875-900 m, 14 Jul. 1966, R.W. Pohl & C. Calderón 10048 (US); San José, Acosta, Cangrejal, 12 Dec. 2001, J. Quesada 901 (K).

CUBA. In Cuba Orientali, 1856-57, *C. Wright* 749 (G, MO); **Camaguey.** Palo Seco, in forest at foot of Loma decada, 3 Oct. 1922, *E.L. Ekman* 15318 (NY, US); **Habana.** Road from El Caney to San Vicente, Santiago, Nov. 1947, *Bro. Clemente* 5683 (US); **Nueva Gerona.** Isla de Pines, 14 Jan. 1904, *A.H. Curtiss* 291 (NY), 31 May 1904, *A.H. Curtiss* 520 (BM, G, K, L, MO, NY, P, US); Isle de Pines, Cerro San Juan del Mar, Columbia, 20 Feb. 1916, *N.L. Britton & al.* 14659 (NY, US); Isle of Pines, Vivijagua, 28-29 Feb. 1916, *N.L. Britton & al.* 15065 (US); Isla de Pines, Sierra de Casas, 18 Oct. 1920, *E.L. Ekman* 11721 (K, NY, US); Isla de la Juventud, Sierra Las Casas, 28 Apr. 1954, *E.P. Killip* 44165 (US); Woods at base of Sierra de Caballos, near Presidio, 19 Jan. 1955, *E.P. Killip* 44533 (US); **Oriente.** Ensenada de Mora, 26-29 Mar. 1912, *N.L. Britton & al.* 12979 (NY, US); S of Guantanamo, 4 Aug. 1913, *Bro. León* 3778 (NY, US); Roja, 100 m, 5 Mar. 1915, *E.L. Ekman* 4903 (US); Sabanaso, 27 Oct. 1915, *E.L. Ekman* 6535 (BM, G, K, NY, US); Mir, 22 Aug. 1916, *E.L. Ekman* 7578 (G); Santiago de Cuba, between Marimón et Boniato, in serpentine hills, 24 Nov. 1916, *E.L. Ekman* 7699 (US); Guantanamo, Finca Forment, 14 Nov. 1918, *Bro. Horam* 2240 (NY); **Pinar del Río.** Vicinity of Los Palacios, 8 Jan. 1912, *J.A. Shafer* 11684 (NY).

CURACAË. Mt. Christoffel, 12 Mar. 1999, *van Proosdij & al.* 1025 (K).

ECUADOR. **Guayas.** Oil Camp between Guayaquil and Salinas, 21-24 Jun. 1923, *A.S. Hitchcock* 20057 (NY); Oil Camp between Guayaquil and Salinas, 22 Jan. 1923, *A.S. Hitchcock* 20037 (US); Chongòn, 6 Mar. 1939, *E. Asplund* 5208 (BR, FI, G, NY, P); Guayaquil, 13 Apr. 1939, *E. Asplund* 5687 (BR); Guayaquil, 26 Apr. 1939, *E. Asplund* 5807 (FI, G, NY, P, UPS, US); Sabanilla, 25-30 m, 12 Apr. 1951, *M. Acosta Solís* 20582 (US); Capeira, km 21 Guayaquil to Daule, 20-200 m, 17 Sep. 1981, *C.H. Dodson & P.M. Dodson* 11309A (MO); Guayas, Guayaquil Canton, Bosque Protector Cerro Blanco, Carretera Guayaquil-Salinas, km 15, 100 m, 02°10'S, 79°50'W, 6 May 1992, *G. Tipaz & al.* 803 (MO); **Loja.** 23 km NW of Chaguarpampa on road to Balzas and the coast, 600 m, 4 Jun. 1990, *P.M. Peterson & E.J. Judziewicz* 9520 (MO); **Oro.** Bosque Petrificado Puyango, 80°05'W, 03°52'S, 7 May 1997, *B.B. Klitgaard & al.* 517 (NY); **Pastaza.** Colonia 24 de Mayo, side road to road Puyo-Puerto Napo, 15-20 km NE of Puyo, 27 Jun. 1972, *H. Lugo S.* 2497 (MO).

EL SALVADOR. **Ahuachapán.** Sierra de Apaneca, in the region of Finca Colima, 17-19 Jan. 1922, *P.C. Standley* 20109 (US); Vicinity of Ahuachapán, 9-27 Jan. 1922, *P.C. Standley* 19870 (MO, NY, US); Parque Nacional El Imposible, transecto 3, San Benito, 13°49'N, 89°56'W, 12 Dec. 1989, *A. Sermeño* 33 (MO); San Francisco Menéndez, El Corozo, Mariposario, 12 Apr. 2000, 2 Jul. 1959, *C.L. Lundell* 16106 (C, G); San Francisco Menéndez, El Corozo, Mariposario, 26 Sep. 2000, *J.M. Rosales* 1495 (BM); Santa Rita, 20 m, 13°48'N, 90°04'W, 14 Jan. 2004, *J.M. Rosales* 1870 (BM, MO); **Cuscatlán.** Cojutepeque a orillas de calle al Cerro de Las Pavas, 16 Jan. 1996, *R. Villacorta & E.A. Montalvo* 2324 (K); **La Libertad.** 1.5 km E of Apulo along the N shore of Lago Olopango, 600 m, 7 Jun. 1970, *G. Davidse & R.W. Pohl* 2033 (MO); La Libertad, San Diego, El Amatal, 21 Sep. 1997, *R. Aparicio & R. Rivera* 15 (K); La Libertad, Cafetale de Miguel E. Araujo, 13°39'33"N, 89°22'49"W, 7 Feb. 1998, *A. Monro & al.* 2267 (BM, MO); **La Unión.** Sierra de Conchagua, Gulf of Fonseca, 3 Dec. 1838, *Barclay s.n.* (BM); Vicinity of La Unión, 13-21 Feb. 1922, *P.C. Standley* 20660 (US); La Unión, Isla Martín Pérez, 11 m, 13°16"N, 87°44'W, 4 Dec. 2006, *D. Rodríguez* 649 (MO); **Morazán.** Montecristo, ca. 15 km NE of San Miguel, 8 Dec. 1941, *J.M. Tucker* 488 (K, US); **Santa Ana.** 15-18 Nov. 1911, *A.S. Hitchcock* 8850 (K,

NY, US); Santa Ana, San Miguel Ingenio, 11 km E of Metapán, 900 m, 11 Jul. 1971, *R.W. Pohl & L. Erickson* 12583 (MO), **n = 18!** (Davidse 1978); Parque Nacional Montecristo, 14°21'58"N, 89°24'08"W, 936 m, 13 Feb. 2016, *J. Menjivar & R.M. Baldini* 3691 (FT, LAGU, MHES, MO); **San Miguel.** Vicinity of San Miguel, 24-27 Feb. 1922, *P.C. Standley* 21138 (US); **San Salvador.** Vicinity of Tonacatepeque, 30-31 Dec. 1921, *P.C. Standley* 19421 (US), 19437 (NY); San Salvador, 1922, *S. Calderón* 510 (NY, US); Lake Illopango, 500 m, 13°38'16"N, 89°3'23"W, 3 Feb. 1998, *K. Sidwell & al.* 610 (BM, MO); **Sonsonate.** Nahuizalco, 12 Jan. 1898, *C.V. Hartman* 50 (FI); 28 Nov. 1911, *A.S. Hitchcock* 8979 (US), 8982 (NY, US); Santa Isabel Ishuatán, cerca del puente, el Ecuador, 430 m, 13°41'N, 89°33'W, 6 Nov. 2005, *D. Rodríguez* 158 (MO); **Usulután.** Puerto El Triunfo, caserio Ceiba doblada, 10 m, 13°12'N, 88°37'W, 26 Aug. 2003, *R.A. Carballo* 888 (MO).

GUATEMALA. **Alta Verapaz.** 1906, *H. von Türckheim* 809 (FI, L); Alta Verapaz, along access road to Finca Argentina above Papalha, 15 miles W of Telemán, 250 m, 19 Jul. 1977, *T.B. Croat* 41532 (MO); **Baja Verapaz.** Salamá, 4 Dec. 1896, *E. Seler* 2446 (US); Salamá Puente Barranca, al W de Salamá, 820 m, 15°06'N, 90°18'W, 24 Jul. 1988, *P. Tenorio L.* 14739 (MO); **Chiquimula.** Grassy plains and low slopes around Chiquimula, 400 m, 20 Oct. 1939, *J.A. Steyermark* 30083 (US); **El Progreso.** San Cristóbal Acasaguastlan, 200-300 m, 14°55'20"N, 89°49'20"W, 4 Oct. 2003, *A. Cobar* 998 (MO); **Guatemala.** From Guatemala City to El Chol, 850 m, 14°52'N, 90°37'W, 25 Jan. 1987, *T.B. Croat & D.P. Hannon* 63555 (K, MO); **Huehuetenango.** Trail between Nentón and Catarina, Sierra de los Cuchumatanes, 800-900 m, 3 Sep. 1942, *J.A. Steyermark* 51810 (US); Río Azul, Nentón, 670 m, 15°45'35"N, 91°50'W, 5 Dec. 2006, *M. Garcia* 2220 (MO); **Izabal.** Vicinity of Lago Izabal, shore of Río Sauce, 2 km N of Lake Izabal, E of El Estor, sea level, 89°0'-89°25'N, 15°15'-15°35'W, 1966, *G.C. Jones & L. Facey* 3054 (USJ), 3474 (US); Lake Izabal, 22 May 1966, *S.C. Snedaker* D 51 (NY); **Jalapa.** Mountains along the road between Jalapa and San Pedro Pinnula, 1400-1800 m, 12 Nov. 1940, *P.C. Standley* 77080 (US); **Jutiapa.** Between Jutiapa and Las Tunas, NW of Jutiapa, 850-900 m, 4 Nov. 1940, *P.C. Standley* 76224 (US); **Petén.** Yaxha-Remate Road, 16 Jun. 1933, *C.L. Lundell* 3862 (US); Lake Petén Itza, along north shore, W of San Andrés, 22 Jan. 1962, *C.L. Lundell* 17240 (US); North Shore Lake Petén, 19 Jun. 1973, *J.D. Dwyer* 11274 (US); Just N of El Cruce on road to Tikal, 19 Jun. 1973, *A. Gentry* 8319 (US); 2 miles E of Melchor, 16-18 Jun. 1973, *T.B. Croat* 24618 (K); SE part of Cerro Cauhui, 20 Apr. 1986, *R.L. Walker* 1244 (MO); Lago Petén Itza' ca. 1 km NNE-NE zentrum von San José, 115 m, 16°59'16"-25"N, 89°53'-54"W, 19 Aug. 1993, *B. Wallnöfer & F.M. Tut-Tesucun* 5958 (MO); **Retalhuleu.** Along Río Coyote, W of Retalhuleu, 300 m, 24 Feb. 1941, *P.C. Standley* 88381 (US); **Santa Rosa.** Jumaytepeque, Aug. 1892, *E.T. Heyde & Lux* 3899 (BM, G, US); **Suchitepéquez.** Cocales, 5 Jan. 1939, *P.C. Standley* 62085 (US); **Zacapa.** Rocky hills in vicinity of Santa Rosalia, 2 miles S of Zacapa, 200 m, 7 Oct. 1939, *J.A. Steyermark* 29294 (US); Zacapa, between Río Hondo and Santa Cruz, 11 Oct. 1940, *P.C. Standley* 74114 (K).

HONDURAS. **Atlántida.** Vicinity La Ceiba, Mt. Cangrejal, 5 Jul. 1938, *T.G. Yuncker & al.* 8226 (BM, G, K, MO, NY); Lancetilla Valley, near Tela, 6 Dec. 1927-20 Mar. 1928, *P.C. Standley* 52803 (US); Lancetilla Valley, 22 Jun.-27 Jul. 1929, *A.M. Chickerling* 9 (US); Ca. 8 miles W of Tela along the Highway to El Progreso, 40 m, 15°45'N, 87°33'W, 18 May 1991, *G. Davidse & al.* 34518 (MO); 33 km SE of Tela by road in Valley of Río Lean, 20 m, 26 Jun. 1970, *G. Davidse & R.W. Pohl* 2190 (MO); **Comayagua.** San Patricio, orilla del Río Yure, 200 m, 6-15 Feb. 1981, *C. Nelson*

& *al.* 7474 (MO); **Copán**. Along Copán River, vicinity of Copán Ruins Town, 18 Nov. 1969, *A. Molina & A. Molina* 24610 (NY); On thickets of Copan River vicinity Jaguar Temple of Copán, 600 m, 3 Jan. 1990, *A. Molina R. & A.R. Molina* 34262 (MO); **Córtés**. 10 Aug. 1961, *J. Dickson* 271 (FTG); 1 km S of Puerto Cortés, 50 m, 23 Jun. 1970, *G. Davidse & R.W. Pohl* 2169 (K, L, MO, NY, US); Aldea La Pita, 5 km SO de Puerto Cortes, 26–30 Nov. 1975, *C. Nelson & al.* 3021 (MO); S of Villanueva, 24 Sep. 1991, *M. Chorley* 407 (BM, MO); 2 km S of Omoa, 20 May 1987, *S. Blackmore & M. Chorley* 4000 (BM); **El Paraíso**. 8 km W of Oyo de Agua, 27 Oct. 1946, *L.O. Williams & A. Molina* 10736 (US); Drainage of the Río Yeguaré, 24 Aug. 1948, *A. Molina* 1085 (US); Entre Mata Indio y Lizapa, drainage of the Río Yeguaré, 25 Jul. 1951, *A. Molina* 4051 (US); Along Highway 17, 9 km S of Danlí, 760 m, 30 Dec. 1977, *R.W. Pohl & M. Gabel* 13424 (MO); **Islas de La Bahía**. Between Coxenhole and Flowers Bight Roatán Island, 20 Apr. 1967, *A. Molina* 20662 (NY, US); Islas de La Bahía, camino entre ciudad de Roatan y Fowers Bay, 10–13 Apr. 1974, *C. Nelson* 2087 (MO); **Morazán**. Río Yeguaré Valley, in forest along Santa Clara Creek, 800 m, 18 Aug. 1946, *L.O. Williams & A. Molina R.* 10343 (MO); Río de La Orilla, SE of El Zamorano, base of Cerro Majicarán, Nov. 1948, *P.C. Standley* 15177 (P); El Zamorano, along the road toward San Antonio de Oriente, 9 Aug. 1949, *P.C. Standley* 22316 (P); In barranco between Las Mesas and Sta. Clara Creek, 3 Sep. 1949, *L.O. Williams* 15956 (US); Vine in tree on slope of Cerro Majicoran above Río de la Orilla, 16 Oct. 1949, *L.O. Williams* 16928 (US); El Zamorano, above Agua Amarilla, Oct.–Nov. 1948, *P.C. Standley* 26683 (US); Morazán, vicinity El Zamorano, 22 Oct. 1951, *J.R. Swallen* 11008 (P, US); El Zamorano, Aug. 1960, *H.W. Pfeiffer* 1622 (US); SE of Tegucigalpa, edge of moist thicket of Río Rancho Quemado, 20–25 km road to Sabana Grande, 9 Nov. 1966, *A. Molina* 18651 (G); 8 km E of El Zamorano, 700 m, 14 Jun. 1970, *G. Davidse & R.W. Pohl* 2082 (MO); Orillas del Río Choluteca, al S de Tegucigalpa, 950 m, 30 Aug. 1981, *T.M. Mejía Ordóñez* 36 (MO); Tegucigalpa, Colonia La Primavera, 950 m, 3 Sep. 1981, *J.C. Soto* 75 (MO); Occasional in garden of vegetable shop of EAP El Zamorano, 800 m, 1 Jul. 2001, *A. Molina R. & A.R. Molina* 35161 (MO); San Antonio de Oriente, loc. Quebrada El Gallo, a orillas de la quebrada, 940 m, *J. Araque* 977 (MO); **Ocatepeque**. El Cerro, vicinity of San Antonio, 30 Aug. 1968, *A. Molina* 22466 (NY); **Olancho**. Along Río Olancho, W of main Tegucigalpa–Catamas Highway, ca. 1 km upstream from and NW of Puente Boquerón, 8.6 miles SW of Catacamas, 6 miles SW of Santa María del Real, 400 m, 14°45'N, 86°00'W, 4 Feb. 1987, *T.B. Croat & D.P. Hannon* 64094 (MO); **Santa Bárbara**. San Pedro Sula, Jul. 1888, *C. Thiem* 5585 (K, US); Aldea San Miguel, 5 km al N de Colinas bosque húmedo subtropical, 23 Jan. 1984, *R. Paz* 168 (NY); **Valle**. Amapala, 12 Nov. 1911, *A.S. Hitchcock* 8763 (US); Amapala, 12 Sep. 1945, *V. Rodríguez* 3422 (US).

JAMAICA. **St. Andrew**. Below Flamstead, 26 Nov. 1912, *W. Harris* 11469 (P); Blue Mts., Robertsfield, 3 Dec. 1912, *W. Harris* 11491 (P); **St. Elizabeth**. Near Black River, Font Hill, 18 Sep. 1907, *N.L. Britton* 1509 (NY); **Westmoreland**. Bluefields and vicinity, 22 Sep. 1907, *N.L. Britton* 1624 (NY).

MEXICO. **Apatzingán**. Aguililla, 12 Sep. 1939, *G.B. Hinton* 15156 (W); **Baja California**. Arroyo Hondo, near base of cliffs on north side of Cerro de la Giganta, 24 Nov. 1947, *A. Carter & L. Kellogg* 2023 (K, US); Baja California, Cañon del Cayco, east base of Cerro de la Giganta, Sierra de la Giganta, 7 Oct. 1951, *A. Carter & L. Kellogg* 3110 (US); Mexico, Baja California Sur, Unknown, Sierra de la Giganta; Arroyo Tabor., 25.7981 –111.3483, 150m, 7 Oct. 1970, *R. Moran* 18223 (SD); Baja California Sur, La Paz, Sier-

ra La Gata: southeast of San Juan de Los Planes and north of San Bartolo; along canyon & trail to the east of Rancho Palo Verde, 23.82594 –109.87641, 615 m, 8 Nov. 2016, *J. Rebman* 32016 (SD); **Campeche**. 28 km N of Escárcega, 7 Mar. 1982, *E. Cabrera* 2032 (BM, MO); Campeche, 18°32'14"N, 89°53'52"W, 11 Apr. 1995, *P. Zamora* 4866 (NY); Campeche, Calkmul, a 9 km al E de Constitucion, 150 m, 18°38'48"N, 90°15'45"W, 11 Dec. 1998, *E. Martínez S.* 31694 (MO); **Chiapas**. Escuinula, 1937, *E. Matuda* 2117 (K, NY, US); Santa Rosa, Río de la Cruz, E of Taxisco, 2 Dec. 1940, *P.C. Standley* 79009 (K); 14 miles E of Cintalpa, 28 Aug. 1953, *J.R. Reeder & C.G. Reeder* 2137 (US); Mapastepec, 30 Oct. 1960, *T. Tateoka* 1001 (US), **n = 18!** (Tateoka 1962); S of Sureste on road to Mal Paso, 17°15'N, 93°35'W, 24 Aug. 1965, *K. Roe & al.* 1432 (BM, US); La Trinitaria, along Highway 190, 11 miles S of La Trinitaria, 14 Oct. 1965, *D.E. Breedlove & P.H. Raven* 13247 (US); Venusiano Carranza, at Rancho Nacimiento along the road between Chiapilla and San Lucas, 23 Feb. 1966, *R.M. Laughlin* 277 (US); Venusiano Carranza, along the road from Acala to Pugilitil, 7 Nov. 1967, *A.S. Ton* 3180 (NY, US); Chiapa de Corzo, El Chorreadero, 28 Nov. 1967, *A.S. Ton* 3269 (NY); Tonalá, NW side of Cerro Veronal, 25–30 km SE of Tonalá, 400–600 m, 4 Oct. 1972, *D.E. Breedlove* 28329 (MO, NY); 14.8 miles S of Ocozocoautla on Highway 190, 9 Oct. 1976, *J. Brunken & C. Perino* 316 (US); Primeiro de Guillén, Tuxtla Chico, 9 Oct. 1984, *E. Ventura & E. López* 443 (BM); Tuxtla Gutierrez, El Zapotal, 25 Dec. 1984, *C. Cowan* 5029 (MO, NY); Chiapas, Tuxtla Chico, 29 Jul. 1985, *E. Ventura & E. López* 2156 (BM); Porvenir, Mun. de Tapachula, 28 Oct. 1985, *E. Ventura & E. Lopez* 2606 (G, P); Chicoasen, Mirador “Manos que Imploran”, 10 km al S de Chicoasen, 700 m, 8 Nov. 1988, *A. Reyes-García* 1147 (MO); 32 km S of Tuxtla Gutierrez, on road to Suchiapa, 19 Jul. 1990, *R.J. Hampshire & A. Reyes García* 1295 (BM, MA); Arriaga, 19 Oct. 1990, *J.C. Soto & al.* 13209 (BM); Ocosingo, NE del poblado Nuevo Guerrero, 17°0'0N, 91°45'W, 13 Jul. 2003, *G. Aguilar M.* 7385 (P); **Chihuahua**. 1885, *E. Palmer* 10 (BM, K, NY, P, NY); Guasaremos, Río Mayo, 20 Aug. 1936, *A. Gentry* 2402 (K, MO); **Chiquimula**. Between Ramírez and Cumbre de Chiquimula, 15 Oct. 1940, *P.C. Standley* 74531 (K); **Colima**. Alzada, 21 Sep. 1910, *A.S. Hitchcock* 411 (BM, C, L, MO, NY, P, US, W), 414 (BM, G, K, L, MO, NY, US, W); About 17 miles S of Colima, 19 Sep. 1953, *J.R. Reeder & C.G. Reeder* 2373 (MO, US); Mountain summits near pass ca. 11 miles SW of Colima on Manzanillo road, 21 Sep. 1958, *R. McVaugh* 18051 (US); About 14 miles N of Manzanillo on the road to Minatitlán on steep slopes with tropical vegetation, 24 Sep. 1974, *J.R. Reeder & C.G. Reeder* 6345, 6346 (US) **2n = 36!** (Reeder 1967); **Durango**. Near Huasemote, 15 Aug. 1897, *J.N. Rose* 3502 (K, US); **Guerrero**. Acapulco, 1894/95, *E. Palmer* 115 (BM, K, MO, NY, US); El Calabazal, 15 Oct. 1898, *E. Langlássé* 458 (G, P, US); Temisco, Barranca de la Julia, 1 Nov. 1937, *Y. Mexia* 8717 (BM, G, K, MO, NY, US); Beyond Acahuizotla, on Highway to Acapulco, 30 Sep. 1949, *H.E. Moore* 5107 (BM, C, G, US); In open pine-oak forest along road from Almoloya-Teloloapan-Iguala, 10 Oct. 1953, *E.R. Sohn* 966 (K, US); 9 miles SW of Tierra Colorado, 14 Nov. 1964, *J.R. Reeder & C.G. Reeder* 4156 (US); Est edge of beach at Puerto Marques, just E of Acapulco, 23 Nov. 1975, *A. Lasseigne* 4966 (MO, NY); Atoyac, carretera a El Paraíso, 21 km al NE de Atoyac, cerca de Río Santiago, 720 m, 3 Nov. 1979, *S.D. Koch & al.* 79302 (MO); A 2 km al NE de Guayameo, camino Zirandaro-Guayameo, 720 m, 13 Jul. 1982, *E.M. Martínez S.* 1359 (US); Petatlán, En Rancho Alegre, 4 km al de Coyuquilla, 23 Oct. 1985, *J.C. Soto & al.* 11346 (MA, US); Petatlán, NE de Coyuquilla, camino al Porvenir, 23 Oct. 1985, *J.C. Soto & al.* 11337 (MA); 16 km al N del Ocotito, carretera Tierra Colorada-

- Chilpancingo, 4 Dec. 2004, *R. Torres C. 16788* (HUEFS); **Jalisco**. Guadalajara, near Río Grande de Santiago, 26 Aug. 1941, *W. & M. Leavenworth 1901* (MO, NY); 18 miles NW of Magdalena, 21 Sep. 1953, *J.R. Reeder & C.G. Reeder 2399* (MO, US); Steep rocky mountainsides, on limestone, 8 miles SW of Pihuamo, 6 Dec. 1959, *R. McVaugh & W.N. Koelz 1498* (G); 16 miles SW of Autlan, 7 Oct. 1960, *R. McVaugh 19975* (US); Playa de Cuastecomate, 8 km road NW of Barra de Navidad, 6 Nov. 1960, *R. McVaugh 20761* (NY, US); Hills between Bahía Navidad, and La Manzanilla on Bahía Tenacatita, east-facing summits 3 miles W of the Autlan-Navidad Highway, 12 Nov. 1960, *R. McVaugh 21022* (US); Wooded hills 2 miles above, N of, La Cuesta, road La Talpa de Allende, 19 Nov. 1960, *R. McVaugh 21144* (NY, US); 2 km S de Puerto Vallarta, 11 Nov. 1963, *J. Rzedowski 17729* (US); About 2 km N of Puerto Vallarta, 13 Nov. 1963, *C. Feddema 2544* (NY, US); 2-6 km SE of La Manzanilla, above Bahía Tenacatita, 6 Dec. 1970, *R. McVaugh 25036* (NY, US); Puente Hidalgo, crossing of Río Grande de Santiago on the Guadalajara-Zacatenas Highway, 1200 m, 20°50'N, 103°21'W, 15 Aug. 1973, *M.C. Johnston & al. 12243* (MO, NY); Ca. 6 miles N of La Resolana (Casimiro Castillo) on route 80, 11 Oct. 1976, *T.F. Stuessy & R.C. Gardner 4140* (MO); Puerto Vallarta, ca 5 km W of the center of town, 175 m, 6 Nov. 1983, *R. Soreng 2185* (US); 2 km W of La Palomita on road to El Divisadero, ca. 23 km ESE of Tomatlan, 19°52'N, 105°02'W, 14 Jan. 1979, *H.H. Iltis & M. Nee 1620* (MO, US); 10 km E of Villa Corona on Highway 80, 16 Sep. 1983, *W.R. Anderson 12668* (NY); El Limón, La Tabaquera, 2.5 km al W de El Limón, por carretera a El Grullo, 950 m 11 Oct. 1986, *F.J. Santana & al. 2261* (MO); El Limón, Rancho El Recodo 2 km al E de San Miguel Hidalgo, 1 Oct. 1987, *F.J. Santana 2960* (NY); La Huerta, Rancho Cuixmala, 19°26'N, 104°59'W, 3 Nov. 1991, *E.J. Lott 4003* (US); **Michoacán**. From El Temascal, on road to Heutamo, 12 Nov. 1949, *H.E. Moore & al. 5665* (BM, US); Old lava flows 4 miles NW of Apatzingán, 16 Sep. 1958, *R. McVaugh 17925* (G, NY, US); West facing slopes of Sierra Madre del Sur, ca. 22 kms N of Playa Azul, region of Los Encinos, 25-31 Oct. 1961, *R.M. King & T.R. Soderstrom 4925* (NY, US); Mugica, along the autopista Labaro Cardenas-Morelia, 5.5 km NE of the exit for Nueva Italia, just W of the Río El Marqués, 19°01'44"N 102°03'19"W, 2 Sep. 2001, *V.W. Steinmann 1913* (NY); **Morelos**. Near Yauatepec, 3 Oct. 1902, *C.G. Pringle 11293* (K, MO, US); Xochitepec, 24 Sep. 1938, *E. Lyonnet 2658* (BM); **Nayarit**. María Madre, Tres Marias Islands, 23 Oct. 1925, *R.S. Ferris 5656* (US); Road from Tepic to Compostello, 13 Sep. 1926, *Y. Mexia 597* (BM); About 50 miles NW of Tepic, 23 Sep. 1953, *J.R. Reeder & C.G. Reeder 2423* (MO, US); On the bajada, ca. 19 miles NW of Tepic, Highway to Mazatlan, 15 Nov. 1959, *R. McVaugh & W.N. Koeltz 722* (US); Valle de Bandeiras, 1 km al N de El Cuatante, 18 Nov. 1963, *J. Rzedowski 17880* (US); Pochotitlan, 15-20 km al E de Francisco I. Madestro, 4 Oct. 1987, *O. Téllez V. 10788* (NY); Ixtlan, 5-6 km de la terracería a Cascalutan, 1100 m, 21°05'N, 104°17'W, 22 Sep. 1989, *O. Téllez V. 12323* (MO); Nayar, km 2-4 de la vereda de la Mesa del Nayar al Cangrejo (Villa de Guadalupe), cruzando el barranco, 900-1200 m, 20 Oct. 1989, *O. Téllez V. 12462* (MO); Nayar, P.H. Aguamilpa aprx. A 20 km al SE de la Cortina o a 5 km al N del poblado Colorado de la Mora, 200 m, 21°43'N, 104°39'W, 5 Oct. 1993, *F. Franco & al. 2975* (MO); **Oaxaca**. Dec. 1900, *C. Conzatti 1103* (US); Vicinity of Cafetal Concordia, 1-15 Apr. 1933, *C.V. Morton & Makrinus 2441* (K, US); Villa Alta, from Temascalpa to San Ildefonso de Villa Alta, 29-30 Oct. 1944, *J.V. Santos 3534* (NY, US); 11 miles W of Zanatepec, 28 Aug. 1953, *J.R. Reeder & C.G. Reeder 2156* (US); Chiltepec, Tuxtepec, 15 Jul. 1965, *G.M. Calderón 120* (MO, NY); Barranca de Río Grande on road to San Lorenzo, near Mitla, 22 Jan. 1966, *W.R. Ernst 2285* (US); Jamiltepec, 3 km NE of Flores Mágón, 18 Nov. 1982, *P. Tenorio & al. 2725* (BM); Tuxtepec, Mun de Soyaltepec, N end of eastern dam, 2 km N of Hidroeléctrica Temascal, 60 m, 18°14'N, 96°23'W, 21 May 1986, *R.E. Gereau & al. 2235* (MO); Uxpanapa Region, along gravel road between Esmeralda and Río Verde, 1.1 miles S of Esmeralda, 100 m, 17°10'N, 94°45'W, 19 Jan. 1987, *T.B. Croat & D.P. Hannon 63308* (MO); Tehuantepec, Santo Domingo, 16°1'16"N, 95°25'14"W, 31 Aug. 1999, *J. Rivera & al. 1847* (NY); Pochutla, San Miguel del Puerto, Zimatán, 15°56'10"N, 96°2'30"W, 24 Sep. 1999, *C. Perret & al. 532* (NY); Tehuantepec, Santiago Astata, Los Guayacanes, E de la Brecha a Chacalapa, 15°53'28.3"N, 95°55'14.6"W, 26 Oct. 2001, *S.H. Salas & al. 4213* (P); **Quintana Roo**. Tancah, 4-5 Aug. 1932, *J.R. Swallen 2808* (US); En San José, a 8 km al S de la carretera Chetumal-Escarcega, sobre camino a Tomas Garrido, 5 Sep. 1980, *O. Téllez & L. Rico 3368* (MO); San Felipe Bacalar, 57 km N of Chetumal on road to Cancún, 8 May 1982, *G. Davidse & al. 20213* (BM, MO); **San Luis de Potosí**. Tamazunchale, 7 Nov. 1937, *M.T. Edwards 478* (BM, MO, US); In a tropical forest between Narango-Platinito-Salto de Agua, 22 Sep. 1954, *E.R. Sohns 1408, 1417* (K, US); **Sinaloa**. Mazatlan, Sep. 1932, *J.G. Ortega 7058* (BR, G); Sinaloa, Imala, 19 Nov. 1939, *H.S. Gentry 4981* (MO, US); Cerro Llano Redondo, W of Caymanero, 8 Oct. 1944, *H.S. Gentry 7097* (NY, US); Along the road to Micro Ondas La Palma, 1.3 miles E of Mexico Highway 15, this road junction at km 225, about 26 miles S of Mexico Highway 40 junction S of Mazatlan and about 1.5 miles N of Rosario, 6 Oct. 1975, *J.L. Reveal & R.M. Harley 4020* (MO, US); Along the dirt road from Rosario to Plomosas, 8 Oct. 1975, *J.L. Reveal & R.M. Harley 4061* (K, MO, NY, US); Above La Reforma, 6 Nov. 1977, *M. Kimnach & al. 2022* (US); **Sonora**. SW slopes of Babiso Mts., 18 miles SE of Magdalena, 12 Sep. 1934, *I.L. Wiggins 7148* (US); Mescales, Río Mayo, 21 Jul. 1936, *A. Gentry 2290* (K, MO); Ravines and slopes of the Sierra Batuc, 8 miles NE of Matape, between Matape and Batuc, 9 Sep. 1941, *I.L. Wiggins & R.C. Rollins 430* (MO, NY, US, W); 13 miles W of Santa Ana on old road to Yécora, 22 miles E of Nuri, 9 Oct. 1976, *R. Spellenberg 4596* (NY); **Tabasco**. La Palma, 1 Jun. 1939, *E. Matuda 3292* (US); Ca. 21 km W of Cardenas, 15 Aug. 1974, *J. Conrad & R. Conrad 2966* (K, MO); **Tamaulipas**. Vicinity of Marmolejo, 2 Aug. 1930, *H.H. Bartlett 10796* (NY, US); Tampico, 28 Jul. 1946, *G.L. Fisher 46193* (US); Between La Concepcion and Aldama on the Aldama-Soto, la Marina Road, 27 Sep. 1956, *F.M. Martínez 2182* (US); Top of Mesa de Llera, 35 miles by Highway S of Victoria, 26 Sep. 1960, *M.C. Johnston 5754* (US); Aldama, ca. 40 km NE of Aldama near Barra del Tordo, 97°2'W, 23°45'N, 21 Sep. 1981, *P.A. Fryxell 3696* (NY); **Temascaltepec**. Plaza de Callos, 18 Sep. 1932, *G.B. Hinton 1767* (G, NY, US); Tenayac, 28 Sep. 1933, *G.B. Hinton 4847* (BM, NY, US); **Veracruz**. San Antonio, 1 Jan. 1926, *G.J.N. Woronow 2182* (US); Misantla, Aug. 1912, *C.A. Purpus 5978* (BM, G, L, MO, NY, US, P); Region of San Andrés Tuxtla, 7 Aug. 1953, *R.L. Dressler & Q. Jones 5* (BM, NY, US); La Laja, 14 Nov. 1963, *H.S. McKee 10955* (P); Michoacán, Chila, 8 km NW de Aquila, 23 Nov. 1963, *J. Rzedowski 17932* (US); 1 mile E of Santiago Tuxtla, 8 Aug. 1965, *J.R. Reeder & C.G. Reeder 4333* (US), **2n = 36!** (Reeder 1967); Tlaliscoyan, 20 Nov. 1967, *G.M. Calderón 1561* (BM, NY); Catemaco, 24 Sep. 1971, *J.I. Calzada 534* (BM, MO); Catemaco, E side of entrance of Laguna de Sontecomapan into Gulf of Mexico, 7 km of Sontecomapan, 18°33'30"N, 94°59'W, 1 Nov. 1981, *M. Nee 22602* (MO, NY); Puente Nacional, 6 km SW of Conejos junct., Conejos-Totutla Highway, 19°17'N, 96°32'W, 13 Nov. 1981, *M. Nee 23073* (MO, NY); **Yucatán**. Izamal, 1895, *G.F. Gaumer 878* (C, G,

MA, MO, NY, P, UPS, US, W); Chichen Itza, 7-13 Jul. 1932, *J.R. Swallen* 2396, 2398, 2418 (US); Uxmal, 20-21 Jul. 1932, *J.R. Swallen* 2635 (K); Peto, 16-27 Jul. 1932, *J.R. Swallen* 2694, 2717 (US); Uxmal, 29 Sep. 1959, *O. Degener & I. Degener* 26760 (NY, US, W); Mayacan, 24 Jan. 1971, *A.A. Beetle* 957 (US); Vicinity of grutas above Calcehtok, 16 Jul. 1982, *D.A. White* 205 (NY); Vallaloid, Xuilub, 25 m, 88°04'W, 20°23'N, 14 Oct. 1989, *B. Mogensen* 1143 (MO, NY); Yucatán, Uxmal, 30 m, 6 Oct. 1995, *M. Piepenbring* 1865 (US); Sotuta, Cenote Xmucuy, Sotuta-Tixcacaltuyub, 20°33'32"N, 88°59'47"W, 24 Sep. 1996, *C. Espadas & al.* 106 (NY); Entrada a Izamal, 20°56'44.5"N, 89°04'20.9"W, 10 m, 13 Oct. 2010, *J.E. López Contreras* 1083 (G).

NICARAGUA. **Boaca.** 24 Jan. 1970, *F.C. Seymour* 3841 (BM, MO, NY); 2 km al N de Boquito, camino a Santa Lucia, 12°28'N, 85°44'W, 21 Oct. 1982, *P.P. Moreno* 18123 (MO); **Cara-zo.** Jinotepe 3-7 Nov. 1911, *A.S. Hitchcock* 8676 (NY, US), 8719 (K, NY, US); **Chinandega.** El Realejo, Feb. 1838, *G.W. Barclay* 2058 (BM, MO, US); Corinto, 10 Nov. 1911, *A.S. Hitchcock* 8743 (NY, US); Potosí, 1 Dec. 1973, *D.A. Marshall & D.A. Neill* 6608 (NY); El Viejo, Reserva Natural de Consiguina, Comunidad La Salvia, 50 m, 13°00'N, 87°37'W, 28 Dec. 2006, *I. Coronado & R.M. Rueda* 3566 (MO); **Chontales.** 2.8 km N of Cuapa, roadside, pastures, along a small stream, 21 Jan. 1978, *P.C. Vincelli* 68 (MO); Hacienda Veracruz, including Cerro La Batea and Cerro Los Charcos, 120-475 m, 12°11'N, 85°21'W, 4-6 Aug. 1983, *W.D. Stevens* 22424 (MO); **Estelí.** Reserva Cerro Tomabú, Comunidad Las Cuevas, 1000-1300 m, 13°01'N, 86°17'W, 24 Feb. 2000, *R. Rueda & al.* 12891 (MO); Estelí, Miraflores, Moropotente, parcela 2 en la Comunidad El Coyolito en la propiedad del Sr. Alberto Rugama, 910 m, 13°12'43"N, 86°19'50"W, 23 Oct. 2007, *N.P. Rugama* 26 (MO); Condega, Comunidad Venecia, 600-800 m, 13°24'60"N, 86°14'25"W, 24 Jan. 2008, *C.A. Padilla Gomez* 195 (MO); **Granada.** Extinct Volcano Mombacho, 9 Jan. 1969, *D.A. Dudey & A.D. Moore* 1948 (NY); Isla Zapatera, costado NE de Hacienda Santa Maria, 100 m, 11°45'05"N, 85°50'28"W, 22 Nov. 1982, *A. Grijalva* 1870 (MO); Granada, Reserva Natural Mombacho, 1150-1350 m, 11°50'27"N, 85°58'59"W, 2 Dec. 2003, *R. Rueda & D. Paguaga* 17662 (MO); **Jinotega.** Al NE de Wiwili, camino entre El Carmen y Wamblan, ca. 1 km al N del Carmen, 300-400 m, 13°43'N, 85°46'W, 2 Mar. 1980, *M. Araquistain & P.P. Moreno* 1521 (MO); Wiwili, Comunidad de Inipuwas, Caño Wayawas, Transecto 8, Caceria (Limsitingni), 135 m, 14°23'N, 85°09'W, 10 Nov. 2005, *I. Coronado & al.* 2568 (MO); Entre Yali y San Rafael del Norte, 936 m, 13°17'34"N, 86°11'09"W, 5 Sep. 2010, *I. Coronado & al.* 5446 (MO); **León.** Quesalguague, 17 Jan. 1903, *C.F. Baker* 2105 (G, K, MO, US, W); Isla Momotombito, NW slope, 40-300 m, 12°21'N, 86°28'W, 11 Jun. 1979, *W.D. Stevens & al.* 13237 (MO); Sauce, camino entre El Sauce y el empalme de Villa Nueva, 150 m, 12°55'N, 86°49'W, 10 Dec. 2006, *I. Coronado* 3555 (MO); Salinas Grande, Isla Juan Venado, 12°18'N, 86°59'W, 2 Jan. 2009, *I. Coronado & R.M. Rueda* 5053 (MO); **Managua.** Vicinity of Managua, 30 Jun. 1923, *W.R. Maxon & al.* 7546 (US); Managua, Tipitapa, 31 Dec. 1969, *F.C. Seymour* 2831 (BM, NY); 27 km S of Managua along Highway 8, 15 Jul. 1970, *G. Davidse & R.W. Pohl* 2379 (K, L, MO, NY, US); Gallery forest long Río Santa Clara, near km 34.5 carretera a León, 150 m, 2 Nov. 1977, *D. Neill* 2875 (M); Laguna de Apoyequé, 200 m, 12°15'N, 86°20'W, 10 Nov. 1989, *P.P. Moreno* 27169 (MO); **Masaya.** 1-8 Nov. 1911, *A.S. Hitchcock* 8710 (NY, US); Masaya, Lake Masaya, 11 Jan. 1970, *J.T. Atwood* 3289 (BM, MO, NY); Parque Nacional Volcán Masaya, 250 m, 11°59'N, 86°07'W, 26 Aug. 1978, *D.A. Neill* 4624 (MO); **Matagalpa.** Along Highway to Magatalpa, 29 Oct. 1968, *A. Molina* 22858 (G, NY); **Nueva**

Segovia. 3 km W of Ocotal, 20 Dec. 1968, *D.A. Dudey* 778 (K); Nueva Segovia, 3 km W of Ocotal, 20 Dec. 1968, *F.C. Seymour* 845 (BM, NY); **Rivas.** Rivas, Sapoa, 7 Jan. 1969, *R.B. Hamblett* 1874 (BM, NY); Isla Omotepe, Volcán Maderas, Blague, Hacienda Magdalena, camino entre Balgue y la hacienda, 50-150 m, 11°29'N, 85°31'W, 30 Apr. 1984, *W. Robleto* 62A (MO).

PANAMA. **Chiriquí.** Burica Peninsula, Corotu, 6 km W from the airport of Puerto Armuelles, 60-100 m, 8°16'N, 82°54'W, 23 Feb. 1973, *P. Busey* 574 (MO); **Coclé.** Aguadulce, 5 Dec. 191, *H. Pittier* 4998 (US); Fort Clayton, 4 miles W Anton on Río Chico, 8 Dec. 1965, *J.D. Dwyer* 2598 (MO); Roadside pasture 20 miles S of Nata, 13 Apr. 1970, *T.B. Croat* 9642 (MO); Nata, low disturbed llanos, 27 Dec. 1970, *S. McDaniel & E.L. Tyson* 14732 (MO); Cole-tada alrededores de Aguadulce, 10 Nov. 1972, *N. Lezcano* 26 (MO, PMA); Río "Las Mendozas" Penonomé, 6 Oct. 1974, *J. Henriquez* 14 (MO, PMA); **Herrera.** 13 Sep. 1938, *P.H. Allen* 797 (MO); Banks of Río Santa Maria, 23 Dec. 1966, *D. Burch & al.* 1187 (MO); 5 km W of turnoff from Highway 105 to Potuga, roadside fields and pastures, 24 Oct. 1978, *B. Hammel* 5275 (MO); Canazas, Divisa, 20 Apr. 1996, *N. Flores* 71 (PMA); **Los Santos.** Monagre beach, 29 Jul. 1963, *J.D. Dwyer* 4181 (BM, US); Las Tablas, 9 Aug. 1962, *J.D. Dwyer* 2529 (US); Road between Tonosí and Guanaco, 28 Feb. 1963, *W.L. Stern & al.* 1865 (MO, US); **Panamá.** Canal Zone, Chepo, Oct. 1911, *H. Pittier* 4688 (BM, NY, US); Canal Zone, jungle along the shore, Taboga Island, 12 Sep. 1911, *A.S. Hitchcock* 8068 (US); Canal Zone, in vicinity of Balboa, 9 Nov. 1911, *A.S. Hitchcock* 8060 (US); Canal Zone, between Panamá and Corozal, 17 Dec. 1911, *A.S. Hitchcock* 9204 (NY, US); Bella Vista, 29 Sep. 1912, *E.P. Killip* 4040 (NY, US); Canal Zone, vicinity of Gatuncillo, 26 Feb. 1923, *C.V. Piper* 5257 (US); Toboga Island, Dec. 1923, *P.C. Standley* 27870 (US); Canal Zone, Balboa, Nov. 1923-Jan. 1924, *P.C. Standley* 26077 (MO, US); Panamá, Punta Paitilla, 12 Jan. 1924, *P.C. Standley* 30807 (US); Panamá, Toboga Island, 25 Jan. 1935, *P.H. Allen* 137 (G, MO, US); Trapicho Island, off coast of Pedro Gonzalez, Perlas Islands, 4 Jul. 1941, *P.H. Allen* 2624 (MO, US); San José Island, Gulf of Panamá (about 55 miles SSE of Balboa); Panamá, Río Oharco-Espiritu on Tocumen Highway, 25 Sep. 1962, *J.A. Duke* 5702 (MO); Canal Zone, Farfan Beach Area, 23 Oct. 1965, *E.L. Tyson* 1806 (MO, US); San José Island, Perlas Archipelago, 1 Oct. 1945, *J. Harlow* 73 (US); San José Island, Perlas Archipelago, 25 Jan. 1946, *I.M. Johnston* 1255 (US); Canal Zone, Madden Dam, 10 Aug. 1960, *J.E. Ebinger* 858 (MO, US); Paitilla, 26 Nov. 1960, *D. Sucre* 123 (MO); Perlas Archipelago, Isla de La Bayonetia, 22 Aug. 1961, *J.D. Dwyer* 1752 (US); Canal Zone, Fort Clayton, Los Santos, 16 mi S Macaracas at Quebrada Bejuco, 22 Jan. 1966, *E.L. Tyson & al.* 3096 (SCZ); Chimán, 12 Dec. 1967, *W.H. Lewis & al.* 3328 (MO, PMA); Saboga Island near village, Las Perlas Islands, 19 Dec. 1968, *E.L. Tyson* 5150 (MO, US); Canal Zone, Los Santos, 5 mi S of Pocri, roadside near cultivated garden, 14 Apr. 1970, *T.B. Croat* 9739 (MO, SCZ); Morro Island, just off N shore of Toboga Island, 25 Dec. 1974, *S. Mori & J. Kallunki* 4075 (MO, PMA); Canal Zone, Fort Kobbe, Farfan area, 9 Nov. 1975, *W.G. D'Arcy* 9619 (MO); Punta Chame, 10-15 miles from Pan American Highway, mangroves and savannas surrounding tropical dry forest, sea level, 17 Sep. 1981, *S. Knapp* 1241 (MO); Cerro Ancon, 8 Oct. 1995, *B. Wong* 71 (PMA); Amador, 1 Jul. 1995, *C. Guerra* 394 (PMA); Carretera a Veracruz & instalaciones del Hospital de Palo Seco, 8°54'43"N, 79°33'51"W, 45 m, 27 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 907, 908, 909 (FT, PMA, SCZ); **Veraguas.** Puerto Mutis, 12 miles S of Santiago, 27 Dec. 1968, *E.L. Tyson* 6028 (MO, US); Camino a Santa Fé, 27 Dec. 1971, *J. Cisneros* 20 (MO, PMA); Llegando a la primera quebrada de Santiago, 28 Nov. 1985, *E. Rodriguez* 64 (MO, PMA).

PERÚ. Huachocolpa. Quintabamba, 850–900 m, 21 Apr. 1963, O. Tovar 4141, 4144 (US); **Tumbes.** Cerros de Amotape, Quebrada Los Conejos and adjacent ridge, ca. 25 km SE of Chiriquelike, 600–850 m, 04°09'S, 80°37'W, 10 Jun. 1987, A. Gentry & C. Diaz 58299 (MO).

USA. Florida: Manatee Co. Tierra Ceia Island, 3 Oct. 1983, J. Beckner 2633 (FTG).

VENEZUELA. Anzotegui. 21 km E of Piritu along Highway 9 to Barcelona, 15 m, 15 Dec. 1973, G. Davidse 5020 (MO, US); Miranda, Boca del Pao, 08°03'20"N, 64°19'28"W, 20 Feb. 1985, A. Castillo & A. Capobianco 1878 (MO); **Carabobo.** Hacienda Taborada, near El Palito, on the road from Valencia to Puerto Cabello, 0–200 m, 31 Dec. 1917, H. Pittier 7686 (US); **Guárico.** 14 km N of Dos Caminos along Highway 2 to San Juan de Los Morros, 180 m, 12 Nov. 1971, G. Davidse 3012 (MO), **n = 18!** (Davidse 1978); Aragua, 2.5 km directly S of Cata, 50 m, 15 Nov. 1971, G. Davidse 3120, 3125 (MO); 15 km SW of Tamaco along carretera between Altigracia de Orituco and Chaguaramas, 150 m, 19 Nov. 1973, G. Davidse 4220 (MO), **n = 18!** (Davidse 1978); Carretera Calabozo–San Fernando de Apure, 8°45'S, 67°32'W, 27 Jul. 1974, G. Morillo & al. 4256 (NY); **Lara.** Palavecino, Hacienda Moron, 2 km fuera del caserio Quebrada Seca hacia Barquisimeto, carretera entre Broto y Acarigua, 19 Jul. 1978, C. Burandt Jr. 298 (MO); **Táchira.** Middle slopes of Cerro El Rayo, between Aguas Calientes and La Rinconada, 550 m, 07°57'N, 72°25'W, 13 Nov. 1979, J.A. Steyermark & al. 120268 (MO); **Zulia.** Vicinity of Mene Grande, 31 Oct. 1922, H. Pittier 10617 (NY, US); Carretera El Consejo–Quiroz, 12 Oct. 1977, G.S. Buntin 5685 (NY); Mara, alrededores de Campamento Carichuano (de Carbozulia), en la via entre el canho Paso de Diablo y el canho Vaqueta, 50–100 m, 10 Jul. 1981, G.S. Bunting 10016 (MO, NY); Perirà, en km 38 de la carretera Machiques–La Fria, 22 Sep. 1982, N. Galué 120 (NY).

(17) *Lasiacis scabrior* Hitchc., Proc. Biol. Soc. Wash. 40: 85. 1927. (Fig. 43).

Type: “Guatemala, Alta Verapaz, Cubilquitz, an Waldrandern, hoch klimmend, Februar 1913, H. von Tuerckheim 4036” (holotype: US! [barcode US00134121]; isotype US! [barcode US00134120]).

Description

Perennials, robust caespitose. *Culms* 1–6(–8) m tall, erect at the base, arching and clambering upward over the vegetation, often rooting near the base; *internodes* up to 14 mm thick, hollow and lignified, papillose-pubescent toward the apex; *nodes* glabrous. *Leaf sheaths* usually pubescent to villous with hairs up to 2.0–3.0 mm long, overlapping margins ciliate with hairs 2.0–3.5 mm long; *collars* glabrous or slightly pubescent at the base; *ligules* 3.5–7.0 mm long, conspicuous, membranous, lacerate, glabrous to pubescent on the back side, margins ciliate with hairs up to 3.0 mm long; *blades* 6.0–18 cm long, 1.3–3.0 cm wide, elliptic-lanceolate to linear-lanceolate, adaxial surface scabrid to the touch, puberulent along the midrib, abaxial surface densely puberulent, base asymmetrical,

apex acuminate. Panicles 2.0–10 cm long, the base always included in the upper sheath, compact nearly spherical; *pedicels* divergent at maturity. *Spikelets* 3.5–4.5(–5.3) mm long, 2.8–3.5 mm wide, obovoid; *lower glumes* 1.5–2.8 mm long, 1.6–2.0 mm wide, 7–11-veined; *upper glumes* 3.8–4.8 mm long, 1.5–2.0 mm wide, 9–13-veined; *sterile florets* without a flowers, *lemmas* 11–13-veined, enrolling the palea at the margin, *paleas* $\frac{3}{4}$ to subequal to the length of the fertile floret; *fertile florets* 3.5–4.8 mm long, 1.6–2.0 mm wide, with an evident depression on the dorsal surface, *anthers* 2 mm long, white, *stigmas* white; *caryopses* 2 mm long, 1.5 mm wide. *Chromosome number*: unknown.

Iconographs

Fig. 100 (Davidse 2004).

Vernacular names

Belize: El Cayo, “reed”, P.H. Gentle 9023 (US); **Mexico:** “carrizo” and “nángkuchip” (Quattrocchi 2006).

Ethnobotanical and economic uses

Ecuador, “used to feed guinea pigs” (Bennet 1990).

Distribution

Belize, Brazil (Pará), Caribbean (Saba Island), Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Perú, Venezuela. (Fig. 44).

Distribution (bibliographic references)

Hitchcock (1930); Swallen (1931, 1943, 1955b); Standley (1937); Beetle (1977); Davidse (1978, 1994, 2001, 2004); Pohl (1980); D'Arcy (1987); Serna and López-Ferrari (2000); Morales (2003); Zuloaga et al. (2003); Correa et al. (2004); Renvoize et al. (2006); Davidse et al. (2007); Hokche et al. (2008); Sutherland (2008); Giraldo-Cañas (2011); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Edges of wet forests, also in open areas along trails. From sea level up to 1000 ml.

Phenology

January through May. Late in the year September through December.

Remarks

Lasiacis scabrior is one of the most distinctive species in the genus. Culms erect, ligules up to 7 mm long,

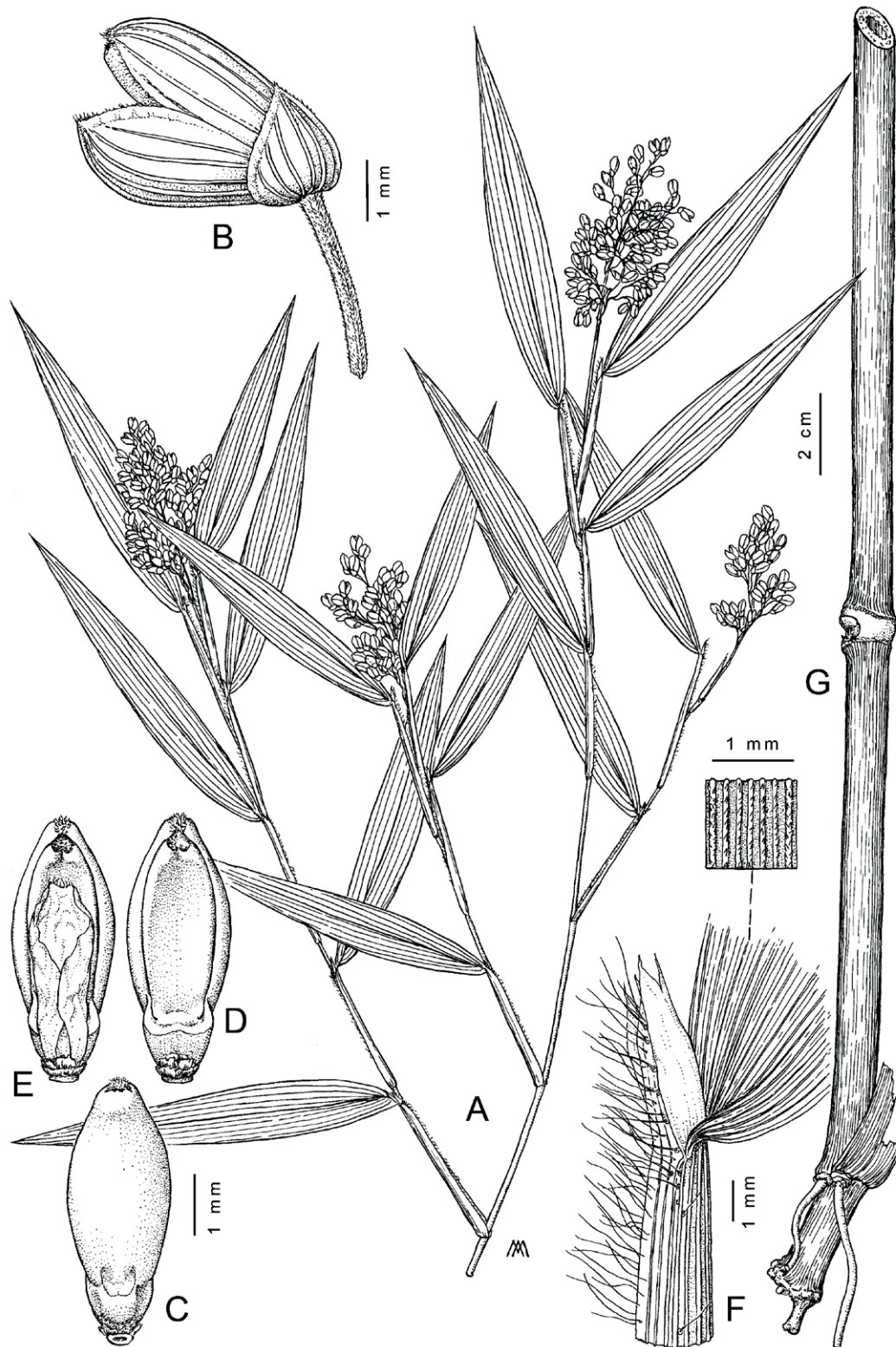


Figure 43. *Lasiacis scabrior* Hitchc.: **A.** Habit [A. from A.F. Skutch 2155 (K)]; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area; **G.** Culm at medium length with robust roots at the nodes [B-G. from R.W. Pohl & G. Davidse 10791 (K)]. *A. Maury delineavit.*

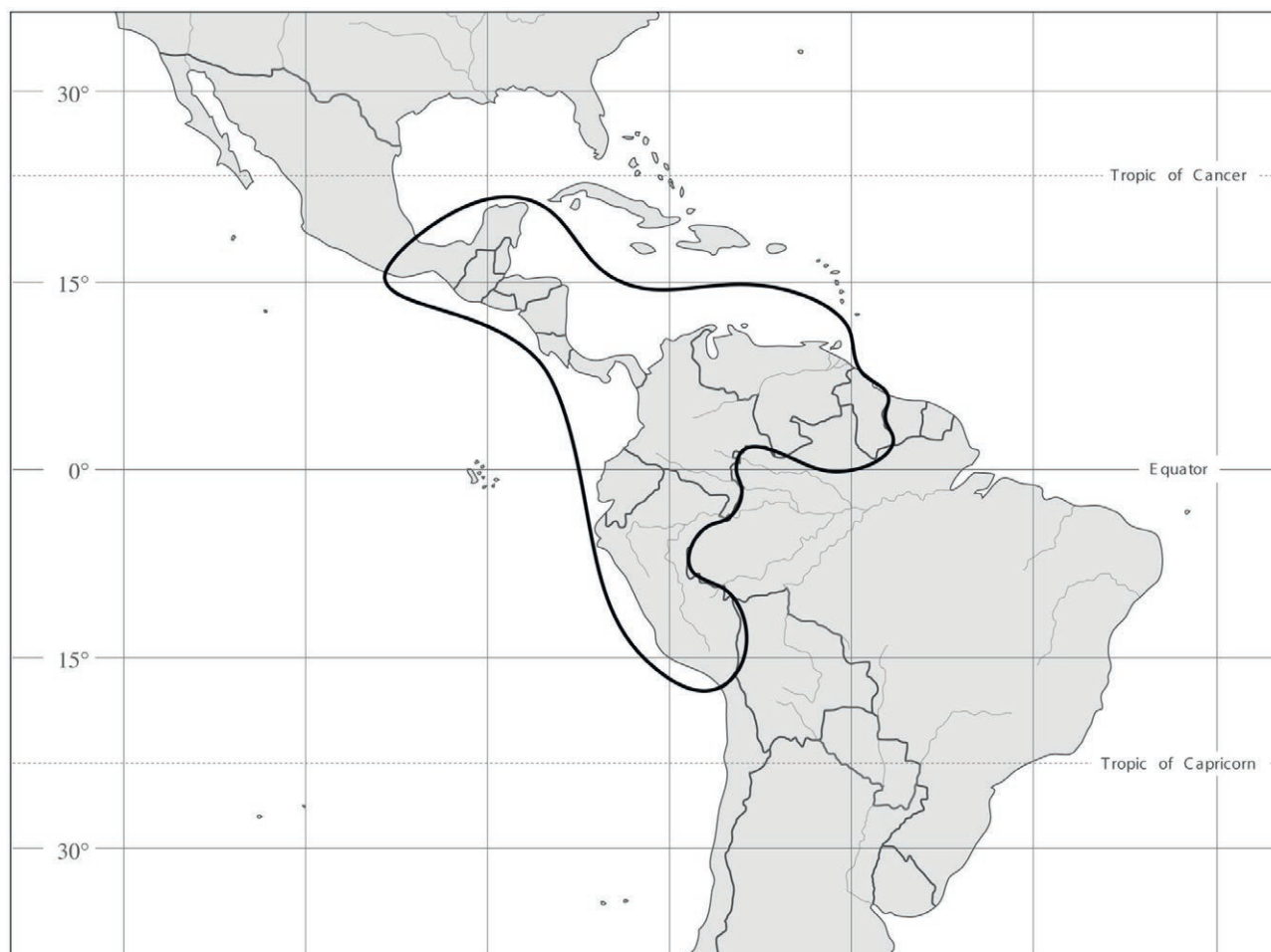


Figure 44. *Lasiacis scabrior* Hitchc.: general geographic distribution.

with spherical panicles, mostly included in the upper sheaths. The upper leaf surface is very scabrid to the touch. Due to its long ligules, *L. scabrior* can be compared to *L. ligulata* and *L. standleyi* but differs in its panicle patterns. *Lasiacis scabrior* is mainly a Central American species occurring throughout West Indies to South America in Colombia, Venezuela, Ecuador, Peru, and northern Brazil (Parà). Perhaps this species is more common than originally thought and deserves more attention in the field, and in herbaria.

Selected specimens

BELIZE. **Cayo.** Hummingbird Highway, 13 Feb. 1956, *P.H. Gentle* 9023 (US); **Cayo.** Track from Ceibo Chico to Ceibo Grande, 16°33'09"N, 89°06'38"W, 488 m, 10 Mar. 2000, *M. Short & al.* 185 (PMA). **Toledo.** Between Rancho Chico and Cockscumb, Monkey River, 10 Apr. 1943, *P.H. Gentle* 4398 (US); Sulphur Hill, Edwards Road beyond Columbia, 15 Jan. 1948, *P.H. Gentle* 6366 (BM); Salomon Camp, vicinity of the junction of Richardson Creek and Bladen Branch, Mar. 1987, *G. Davidse* 32159 (K);

Southern Maya Mountains, Bladen Nature Reserve, trail from central Snake Creel Camp to Roochire Selipan archeological site, 450 m, 16°27'48"N, 88°58'42"W, 29 May 1997, *G. Davidse & H.B. Buchanan* 36944 (MO).

BRAZIL. **Parà.** Boa Vista on the Tapajos River, May-Jun. 1929, *B.E. Dahlgren & E. Sella* 198 (US).

COLOMBIA. **Chocó.** Near Ciudad Mutis, 75 m, 21-23 Feb 1939, *E.P. Killip & al.* 33554 (US), 33594 (BM, US); Chocó, peak over R. Curundu, 1800 ft, 8 Mar. 1968, *J.A. Duke* 15311 (MO); **Valle.** Cordillera Occidental, hoya del Río Digua, Quebrada del Río Blanco, 350 m, 18 Dec. 1942, *J. Cuatrecasas* 13674 (MO, US).

COSTA RICA. **Alajuela.** Wet forest near Río San Rafael, 2 km W of La Marina, Llanura de San Carlos, 17 Feb. 1966, *A. Molina & al.* 17385 (NY); About 8 km S of Colonia Blanca off a lumber road leading NE toward Volcán Santa Maria, 28 Feb. 1978, *F. Almeda* 4021 (NY); Between Cerro Chado and Cerro de los Perdidos, 17 Feb. 1989, *G.F. Russell & al.* 769 (US); **Cartago.** Turrialba, 5 Feb. 1965, *E.W. Lathrop* 5522 (K); **Guanacaste.** La Tejon, N of Tilaran, 25 Jan. 1926, *P.C. Standley & J. Valerio* 45897 (US); Parque Nacional Guanacaste Estación titilla, 600 m, 11°02'N, 85°25'3"W, 24 May 1989, *B. Hammel* 17386 (MO, USJ); **Heredia.** Finca La Selva, the OTS field station on the Río Puerto

Viejo just E of its junction with the Río Sarapiquí, 2 Apr. 1980, *B. Hammel* 8404 (MO); Parque Nacional Rincon de la Vieja, the SE slopes of Volcán Santa María, above Estación Hacienda Santa María, 900–1200 m, 10°47'N, 85°18'W, 27–28 Jan. 1983, *G. Davidse et al.* 23384 (MO); Finca La Selva, the OTS Field Station on the Río Puerto Viejo just E of its junction with the Río Sarapiquí, 12 Jan. 1995, *R.L. Wilbur* 63341 (USJ); 23 Jan. 1995, *R.L. Wilbur* 63701 (MO, USJ); Finca La Selva, the OTS Field Station on the Río Puerto Viejo just E of its junction with the Río Sarapiquí, 100 m, 20 Feb. 1998, *R.L. Wilbur* 70209 (PMA); **Limón**. Vicinity of Guapiles, 12–13 Mar. 1924, *P.C. Standley* 37178 (US); Limón, main road beyond river from Rubber Station, Los Diamantes, 1 Mar. 1956, *B.G. Schubert* 1137 (US); Limón, Canton de Talamanca, R.V.S. Gandoca-Manzanillo, Caribe Sur, 9°38'00"N, 82°38'26"W, 4 Mar. 1999, *U. Chavarria* 1943 (MO); **Puntarenas**. Golfo Dulce and Río Térraba, Dec. 1947, *A.F. Skutch* 5391 (US); Near Finca Las Crucis near San Vito de Java, 28 Jul. 1968, *R.W. Pohl & G. Davidse* 10791 (K, US); 3 km NE of Quespos, 29 Jan. 1969, *R.W. Pohl & G. Davidse* 11692 (K, US); Río Agua Buena near Airport, Rincon de Osa, 10 Feb. 1974, *R. Liesner* 1988 (K, MO); Las Cruces, 1300 m, 11 Jan. 1978, *T.B. Croat* 44409 (MO); Foot-hills of the Cordillera de Talamanca, vicinity of Helechales, along Río Guineal, 1100–1200 m, 9°04'30"N, 83°05'W, 29 Mar. 1984, *G. Davidse & G. Herrera* 26272 (K, MO); Canton de Osa, camino a la toma de agua, Rancho Quemado Rincon, 200 m, 8°42'N, 83°34'W, 9 Dec. 1990, *Fco. Quesada* 279 (BR, MO); Canton de Sierpe, high forest W of Rancho Quemada on road to Drake and new logging road, 1–300 m, 8°42'00"N, 83°36'00"W, 7 Feb. 1991, *P.J.M. Baas* 7887 (MO); Canton Osa, Osa Peninsula, 24 Dec. 1992, *J.R. Grant & J.R. Rundell* 2216 (US); Along edge of Zona Protectora Las Tablas near Las Alturas Biological Station, 1500 m, 10°10'N, 83°10'W, 1 Sep. 1995, *K. Holl* 1050 (USJ); Canton de Golfito, P.N. Corcovado, Peninsula de Osa, Estación de Oro, Sendero El Acueducto, 180 m, 8°33'30"N, 83°30'10"W, 14 Mar. 1996, *L. Angulo* 551 (MO); **San José**. Vicinity of El General, Dec. 1935, *A.F. Skutch* 2155 (K, MO, NY, US); Vicinity of El General, Jan. 1939, *A.F. Skutch* 3871 (K, MO, NY, US); El General Valley, vicinity of San Isidro, 28 Feb. 1966, *A. Molina & al.* 18111 (BM); Pérez Zeledón, Páramo, Los Angeles, 23 Mar. 1998, *A. Estrada* 1488 (K); Pérez Zeledón, Barú, 253 m, 9°25'50"N, 83°59'40"W, 6 Feb. 2001, *S. Lobo* 218 (K, MO); **Talamanca**. Lisieré de la forêt de Shiroes, Feb. 1895, *A. Tonduz* 9213 (G, US); Talamanca, Apr. 1895, *H. Pittier* 9492 (US, W).

ECUADOR. Esmeraldas. Esmeraldas Guadal, 20 May 1949, *M. Acosta Solís* 12433 (US); Quinde Canton, Bilsa Biological Station, Montañas de Mache, 35 km W of Quindindé, 5 km W of Santa Isabel, 400–600 m, 00°21'N, 79°44'W, 11 Nov. 1994, *M.S. Bass & al.* 231 (BM, MO); Quinde Canton, The Mache-Chindul Ecological Reserve, Bilsa Biological Station, Mache Mts. 35 km W of Quindindé, 500 m, 00°21'N, 79°44'W, 4 Dec. 1996, *J.L. Clark & al.* 3557 (MO, US); **Guayas**. Teresita, 3 km W of Bucay, 270 m, 5–7 Jul. 1923, *A.S. Hitchcock* 20438 (NY, US); **Manabí**. Manabí, 29 Nov. 1939, *O.L. Haught* 2973 (US); Jama, Cordillera de Jama, coastal range, 12 km E of Jama, 300 m, 00°15'S, 80°13'W, 16 Dec. 1998, *D. Neill & al.* 11562 (MO); **Morona-Santiago**. Río Yunganza, Road Límon-Méndez, 23 Sep. 1979, *L. Holm-Nielsen & al.* 20385 (K); Centro Shuar Yukutais, East side of Río Yukutais, 950–1020 m, 03°30'S, 78°10'W, 6 Nov. 1988, *B. Bennett* 3527 (MO, NY); Canton, Macas, Bosque Protector Do Mono, 1170 m, 02°13'38"S, 078°07'23"W, 15 Aug. 2005, *J.L. Clark* 9339 (NY, US); **Napo**. Orellana Canton, Parque Nacional Yasuni, Carretera y oleoducto de Maxus en construcción, 240 m, 03°05'S, 76°29'W, 29–31 May 1994, *A. Dik* 1388 (MO); **Pastaza**. Canton, Pozo Petro-

liero "Corrientes" de Unocal, 300 m, 76°49'W, 01°43'S, 1–31 Aug. 1990, *E. Gudiño* 531 (MO, US); **Pichinca**. Shingupino, between Ríos Napo and Tena 8 km SE of Tena, Cerro Antisana, rain forest, 30 Aug. 1960, *P.J. Grubb & al.* 1521 (K, NY); 20 km W of Santo Domingo de los Colorados, banks on the river Huacuhua, 1000 ft, 23 Oct. 1961, *P.C.D. Cazalet & T.D. Pennigton* 5125 (K, NY, US); S.to Domingo de los Colorados, 28 Nov. 1952, *F. Fagerlind & G. Wibom* 1594 (MO, UPS); Km 127 on road Quito-Puerto Quito, 500 m, 00°06'N, 79°09'W, 14 Jul. 1985, *S. Lægaard* 54629 (K, MO); **Santiago-Zamora**. Cordillera Cutucu, 2800 ft, 2°40'S, 78°W, 17 Nov.–5 Dec. 1944, *H. Jorgenson* 1119 (NY, US).

GUATEMALA. Alta Verapaz. Sebol, 13 Apr. 1964, *E. Contreras* 4270 (US); **Petén**. Lacandon, about 3 km NW on trail to Tenosique, 6 Feb. 1962, *E. Contreras* 3327 (US); Guayacan, on al Camino al Ceibo, 3 km, 10 Jan. 1968, *E. Contreras* 7425 (NY); Los Arcos, on Cadenas Road, 21 Dec. 1969, *E. Contreras* 9437 (NY); La Cumbre, on km 138 bordering Cadenas Road, 13 Feb. 1971, *E. Contreras* 10492 (NY); Petén, en el camino para San Luis, 7 Jan. 1972, *R.T. Ortiz* 2171 (US).

GUYANA. Rupununi. Basin of Rupununi River, Isherton, 9–15 Nov. 1937, *H.H. Smith* 2417 (G).

HONDURAS. Atlantida. 28 km NE of El Progreso, 150 m, 24 Jun. 1970, *G. Davidse & R.W. Pohl* 2173 (MO, US); **Gracias a Dios**. Río Patuca, 0–200 m, 1994–1995, *P. House* 1238 (BM, BR, MO); **Olancho**. Carretera entre Catacamas y Juticalpa, orillas del riachuelo Aguaquire, 700 m, 1–4 May 1975, *C. Nelson & E. Vargas* 2719 (MO); Olancho, Río Incendio, 5 Mar. 1982, *S. Blackmore & G.L.A. Heath* 2145 (BM, MO); **Yoro**. Cordillera Nombre de Dios, between Río Guán Guán and Quebrada Aguatacal, 4 Mar. 1993, *R. Evans* 1315 (BM, US).

MEXICO. Chiapas. Ocosingo, tropical rain forest, at the ruins of Yaxchilan on the banks of the Río Usumacinta, 26 Feb. 1973, *D.E. Breedlove* 33955 (NY); Las Margaritas, tropical rain forest, low ridges at the confluence of the Río Ixcán with the Río Lacantum (Río Jataté) on the Guatemala border, 14 Mar. 1973, *D.E. Breedlove & E. McClintock* 34090 (NY); Ocosingo, 5 km SW of Santo Domingo, 13 May 1982, *G. Davidse & al.* 20420 (BM); **Oaxaca**. 7 Mar. 1978, *A. Delgado & al.* 950 (L); Uxpanapa Region, along gravel road between Esmeralda and Río Verde, 17°10'N, 94°45'W, 19 Jan. 1987, *T.B. Croat & D.P. Hannon* 63308 (K, US); **Veracruz**. Fortuño, Coatzacoalcos River, 1937, *L.O. Williams* 8615, 8960 (G, P, US, W); Veracruz, Hidalgotitlan, 21 Mar. 1973, *A. Juan* 13 (BM).

NICARAGUA. Atlantico Norte. Musawas, Reserva Bosawas, Musawas, 50–150 m, 14°14'00"N, 84°43'00"W, 3 Mar. 2001, *C. Aker* 449 (MO); **Carazo**. Bluefields, summit and slopes of Cerro San Isidro, 28 Mar. 1966, *G.R. Proctor & al.* 27281 (MO, NY, SD, US); Granada. Volcán Mombacho, 20 Feb. 1903, *C.F. Baker* 2454 (G, K, L, MO, US, W); **Jinotega**. Wiwili, Reserva de Bosawas, Cominidad Inipuas, Transecto 3, ubicado en zona agrícola, 185 m, 14°24'32"N, 85°11'06"W, 16 Apr. 2005, *I. Coronado & al.* 1584 (MO), 1594 (P); Wiwili, Comunidad La Esperanza Reserva Bosawas, Territorio Miskito Indian Tasbaika Kum, parcela 2 en el Tacotal, 500 m al oeste de la Finca de Lionidas, 60–70 m, 4 Mar. 2008, *D. Prado G.* 276 (MO); **Río San Juan**. El Castillo, Sabalos, comarca Las Maravillas, 11°08'N, 84°39'W, 14 Jan. 1995, *R. Rueda & al.* 2745 (MO); El Castillo, Comunidad Aguas Zarcas, 2 km al norte del puesto de guardaparques, 350 m, 11°14'22"N, 84°14'16"W, 12 Mar. 2005, *A. Urbina* 181 (MO); **Zelaya**. Ca. 6.3 km S of bridge at Colonia Yolaina and ca. 0.8 km S of ridge of Serranías de Yolaina on road to Colonia Manantiales (Colonia Somoza), 200–300 m, 11°36'N, 84°22'W, 13–14 Feb. 1978, *W.D. Ste-*

vens & *al.* 6390 (MO); Zelaya, ca. 13 km above Kururia, 200 m, 14°39'N, 84°04'W, 2 Mar. 1979, *J.J. Pipoly* 3786 (BM, MO); Zelaya, Alrededores del poblado Nueva Atlanta, 11°34'N, 84°26'W, 19 Feb. 1994, *R. Rueda* & *al.* 3246 (MO).

PANAMA. Bocas del Toro. SE y NE del campamento Changuinola 1 del IRHE, 19 Jan. 1980, *M.D. Correa* & *al.* 3351 (MO, NY, PMA), 3388 (MO); Isla San Cristobal, 2 km W of Boca-torito, 60 m, 8 Feb. 1989, *P.M. Peterson* & *C.R. Annable* 6711 (MO); Approximately 3 km S of Tiger Key, 0-30 m, 25 Feb. 1989, *P.M. Peterson* & *C.R. Annable*, 7102, 7110 (MO); Camino a Quebrada Rabo de Puercos, 9 Mar. 1994, *Santamaría* 761 (MA, PMA); Caribbean slopes of Cerro Fabrega at foot of "Falso Fabrega" in Palo Seco Reserve, second northernmost tributary (on map) of Culubre river; Río Liso Camp, 840 m, 09°09'N, 82° 40'69W, 16 Mar. 2005, *A.K. Monro* & *S. Cafferty* 4661 (MO, PMA); Changuinola, Bosque Protector Palo Seco, Charco La Pava, Comunidad de Guayacán, 9°09'31"N, 82°30'35"W, 424 m, 4 Feb. 2014, *O.O. Ortiz* & *R.M. Baldini* 2105 (FT, PMA); **Chiriquí.** Burica Peninsula, San Bartolo Limite near Costa Rican border, 12 miles W of Puerto Armuelles, 400-500 m, 24 Feb. 1973, *T.B. Croat* 22169 (MO, US); 1 mile E of Cañas Gordas, near Costa Rica Border on road to volcano, 800-1200 m, 26 Feb. 1973, *R. Liesner* 267A (K, MO); 19 km W of Río Chiriquí Viejo on road to San Sereno, 1000-2000 m, 17 Mar. 1977, *W.G. D'Arcy* 10838 (PMA, MO, US); **Coclé.** N rim of El Valle de Antón, 600-1000 m, 12 Feb. 1939, *P.H. Allen* 1641 (MO, NY); Coclé, vicinity of La Mesa, N of El Valle de Antón, 12 May 1941, *P.H. Allen* 2376 (US); 4 miles W Antón on Río Chico, 10' tall in shade, 8 Dec. 1965, *E.L. Tyson* & *K.E. Blum* 2598 (SCZ); Cerro Pilón, hill below summit, above El Valle de Antón, 2000-2700 ft, 28 Mar. 1969, *J.D. Dwyer* & *al.* 4549 (MO); Hills above El Valle, 1000 m, 24 Dec. 1972, *A. Gentry* 6897 (K, MO, PMA, US); 44 km N of Penonóné on road to Coclesito, 300-500 ft, 21 Feb. 1978, *B. Hammel* 1672 (MO); Above La Pintada, peak to E of Llano Grande-Toabré Highway, 1400-1900 ft, 15 Feb. 1981, *W.G. D'Arcy* & *K. Systma* 14705 (MO); Coclé, Caribbean side of divide at El Copé, 200-400 m, 8°45'N, 80°35'W, 4 Feb. 1983, *C. Hamilton* & *G. Davidse* 2736 (MO); **Colón.** Santa Rita Ridge, 500 m, 09°20'04"N, 79°45'04"W, 11 Jan. 1987, *G. MacPherson* 10246 (MO, PMA); **Darién.** Vicinity of Campamento Buena Vista, Río Chucunaque above confluent with Río Tuquesa, 5 Jul. 1959, *W.L. Stern* & *al.* 851 (G, MO); Agua Fria, ca. 8 miles N of Santa Fé, 50 m, 13 Feb. 1967, *J.A. Duke* 10098(3) (MO); Darién, Mannene to the mouth of the Río Coasi, 28 Apr. 1968, *J.H. Kirkbride* & *N. Bristan* 1553 (MO, NY); W side of SW ridge leading to Alturas de Nique, headwaters of Río Coasi, 450 m, 27 Dec. 1980, *R.L. Hartman* 12275 (MO); Río Cocalito, 17 Sep. 1982, *C. Whiteford* & *A. Eddy* 214 (BM, F, MO, PMA); Ensenada del Guayabo, 18 km SE of Jaqué, 50 m, 12 Jan. 1983, *N. Garwood* & *al.* 185 (BM, MO, PMA); S of El Real on trail to Cerro Pirre, ca. 50 m, 8°00'N, 77°45'W, 27 Mar. 1985, *G. McPherson* 6981 (PMA, US), 6987 (BM, K, MO, NY); **Panamá.** San José Island, Perlas Arch., about 55 mi. SSE of Balboa, 24 Mar. 1945, *I.M. Johnston* 548 (BM, MO, US); Cerro Campana, 8 Jul. 1960, *J.E. Ebinger* 340 (MO, US); Canal Zone, Fort Clayton, Los Santos, 11 mi N Tonasi, fruits black, very dense in woods, 23 Jan. 1966, *J. Dwyer* 2977 (MO, SCZ); Cerro Jefe in "Clusia" forest, 2700-3000 feet, 27 Jan. 1966, *E.L. Tyson* & *al.* 3327 (MO, SCZ); Tributary of Río Chagres, 5 miles SW of Cerro Brewster, 1000 ft, 14 Dec. 1967, *W.H. Lewis* & *al.* 3376 (MO); Cerro Azul, 6-10 km del Lago Goofy, 700 m, 11 Mar. 1968, *C.E. Calderón* 2091 (MO, US); Cerro Campana, above Su Lin Motel, rain forest, 25 Mar. 1969, *D.M. Porter* & *al.* 4271 (MO); Slopes of Cerro Campana, 2700 ft, 23 Jan. 1970, *R.L. Wilbur* & *R.E. Weaver* 11289 (MO, US);

Panamá, near top of Cerro Jefe, 1 Jan. 1971, *A. Gentry* 3511 (PMA); Canal Zone, Pipeline Road 12 miles from Gamboa Gate, 5 Mar. 1971, *T.B. Croat* 13950 (MO); Cerro Jefe, 2900 ft, 1 Jan. 1972, *A. Gentry* & *al.* 3514 (MO); 6-10 km N of Pan-American Highway on El Llano-Cartí Road, 9°15'N, 78°59'W, 200-250 m, 1 Apr. 1988, *S.A. Thompson* 4690 (MO, PMA, US); **Los Santos.** Azuero Peninsula, along trail between Jobero and headwaters of Río Pedregal, 300-700 m, 28 Apr. 1976, *T.B. Croat* 74 (MO); Los Santos, road to El Corteo, 100-200 m, 24 Jan. 1981, *W.G. D'Arcy* & *K.J. Sytsma* 14348 (BM, MO); **San Blas.** El Llano-Cartí Road, 350 m, 9°19'N, 78°55'W, 2 Jan. 1985, *G. De Nevers* & *G. Herrera* 4441 (K, MO, PMA); **Veraguas.** Veraguas, 6-7 km W of Santa Fe, 2900 ft, 16 Feb. 1974, *M. Nee* 9778 (K, MO, PMA); NW of Santa Fé, 26 Feb. 1975, *S. Mori* & *J. Kallunki* 4881 (K, MO, US); Veraguas, along steep trail to summit of Cerro Tute ca. 3 km above Escuela Agricultura Alto Piedra near Santa Fé, 3000-3100 ft, 4 Jan. 1981, *K. Systma* & *T. Antonio* 3055 (MO).

PERÚ. Huanuco. Vicinity of Tingo Maria, Cordillera Azul, dense forest E of Koenig's along small stream to N of road, 22 Jun. 1959, *M.E. Mathias* & *D. Taylor* 3463 (MO, US); **La Mar.** Ayachuco, 585 m, 12°23'N, 73°47'W, 8 Jun. 1968, *T.R. Dudley* 10025 (MO); **Loreto.** Province C. Portello, Inchua, 4 Aug. 1946, *J. Soukup* 3022 (US); Puranichim, Río Sinchiayacu, 200 m, 02°50'S, 76°55'W, 21-27 Nov. 1986, *W.H. Lewis* & *M. Elvin-Lewis* 12106 (MO); **Madre de Dios.** Prov. Tambopata, Las Piedras, Cusco Amazónico, 200 m, 12°29'S, 69°03'W, 21 Jul. 1991, *M. Timaná* 1907 (MO); **San Martín.** Lamas, Along Río Curiyacu, an affluent of Río Cumbasa, about 8 km above San Antonio, 7 Nov. 1937, *C.M. Belshaw* 3615 (MO, NY).

VENEZUELA. Amazonas. Alto Orinoco, Raudal de los Guaharibos, 22 Jul. 1951, *L. Croizat* 250 (NY).

VIRGIN ISLANDS. Saba. (Netherlands Antilles), first 500 meters of Sandy Cruz Trail entering from east end, disturbed area with cultivated plants, forming clump with arching culms, fruits black, 17°37'55"N, 17°38'08"N, 63°14'45"W, 63°14'52"W, 5 Mar. 2007, *S.A. Mori* & *al.* 26723 (NY) .

(18) *Lasiacis sloanei* (Griseb.) Hitchc., Bot. Gaz. (Crawfordsville) 57: 302. 1911. (Fig. 45, 46).

Bas.: *Panicum sloanei* Griseb., Fl. Brit. W. Ind. 551. 1864.

Type: "Jamaica, Manchester, woods near Broken(horn?), Nov. 1843, *Purdie s.n.* (lectotype, designated by Davidse 1978: K! [barcode K000308121]; isolectotype: US! Fragment from K [barcode US00140000]).

(=) *Panicum latifolium* Ham., Prodr. Pl. Ind. Occ. 10. 1825, non L. (1753).

Type: "Antilles, (ex spec. Hort. Paris)" (Hamilton 1825: 10), "*Panicum latifolium*, Le Calumet", "ex horto Reg" (holotype: P! [barcode P00667321]).

(-) *Panicum divaricatum* J.Presl ex Griseb., Fl. Brit. W. Ind. 551. 1864, non L. (1759) *nom. inval.* [cited as a synonym of *P. sloanei* Griseb. (Grisebach 1864).

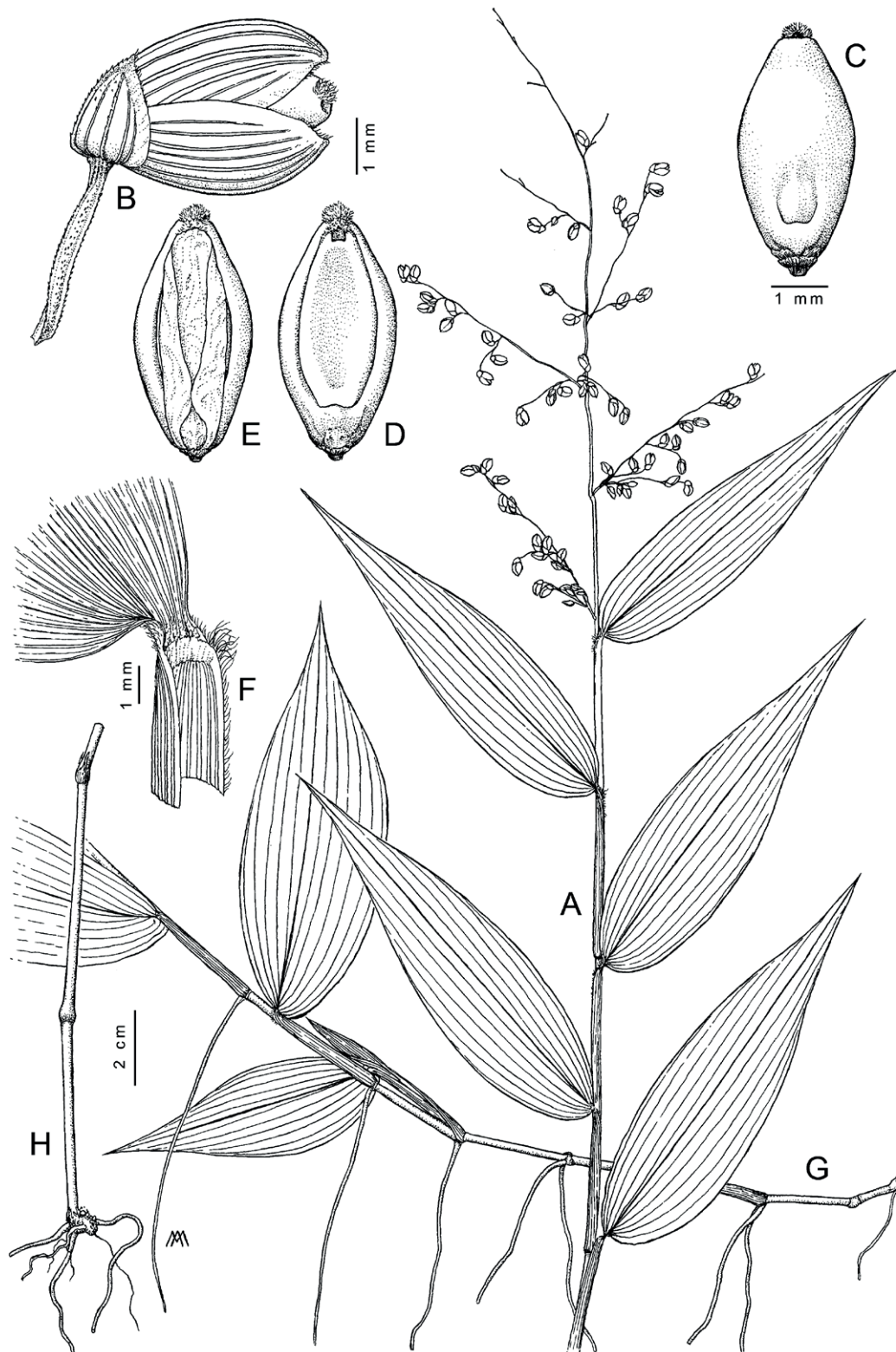


Figure 45. *Lasiacis sloanei* (Griseb.) Hitchc.: **A.** Habit [A. from E.L. Ekman 12094 (K)]; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea [B-E. from R.W. Pohl & G. Davidse 10994 (K)]; **F.** Ligular area [F. from A.S. Hitchcock 591 (K)]; **G.** Culm at medium length rooting at the nodes; **H.** Culm at the base [G-H. from R.W. Pohl & G. Davidse 11123 (K)]. A. Maury delineavit.



Figure 46. *Lasiacis sloanei* (Griseb.) Hitchc.: habit. (Panama, Cerro Campana, photo R.M. Baldini).

Description

Perennials, caespitose. *Culms* 1–8 m long; erect, clambering and climbing into the vegetation; *internodes* 5–10 mm thick at maturity, hollow, usually glabrous. *Leaf sheaths* glabrous, ciliate upward, auricular hairs 1.5–3.0 mm long; *collars* extended, forming a pseudopetiole up to 3–4 mm long, puberulent to short-hispid; *ligules* 0.5–1.0 mm long, membranous, inconspicuous, ciliate with small hairs up to 0.5 mm long, puberulent on the back side; *blades* 8–20 cm long, 1.5–5.0 cm wide, ovate to ovate-lanceolate, adaxial surface puberulent or slightly scabrous, adaxial surface glabrous, base asymmetrical, apex acuminate, margins scabrid. *Panicles* 5–38 cm long, open, with few short-pedicelled spikelets; *upper branches* ascending to widely spreading, scabrid. *Spikelets* 4.0–5.5 mm long, 2.8–3.5 mm wide; *lower glumes* 1.5–2.5 mm long, 0.8–1.5 mm wide, 7–9-veined; *upper glumes* 3.8–5.0 mm long, 1.7–2.0 mm wide, 9–13-veined; *sterile florets* often staminate or rudimentary, *lemmas* 9–13-veined, *paleas* $\frac{3}{4}$ to equal the length of the fertile floret; *fertile florets* 3.8–4.8(–5.0) mm long, 2.3–2.8 mm wide, *anthers* 1.6–2.0 mm long, white, *stigmas* white; *caryopses* 2.3–2.7

mm long, 2.0 mm wide. *Chromosome number*: $2n = 36$ (Reeder 1968); $n = 18$ (Davidse 1972, 1978).

Iconographs

Fig. 99 (Davidse 2004); Lámina 157 (Catasús Guerra 2012b).

Vernacular names

Cuba: “canutillo” (Catasús Guerra 2012a), “canutillo cimarrón”, “tibisi” (Acevedo-Rodríguez and Strong 2012); **Dominican Republic**: “calimete” Acevedo-Rodríguez and Strong 2012); **Guatemala**: Petén, “carrizo” E. Contreras 1846 (US); **Haiti**: “calumete”, “calumette” (Acevedo-Rodríguez and Strong 2012); **Honduras**: Copán, “carrizo” A. Molina & Albertina R. 34261 (US); **Mexico**: “otate” (Quattrocchi 2006).

Distribution

Belize, Bolivia, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Haiti, Dominican Republic, Guatemala, Honduras, Jamaica, Leeward Islands (Antigua, St. Martin), Mexico, Nicaragua, Panama, Puerto Rico, Suriname, Venezuela. (Fig. 47).

Distribution (bibliographic references)

Hitchcock and Chase (1917); Hitchcock (1911, 1920, 1930); Urban (1921); Swallen (1931, 1934, 1936, 1955b); Standley (1937); Pinto-Escobar (1966); Adams (1972); Beetle (1977); Howard (1979); Davidse (1978, 1994, 2001, 2004); Pohl (1980); Serna and López-Ferrari 2000); Morales (2003); Zuloaga et al. (2003); Renvoize et al. (2006); Davidse et al. (2007); Hokche et al. (2008); Sutherland (2008); Giraldo-Cañas (2011); Acevedo-Rodríguez and Strong (2012); Catasús-Guerra (2012a); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019); Menjivar et al. (2021).

Ecology

Edges of wet montane forests, also at montane roadsides. From sea level to 1780 m [El Salvador: Santa Ana, 1780 m J. Monterosa 918 (MO)] and 1900 m [Colombia: Santander, E.P. Killip & A.C. Smith 19411 (US)].

Phenology

July through April.

Remarks

Lasiacis sloanei is a very distinct species with culms up to 6 m tall, erect to clambering, rooting at the nodes, ovate to ovate-lanceolate, up to 20 cm long and 5 cm wide, glabrous leaf blades [E.L. Ekman 15851 (G, US)],



Figure 47. *Lasiacis sloanei* (Griseb.) Hitchc.: general geographic distribution.

glabrous, long open panicle. Its distribution is centered in Central America and Caribbean, scattered in South America (Colombia, Venezuela, Suriname, and Ecuador).

Selected specimens

BELIZE. **Cayo.** Hummingbird Highway, 12 Dec. 1955, *P.H. Gentle* 8980 (BM, NY, US); Central Farm, Sep. 1964, *R.H.L. Disney* A380/D (BM); SW of Cayo on road to Benque Viejo, 29 Nov. 1968, *R.R. Innes* 74 (K); W of Hummingbird Highway at a point 7 miles S of its junction with Western Highway, N boundary of Roaring River Est, 80 m, 13 Jul. 1970, *D.L. Spellman & W.W. Newey* 1661 (MO); 3 mi. S of Guacomallo bridge, 28 Aug. 1980, *D. Sutton & al.* 299 (BM, MO); 10 miles from San Ignacio, Chaa Creek Road, Ixchel Farm, 17°61'N, 89°4'W, 15 Aug. 1987, *R. Arvigo* 48 (MO, US); **Orange Walk.** Honey Camp, Oct. 1929, *C.L. Lundell* 555 (K, MO, NY, UPS, US); **Toledo.** Cero, 1 Feb. 1950, *P.H. Gentle* 6966 (US); Gracie Rock, 4–5 Jun. 1973, *T.B. Croat* 23912 (K, L, MO, NY); Las Sierritas, 20 km W of Big Creek Settlement, eastern slope of Cerrito, the tallest hill in Las Sierritas range, 80–120 m, 16°31'55"N, 88°35'48"W, 4 Dec. 1997, *T. Hawkins* 1644 (MO).

BOLIVIA. **La Paz.** Sud Yungas, Alto Beni, Concesión de San José de Popoy, 580 m, 21 Oct. 1987, *R. Seidel & E. Vargas* 2155 (US).

COLOMBIA. **Magdalena.** Santa Marta, 1898–1901, *H.H. Smith* 2145 (BM, G, K, L, MO, NY, P, US); In forest long indian trail to Pueblito, Parque Nacional Tayrona, 50 m, 11°19'N, 73°58'W, 24 Oct. 1972, *J.H. Kirkbride* 2496 (MO, NY, US); **Meta.** Río Güejar about 10 km below junction with Río Zanza, north end of Cordillera Macarena, 470 m, 21 Aug. 1950, *S.G. Smith & J.M. Idrobo* 1534 (K, MO, NY, US); **Risaralda.** Pereira, Hacienda Corsega, a 18 km de La Virginia por carretera, a 7 km al W de carretera La Virginia-Cerritos por carretera a El Trapiche, 900 m, 12 Feb. 1990, *P.A. Silverstone-Sopkin & al.* 5913 (MO); **Santander.** Between El Roble and Tona, 1500–1900 m, 17 Feb 1927, *E.P. Killip & A.C. Smith* 19411 (US); Río Caquetá, 18 Oct. 1990, *van Dolmen & Matapi* 20 (K).

COSTA RICA. **Cartago.** Turrialba, Instituto Interamericano de Ciencias Agrícolas, Canyon of the Río Reventazón, 602 m, 14 Aug. 1966, *R.W. Pohl & C. Calderón* 10300 (MO); Canyon of Río Reventazón, near Turrialba, 6 Aug. 1968, *R.W. Pohl & G. Davidse* 10832 (K, US); Canton de Turrialba, Cordillera de Talamanca, along W side of Río Chirripó from Quebrada Bolori to

Quebrada Kulri, 575–625 m, 9°46'30"N, 83°23'30"W, 8 Aug. 1995, *M. Grayum* 10813 (MO); **Guanacaste**. Upala Road, ca. 30 km N of Cañas, forested area along Río Chiquito, 400 m, 25 Jul. 1971, *R.W. Pohl* 12637 (MO), **n** = 18! (Davidse 1978); **Limón**. Along Río Estrella, near Pandora, 19 Sep. 1968, *R.W. Pohl* & *G. Davidse* 11123 (K, US); **Puntarenas**. N of the Carretera Interamericana along road to Boruca, 220 m, 22 Aug. 1968, *R.W. Pohl* & *G. Davidse* 10994 (US), **n** = 18! (Davidse 1978).

CUBA. Cuba, s.d., *Ramon de la Sagra* 44 (FI-Webb, G); Cuba, 1849, *F. Rugel* 868, 872 (BM, L, NY); s.l., 1865, *C. Wright* 51 (K), 97 (K), 3878 (K, NY, P, US, W); **Cienfuegos**. Vicinity of Soledad, Aug. 1941, *R.A. Howard* 6250 (NY, US); **Habana**. La Habana, Loma Esperón, 4 May 1914, *E.L. Ekman* 653 (K); Pinar del Río, Mogote in front of La Güira S. Diego de Los Baños, 5 Jul. 1915, *Bro. León* 5148 (US); Habana, Managua, 15 Feb. 1956, *C.V. Morton* 10194 (US); **Mantanzas**. Mantanzas, 9 Sep. 1903, *N.L. Britton* & *P. Wilson* 393 (NY); On limestone, near Boca de Canasí, 7 Dec. 1927, *Bro. León* 13171 (US); **Mayabeque**. Vicinity of Madruga, 28 Mar. 1903, *N.L. Britton* & *al.* 759 (NY); **Nueva Gerona**. Isle of Pines, near Nueva Gerona, 4 Jul. 1900, *W. Palmer* & *J.H. Ridley* 1001 (NY); Isles of Pines, Sierra de Los Caballos, 2 Mar. 1916, *N.L. Britton* & *P. Wilson* 15134 (US); **Oriente**. Mayarí arriba, at Río Mayarí, 7 Dec. 1922, *E.L. Ekman* 15851 (G, US); **Pinar del Río**. 26 Jan. 1905, *C.F. Baker* 4587 (W); Sierra Anafé, 19 Dec. 1911, *P. Wilson* 11421 (NY, US); Sierra Mendoza, 25 Dec. 1911, *J.A. Shaffer* 11147 (NY, US); Sierra de Anafé, Loma San Gabriel, 21 Mar. 1920, *E.L. Ekman* 10557 (NY); San Cristobal, Pinar del Río, Loma del Pimento, in thickets on the top of the mountain, 29 Nov. 1920, *E.L. Ekman* 11528 (K); Las Pozas, in hills towards Pan de Guajabon, 7 Jan. 1921, *E.L. Ekman* 12743 (US); Mariel, 4 Jun. 1921, *E.L. Ekman* 12853 (NY, US); Sierra de Anafé, Loma de San Gabriel near Guanajay, 11 Jul. 1921, *E.L. Ekman* 13035 (G, US); Camagüey, Palo Seco, in forest at foot of Poma Decada, 3 Oct. 1922, *E.L. Ekman* 15319 (US); Santa Cruz to Rangel, Sierra de Los Organos, 17–19 Nov. 1941, *C.V. Morton* 4441 (US); **Santiago**. SE Villa Estate, near Santiago, 10 Sep. 1906, *N. Taylor* 328 (NY); **Villa Clara**. Santa Clara, Cienfuegos, Cieneguita, 7 Feb. 1895, *R. Combs* 55 (K, NY, P); Santa Clara, Limones, Soledad, Cienfuegos, 29 Jul. 1927, *J.G. Jack* 5187 (NY, UPS, US).

DOMINICAN REPUBLIC. **Barahona**. El Firme, Cabral, 18 Aug. 1959, *J. de Jesus Jimenez* 3751 (US); **El Seybo**. Llano Costero, La Romana, near S. Pedro de Macorís, 6 Apr. 1929, *E.L. Ekman* 12094 (K, NY, US); **San Pedro de Macorís**. Macoris, 23 km W of San Pedro de Macorís, 18 Oct. 1946, *R.A. Howard* & *E.S. Howard* 9508 (NY, US); **Santiago**. Jaiquí Picado, 20 miles W of Santiago, 27 Nov. 1969, *A.H. Liogier* 17049 (NY).

ECUADOR. **Esmeraldas**. Near Punta Galera at finca of Robin Gracia Montalvo, along watercourse in secondary rain forest, 0°48'N, 80°2'W, 30 m, 15 May 1988, *S. Lægaard* & *E. Kullberg* 71243, 71248 (G).

EL SALVADOR. **Santa Ana**. Coatepeque, 3 Sep. 1994, *R. Vil-lacorta* 2198 (K); Santa Ana, P.N. Los Volcanes, sector Los Andes, sendero al crater, 1783 m, 13°52'N, 89°38'W, 26 May 2005, *J. Monterosa* 918 (MO).

GUATEMALA. **Alta Verapaz**. 1906, *M. Gandoger* s.n. (G); **Petén**. Tikal National Park, growing in zapotal along Remate Road, 3 Jul. 1959, *C.L. Lundell* 16146 (US); Tikal National Park, in secondary growth bordering airfield, 4 Aug. 1959, *E. Contreras* 72 (G); Tikal National Park, 6 Aug. 1960, *E. Contreras* 1395 (NY); Petén, Dos Lagunas, in zapotal, on Ixcandrio Road, 12 Oct. 1960, *E. Contreras* 1518 (US); Dos Lagunas, bordering north lake, in low forest, 15 Dec. 1960, *E. Contreras* 1689 (NY); Tikal National Park,

Tikal on the top of temple II, 21 Jan. 1961, *E. Contreras* 1846 (US); Uaxactum, 20 Dec. 1963, *E. Contreras* 3641 (US); Ruinas Plaza Mayor en Tikal, 16 Nov. 1965, *A. Molina* 15818 (US); Tikal, Sacate en camino para Uaxactum, 29 Jul. 1969, *R.T. Ortiz* 204 (US); **Quezaltenango**. Colombia, 29 Sep. 1934, *A.F. Skutch* 1345 (US).

HAITI. **L'Artibonite**. Vicinity of Ennery, Département de l'Artibonite, 325–900 m, 3 Feb. 1926, *E.C. Leonard* 9466 (MO, US); **Gonave Island**. Vicinity of Anse Galette, Gonave Island, 11 Mar. 1920, *E.C. Leonard* 3240 (NY, US), 3240 (BM); Vicinity of Pikmi, 5–9 Jul. 1920, *E.C. Leonard* 5121 (NY); **Nord**. Port de Paix western slope of Haut Pibon in falaise at Rivière Froide, 26 Jun. 1925, *E.L. Ekman* 4438 (US); Vicinity of St. Raphael, 350 m, 2 Dec. 1925, *E.C. Leonard* 7650 (US); Vicinity of St. Louis du Nord, 30 Mar.–7 Apr. 1929, *E.C. Leonard* & *G.M. Leonard* 14292 (NY); **Ouest**. Vicinity of Pétionville, 350 m, 25 Jun. 1920, *E.C. Leonard* 5054 (BM, US); Port au Prince, hills between the town and Pétionville at Source Plaisance, 19 Oct. 1924, *E.L. Ekman* 2190 (C, US); **Sud**. Arrondissement de Jérémie, southern peninsula, flood plain of Grand Rivère de Jérémie, 7 Jul. 1941, *H.H. Bartlett* 17498 (US); Between Anse d'Hainault and Dame Marie, southern peninsula, 8 Jul. 1941, *H.H. Bartlett* 17519 (US).

HONDURAS. **Comayagua**. Chichipates, orilla del Río Yure, 30 km E Lago Yojoa, 200 m, 22 Nov.–31 Dec. 1980, *C. Nelson* & *al.* 6654 (MO); **Copán**. Vicinity of Santa Rita, 21 Aug. 1971, *A. Molina* 26229 (BM, NY, US); Vicinity of Jaguar Temple of Copán, 3 Jan. 1990, *A. Molina* & *Albertina R.* 34261 (US); **Cor-tés**. Montaña de Río Piedras, 4 Dec. 1950, *A. Molina* 3541 (BM, MO, US); 5 km of San Pedro Pula, Río Arenales, El Sauce, 18 Dec. 1950, *A. Molina* 3814 (BM, US); **Santa Barbara**. El Nispero, 25 km al S de la ciudad de Santa Barbara cercanías del proyecto hidroeléctrico, 600–800 m, 8 Aug. 1982, *G. Padilla* 48 (MO); Lago Yojoa, Punta Gorda, 650 m, 14°52'N, 88°00'W, 2 Nov. 1988, *J.M. McDougal* & *al.* 3125 (MO); **Yoro**. 19 km SE of Río Viejo, 27 Jun. 1970, *G. Davidse* & *R.W. Pohl* 2200 (K, MO, NY, US), **n** = 18! (Davidse 1978).

JAMAICA. *C. Wright* s.n. (K); **Clarendon**. Upper slopes of Round Hill, 900–1000 ft, 26 Jul. 1979, *G.R. Proctor* 38265 (FTG, MO); **Middlesex**. 28 Jan. 1938, *F.W. Hunnewell* 15226 (NY); **Portland**. St. Margaret Bay, 6 miles W of Port Antonio, 18 Feb. 1906, *A.E. Wight* 118 (NY); **St. Andrew**. Stony Hill Road, above Constant Spring, near Kingston, 25 Sep. 1912, *A.S. Hitchcock* 590 (BM, C, G, K, L, MO, NY, P, US, W); Hells' Delight, roadside, 10 Oct. 1912, *W. Harris* 11260 (BM, C, K, NY, P, US); Road from Pardon Source to Flamstead, 26 Nov. 1912, *W. Harris* 11454 (BM, K, MO, NY, P, US); Blue Mts., Mount Faraway, 3 Dec. 1912, *W. Harris* 11490 (P); Bryans Hill, 26 Dec. 1912, *W. Harris* 11531 (NY, US); St Andrew, hill just above Yallahs River Bridge below Chestervale, 850 m, 24 Nov. 1971, *G. Davidse* & *G. Proctor* 3249 (MO, US); **St. Ann**. 1.4 miles S of Ocho Ríos at end of Fern Gully, 130 m, 26 Nov. 1971, *G. Davidse* & *E. Convey* 3273 (MO, NY, US); **St. Catherine**. Between Bog Walk and Spanish Town, 26 Sep. 1912, *A.S. Hitchcock* 591 (BM, C, G, K, L, MO, NY, P, US, W); Ewarton to Linstead, 9–11 Oct. 1912, *A.S. Hitchcock* 9413 (US); Blue Mts., Pimento Grove, 22 Jan. 1913, *W. Harris* 11589 (BM, NY); Bog Walk and vicinity, 27 Jul. 1926, *W.R. Maxon* 10502 (NY, US); **St. Elizabeth**. Santa Cruz Mountains, 9 Sep. 1907, *N.L. Britton* 1280 (NY); Ipswich to Black River, 21 Oct. 1912, *A.S. Hitchcock* 9606 (US); **St. James**. Montego Bay, Mar. 1916, *H.N. Ridley* 35 (US); Orange River, near Montego Bay, 29–30 Mar. 1920, *W.R. Maxon* & *E.P. Killip* 1673 (NY, US); **St. Thomas**. 2.4 miles SE of Cedar Valley along road to Seaforth, 350 m, 25 Nov. 1971, *G. Davidse* & *E. Convey* 3264 (MO); **Trelawny**. Troy, 6 Nov. 1912, *A.S. Hitchcock* 9801 (US).

LEEWARD ISLANDS. Antigua. Forest NE of Dark Valley, below Boggy Peak, 16 Dec. 1931, *H.E. Box 119* (BM, K, US); **St. Martín.** Pic du Paradis, sommet, 424 m, 7 Dec. 1977, *A.M. Raynal 19643* (P).

MEXICO. Campeche. Zuxpeña, Campeche, 6 Nov. 1931, *C.L. Lundell 904* (K, MO, NY, US); Calakmul, loc. a 4 km al S de La Nueva Vida, camino a Xpujil, en el puente Papagayo, 297 m, 18°44'15"N, 89°23'32"W, 2 Aug. 1997, *E. Martínez S. 27983* (MO); Campeche, Municipio Calakmul, a 34 Km al S de la Caseta de entrada a Calakmul, 160 m, 18°15'47"N, 89°49'39"W, 18 Oct. 1997, *E. Madrid 292* (BM, MO); Campeche, Calakmul, road to Nadzacaan, 195 m, 18°33'21"N, 89°53'49"W, 23 Oct. 2002, *D. Álvarez 2184* (BM, MO); **Chiapas.** Hillside 3 km W of the Chiapas/Tabasco border on Highway 186, 19 Aug. 1974, *J. Conrad & R. Conrad 2986* (K, NY); Ocosingo, Lower Montane Rain Forest, 70 km SW of Palenque on road to Ocosingo along the Joluk'um, 9 Nov. 1981, *D.E. Breedlove 55237* (NY); Along Highway 195 between Chiapa de Corzo and Pichucalco, 10.7 miles S of Solosuchiapa, 27.8 miles SSE of Pichucalco, 520 m, 17°23'N, 93°00'W, 18 Feb. 1987, *T.B. Croat & D.P. Hannon 65305* (MO); Aeropuerto-Ocozocoautla-México, 17 Sep. 1988, *A. Reyes García 969* (BM, MO); Angel Albino Corzo, 13 Nov. 1989, *A. Reyes García & al. 1414* (BM); Ocosingo, 2 km al E de Nuevo Guerrero, 22 m, 16°58'35"N, 91°16'09"W, 5 May 2002, *J.C. Soto 23284* (MO); Ocosingo, banco de grava de San Javier, 560 m, 16°48'10"N, 91°05'43"W, 13 Aug. 2002, *E. Martínez & al. 35679* (BM, MO); **Colima.** Manzanillo, 19 Sep. 1910, *A.S. Hitchcock 410* (BM, G, L, MO, NY, P, US, W); **Hidalgo.** On Highway below Chapulhuacan, 26 Sep. 1946, *H.E. Moore 1328* (US); **Oaxaca.** 5 km S of Tuxtepec, 30 Aug. 1974, *J. Conrad & R. Conrad 3253* (K, MO, US); 8 miles NE of Valle Nacional on Highway 175 to Tuxtepec, 16 Aug. 1975, *G. & J. Davidse 9732* (K, MO, US), **n = 18!** (Davidse 1978); En los alrededores de las Bombas de Auxiliación de la Presa de Temaxcal, 22 Sep. 1984, *E. Cabrera 7232* (MO); **Quintana Roo.** Tancah, 4-5 Aug. 1932, *J.R. Swallen 2807, 2817* (US); Quintana Roo, F. Carrillo Puerto, 16 Nov. 1980, *E. Cabrera 393* (BM); **San Louis Potosí.** Ledges, Tamasopo Canyon, 1 Jul. 1890, *C.G. Pringle 3403* (US); Las Canoas, 15 Aug. 1891, *C.G. Pringle 3808* (NY, US); Tamasopo, 8-9 Aug. 1934, *F.W. Pennell 18012* (US); Tamazunchale, 5 Aug. 1937, *G.L. Fisher 37127* (MO, NY), 37129 (US); In a tropical forest between Narango-Platinito-Salto de Agua, 22 Sep. 1954, *E.R. Sohns 1406* (K, US); 9 miles E of Xilitla, 18 Jul. 1963, *R.L. McGregor & al. 933* (US); 1.5 km SW of Tamazunchale on Highway 85, 150 m, 26 Oct. 1985, *B. Bartholomew 3* (MO); **Tabasco.** Arriba de las grutas del Cocona, a 2 km de Teapa, 8 Sep. 1980, *C. Cowan 3153* (MO, NY); Teapa, E of Chapingo, 28 Jan. 2002, *Calónico & al. 21134* (BM); **Tamaulipas.** 10 km NW of El Progreso, 30 Aug. 1941, *L.R. Stanford & al. 1061* (MO, NY); Western slopes of the Sierra de Tamaulipas at Santa Maria de los Nogales, 800 m, 23 Sep. 1956, *F.M. Martínez & G.B. Luyando F-2102* (US); **Veracruz.** Coatepec, 3 km de Tuzamapa, 19°22'N, 96°53'W, *M. Vasquez Torres 2238* (MO); **Yucatán.** Yucatán, Chichen Itzá, 7-13 Jul. 1932, *J.R. Swallen 2415* (K, US); Tizimin, 14-16 Jul. 1932, *J.R. Swallen 2519* (K, US); Yucatán, Peto, 26-27 Jul. 1932, *J.R. Swallen 2714* (K, US).

NICARAGUA. Carazo. Jinotepe, 3-7 Nov. 1911, *A.S. Hitchcock 8673* (NY, US), 8700 (US); **Chontales.** 12 km E of Villa Somoza along Highway 7, 18 Jul. 1970, *G. Davidse & R.W. Pohl 2388* (MO, US); 3 km N of Cuapa, 500 m, 3 Sep. 1977, *D. Neill 2515* (MO); **Granada.** NE del Volcán Mombacho, Hacienda Las Delicias, de 8-9 km sobre la carretera a Cutirre, 350-400 m, 11°51'N, 85°58'W, 16 Sep. 1980, *P. Moreno 2673* (MO).

PANAMA. Panamá. s.d., s.coll. (Exp. Malaspina), sec. XVIII, *L. Née s.n.* (MA); Parque Nacional Altos de Campana, después del mirador del Parque, 642 m, 8°41'22"N, 79°54'54"W, 14 Jan. 2012, *M.N.S. Stapf & R.M. Baldini 815* (FT, PMA, SCZ); Parque Nacional Altos de Campana, Capira, 29 Jan. 2013, *O.O. Ortiz & R.M. Baldini 1988* (FT, PMA); Parque Nacional Altos de Campana, carretera a Chicá, 8°41'13"N, 79°55'W, 2 Feb. 2014, *M.N.S. Stapf & R.M. Baldini 939* (FT, PMA).

PUERTO RICO. 1827, *H. Wydler 222* (FI-Webb); Toa Alta, 11 Nov. 1960, *R. Woodbury s.n.* (NY).

SURINAME. Bei Paramaribo, 1913, *J. Kuiper 27915* (L).

VENEZUELA. Aragua. 16.3 km NW of Rancho Grande along road to Cata, 270 m, 15 Nov. 1971, *G. Davidse 3116* (MO); **Bolívar.** Upper part of west-facing wooded slopes, E of Miamo, Altiplanicie Nuria, 300-500 m, 8 Jan. 1961, *J.A. Steyermark 88189* (NY, US); **Bolívar.** El Pao Viejo, 430 m, 7 Dec. 1973, *G. Davidse & al. 4969* (K, MO, US); **Lara.** Alrededores de Barquisimeto, Jul. 1925, *J. Saer d'Héguert 280* (G, NY, US); **Mérida.** Tovar, penetration road to Mijagual from 1 km S of Puente Victoria, 600-800 m, 29 Aug. 1973, *S.S. Tillett & K.W. Höning 738-549* (MO); **Miranda.** Plaza, campamento Scout Curupao, al NE de Guarenas, 10°30'N, 66°39'W, 400-600 m, 19 Sep. 2008, *W. Meier & C. Bottome 15180* (G); **Táchira.** Vicinity of San Cristóbal, 5 Jan.-22 Feb. 1923, *W.E. Broadway 289* (US).

(19) *Lasiacis standleyi* Hitchc., Proc. Biol. Soc. Wash. 40: 86. 1927. (Fig. 48, 49).

Type: "Costa Rica, Guanacaste, La Tejona, north of Tilaran, moist forest, subscandent, 8 ft, 600-700 m, 25 Jan. 1926, P.C. Standley & J. Valerio 45839" (holotype: US! [barcode US00134122]; isotype MO! [Acc. No. MO354963]).

(=) *Lasiacis lucida* Swallen, Ann. Missouri Bot. Gard. 30: 231. 1943.

Type: "Panamá, Chiriquí, Volcán de Chiriquí, forest above Sabana de El Salto, on trail to Camp Aguacatal, eastern slope of Chiriquí Volcano, altitude 1500 to 1750 m, 10-13 March 1911, W.R. Maxon 5266" (holotype: US! [barcode US00134114]; isotypes L! [barcode L0797287]! US! Two sheets [barcode US00134112, US00134113]).

(=) *Lasiacis longiligula* Swallen, Ann. Missouri Bot. Gard. 30: 232. 1943.

Type: "Panamá, Canal Zone, forest along telephone cable trail between splice S16 and S49, Río Indio, trail toward Chico, 1m tall, 12 January 1935, J.A. Steyermark & P.H. Allen 17435" (holotype: US! [barcode US00134111]; isotypes G! [barcode G00176063], GH (photo!) [barcode GH00023860], K! [barcode K001491992], MO! [Acc. No. MO354963]).

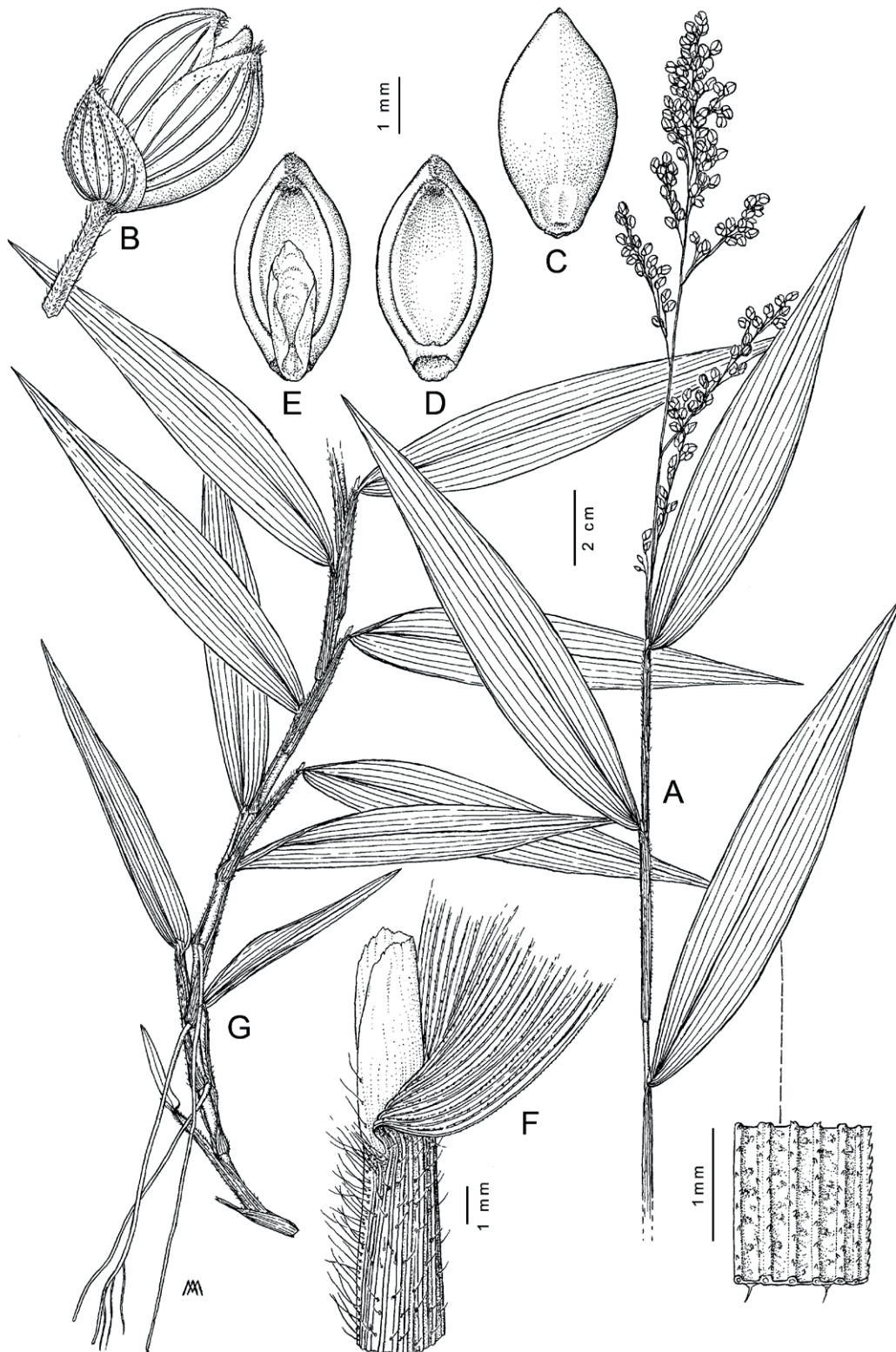


Figure 48. *Lasiacis standleyi* Hitchc.: A. Habit; B. Spikelet lateral view; C. Fertile upper floret dorsal view; D. Fertile upper floret ventral view without lower persistent palea; E. Fertile upper floret ventral view with lower persistent palea; F. Ligular area [A-F. from P.H. Allen 1338 (K)]; G. Culm at the medium length rooting at the nodes [G. from B.A. Stein & C.W. Hamilton 1149 (K)]. A. Maury delineavit.



Figure 49. *Lasiacis standleyi* Hitchc.: procumbent habit in shade forest (Panama, Chiriquí, photo R.M. Baldini).

Description

Perennials, semi-caespitose. Culms up to max 1 m tall, creeping, rooting at the nodes or erect usually scrambling into the shrubs up to several meters; *internodes* 2–5 mm thick, herbaceous, hollow, puberulent upward, often pubescent; *nodes* glabrous to puberulent. *Leaf sheaths* puberulent to pubescent, often hispid with hairs up to 3.0 mm long; *collars* glabrous; *ligules* 4.5–7.0(–8.0) mm long, conspicuous and prominent, membranous, lacerate, slightly ciliate at the base, usually glabrous on the back; *blades* 10–20 cm long, 1.5–3.5 cm wide, elliptic-lanceolate to linear, adaxial surface scabrous, rarely glabrous, adaxial surface puberulent to hispidulous, apex acuminate, base asymmetrical, margins scabrid, often undulate. *Panicles* up to 30 cm long, rather compact; *branches* ascending, often spreading; *pedicels* usually slightly pubescent, rarely scabrid. *Spikelets* 3.5–5.0 mm long, ovate-elliptic; *lower glumes* 1.8–2.5 mm long, 0.8–1.5 mm wide, 9–11-veined; *upper glumes* 1.8–3.8 mm long, 1.0–1.8 mm wide, 9–13-veined; *sterile florets* without flowers, *lemmas* 11–13-veined, *paleas* $\frac{1}{2}$ the length of the fertile floret; *fertile florets* 3.5–4.3(–4.5) mm long, 2.0–2.5 mm wide, *anthers* 2.2 mm long, white or yellowish, *stigmas* purple; *caryopses* 2.0–2.5 mm long, 1.5–2.0 mm wide. *Chromosome number*: $n = 18$ (Davidse 1972, 1978).

Distribution

Belize, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Perú, Venezuela. (Fig. 50).

Distribution (bibliographic references)

Hitchcock (1927, 1930); Standley (1937); Swallen (1931, 1943); Pohl (1980); D'Arcy (1987); Davidse (1978, 1994, 2001); Cialdella and Vega (1996); Serna and López-Ferrari (2000); Morales (2003); Zuloaga et al. (2003); Correa et al. 2004; Renvoize et al. (2006); Hokche et al. (2008); Sutherland (2008); Bono (2010); Giraldo-Cañas (2011); Villaseñor (2016); Dávila et al. (2018); Sánchez-Ken (2019).

Ecology

Common grass at edges of moist and wet undisturbed forests, in moist cloud forest openings and along trails in montane vegetation. Elevation between 500 m to 2200 m [Colombia: El Valle, E.P. Killip & H. Garcia 33774 (US)].

Phenology

October through May, with the peak December through March.

Remarks

Lasiacis standleyi is a creeping species that grows in the forest undergrowth often in association with other species belonging to “Forest Shade Clade” such as *Acroceras zizanioides* (Kunth) Stapf, *Oplismenus burmannii* (Retz.) P.Beauv., *Oplismenus hirtellus* (L.) P.Beauv., *Pseudechinolaena polystachya* (Kunth) Stapf.

The hollow culm, short leaf blades, and long ligules are all distinctive characters. The presence of long ligules (up to 8 mm) can cause confusion with other species such as *L. oaxacensis*, *L. ligulata*, and *L. scabrrior*.

The specimens collected by me in the area from where *L. lucida* Swallen was described (Panamá, Chiriquí, Volcán de Chiriquí) seem to be quite different and perhaps they might be worth of more attention at the population level.

Selected specimens

BELIZE. Toledo. Crique Negro, 14 Feb. 1951, P.H. Gentle 7205 (BM); Toledo, Southern Maya Mountains, Bladen Nature Reserve, Ridge just S of the Main Divide of the Maya Mountains, “Augusta Divide Camp”, 920 m, 16°29'22"N, 88°59'33"W, 22 May 1997, G. Davidse & D.L. Holland 36712 (MO).

COLOMBIA. Antioquia. Amalfí, Vereda La Viborita, 4 km NO de Amalfí, 1500–1510 m, 6°55'N, 75°05'W, 8 Dec. 1989, R. Callejas & al. 9190 (MO, NY); Las Orquideas, Vereda Calles, Quebrada Honda, 1330 m, 06°29'N, 76°14'W, 8 Dec. 1992, J. Pipoly & al. 16833 (MO, NY); **Caldas.** Río Santa Rita, Salento, Cordillera Central, 1600–1800 m, 26 Aug. 1922, E.P. Killip & T.E. Hazen 10138 (US); **Cauca.** Hills of Miraflores above Palmira, central Cordillera, 1200–1600 m, Jan. 1906, H. Pittier 875 (US); Cauca, Río Hondo to Popayan, 1500–1700 m, 4 Jul. 1922, E.P. Killip



Figure 50. *Lasiacis standleyi* Hitchc.: general geographic distribution.

8259 (NY, US); Cauca. La Gallera Micay Valley, 1400–1500 m, 29–30 Jun. 1922, *E.P. Killip* 7714 (NY, US); **Magdalena.** Santa Marta, 1898–1901, *H.H. Smith* 2148 (G), *H.H. Smith* 2258 (G, L, NY, P); **Meta.** Restrepo, Salinas, subida al cerro, 600–700 m, 12 Jun. 1989, *F.O. Zuloaga* 3941 (US); **Putumayo.** Sachamates below mouth of Quebrada Patoyaco, Río Susunga (upper Río Mocca), 17 km W of Mocca, 1600 m, 1°10'N, 76°47'W, 27–28 Mar. 1943, *F.R. Fosberg* 20370 (US); **Valle.** Miraflores, Palmira, Cordillera Central, 1800–2100 m, 27 May 1922, *E.P. Killip* 6149 (NY, US); El Silenzio, Yanacónas, 1900–2200 m, 28 Feb. 1939, *E.P. Killip* & *H. Garcia* 33774 (US); Cordillera Occidental, Hoya del Río Sanjuquín, lado izquierdo, La Laguna, 1250–1400 m, 10–20 Dec. 1943, *J. Cuatrecasas* 15602 (US); Yotoco, Cordillera Occidental, eastern slopes, along Highway between Dapa and Loboguerrero at Parque Yotoco, 1485–1550 m, 03°52'N, 76°22'W, 17 Feb. 1990, *T.B. Croat* 70702 (MO); Lago Calima, 6 Sep. 1992, *S.A. Renvoize* 5364 (K).

COSTA RICA. **Alajuela.** Vicinity of San Ramon, 21 Jan. 1935, *A.M. Brendes* 20319 (NY); **Cartago.** Vicinity of Pejivalle, Jan. 1940, *A.F. Skutch* 4571, 4649 (MO, NY, US); Along road between Navarro and El Muneco, along S side of Río Navarro, 9°48'N, 43°54'W, 1150 m, 15 Nov. 1987, *M. Grayum* & *B. Hammel* 8430 (US); **Guanacaste.** Los Ayotes, near Tilarán, 600–700

m, 21 Jan. 1926, *P.C. Standley* & *J. Valerio* 45532 (US); La Tejona, N of Tilarán, 600–700 m, 25 Jan. 1926, *P.C. Standley* & *J. Valerio* 45820 (US); Lower forested slopes of Volcán Orosí at the hacienda Los Inocentes about 15 km SE of La Cruz at an elevation of between 650–2100 feet, 26 Mar. 1968, *R.L. Wilbur* & *D.E. Stone* 10214 (MO, PMA); Cordillera de Talamanca, Volcán Rincón de La Vieja, Hacienda Guachipelin, 900 m, 17 Jan. 1969, *R.W. Pohl* & *G. Davidse* 11675 (MO); Parque Nacional Rincón de la Vieja, the SE slopes of Volcán Santa María, 27–28 Jan. 1983, *G. Davidse* & *al.* 23354 (K, MO); Guanacaste, ridge SE of Quebrada Zopilote, lower SE slope of Volcán Santa María, 950–1000 m, 10°46'N, 85°18'W, 24 Jan. 1986, *M.H. Grayum* & *al.* 6208 (MO); **Heredia.** Yerba Buena, NE of San Isidro, 2000 m, 22–28 Feb. 1926, *P.C. Standley* & *J. Valerio* 49785, 50068 (US); Vera Blanca de Sarapiquí, north slope of Central Cordillera, between Pos and Barba Volcanoes, Mar. 1938, *A.F. Skutch* 3674, 3680 (K, MO, NY); **Limón.** Talamanca, Coroma, 31 May 1977, *Rafael* & *Ocampo* 1686 (K); **Puntarenas.** Slopes up high road from Rincon, Península de Osa, 650 m, 3 Mar. 1965, *R.K. Godfrey* 66916 (NY, US); Forested slopes E of Las Cruces and 5 to 6 km S of San Vito on and around the property of Mr Robt. Wilson, 8°47'N, 82°58'W, 15–16 Jan. 1967, *W.C. Burger* & *G. Matta* 4482

(NY, US); Primary forest and forest edge, Finca Loma Linda, 1 mile SW of Cañas Gordas, 1150 m, 26–27 Feb. 1973, *T.B. Croat* 4482 (US); Cantón de Puntarenas, Monteverde, 1350 m, 10°18'N, 84°48'W, 14 Dec. 1989, *W.A. Haber* 9609 (MO); Cantón de Osa, Agua Buena, Rincón, 60–70 m, 8°41'32"N, 83°30'21"W, 23 Jan. 1991, *V. Ramírez* 248 (USJ); Parque Nacional Corcovado, Cerro Brujo, 600 m, 8°38'N, 83°35'W, 24 Jan. 1991, *E. Castro* 252 (MO, USJ); 29 km NE of San Vito de Java near Alturas, 10 Jan. 1992, *J.R. Grant & J.R. Rundell* 1824 (US); San Vito de Coto Bus, Jardín Botánico Wilson Sendero Java, 8°47'9"N, 82°57'29.3"W, 28 Jan. 1999, *T. Bermúdez* 66 (USJ); Buenos Aires, P.N. La Amistad, Cuenca Terraba-Sierpe, Buenos Aires, Portero Grande, Tres Colinas, 1700–1800 m, 9°08'10"N, 83°03'22"W, 29 Feb. 2008, *D. Solano* 5253 (MO); **San José**. Vicinity of El General, Dec. 1935, *A.F. Skutch* 2206 (K, MO, NY, US); Vicinity of El General, Jan. 1939, *A.F. Skutch* 3802 (K, MO, NY, US); Eastern spur ridge of Cerro Hondura, between Río Patria and Río Zurquí, Cordillera Central, 10°04'N, 84°01'W, 1500–1600 m, disturbed sites, 18 Jan. 1986, *M.H. Grayum & P. Sleeper* 6118 (MO, US); Cantón de Perez Zeledon, ca. 15 km S de San Isidro, El Pilar de Cajon, 600 m, 9°17'00"N, 83°37'00"W, 4 Feb. 1991, *B. Hammel & al.* 18054 (MO); Pérez Zeledón, Río Nuevo, Finca de Julio Mena, 9°27'20"N, 83°50'30"W, 10 Feb. 1999, *A. Estrada & al.* 2029 (K, USJ); Pérez Zeledón, Río Nuevo, Savegre Abajo, 6 Feb. 2001, *A. Estrada* 2684 (K).

ECUADOR. Napo-Pastaza. Vicinity of Puyo, 750–1000 m, Aug. 1939, *A.F. Skutch* 4460 (K, MO, NY, US); **Tungurahua.** Valley of Pastaza River, between Banhos and Cashurco, 8 hours of Banhos, 1300–1800 m, 25 Sep. 1923, *A.S. Hitchcock* 21894 (NY, US); Valley of Río Pastaza, between Machai and La Victoria, 1400 m, 24 Aug. 1939, *E. Asplund* 8514 (MO, NY, US).

EL SALVADOR. Santa Ana. Parque Nacional Montecristo, 3 Sep. 2002, *R.A. Carballo* 444 (BM).

GUATEMALA. Huehuetenango. Barillas, Aldea Malpais, secondary cloud forest on volcanic soil, 1200 m, 15°51'N, 91°13'W, 1 Mar. 2009, *J.M. Maarten & al.* 5426 (MO); **Petén.** Sacate, Dolores, en el camino para-Río Machaquilla, en km 85, 15 Feb. 1971, *R.T. Ortíz* 1576 (F, SCZ, US).

HONDURAS. Atlantida. Sobre árboles en el bosque lluvioso de Montaña Lancetilla, cerca de El Portello, 3 km al sur de Lancetilla, 19 Mar. 1962, *A. Molina* 10467 (US); **Cortés.** Mountains on N side of Lake Yojoa, in rainforest, 10 Apr. 1951, *C.V. Morton* 7619 (NY, US); **Lempira.** Near Gracias, Montaña de Celaque, 20 Sep. 1991, *M. Chorley* 342 *pro parte* (BM); **Olancho.** Road from San Francisco de La Paz to Gualaco, 11.5 km S of Gualaco, 1000 m, 14°57'N, 86°08'W, 29 May 1992, *W.G. D'Arcy* 18050 (MO).

MEXICO. Chiapas. Ocozocoautla de Espinosa, steep heavily wooded slope, 32 Km N of Ocozocoautla along road to Mal Paso, 2500 ft, 19 Oct. 1965, *D.E. Breedlove & P.H. Raven* 13566 (US); Ocosingo, 5 km SW of Santo Domingo, 13 May 1982, *G. Davidse & al.* 20448 (BM); Ocosingo, en Laguna Ocotolito a 12 km al N de Monte Libano camino a Chancala, 980 m, 2 Feb. 1986, *E.M. Martínez S.* 17189 (MO); Ocosingo, a 2.5 km al N de San Javier, 16°27'43"N, 91°14'26"W, 21 Dec. 2002, *G. Aguilar* 4822 (NY); **Tabasco.** Huimanguillo, Cabañas Agua-Selva W of Malpasito, 31 Jan. 2002, *E.M. Martínez S. & al.* 34787 (BM); **Veracruz.** Hidalgotitlán, north side of Río Solosúchil, 2–3 km SE of Augustin Melgar, 17°14'N, 94°33'W, 5 Mar. 1984, *M. Nee & K. Taylor* 29937 (NY).

NICARAGUA. Granada. Upper slope of Volcán Mambacho along W shore of Lake Nicaragua, ca. 15 km S of Granada, 1100–1200 m, 19 Mar. 1977, *T.B. Croat* 39093 (MO); **Jinotega.** Macizos de Peñas Blancas, along trail between finca of Socorro

Mejia and finca of Luis Manzanares, 1350–1650 m, 13°17'N, 85°41'W, 14 Jan. 1979, *W.D. Stevens & al.* 11373 (MO); Wiwili, Reserva Natural Kilambé, Comunidad Aguas Frias, Sector Caballo Blanco, 900–1200 m, 13°35'N, 85°44'W, 25 May 2001, *R. Rueda & al.* 16351 (MO); Wiwili, Comunidad La Esperanza, Reserva Bosawas, Territorio Miskito, Indian Tasbaika Kum, parcela 2 en el Tacotal, 500 m al oeste de la Finca de Lionidas, 60–70 m, 25 Feb. 2008, *C. Centeno* 248 (MO); **Matagalpa.** Road to La Fundadora, N of Maria de Ostuma, Feb. 1963, *L.O. Williams & al.* 24919 (G, NY, W); **Rivas.** Isla de Omotepe, San Pedro, al E del Volcán Maderas, 200–450 m, 11°25'N, 85°28'W, 2 Mar. 1983, *J.C. Sandino* 4283 (MO); **Zelaya.** Along rail from Cerro El Inocente toward Cerro Saslaya, 1050–1150 m, 13°46'N, 85°00'W, 8 Mar. 1978, *W.D. Stevens & al.* 6708 (MO); Siuna, Reserva Bosawas, Cerro Saslaya, 800–1000 m, 13°47'N, 84°59'W, 14 Apr. 1999, *R. Rueda & al.* 10699 (MO).

PANAMA. Bocas del Toro. 1525 m, 9°03'96"N, 82°43'93"W, 10 Mar. 2004, *E. Alfaro & A.K. Monro* 5475 (BM, PMA); Changuinola, PILA, Point 17, ca 2 km from estación de Alto Urí, 9°03'54"N, 82°42'006"W, 19 Apr. 2008, *D. Santamaria* 7441 (PMA); Changuinola, PILA, 9°03'22"N, 82°42'15"W, 1450 m, 21 Apr. 2008, *J. Lezcano* 330 (PMA); Changuinola, Cerro Frio, Cabeceras del Río Tskui, Punto 14, 1276 m, 9°25'45"N, 82°50'53"W, 25 Oct. 2008, *F. González* 753 (MO); Changuinola, Bonyic, sitio presa, 9°17'12"N, 82°39'01", 258 m, 3 Feb. 2014, *O.O. Ortiz & R.M. Baldini* 2026 (FT, PMA); **Chiriquí.** Foot-hills vicinity of El Boquete, 1000–1300 m, 28 Sep.–7 Oct. 1911, *A.S. Hitchcock* 8267 (US); Cerro Vaca, in forest or in thickets, 900–1200 m, 25–28 Dec. 1911, *H. Pittier* 5339 (US); Open woods along Río Caldera 2 miles above El Boquete, 14 Feb. 1918, *E.P. Killip* 4529 (US); "New Switzerland", central valley of Río Chiriquí Viejo, 6–14 Jan. 1939, *P.H. Allen* 1338 (K, MO, NY); 1 mile E of Cañas Gordas on road to Volcán, near Costa Rican border, 26 Feb. 1973, *T.B. Croat* 22331 (MO); N of Bambito, 4.5 km by air WNW of town of Cerro Punta, 2100 m, 8°52'N, 82°37'W, 3 Jan. 1975, *T.S. Cochran & al.* 6296 (MO); Above San Felix along mining road 18–27 miles off of Panamerican Highway (above Chame or turnoff to Escopeta), 1200–1500 m, 12 Mar. 1976, *T.B. Croat* 33047 (MO); Ridge road at Cerro Colorado, 1450–1750 m, 15 Aug. 1977, *J.P. Folsom* 4845 (MO, PMA); Near Fortuna Dam Camp, 25 Feb. 1985, *R.J. Hampshire & C. Whiteford* 59 (BM); Between Los Planes de Hornito and Fortuna Lake, 17 Mar. 1985, *R.J. Hampshire & C. Whiteford* 700 (BM); Along trail to Cerro Pate Macho, 1500–1700 m, 8°49'N, 82°24'W, 6 Feb. 1986, *G. MacPherson & M. Merello* 8290 (MO); Ojo de Agua, vicinity of Santa Clara, between Volcán and Río Sereno, E of Volcán, 1520 m, 8°51'N, 82°45'W, 16 Jun. 1987, *T.B. Croat* 66260A (MO); Comarca Ngöbe Buglé, corregimiento de Hato Chami, base de Cerro Flores, 8°29'06"N, 81°46'13"W, 1441 m, 22 Jan. 2008, *M.N.S. Stapf & al.* 554 (FT, PMA); Sendero del Pianista, 8°49'08"N, 82°25'20"W, 1404 m, 11 Jul. 2012, *O.O. Ortiz* 783 (PMA); **Colón.** Along Santa Rita ridge road, 9°20'N, 79°45'W, 500 m, 16 Feb. 1986, *G. MacPherson* 8442 (MO, PMA); **Darién.** West ridge of Cerro Mali due West of helipad on trail to Río Pucro valley, premontane wet forest, 1150–1350 m, 23 Jan. 1975, *A. Gentry & S. Mori* 13855 (MO, NY, PMA); Cerro Tacaruna, W ridge 1500–1550 m, 2 Feb. 1975, *A. Gentry & S. Mori* 14090 (MO, PMA); Darién, east slope of Cerro Sapo, 2500 ft, 3 Feb. 1978, *B. Hammel* 1310 (MO); Alto de Nique, S peak of Cerro Pirre masif, 1300–1520 m, cloud forest on Panamá/Colombia border, 19 Apr. 1980, *A. Gentry & al.* 28662 (MO, PMA); Serranía del Sapo, area surrounding Río Chado, 400 m, 7°40'N, 78°10'W, 2

Jan. 1981, *W. Hahn* 253 (MO); 10 km NE of Jaque, headwaters of Río Pavandó, 1400 ft, 31 Jan. 1981, *P. D'Arcy & K.J. Sytsma* 14521 (BM, MO); Chepigana, Parque Nacional Darién, Río Casa Vieja, Darién, 7°59'24"N, 78°22'34"W, 676 m, 12 Apr. 2014, *O.O. Ortiz & al.* 2303 (FT, PMA); Chepigana, Parque Nacional Darién, camino hacia la cima de Cerro Sapo, 7°58'40"N, 78°21'31"W, 891 m, 15 Apr. 2014, *O.O. Ortiz & al.* 2348 (FT, PMA); **Herrera**. Hill above Chepo de Las Minas, 700 m, 19 Dec. 1977, *J.P. Folsom* 6996 (MO, PMA); Between Las Minas and El Toro, near village of Chepo, trail along ridge of Motosa de Chepo Forest, 900–950 m, 7°42'04"N, 80°51'04"W, 24 Jan. 1987, *G. MacPherson* 10289A (MO, PMA); **Los Santos**. Vicinity of headwaters of Río Pedregal, 25 miles SW of Tonosí, 2500–3000 ft, 7 Dec. 1967, *W.H. Lewis & al.* 2896 (MO); **Panamá**. Canal Zone, vicinity W end of Gatun Lake dam, 22 Dec. 1965, *K.E. Blum & E. Tyson* 7268 (USJ); Slopes of Cerro Campana, about 2700 ft, 23 Jan. 1970, *R.L. Wilbur & R.E. Weaver* 11300 (MO); Cerro Jefe, 2900 ft, 1 Jan. 1972, *A. Gentry* 3515 (MO); Cerro Campana, 850 m, 11 Mar. 1973, *T.B. Croat* 22784 (K, MO, US); La Eneida, ca. 10 km N of Goofy Lake, 675 m, 15 Jan. 1973, *T.R. Soderstrom* 2007 (K, MO, US); 3 miles NE of Altos de Pacora, 500–800 m, 10 Mar. 1973, *R.L. Liesner* 527 (MO); Premontane wet forest area, 6.5 km by road N of Lago Cerro Azul, 650–730 m, 13 Jan. 1974, *M. Nee* 9295 (MO, PMA); Cerro Campana, 2700–2900 ft, 14 Feb. 1981, *K.J. Sytsma* 3531 (BM, MO); In high ridges of the Serranía de Magé, S of the village of Ipetí, ca. 5 hrs walk from the village, tropical wet forest, 650–800 m, 31 Mar. 1982, *M. Huft & al.* 1667 (MO, PMA); Parque Nacional Cerro Campana, 850 m, 8°42'N, 79°55'W, 1 Jan. 1983, *B.A. Stein & C.W. Hamilton* 1149 (K, MO); Serranía de Majé, forest at top of ridge at headwaters of the Río Ipetí Grande, 100 m, 8°51'N, 78°34'W, 25–26 Jan. 1984, *H.W. Churchill & G. de Nevers* 4342 (MO, PMA); Capira, Parque Nacional Altos de Campana, Sendero de Interpretación, 8°40'54"N, 79°55'40"W, 500 m, 27 Jan. 1990, *C. Galdames & al.* 484 (PMA); Parque Nacional Altos de Campana, Buena Vista, Bejuco, 08°41'821"W, 079°57'791"N, 24 Feb. 1999, *F. Espinoza A. & L. Martinez* 3451 (PMA); Parque Nacional La Campana, Cerro Campana in the Mirador on La Cruz trail, 780 m, 8 Apr. 2002, *J.G. Sanchez-Ken* 679 (PMA); Cerro Azul, 4 km después del Lago Gofy, 9°11'15"N, 79°24'20"W, 706 m, 13 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 795 (FT, PMA, SCZ); Parco Nacional Altos de Campana, inicio del Sendero Panamá, 8°40'57"N 79°55'42"W, 889 m, 14 Jan. 2012, *M.N.S. Stapf & R.M. Baldini* 804 (FT, PMA, SCZ); **Veraguas**. NW of Santa Fé, 1.5 km from Escuela Agrícola Alto de Pietra, 29 Mar. 1975, *S. Mori & J. Kallunki* 5315 (MO, US); Ridge of Cordillera de Tute, along trail to Cerro Tute, ca. 3–4 km past Escuela Agrícola Alto de Pietra, just W of Santa Fé, pre-montane and montane rainforest, 800–1400 m, 8°32'N, 81°07'W, 20 Mar. 1982, *S. Knapp & W.J. Kress* 4383 (MO, PMA).

PERÚ. Junín. Gran Pajonal, Mapari, ca. 12 km SW of Chequitavo, 1300 m, 10°45'S, 74°23'W, 7 Apr. 1984, *H.H. Smith* 6806 (K, MO); **San Martín**. Rioja, Pedro Ruíz-Moyobamba road, km 390, Venceremos, 1800 m, 77°45'W, 5°50'S, 27 Jul. 1983, *D.H. Smith* 4407 (K, L, MO, US).

VENEZUELA. Trujillo. Along quebradas Los Riitos, Edo. Trujillo, slva virgen, arriba de Escuche, entre Escuche y la Mesa de San Pedro, 1300–1650 m, 20–23 Feb. 1971, *J.A. Steyermark* 104658 (P, VEN); **Zulia**. Sierra de Perirá, a o largo de la quebrada del Río Omira-kuná, cerca de la frontera Colombo-Venezolana, SE de Pishikakao e Iria, Mar. 1972, *J.A. Steyermark & al.* 105551 (MO, P).

(20) *Lasiacis velutina* Swallen, *Ceiba* 4: 288. 1955. (Fig. 51).

Type: "Honduras, Morazan, vicinity of El Zamorano, road to San Antonio, 17 October 1951, J.R. Swallen 10834" (holotype: US! [barcode US00134123]; isotype MO! [Acc. No. MO2932156]).

(=) *Lasiacis ruscifolia* (Kunth) Hitchc. var. *velutina* (Swallen) Davidse, *Ann. Missouri Bot. Gard.* 64: 375. 1977.

Description

Perennials, caespitose. *Culms* 2–5(–6) m tall, erect at the base or laying on vegetation, glabrous, sparingly branching, often rooting at nodes; *internodes* 2.8–6.8 mm thick, lignified, glabrous or with a line of hairs; *nodes* glabrous. *Leaf sheaths* pilose-velutinous, overlapping margin and throat ciliate; *collars* pilose; *ligules* 0.2–0.5 mm long, inconspicuous or roundly ciliate; *blades* 5–7 cm long, 0.5–3.0 cm wide, ovate to ovate-lanceolate, adaxial surface hispid to velutinous, often pilose, abaxial surface softly pilose, base usually asymmetrical, ciliate, apex acuminate. *Panicles* 4–15 cm long, lower portion enfolded in the sheath or exserted; *longest branches* up to 7–8 cm long, terminal branch of each spikelet densely pilose to pubescent. *Spikelets* 3–4 mm long, globose, purple when immature; *lower glumes* 1.2–2.0 mm long, 7–10-veined; *upper glumes* 10–15(–16)-veined; *sterile florets* staminate, *lemmas* 8–12-veined, *paleas* subequal the length of the fertile floret, clearly acuminate at the apex and enrolled at the base; *fertile florets* 3.3–4.0 mm long, 2.3–2.5 mm wide, *anthers* 2.2–2.5 mm long; *stigmas* purple; *caryopses* 2 mm long, 1.8 mm wide. *Chromosome number*: $n = 18$ (Davidse 1972, 1978 as *L. ruscifolia* var. *velutina*).

Vernacular names

Honduras: El Paraiso, "carrizo" *A. Molina* 4051 (US).

Distribution

Colombia, Costa Rica, Cuba, El Salvador, Honduras, Mexico, Nicaragua, Venezuela. (Fig. 52).

Distribution (bibliographic references)

Swallen (1955a); Davidse (1977, 1978, 1994, 2001); Morales (2003); Zuloaga et al. (2003); Sutherland (2008); Sánchez-Ken (2019). Note: Sánchez-Ken (2019) reports this species in Mexico (Chihuahua).

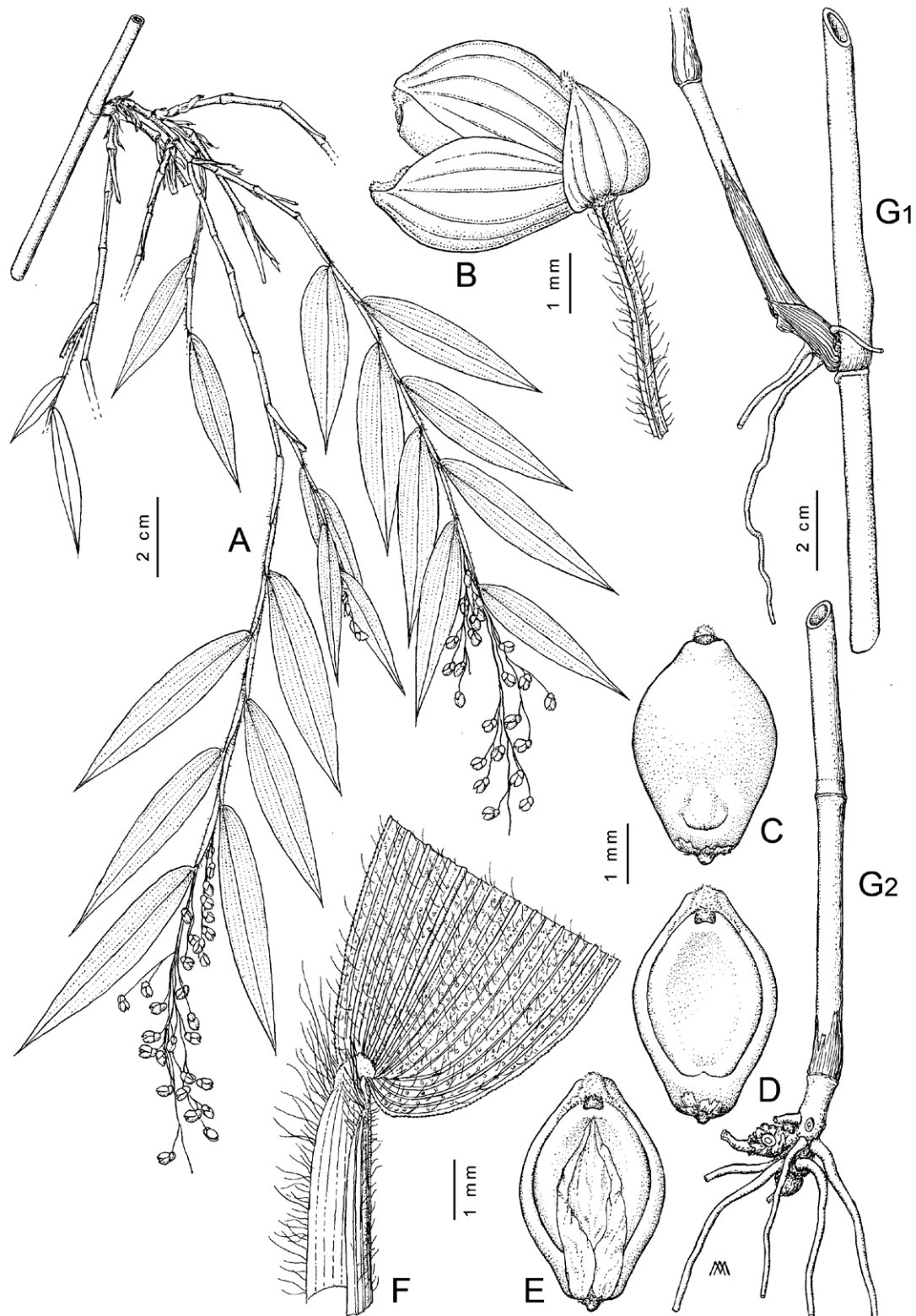


Figure 51. *Lasiacis velutina* Swallen: **A.** Habit with lateral procumbent fertile branches; **B.** Spikelet lateral view; **C.** Fertile upper floret dorsal view; **D.** Fertile upper floret ventral view without lower persistent palea; **E.** Fertile upper floret ventral view with lower persistent palea; **F.** Ligular area [A-F. from P.C. Standley 26686 (MO)]; **G1.** Portion of the culm at medium length rooting at the nodes; **G2.** Culm towards the base. [G1-G2. from G. Davidse & R.W. Pohl 2162 (MO)]. A. Maury delineavit.



Figure 52. *Lasiacis velutina* Swallen: general geographic distribution.

Ecology

Often in pine/oak montane forests, sprawling on other plants. Elevation from sea level (Honduras: Atlantida, *G. Davidse* & *R.W. Pohl* 2188 (K, L, MO, NY, US) up to 1000–1100 m [Honduras: Morazán, *P.C. Standley* 26686 (MO)].

Phenology

June through December, in southern America in February/March.

Remarks

Lasiacis velutina is distinguished by its pilose-velutinous pubescence, leaf blades subovate to ovate, small ligule, purple small globose spikelets, and open inflorescences. It is related to *L. ruscifolia* and for some characters such as open panicle, and dense purple spikelets reminds *L. nigra* Davidse.

I resurrect this taxon at the species level as originally described by Swallen (1955) not excluding a possible hybrid origin between *L. ruscifolia* and *L. nigra* hypothesized by Davidse (1978).

L. velutina is mainly distributed in Honduras, and in scattered areas in Colombia, Costa Rica, Ecuador, El Salvador and Venezuela. I traced an interesting record from Cuba [Pinar del Río, Mendoza, in forest at Río Cuyaguaje, 26 Jun. 1920, *E.L. Ekman* 11490 (G)] referable to *L. velutina*, suggesting that this taxon deserves more attention in the field and in herbaria, because it is often confused with *L. ruscifolia*.

Selected specimens

COLOMBIA. Huila. Garzón, Vereda de las Quebraditas, 900 m, 21–26 Feb. 1947, *L.A. Bermudez* 34933 (G).

COSTA RICA. Guanacaste. About 8 km due north of Liberia, 10°42'N, 85°27'W, 2 Aug. 1971, *W.C. Burger* & *Burger M.* 7855 (NY).

ECUADOR. Manabí. s.l., 1897, *H.F.A. von Eggers* 15553 (L, P).

EL SALVADOR. Santa Ana. Depto. Santa Ana, Chalchuapa, Cantón El Jute, A.N.P. La Magdalena, Sendero del Cerro Pelón al Sector El Tanque, -14.09297° -89.70224°, 11 Jul. 2012, *D. Rodríguez et al.* 3300 (K, LAGU, MO).

HONDURAS. Atlantida. 9 km E of Tela, 10 m, 26 Jun. 1970, *G. Davidse & R.W. Pohl* 2188 (K, L, MO, NY, US), *n* = 18! (as *L. ruscifolia*, Davidse 1978); **Copán.** 8 km de Santa Rosa de Copán entre El Portello y San Juan Opoa, 23 Sep. 1963, *A. Molina* 12880 (US); **El Paraíso.** Matorrales húmedos-enguamilados entre Mata Indio y Lizapa, 25 Jul. 1951, *A. Molina* 4051 (US); **Morazán.** Clara Creek, Zamorano Valley near Santa Inés, 23 Aug. 1946, *L.O. Williams & A. Molina* 10407 (MO, US); Drainage of the Río Yeguaré, 24 Jun. 1948, *S.F. Glassman* 1732 (NY); Along Río Yeguaré E of El Zamorano, Sep.-Dec. 1948, *P.C. Standley* 12728 (NY); Márgenes de la quebrada de las Burras entre Suyapa y Tegucicalpa, 11 Dic. 1948, *A. Molina* 1811 (US); Along Río Agua Amarilla, above El Jicarito, 900-1100 m, 2 Mar. 1949, *P.C. Standley* 26686 (MO); El Zamorano, along road toward San Antonio de Oriente, 800-1000 m, 9 Aug. 1949, *P.C. Standley* 22316 (P); Las Mesas, 800-900 m, 3 Sep. 1949, *P.C. Standley* 23373 (P); Vicinity of El Zamorano, La Quince to El Jicarito, 800-850 m, 10 Sep. 1949, *P.C. Standley* 23574 (P); Above Zamorano, near Río Agua Amarilla, 14 Sep. 1950, *P.C. Standley* 26683 (BM); Cerro Majicoran, above Río de la Orilla, 16 Oct. 1949, *L.O. Williams* 16928 (BM, MO); Río de la Orilla, vicinity of El Zamorano, 16 Oct. 1949, *P.C. Standley* 24173 (NY, US); El Jicarito, above El Zamorano, Río Caparrosa, small vine, 900-1000 m, 1 Dec. 1949, *P.C. Standley* 24859 (P); Río del Gallo, near El Jicarito, about 2 km from El Zamorano, 22 Oct. 1951, *J.R. Swallen* 11008 (G, NY, P, US); Along Río Rancho Quemado, SE of Tegucicalpa, 20-25 km road to Sabana Grande, 9 Nov. 1966, *A. Molina* 18631 (G, NY); Between El Zamorano and San Antonio de Oriente, brushy hillside which was originally pine forest, 1100 m, 21 Jun. 1970, *G. Davidse & R.W. Pohl* 2162 (MO), *n* = 18! (as *L. ruscifolia* var. *velutina*, Davidse 1978); Quarry above El Zamorano, ca. 1000 m, in brush, to 4-5 m tall, 21 Nov. 1970, *G. Davidse & R.W. Pohl* 12508 (MO); Quebrada detras de La Aldea de Suyapa, 950 m, 13 May 1983, *V.L. Ochoa* 161 (MO); **Olancho.** Catamas, 11 Sep. 1991, *M. Chorley* 170 (BM).

VENEZUELA. Distrito Federal. Las Colinas de Sosa, Oct. 1939, *F. Tamayo* 2010 (US, VEN); Cerro Naiguatá, arriba del pueblo de Naiguatá, Lomas de las Delicias, entre Quebrada de Basenilla y Quebrada Guayoyo, suroeste de Hacienda Cocuizal, 100-1300 m, 15-19 Nov. 1963, *J.A. Steyermark* 92125 (US, VEN); **Guárico.** Sabanas de la Estación Biológica de Los Llanos, 10 km al sureste Calabozo, 8°52'N, 67°22'W, 200 m, 7 Aug. 1989, *F.O. Zuloaga & al.* 4355 (US, VEN).

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Appendix I - Index of scientific names cited in the text

(Accepted and valid names in **bold**)

- Lasiacis compacta* (Swartz) Hitchc., *Proc. Biol. Soc. Wash.* 24: 145. 1911 = ***Lasiacis ruscifolia*** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Lasiacis divaricata* (L.) Hitchc., var. *austroamericana* Davidse, *Ann. Missouri Bot. Gard.* 64: 374. 1977 = ***Lasiacis austroamericana*** (Davidse) Baldini
- Lasiacis divaricata* sensu Auct. *Fl. S. America*, non (L.) Hitchc. = ***Lasiacis austroamericana*** (Davidse) Baldini
- Lasiacis glabra* Swallen, *Ceiba* 4: 287. 1955 = ***Lasiacis ruscifolia*** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Lasiacis globosa* Hitchc., *Contr. U.S. Natl. Herb.* 17: 251. 1913 = ***Lasiacis ruscifolia*** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Lasiacis grisebachii* (Nash) Hitchc. var. *lindeliiana* Davidse, *Ann. Missouri Bot. Gard.* 64: 375. 1977 = ***Lasiacis grisebachii*** (Nash) Hitchc.
- Lasiacis guaranitica* (Speg.) Parodi, *Notas Mus. La Plata, Bot.* 8: 95. 1911 = ***Lasiacis maculata*** (Aubl.) Urb.

- Lasiacis lancifolia* Swallen, Publ. Carnegie Inst. Wash. 436: 349. 1934 = **Lasiacis rugelii** (Griseb.) Hitchc.
- Lasiacis leptostachya* Hitchc., Contr. U.S. Natl. Herb. 22: 19. 1920. = **Lasiacis divaricata** (L.) Hitchc. var. **leptostachya** (Hitchc.) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977
- Lasiacis liebmänniana* (E.Fourn.) Hitchc., Proc. Biol. Soc. Wash. 24: 145. 1911 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Lasiacis lucida* Swallen, Ann. Missouri Bot. Gard. 30: 231. 1943 = **Lasiacis standleyi** Hitchc.
- Lasiacis longiligula* Swallen, Ann. Missouri Bot. Gard. 30: 232. 1943 = **Lasiacis standleyi** Hitchc.
- Lasiacis maculata* (Aubl.) Urb. var. *patentiflora* (Hitchc. & Chase) Baldini = **Lasiacis maculata** (Aubl.) Urb.
- Lasiacis maxoni* Swallen, Ann. Missouri Bot. Gard. 30: 231. 1943 = **Lasiacis oaxacensis** (Steud.) Hitchc. var. **maxonii** (Swallen) Davidse
- Lasiacis papillosa* Swallen, Publ. Carnegie Inst. Wash. 436: 349. 1934 = **Lasiacis rugelii** (Griseb.) Hitchc.
- Lasiacis patentiflora* Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 338. 1917 = **Lasiacis maculata** (Aubl.) Urb.
- Lasiacis rugelii* (Griseb.) Hitchc. var. *pohlui* Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977 = **Lasiacis pohlui** (Davidse) Baldini
- Lasiacis ruscifolia* (Kunth) Hitchc. & Chase, Contr. U.S. Natl. Herb. 18(7): 339. 1917 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Lasiacis ruscifolia* (Kunth) Hitchc. var. *velutina* (Swallen) Davidse, Ann. Missouri Bot. Gard. 64: 375. 1977 = **Lasiacis velutina** Swallen
- Lasiacis sorghoidea* (Ham.) Hitchc. & Chase, Contr. U.S. Natl. Herb. 18: 338. 1917 = **Lasiacis maculata** (Aubl.) Urb.
- Lasiacis sorghoidea* (Ham.) Hitchc. & Chase var. *patentiflora* (Hitchc. & Chase) Davidse = **Lasiacis maculata** (Aubl.) Urb.
- Lasiacis swartziana* (Hitchc.) Hitchc., Bot. Gaz. (Crawfordsville) 51: 302. 1911 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum agglutinans* Kunth, Enum. Pl. 1: 120. 1833 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum arborescens* Sieb. ex Trin., Gram. Pan. 208. 1826 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum bambusoides* Ham. Prodr. Pl. Ind. Occ. 10. 1825 = **Lasiacis divaricata** (L.) Hitchc. var. **divaricata**
- Panicum chauvinii* Steud., Syn. Pl. Glum. 1: 68. 1854 = **Lasiacis divaricata** (L.) Hitchc. var. **divaricata**
- Panicum compactum* Swartz, Adnot. Bot. 14. 1829 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.
- Panicum divaricatum* L., Syst. Nat., ed. 10, 2: 871. 1759 = **Lasiacis divaricata** (L.) Hitchc. var. **divaricata**
- Panicum divaricatum* J.Presl ex Griseb., Fl. Brit. W. Ind. 551. 1864 = **Lasiacis sloanei** (Griseb.) Hitchc.
- Panicum divaricatum* L. var. *agglutinans* (Kunth) Hack. ex Sodiro, Anales Univ. Centr. Ecuador 1889: 5. 1889 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum divaricatum* L. var. *glabrum* Kuntze, Rev. Gen. Pl. 2: 784. 1891 = **Lasiacis divaricata** (L.) Hitchc. var. **divaricata**
- Panicum divaricatum* L. var. *lanatum* Schlecht. & Cham., Linnaea 6: 33. 1831 = **Lasiacis anomala** Hitchc.
- Panicum divaricatum* L. var. *lanatum* (Sw.) Kuntze, Rev. Gen. Pl. 2: 784. 1891 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum divaricatum* L. var. *latifolium* Schlecht. & Cham., Linnaea 6: 33. 1831 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum divaricatum* L. var. *molle* Schlecht. & Cham., Linnaea 6: 33. 1831 = **Lasiacis nigra** Davidse, Phytologia 29: 152. 1974
- Panicum divaricatum* L. var. *puberulum* Griseb., Fl. Brit. W. Ind. 551. 1864 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum divaricatum* L. var. *puberulum* Sodiro, Anales Univ. Centr. Ecuador: 5. 1889 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum divaricatum* L. var. *stenostachyum* Griseb., Fl. Brit. W. Ind. 551. 1864 = **Lasiacis divaricata** (L.) Hitchc. var. **divaricata**
- Panicum fruticosum* Salzm. ex Steud., Syn. Pl. Glum. 1: 74. 1854 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum fuscum* Sieb. ex C.Presl, Abh. Böhm. Ges. Wiss. 3: 550. 1845 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum glutinosum* Lam., Tabl. Encycl. 1: 174, tab. 43, fig. 3. 1791 = **Lasiacis ligulata** Hitchc. & Chase
- Panicum glutinosum* J.Presl ex Griseb., Fl. Brit. W. Ind. 552. 1864 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum grisebachii* Nash, Bull. Torrey Bot. Club 35: 301. 1908 = **Lasiacis grisebachii** (Nash) Hitchc., Bot. Gaz. (Crawfordsville) 54: 302. 1911
- Panicum guaraniticum* Speg., Anales Soc. Ci. Argent. 16: 107. 1883 = **Lasiacis maculata** (Aubl.) Urb.
- Panicum latifolium* L. var. *tomentellum* Döll in C.F.P.Mart. & auct. suc. (eds.), Fl. Bras. 2(2): 207. 1877 = **Lasiacis anomala** Hitchc.
- Panicum lanatum* Sw., Prodr. Veg. Ind. Occ. 24. 1788 = **Lasiacis maculata** (Aubl.) Urb.

Panicum lanatum Sw. var. *sorghoideum* (Ham.) Griseb., Fl. Brit. W. Ind. 551. 1864 = **Lasiacis maculata** (Aubl.) Urb.

Panicum latifolium Ham., Prodr. Pl. Ind. Occ. 10. 1825 = **Lasiacis sloanei** (Griseb.) Hitchc.

Panicum liebmannianum E.Fourn., Mex. Pl. 2: 33. 1886 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum liebmannianum E.Fourn., var. *depauperatum* E.Fourn., Mex. Pl. 2: 33. 1886 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum maculatum Aubl., Fl. Guiana Fr. 1: 51. 1775 = **Lasiacis maculata** (Aubl.) Urb.

Panicum maculatum Rchb. ex Schlecht. & Cham., Linnaea 6: 33. 1831, non Aubl. = **Lasiacis ligulata** Hitchc. & Chase

Panicum maculatum Aubl. var. *pilosum* E.Fourn., Mex. Pl. 32. 1886 = **Lasiacis maculata** (Aubl.) Urb.

Panicum martinicense Griseb., Fl. Brit. W. Ind. 552. 1864 = **Lasiacis maculata** (Aubl.) Urb.

Panicum megacarpum Steud. in Lechl., Berb. Amer. Austr. 56. 1857 = **Lasiacis ligulata** Hitchc. & Chase

Panicum oaxacense Steud., Syn. Pl. Glum. 1: 73. 1854 = **Lasiacis oaxacensis** (Steud.) Hitchc. var. *oaxacensis*

Panicum orinocense Willd. ex Spreng., Syst. Veg. 1: 316. 1825 = **Lasiacis maculata** (Aubl.) Urb.

Panicum praegnans Steud., Syn. Pl. Glum. 1: 74. 1854 = **Lasiacis maculata** (Aubl.) Urb.

Panicum procerrimum Hack., Oesterr. Bot. Z. 51: 431. 1901 = **Lasiacis procerrima** (Hack.) Hitchc.

Panicum rhizophorum E.Fourn., Mex. Pl. 2: 31. 1886 = **Lasiacis rhizophora** (E.Fourn.) Hitchc.

Panicum rhizophorum E.Fourn. ex Hemsl., Biol. Cent.-Amer. Bot. 3: 495. 1885 = **Lasiacis rhizophora** (E.Fourn.) Hitchc.

Panicum rugelii Griseb., Cat. Pl. Cub. 233. 1866 = **Lasiacis rugelii** (Griseb.) Hitchc.

Panicum ruscifolium Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth, Nov. Gen. Sp. Pl. 1: 101. 1816 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum ruscifolium Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth var. *amblyoides* E.Fourn., Mexic. Pl. 2: 34. 1886 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum ruscifolium Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth, var. *amblyoides* E.Fourn. subvar. *glabra*

E.Fourn., Mex. Pl. 2: 34. 1886 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum ruscifolium Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth, var. *amblyoides* E.Fourn. subvar. *pilosa* E.Fourn., Mex. Pl. 2: 34. 1886 = **Lasiacis ruscifolia** (Kunth in F.H.W. von Humboldt, A.J.Bonpland & C.S.Kunth) Hitchc.

Panicum scariosum Trin. ex Steud., Nomencl. Bot., ed. 2, 2: 263. 1841 = **Lasiacis procerrima** (Hack.) Hitchc.

Panicum sorghoideum Ham., Prodr. Pl. Ind. Occ. 10. 1825 = **Lasiacis maculata** (Aubl.) Urb.

Panicum sloanei Griseb., Fl. Brit. W. Ind. 551. 1864 = **Lasiacis sloanei** (Griseb.) Hitchc.

Panicum swartzianum Hitchc., Contr. U.S. Natl. Herb. 12: 140. 1908 = **Lasiacis maculata** (Aubl.) Urb.

Appendix II - Nomina excludenda

Lasiacis excavata (Henrard) Parodi, Notas Mus. La Plata, Bot. 8: 92. 1943 = **Acroceras excavatum** (Henrard) Zuloaga & Morrone, Darwiniana 28(1-4): 195. 1987 [1988].

Bas.: *Panicum excavatum* Henrard, Repert. Spec. Nov. Regni Veg. 23: 179. 1926.

Type: "Paraguay, Guarapí, in silvis, 1881, *Balansa* 2947" (holotype: L! [barcode L0044801]; isotypes: BAA (photo!) [barcode BAA00002330], G! (four sheets) [barcode G00009454, G00036486, G00036487, G00036488], K! [barcode K000309354], MVFA (photo!) [barcode MVFA0000426], P! (two sheets) [barcode P00633933, P00633934], US! Fragment from L [barcode 00148483, 00148484]. See comments in Zuloaga et al. (1987).

Appendix III – List of names typified in this revision (reference taxa in the text in brackets)

Panicum divaricatum L. var. *lanatum* Schlecht. & Cham., Linnaea 6: 33. 1831 - (2).

Panicum divaricatum L. var. *glabrum* Kuntze, Rev. Gen. Pl. 2: 784. 1891 - (4a).

Panicum glutinosum Lam., Tabl. Encycl. 1: 174, tab. 43, fig. 3. 1791, non Sw. (1788) - (7).

Panicum lanatum Sw., Prodr. Veg. Ind. Occ. 24. 1788, non Rottb. (1776) - (9).

Panicum guaraniticum Speg., Anales Soc. Ci. Argent. 16: 107. 1883. - (9).

Panicum ruscifolium Kunth, Nov. Gen. Sp. Pl. 1: 101. 1816. - (16).

Panicum liebmannianum E.Fourn., Mex. Pl. 2: 33. 1886. - (16).

Panicum ruscifolium Kunth var. *amblyoides* E.Fourn., Mexic. Pl. 2: 34. 1886 - (16).

Index to collectors cited in the text

The primary collector is cited, even when other collaborators took part in the collecting trip. The collector's name is followed by the collection number (when available) and the respective taxon in parenthesis according to the list of taxa in the text.

J.R. Abbott 15140 (10) - **W.L. Abbott** 179, 1542, 2859 (4a); 121, 2597 (7); 332, 737, 16440 (9) - **P. Acevedo-Rodríguez** 3283 (2); 2288, 2681, 3795, 5218, 6984, 10931, 11429 (4a); 3169 (6); 3844 (7); 2638, 3844, 7155 (9) - **L. Acosta** 188 (16) - **M. Acosta S.** 5216, 10263, 10696, 19613 (9); 17148 (10); 5176, 19481 (11a); 20582 (16); 12433 (17) - **R. Acosta** 1668 (4b); 1652 (10) - **C.D. Adams** 601, 14103 (2); 11638 (4a); 323, 341, 14168 (7); 6399, 8946 (9); 8632 (11a) - **G. Agostini** 1808 (2); 1808 (9) - **G. Aguilar M.** 34, 1615, 4829, 4917 (4a); 1719 (9); 2799 (13); 7385 (16); 4822 (19) - **M. Aguilar** 19 (4a) - **R. Aguilar** 1438 (4b); 11679 (9) - **C. Aker** 449 (17) - **Bro. Alain** 2415 (5) - **D. Alavarez** 2040 (4a) - **P.W. Alcorn** 786 (15) - **R.C. Alexander s.n.** (4a) - **A. Alfaro** 33989 (10); 5475 (19) - **E. Alfaro** 3416 (11a); 5597 (14) - **P. Allain** PA69 (7) - **H.A. Allard** 14126 (4a); 13333, 17779, 21524 (7); 13452, 14557, 20847 (9) - **P.H. Allen** 142, 176, 4102 (9); 367 (13); 137, 797, 2624 (16); 1641, 2376 (17); 1338 (19) - **F. Almeda** 4021 (17) - **J.L.F. Alonso** 5277, 8558 (9) - **A.H.G. Alston** 5267, 5332, 5623 (9); 8292 (10); 5766 (11a) - **C. Alvarado** 26 (4a) - **A. Alvarez** 626, 2019 (10) - **D. Alvarez** 3882 (10); 2211, 8769 (15); 2184 (18) - **P.A.M. Alvarez** 621 (5) - **V. Alves** 4430 (3) - **A.M. Amorin** 2607, 4220, 5278 (7) - **L. Anananch** 101 (7) - **E. Ancuash** 562 (9) - **W.R. Anderson** 37186 (3); 7537 (7); 6950, 8787, 9491, 9777, 9878, 9923, 36296 (9); 12995, 13221 (10); 12668 (16) - **L.M. Andrews** 610A (7) - **L. Angulo** 551 (17) - **Bro. F. Ansovin** 349 (4a) - **T. Antonio** 5145 (13); 2568 (14) - **R. Aparicio** 15 (16) - **J. Araque** 977 (16) - **M. Araquistain** 1521 (16) - **D. Araujo** 6201 (7) - **F.S. Araújo** 1378, 1508 (2) - **G. Araújo** 147 (7) - **A. Arauz** 103 (9) - **W.A. Archer** 2759, 8403 (7); 522 (9); 756 (16) - **L. Aristeguieta** 5135, 6212 (2); 3712 (7) - **J.D.C. Arouck Ferreira** 125 (9) - **L. Arroyo** 1323 (7) - **Bro. Arsène s.n.** (4a); 31, 2976, 5287, 8487 (10) - **R. Arvigo** 737 (4a); 48 (18) - **E. Asplund** 14378 (7); 5494, 5496, 5802, 5810, 7272, 8512, 15118 (9); 8669 (10); 12197, 16365, 16632 (11a); 5208, 5687, 5807 (16); 8514 (19) - **G.F. Asprey** 2222 (9) - **D. Atha** 827 (9); 1245 (13); 1013 (15) - **J.T. Atwood** 4182 (13); 3289 (16) - **Bro. B. Augusto** 1015 (4a) - **D.F. Austin** 6651 (4a); **S. Avendano** 351 (10) - **F. Axelrod** 1374, 1583, 3296, 3457, 5364 (4a) - **G. Aymard** 8824 (2); **P.J.M. Baas** 7887 (17) - **C.F. Baker** 2501, 5324 (4a); 3817 (5); 392 (7); 3790 (15); 2105 (16); 2454 (17); 4587 (18) - **M.A. Baker** 6307 (9) - **B. Balansa** 40a (3); 40, 41 (9) - **R.M. Baldini** 2118, 2119, 2121 (7) - **J.T. Baldwin Jr.** 14342 (10); 3538 (13) - **M.J. Balick** 2053 (4a); 1491 (7) - **H. Balslev** 10593 (9) - **P. Bamps s.n.** (9) - **M. Bang** 494 (3); 1289 (9) - **M.R. Barbosa** 2531 (9) - **P.J. Barbour** 5432 (7); 2693 (10) - **G.W. Barclay** 2058 (16) - **F.A. Barkley** 39669 (4a); 1831 (9) - **G. Barrantes s.n.** (13) - **S. Barrier** 2997 (4a) - **K. Barringer** 3924 (10) - **B. Bartholomew** 3524 (4a); 2769 (10); 2538 (13); 3 (18) - **H.H. Bartlett** 17404, 17312, 17558 (4a); 11505, 12190 (5); 8576 (7); 12954 (9); 10796 (16); 17498, 17519 (18) - **M.S. Bass** 231 (17) - **I. Basualdo** 1399 (7); 1551 (9) - **J. Bauml** 464 (4b); 464, 586B (9); 453 (10) - **R. Bavazzano s.n.** (10); *s.n.* (14) - **G. Beck** 395, 24751 (3); 6874, 12287, 19303 (7); 1668, 2590, 4727, 6985, 9177, 18633 (9) - **J. Beckner** 2633 (16) - **A.A.**

Beetle 2216, 4617, 5925 (10); 5790 (13); 957 (16) - **C. Belanger** 70 (4a); 71 (9) - **R.P. Belém** 1657 (7) - **C.M. Belshaw** 3086, 3615 (7); 3086 (9); 3615 (17) - **B. Bennett** 3527 (17) - **W. Berendsohn** 1377 (4a) - **S. Bergeron** 315 (7) - **L.A. Bermúdez** 34933 (20) - **T. Bermúdez** 66 (19) - **L.C. Bernacci** 162 (3) - **R. Bernal** 1127 (13) - **L. Bernardi** 20372, 20561 (9); 993 (13) - **G. Bernoulli** 48 (4b); 1189 (11a); 1189 (13) - **C. Bertero s.n.** (7); *s.n.* (9) - **B.S. Bertoni** 2672 (9); 3231 (16) - **J. Betancur** 4975 (9); 767 (10); 1341 (13) - **Biolley** 3114 (12) - **G.A. Black** 46-185, 52-14444, 54-16333, 54-16532 (7); 48-2495 (13) - **S. Blackmore** 2014 (11a); 4000 (16); 2145 (17) - **S.F. Blake** 7721 (10); 7836 (13) - **K.E. Blum** 1962 (9); 2089 (11a); 1734 (13); 7268 (19) - **J.D. Boeck** 2095, 2862 (10) - **I. Boldingh** 990, 2645 (4a); 750 (6) - **G. Bolland** 38 (7) - **J. Bono** 768 (4b); 8 (7); 184, 2694, 4075, 4987, 6954, 8111 (9); 7230 (10) - **B. Boom** 6070 (2); 6975 (4a); 7332 (7); 6418 (13) - **W. Boone** 1357 (7) - **B. Bordenave** 901 (7) - **M. Botteri** 149 (10); 150, 151 (14) - **E. Bourgeau** 1299, 1936, 2648 (10); 1461, 2648 (11a); 2971 (13) - **Boutin** 5132 (4b) - **M.G. Bovini** 104 (7) - **H.E. Box** 64, 91, 172 (4a); 115, 160 (9); 119 (18) - **B. Boyle** 1798 (10) - **L.J.K. Brace** 1617, 4230 (4a) - **J. Bradford** #327 (4a) - **K. Bradley** #1141 (4a) - **P.I.S. Braga** 2465 (9) - **J. Brandbyge** 32136 (7) - **D.E. Breedlove** 29030, 47298, 55240, 55368 (4a); 13704, 28304 (4b); 28838, 38201 (5); 6428, 13121, 13208, 13956, 14829, 20352, 27616, 28156 (10); 13903, 54023, 54688 (11a); 24080 (13); 14999 (14); 13247, 28329 (16); 33955, 34090 (17); 55237 (18) ; 13566 (19) - **A.M. Brendes** 21911 (5); 20319 (19) - **A.M. Brenes** 1733, 21959 (9); 5191, 20314 (10); 17380 (11a); 20300, 21101, 21703, 27923 (14) - **F.J. Breteler** 3417 (9); 4136 (10); 3 (11a); 4128 (13) - **S.W. Brewer** 172 (5); 171 (11a) - **H.S. Brito** 03 (7) - **E.G. Britton** 187, 6403 (4a); 1230 (7) - **N.L. Britton** 2905 (2); 241, 946, 2130, 2630, 4955, 5696, 15134 (4a); 678, 2266, 4490 (7); 443, 665, 2623, 4045, 4694, 6450 (9); 106, 14860 (15); 1509, 1624, 12979, 14659, 15065 (16); 393, 759, 1280, 15134 (18) - **G.K. Briziky** 253 (4a) - **W.E. Broadway** 2504, 2627, 6736, 6775, 8081, 8083 (2); 415, 3551, 4038, 4052, 5504, 5892, 6811, 7666, 9929 (7); 164, 501, 607, 671, 716, 4294, 4674, 4841, 4976, 5170, 5991, 6397, 7067, 7233, 9064 (9); 289 (18) - **N.V.L. Brokaw** 60 (5) - **B.M. Broom** 6911 (7) - **W.C. Brumbach** 8732 (4a) - **J. Brunken** 348, 440 (10); 316 (16) - **D.R. Brunner** 1200, 1775, 1850 (9) - **M. Brunt** 2031, 2191 (4a) - **O. Buchtien** 2499 (7); 89, 161, 3635 (9) - **G.S. Bunting** 6645 (2); 1167, 6002, 6046, 12242 (9); 4901 (10); 527, 8990 (11a); 5685, 10016 (16) - **C. Burand Jr.** 281 (2); 298 (16) - **D. Burch** 1187 (16) - **W.J. Burchell** 703 (7) - **W.C. Burger** 8402 (10); 9629 (14); 4117, 7855 (16); 4482 (19); 7855 (20) - **A. Burkart** 28253 (3); 18338 (9); 17001 (10) - **L. Buscalioni** 4079 (2); 1252, 2871, 2959, 4570 (7) - **P. Busey** 574 (16) - **Bustamante** 35 (13) - **W.M. Buswell** 11 (4a) - **R. Byrne** 227 (4a) - **E. Cabrera** 57, 146, 589, 700, 3607, 8784, 9056, 9290, 9581, 9781, 12984, 14477 (4a); 440 (5); 99, 1129 (15); 2032 (16); 393, 7232 (18) - **S. Cafferty** 33 (13) - **G. Calatayud** 4342 (7) - **C. Calderón** 2327, 2522 (7); 83 (14); 2091 (17) - **G.M. Calderón** 120, 1561 (16) - **J.G. Calderón V.** 217 (11a) - **S. Calderón** 508 (4b); 509, 2514 (9); 507, 1324 (11a); 849 (13); 510 (16) - **R. Callaway** 10898 (16) - **J. Callejas** 4728 (13) - **R. Callejas** 4050, 9014 (9); 3311, 7913, 11331 (10); 9014 (16); 9190 (19) - **Calónico** 21308 (11b); 21134 (18) - **J.I. Calzada** 24618 (10); 3964 (13); 534 (16) - **W.H. Camp** 911, 2461, E-3039 (9); 2461 (10) - **D.G. Campbell** 22147 (7) - **A. Campos V.** 2503 (14) - **J. Campos** 2714, 4062 (3); 2233, 4105 (9) - **J. Caranqui** 177 (9) - **R.A. Carballo** 484 (4b); 444 (8); 1042 (13); 1142 (14); 888 (16); 444 (19) - **G. Carnevali** 5656 (4a) - **A. Carter** 3110 (9); 2023, 3110 (16) - **H. Carter** 7007 (7) - **R. Carter** 5325 (4a); 5321 (9) - **A.M. de Carvalho** 6973 (3); 1314, 3196, 3532 (7); 6973 (9) - **A. Cascante** 1436 (13) - **E.D. Castellani** 150 (3) - **R. Castello** 47 (10) - **A. Castillo** 584 (2); 1878

- (16) - J.F. Castrejon R. 925 (4b) - D. Castro 2420 (9) - E. Castro 100 (9); 168 (11a); 252 (19) - S. Castroviejo 405 (9); s.n. (10) - C. Catalan 114 (10) - J.C. Catari 58 (7) - L. Catasús Guerra s.n. (5) - P.C.D. Cazalet 5125 (17) - L. Cayola 1678 (7) - J.A. Cedeño 438 (4a); 238 (7); 637 (9) - R. Cedillo 2351 (10) - C. Centeno 248 (19) - C.E. Cerón 1355 (7); 2118, 4609, 18279 (9); 20374 (11a) - M.F. Cervantes 825 (4a) - R. Chacón 146, 213 (10); 75, 383 (16) - K.L. Chambers 2608 (9) - C. Chan 6049 (15) - M.L. Chaparro 107 (13) - C.E. Chardon 811 (4a) - A. Charpin (9) - A. Chase 8619, 9437, 9644 (3); 3930, 6157, 6192, 6431, 6521, 6587, 6683, 6726, 6782, 6814 (4a); 6228, 6742 (6); 6454, 6747, 7833, 8027, 8610, 9103, 9794, 9796, 10969, 11321 (7); 6218, 6412, 6419, 6457, 6728, 6824, 10152, 11019, 11154, 11618, 11821, 12339, 12580 (9); 12408 (10); 12464 (13) - U. Chavarria 1627 (4a); 1627 (4b); 208, 287 (16); 1943 (17) - J.L. Chaves 1409 (9); 15 (16) - A.M. Chickering 9 (16) - Chinchilla Peña ISB00584 (13) - M. Chorley 341 (4a); 342 (14); 407 (16); 342 (19); 170 (20) - H.W. Churchill 4342 (19) - C.A. Cid 4624 (7) - J. Cisneros 20 (16) - J.L. Clark 9117 (9); 3557, 9339 (17) - D. Clarke 6666, 7997, 8637 (7); 5145, 8219 (9); 30 (13) - P. Clausen 192 (7) - W.D. Clayton 4977 (9) - Clement 596 (4a); 270 (9) - Bro. Clemente 2879 (4a); 5683 (16) - A.Cóbar 998 (16) - T.S. Cochrane 6296 (19) - A. Cogollo 1413 (7) - R. Combs 55 (18) - J. Conrad 3064 (10); 2966 (16); 2986, 3253 (18) - E. Contreras 2448, 8838 (4a); 1596 (5); 2283 (9); 5972 (10); 1151, 1738, 2692 (15); 3327, 4270, 7425, 9437, 10492 (17); 72, 1395, 1518, 1689, 1846, 3641 (18) - C. Conzatti 2012 (10); 1103 (16) - O.F. Cook 923 (3); 1405 (9) - G.R. Cooley 8182 (9) - J.J. Cooper 98 (10) - Coradin 7787 (9) - E.L. Core 805 (9); 477 (10) - L. Cormier 88 (7) - I. Coronado 454 (11a); 4974 (12); 5488 (13); 2568, 3555, 3566, 5053, 5446 (16); 1584 (17) - M. Correa 6 (4a); 885 (9); 2869 (10); 7365 (12); 2262 (13); 3351 (17) - D.S. Correll 5974, 40304, 40321, 40919, 43636, 43383, 43906, 45128, 45609, 46073, 46438, 47652, 53983, 54043 (4a) - M.E. Cortes 472 (4a) - Costa 641 (7) - C. Cowan 3223 (4a); 2796 (9); 3374, 5033 (10); 5047 (13); 5029 (16); 3153 (18) - R.S. Cowan 1486, 38105, 39007 (7); 1448, 1484, 1572 (9); 1889 (13) - H.C. Cowles 012-2 (4a) - G. Cremers 7761, 13869, 14008, 14455, 14636 (7); 14455 (9) - T.B. Croat 54399 (2); 23707, 23924, 24420, 40006, 40038, 41779, 42537, 63055, 68495 (4a); 23398 (5); 19761, 20302, 21008, 53744, 56617, 62602, 81977 (7); 26858 (8); 4259, 4821, 8009, 12791, 12924, 12942, 18083, 21968, 22050, 22513, 23187, 26615, 36013, 48019, 55821, 64486, 84613, 88484, 91906, 99051 (9); 14603, 39510, 42290, 63325, 63424, 69119, 71510, 87675, 89584, 94556, 95117 (10); 7081, 21700, 69848 (11a); 12142, 14221, 17287, 25353, 37418, 63734 (12); 6108, 12037, 33410, 40779, 68210 (13); 63145, 41390 (14); 24709, 24770, 41538 (15); 9642, 9739, 24618, 41532, 63308, 63555, 64094 (16); 74, 13950, 22169, 44409, 63308 (17); 23912, 65305 (18); 4482, 22331, 22784, 33047, 39093, 66260A, 70702 (19) - L. Croizat 677 (7); 250 (17) - M.R. Crosby 1099 (4a) - Cruz 27 (3) - H. Cuadros V. 440 (9) - J. Cuatrecasas 4191 (2); 22174 (3); 2995, 15202 (7); 2008, 2996, 9624, 12239, 13884, 15069, 19617, 25693 (9); 221, 14980, 15358, 22174, 25306, 28941 (10); 25383 (14); 22909, 24922 (16); 13674 (17); 15602 (19) - N. Cuello 685 (13) - G. Cufodontis 180 (9) - H.M. Curran s.n. (2); 223 (9) - A.H. Curtis 3588, 5530 (4a); 291, 520 (16) - W.N. da Fonseca 323 (7) - D.C. Daly D348, D478, 6386, 6856 (7) - B.E. Dahlgren 198 (17) - W.G. D'Arcy 13493 (9); 6748, 14961 (12); 12254 (13); 9619 (16); 10838, 14348, 14705 (17); 14521, 18050 (19) - Da Rocja 109 (3) - Dasa 4911 (13) - R. Daurenmiere 438 (9); 399 (13); 169 (16) - G. Davidse 2788, 2875, 2580, 2892, 3047, 3087, 3103, 3104, 3184, 3241, 4772A, 5692, 21062 (1); 2522, 2591, 2696, 2786, 3690, 3968, 4272, 4469, 4617, 15229, 26374 (2); 2189, 3114, 10948 (3); 2126, 2174, 2196, 2226, 2295, 2440, 2619, 2641, 2674, 2721, 3258, 3274, 20120, 20211, 20461, 20623, 29441 (4a); 2145, 37114 (4b); 2218, 2442, 36262 (5); 3242, 3248 (6); 2461, 2566, 2579, 11500, 13648, 12241, 19775 (7); 2100, 2121, 2839, 10162, 10816A, 24055, 34756, 37167 (8); 452, 2197, 2446, 2460, 2561, 2680, 3247, 3250, 3266, 3923, 4782, 4968, 5163, 5198, 5469, 5522, 5585A, 5605, 5629, 5690, 5727, 9409, 12544, 19795, 21470, 21834 (9); 2025, 2035, 2098, 2119, 2126, 2209, 3033, 3100, 3240, 3999, 4032, 9458, 9819, 10155, 21206, 22347, 23370, 24620, 24655 (10); 2026, 2127, 2199, 2205, 2346, 3113, 4980 (11a); 2199 (11b); 10103, 20402 (12); 2072, 2081, 2161, 2347, 2910, 3022, 3193, 4783, 5523, 5764, 20890 (13); 10158, 12489, 21089, 23385, 29728, 37158 (14); 20094, 20142, 20261, 31968 (15); 2033, 2082, 2169, 2190, 2379, 3012, 3120, 3125, 4220, 5020, 20213, 34518 (16); 2173, 20420, 23384, 26272, 32159, 36944 (17); 2200, 2388, 3116, 3249, 3264, 3273, 4969, 9732 (18); 20448, 23354, 36712 (19); 2162, 2188, 12508 (20) - C. Davidson 10580 (7) - M.E. Davidson 710 (10) - N. Dávila 784 (4b); 4988 (9) - E.Y. Dawson 26547 (4a) - O. de Benavides 9707 (10) - L. de Escobar 2690 (10) - R. de Filippis 191 (9) - J.J. de Granville 13048 (2); 1380, 6982, 9320, 13048, 14294, 15207, 15880, 16318, 1648, 17393 (7); 13812, 15207, 15518, 15880, 16318 (9) - J. de Jesus Jiménez 2764, 5937 (4a); 2123, 3468 (9); 3751 (18) - J.S. de La Cruz 3663, 4291 (7) - R. de Lemos Fróes 21119 (13) - G. de Nevers 4927 (9); 4350 (13); 4441 (17) - M. de Pardo 139 (7) - L.P. de Queiroz 1008 (3); 1383, 2473, 6379 (7); 10383 (9) - R.R. de Santos 1264 (7) - O. Degener 26713 (5); 26291 (10); 26290 (13); 26760 (16) - N.B. Degignani 1302 (3); A. Delgado 950 (17) - C. Delnatte 3674 (9) - Del Puerto 2663 (3); 2648 (16) - M. Dematteis 559, 2228 (9) - W. Devia A. 579 (13) - C. Diaz 7905 (7); 3508 (9) - W. Diaz 1253 (2); 3134 (9); 532 (13) - M. Díaz-Piñer s.n. (4a) - J. Dickson 271 (16) - A. Dik 1388 (17) - M.O. Dillon 4360 (10) - R.H.L. Disney A380/D (4a); A380/D (16); A380/D (18) - C.W. Dodge 16513 (4b); C.H. Dodson 7666 (7); 11398 (9); 10230, 12245 (10); 11309A (16) - Donaire 22 (4b) - J. Donnell Smith 4891 (9); 1852 (10) - J. Dorantes 2261 (13) - L.J. Dorr 6298 (9) - E.B. dos Santos 69 (7) - T.S. dos Santos 51 (7) - R.L. Dressler 5 (16) - H. Droege 428 (4a) - E. Dryander 1895 (10); 2555 (11a) - A.P. Duarte 5221 (7) - F. Duckett 212 (4a); D.A. Dudgey 778, 1948 (16) - T.R. Dudley 10025 (17) - J.A. Duke 15495 (4b); 7607 (9); 13704(4) (10); 5107A (11a); 5959 (13); 5702 (16); 10098(3), 15311 (17) - K. Dumont 7405 (2) - R. Duno de Stefano 2170 (4a) - P. Dusén 9643 (3); 11487, 14050 (7) - P. Duss 769, 770, 3182, 3613 (9) - J.D. Dwyer 9957, 10971, 11155, 12209, 11239, 14522, 14899, 15136 (4a); 544 (5); 9753 (7); 4011, 7150, 11994 (9); 1967 (11a); 11942 A (11b); 7974 (12); 1820, 7800, 8724, 11416 (13); 12284 (15); 1752, 2529, 2598, 4181, 11005, 11274 (16); 2977, 4549 (17) - A.A. Eaton 315 (4a) - J.E. Ebinger 1067 (9); 858 (16); 340 (17) - D.K. Edelman 02 (4a) - M.T. Edwards 478 (16) - P.J. Edwards 207 (3) - H.F.A. Eggers 13480 (2); 10 (4a); 15006 (9) - W.A. Egler 47665 (7) - G. Eiten 4092, 10750 (2); 4736 (3); 4320, 5955A, 6279 (7) - E.L. Ekman 618 (3); 1020, 1723, 2334, 5845, 8559, 11246, 11527, 14971 (4a); 1024, 10506, 12646, 13046, 13462, 13511, 13531, 16464, 17542, 18340 (5); 14176 (6); 619, 2224, 2624, 4330, 10095, 10108, 10318, 10324, 11157, 13200, 13878, 14219 (9); 2841, 7153, H7153 (11a); 4254, 10306, 11526, 12446, 12845, 13516, 14531, 15242, 16157, 16489 (15); 4903, 6535, 7578, 7699, 11721, 15318 (16); 653, 2190, 10557, 11528, 12094, 12743, 12853, 13035, 15319, 15851 (18) - Bro. Elias 1098 (16) - T.S. Elias 1667A (9) - M. Elizondo 20 (14) - H. Ellenberg 290 (13) - L. Emygdio 1217 (7) - F. Encarnación 26216 (7) - C.O. Erlanson 308 (11a); 383 (13) - W.R. Ernst 1156 (4a); 1113 (9); 2285 (16) - L.E. Escobar ISB00748 (11a) - C. Espadas 106 (16) - J. Espina 2010 (9) - F. Espinal 112 (10) - J.A. Espinosa Jimenez 534 (8) - F. Espinoza A. 3451 (19) - R. Espinoza 528 (4a); 1726, 1780 (9) - M. Esteban 22885 (10) - A.

- Estrada 1502 (4b); 1843 (10); 1783 (13); 1488 (17); 2029, 2684 (19) - J. Eugenio 284 (2) - R. Evans 1163B (8); 1163A (13); 1315 (17) - W.J. Eyerdam 326 (4a); 594, 12079 (9) - F. Fagerlind 1961 (9); 1594 (17) - N.C. Fasset 29100 (10); 28590 (11a) - C. Feddema 131 (10); 2544 (16) - A. Fendler 963 (2); 1613, 1614, 1615, 1617, 2493 (3); 371, 2494 (9); 1619 (10); 2495 (13) - B. Ferlay 1620 (4a); 1172 (9) - Á. Fernández 12764, 26980 (2); 84 (4a); 7567 (7); 1188 (10) - A. Fernandez-Pérez 5194 (16) - J. Fernandez Casas 6039 (9) - A. Ferreira 125 (7) - R. Ferreira 920, 7916 (7) - R.S. Ferris 5848 (13); 5656 (16) - M.S. Ferrucci 1053 (7) - T. Feuerer 855a (9) - P. Fiaschi 1392 (3); 1512, 1629 (7) - K. Fiebrig 4710, 6014 (9) - H. Field s.n. (4a) - C.S. Figueroa 788 (7) - V.M. Figueroa 156 (4a); 164 (12) - T. Filgueiras 2445 (7) - G.L. Fisher 35298 (10); 46193 (16); 37127, 37129 (18) - W.C. Fishlock 140, 240 (4a); 140 (9) - E. Fittkau 118 (7) - M. Fleury 1581 (7) - G. Flores-Franco 3673, 4007 (13) - N. Flores 71 (16) - J. Florschütz 1563 (2); 1563 (9) - J.P. Folsom 7044 (9); 6932 (12); 6431 (13); 4845 (19) - R. Fonnegra 7731 (9); 2400, 6603 (10); 6954 (13); 1459, 6996 (16) - E. Foreiro 6310 (7); 5173 (9); 2231 (10) - R. Fortunato 3778 (3) - F.R. Fosberg 58915 (4a); 27757, 55312 (7); 19519, 19777, 21990, 59223 (9); 19635, 20532, 23149 (10); 20370 (19) - P.F. Foster 571, 595 (7) - R.B. Foster 3487, 6832 (7); 2026 (13) - Fournet 4272, 4482 (9) - D. Frame 139 (7) - F. Franco 2975 (16) - L. Franco Mellado 2559 (10) - P. Franco 1056 (11a) - A. Fredgolm 5532 (4a) - W.G. Freeman 11426 (7) - E. Freid 04-109, 06-048, 06-761 (4a) - A. Freire-Fierro 3613 (11a) - G.F. Freytag 319 (10) - Friedrichstahl 549 (9) - P. Fryxell 2842 (4a); 3281 (4b); 3696 (16) - A. Fuentes 6962 (3); 7041 (9) - Bro. M. Fuertes 130, 1276 (4a) - N. Funck 813 (11a) - D.G. Furth 10 (16) - C. Galdames 3459 (8); 1811 (13); 484 (19) - H. Galeotti 5725 (10); 5717 (13) - W. Galiano 4864, 6620 (9) - Galo 77 (4b) - N. Galué 120 (16) - B. Gamboa R. 2064 (10) - M. Gandoger s.n. (18) - W. Ganew 1768, 2846 (3) - G. Gann 529 (4a) - B.H. Garcia 6458 (9) - J. Garcia R. 388 (10); 929 (11a) - M. Garcia 1818, 2401 (10); 2220 (16) - R. Garcia 569 (4a); 840 (15) - G. Gardner 1894, 3513 (2); 5654 (3); 3573, 4052 (9) - Bro. A. Garnier 39 (11a) - N. Garwood 81, 2282A, 1741A (9); 185 (17) - E.M. Gaudichaud 303 bis (7); 303 (9) - G.F. Gaumer 129, 1032 (4a); 1032, 23685 (15); 878 (16) - R. Gegen 1155 (3) - W. Gehringer 398 (4b) - P.H. Gentle 3657, 4905, 5572, 6278, 6931, 6963, 7785, 7975, 8215, 8523 (4a); 4798, 6849, 7101, 7523, 8384, 8441, 8864, 9641 (5); 1910, 2196, 6945, 7873, 8118 (9); 1769, 3937, 7205, 7874, 9331 (11a); 1743, 3632 (13); 1218, 8094, 8974, 9691 (15); 104 (16); 4398, 6366, 9023 (17); 6966, 8980 (18); 7205 (19) - A. Gentry 51046 (4a); 29418, 37939, 48146 (7); 9992, 13488, 16430, 28320, 29489, 34876, 61089, 70169, 70736 (9); 28731 (10); 5126, 17724 (13); 2290, 2402, 8319, 58299 (16); 3511, 3514, 3515, 6897 (17); 13855, 14090, 28662 (19) - H.S. Gentry 4981, 7097 (16) - Gerdes s.n. (3) - R.E. Gereau 1981 (4a); 2235 (16) - D.R. Gifford G71 (9) - L.J. Gillespie 866 (13) - W.T. Gillis 7338, 7769, 5696 (4a) - D.A. Giraldo Cañas 708 (9) - C. Girod 3159 (7) - A.M. Giulietti 2064, 13724 (7) - S.F. Glasman 1972, 1625 (8); 1947 (10); 1732 (20) - A. Glaziou 18649, 20574 (3); 1007 (7) - H.A. Gleason 70 (7) - R.K. Godfrey 66850 (9); 66916 (19) - A. Goeldi 38, 227 (7) - D. Goldman 1994 (4a) - A. Gómez 99 (10) - L.G. Gomez 24501 (11b) - P. Gómez 499 (9) - J. Gómez Laurito 1068, 1082 (9); 2655 (10); 262, 1703, 3049, 12813 (13); 136, 258 (16) - R. Gonto 5902, 6633 (10) - A. Gonzales 469 (9) - F. González FG 2813 (7); 753 (19) - J. González 334 (10); 1688 (11a); 2576 (13) - M. Gonzalez-Espinosa 166, 865 (10) - R. Goodland 955 (2); 715 (9) - I.S. Gottsberger 22 (9) - F.W. Gould 15047 (4a); 10892 (9); 12250 (13) - E. Gounelle s.n. (3) - J. Graham 516, 16158 (7) - J.R. Grant 3283 (9); 92-01974 (16); 2216 (17); 1824 (19) - M.L. Grant 10549 (7) - V. Grant 821 (14) - M. Grayum 11530 (4a); 6078 (4b); 4737 (9); 8450 (10); 4736 (11a); 8430 (14); 4157 (16); 10813 (18); 6118, 6208, 8430 (19) - J.M. Greenman 5289 (11b) - A. Grijalva 3597 (4a); 4185 (4b); 2094 (11a); 623 (14); 1870 (16) - A. Gröger 561 (2) - M. Groppo 481 (7) - P.J. Grubb 1521 (17) - E.R. Guaglianone 2817 (3); 675 (9) - G.F. Guala II & al. 1901 (4a) - F. Guanche 2101 (13) - E. Gudiño 531 (17) - M.L. Guedes 6654 (7) - C. Guerra 595 (9) - B. Guerrero 275 (10) - G. Guevara 41 (4a) - M. Guillemín 739 (3); 826 (7) - R. Guillén 1418, 3675, 4585 (7) - C. Gutiérrez B. 1614 (15) - G. Gutiérrez 128 (9); 170145 (13) - N. Gutiérrez 538 (10) - M. Guzmán 1614 (11b) - R. Guzmán 765 (11a) - W.A. Haber 718, C.2266, 4/2001 (10); 9616 (11b); 11702 (12); 9716 (14); 9609 (19) - J.L. Hage 1134, 2109 (7) - L. Hahn 480 (4b); 1158 (7); 482, 1057 (9) - W. Hahn 3663, 4349, 5634 (7); 699, 2250, 2302 (9); 4520, 5715 (13); 253 (19) - R.B. Hamblett 1874 (16) - C. Hamilton 2835, 2956 (9); 1037 (13); 1244 (14); 2736 (17) - M.A. Hamilton 480 (4a); 1189 (12) - B. Hammel 6941 (8); 3275 (9); 1209, 1765, 4701, 5370, 15696, 23541 (10); 8479 (11a); 5125 (12); 5275 (16); 1672, 8404, 17386 (17); 1310, 18054 (19) - R.J. Hampshire 59 (8); 1267A (13); 1295 (16); 59, 700 (19) - O. Handro 910 (3) - J. Harlow 73 (16) - E.P. Heringer 15220 (7) - R.M. Harley 16991 (2); 21784, 28543 (7); 11074, 21784 (9) - G. Harling 256 (9) - W.E. Harmon 647 (5); 4278 (10); 4280 (14) - N.A. Harriman 17501 (7) - W. Harris 11297, 11490, 11528, 11530, 12512, 12629, 12691, 12740, 12572, 12768 (4a); 11354, 11486, 11487, 11552, 11587 (6); 11398, 11405, 11410, 11469, 11491, 12488, 12650, 12768 (9); 11832, 12615, 12828 (11a); 11469, 11491 (16); 11260, 11454, 11490, 11531, 11589 (18) - D. Hartlett 649 (10) - C.V. Hartmann 13 (7); 50 (16) - R.L. Hartmann 12275 (17) - L.H. Harvey 8598 (5) - E. Hassler 8920 (3); 2868, 3731, 9143, 12514 (9) - W.H. Hatheway 1689 (10) - G. Hatschbach 31338, 58458, 71073 (3); 974, 14091, 46792, 57047 (7); 15844, 16608, 39881, 57047, 74460 (9) - O.L. Haight 3633 (16); 2973 (17) - J.G. Hawkes 1921 (9); 2131 (11a); 2192 (14) - T. Hawkins 1334 (9); 1531A (10); 1669 (15); 1644 (18) - A.A. Heller 4375 (9) - T.W. Henkel 967, 4940 (7); 2831, 5590 (9) - J. Henriquez 14 (16) - S. Henriquez 5174 (9) - N. Hensold 1035 (10) - D.N. Hepper 13, 54 (10) - Bro. Heriberto 257 (9) - A.I. Hernández 119 (11a) - E. Hernandez X. 309 (14) - H.M. Hernández 479 (10) - A. Herndon 1765 (4a) - G. Herrera 2010 (4b); 4735 (9); 3601 (14) - H.A. Hespénheide 1409 (4a) - N.M. Heyde 10 (7); 3906 (13); 3915 (14); 3899 (16) - S.R. Hill 2289, 3294, 10988, 25372, 28897 (4a); 13012 (7); 28989 (9); 1681 (14) - G.B. Hinton 1909, 4958, 6722, 9581, 14932, 15156 (10); 1948, 2408 (13); 10809, 10809a, 11381, 14633 (14); 1767, 4847, 15156 (16) - A.S. Hitchcock 5946, 2564, 10001, 10021, 10136, 10177, (2); 22616 (3); 409, 410, 411, 723, 7311, 9149, 9264, 9304, 9519, 9687, 9802, 9838, 9881, 16354, 19888 (4a); 8722 (4b); 588, 9730, 16468 (6); 9962, 10020, 10151, 10170, 10261, 10262, 10269, 10275, 17553, 21863, 33391 (7); 8201 (8); 416, 417, 592, 593, 594, 8674, 8695, 8921, 9036, 9053, 9335, 9380, 9382, 9569, 9570, 9571, 9808, 9813, 9893, 10064, 10170, 10270, 10374, 10731, 16353, 16415, 16454, 20133, 20236, 20295, 20432, 20607, 21196, 21808, 22118, 22652, 23325 (9); 409, 415, 6680bis, 7207, 8269, 8270, 8286, 8311, 8315, 8925, 9057, 20754, 21184, 21856 (10); 412, 8199, 8201, 8488, 8496, 8672, 8698, 8853, 8877, 9045, 9080, 9107, 9608, 9800, 20299, 20568, 21131 (11a); 8281, 8695 (11b); 6385, 6422, 8572, 8694, 7961, 8393, 9067 (13); 413, 8502, 9051 (14); 176 (15); 411, 414, 8060, 8068, 8570, 8571, 8577, 8581, 8676, 8710, 8743, 8763, 8850, 8979, 8982, 9204, 20037, 20057 (16); 20438 (17); 410, 590, 591, 8673, 9413, 9606, 9801 (18); 8267, 21894 (19) - F.C. Hoehne 29972 (3); 5998 (7); 20294 (9) - M. Hoff 5199, 5694 (7) - B. Hoffman 409 (9) - L.R. Holdridge 1945 (4a); 1738 (9) - K. Holl 1050 (17) - R.W. Holm 728 (4a); 728 (5) - W.C. Holmes 4269 (10) - L. Holm-Nielsen 4543 (3); 19624, 20469 (9); 24430 (10); 20385

- (17) - **B.K. Holst** 2300 (3); 7135 (5); 9002 (10); 9069 (13) - **E.W.D. Holway** 1148 (7) - **J. Hoock** 82, 89, 90, 93 (7); 83, 91 (9) - **M.J.G. Hopkins** 782 (2); #79 (9) - **Bro. Horam** 2240 (16) - **F.W. Hostmann** 13, 511 (7) - **N. Hotchkiss** 6460 (4a) - **P. House** 993 (10); 1238 (17) - **R.A. Howard** 384, 8672, 9503, 10069, 11100 (4a); 9454, 11276, 12237, 14990, 19888 (9); 6250, 9508 (18) - **O. Huber** 4786 (9) - **J. Hudson** 885 (3) - **M.J. Huft** 2373 (10); 1667 (19) - **Humbert** 27605 (4a) - **F.W. Hunnewell** 15224, 20116 (4a); 18805 (9); 17091 (10); 16395 (11a); 16394 (13); 15226 (18) - **D.R. Hunt** 5673 (9); 268 (13); 266 (15) - **A.A. Hunter** 760 (9) - **T. Husnot** 93 (4a); 94 (9) - **A. Ibáñez** 1516 (9) - **T. Ibarrola** 4054 (9) - **J.M. Idrobo** 2176 (9); 4274 (13) - **H.H. Iltis** 313 (7); 130 (9); 86, 44, 128 (10); 349 (13); 86 (14); 1620 (16) - **R.R. Innes** *RRI* 58 (4a); 59 (5); 49 (15); 92 (16); 74 (18) - **Intosh** 3 (4a) - **H.S. Irwin** 54540, 55790 (2); 12268, 13958, 14155, 23138, 24237, 28160, 55790A, 57618 (7); 5624, 7030, 15453, 21180, 23138, 28160, 31599 (9) - **J.G. Jack** 4380 (4a); 7053 (9); 5187 (18) - **D. Jackson** 134 (13) - **A. Jahn** 312 (3) - **J. Jangoux** 93 (7) - **J.P. Janovec** 2206 (7) - **M.J. Jansen-Jacobs** 163, 4149 (2); 1812, 2989, 3176, 5950, 6099 (7); 758, 966, 1274, 2182, 3346, 4149 (9) - **D.H. Janzen** 12241A (4b); *s.n.* (4b); 12426 (13) - **R. Jaramillo-Mejía** 2753 (3); 1019 (13) - **J.G. Jardim** 2912 (3); 503, 871, 1115 (7) - **C. Játiva** 155, 889 (9) - **O. Jéllez** 1557, 1799 (4a) - **G.S. Jenman** 35 (6); 257, 1916, 2053, 3593, 4089 (7); 256 (9); 813 (13) - **J. Jeremie** 193 (4a) - **B. Jestrow** 2012-018, 2012-429 (4a) - **A. Jiménez** 1271 (14) - **B. Jiménez** 1379 (9) - **M. Jiménez** 31045 (13) - **O. Jimenéz** 378 (4b) - **F.W. Johnson** 1246 (2) - **I.M. Johnston** 1078, 1272 (9); 904 (11a); 442 (13); 1255 (16); 548 (17) - **M.C. Johnston** 6028 (10); 5754, 12243 (16) - **G.C. Jones** 3054, 3474 (16) - **M.E. Jones** 27414 (10) - **S. Jones** 5385 (10) - **H. Jorgenson** 1119 (17) - **A. Juan** 13 (17) - **E.J. Judziewicz** 4283 (9); 4377 (10); 4295 (14) - **S.L. Jung-Mendaçolli** 562 (3) - **G. Jürgens** 6391B (9) - **A. Kappler** *s.n.* (7) - **V. Kapos** 1606 (9) - **Karsten** *s.n.* (10) - **R. Kayap** 903 (7); 744, 1096 (9) - **H.A. Keller** 2100 (16) - **W.A. Kellerman** 7472 (9); 4735 (10); 7486 (11a) - **H. Kennedy** 677 (4b); 677, 1398 (10) - **E. Kerber** 74 (4a); 74 (10) - **R. Kiesling** 5644 (9) - **T. Killeen** 883, 2099, 2332, 6308 (9) - **E.P. Killip** 16794, 25615 (3); 13509, 32037, 42259 (4a); 13528 (5); 23080, 25255, 26327, 27125, 27561 (7); 5052, 9732, 14681, 14992, 16302, 20901, 23998, 28673, 30674, 34837, 37030, 37706, 38230 (9); 5444, 8770, 11649, 17013 (10); 4284, 25170 (11a); 5366, 11564, 12066, 34505 (13); 11607 (14); 4040, 14082, 14126, 14513, 16476, 38261, 44165, 44533 (16); 33554, 33594 (17); 19411 (18); 4529, 6149, 7714, 8259, 33774, 10138 (19) - **M. Kimnach** 2022 (16) - **R.M. King** 1057, 4813 (10); 4802 (13); 4925 (16) - **W. Kings** 166 (4a) - **J.H. Kirkbride** 2764 (7); 1931, 2223 (10); 90 (13); 1553 (17); 2496 (18) - **R.M. Klein** 2026, 8089, 11735 (3); 1320 (7) - **B.B. Klitgaard** 517 (16) - **G. Klug** 4372 (9) - **S. Knapp** 2723 (4b); 4869 (9); 5623 (10); 1241 (16); 4383 (19) - **S.D. Koch** 78244 (5); 82171 (10); 78235 (13); 79302 (16) - **Køie** 5237 (4b); 5311 (9) - **T. Koyama** 14098 (11a); 7500 (13) - **L. Kollmann** 6048 (3) - **R. Kral** 49192, 57134 (4a) - **A. Krapovickas** 23624, 32064, 34930, 41058 (9) - **W.J. Kress** 94-3973 (10) - **J.G. Kuhlmann** 2002, 152952 (7) - **J. Kuiper** 27915 (18) - **O. Kuntze** *s.n.* (3) - **L.P. Kvist** 305 (7) - **S. Lægaard** 18533, 18927, 19171, 51912, 53405, 53395, 54202, 54711, 71372, 101029, 101083 (3); 17656, 18895, 51503, 55837, 102469 (7); 20237, 52077, 52471, 53994, 54712, 54713, 57466, 55839, 70782, 70774, 71223, 71257 (9); 70821, 18630, 18919, 19099, 19171, 20856, 53395, 55479 (10); 19171 (13); 54629 (17); 71243, 71248 (18) - **H. Lainez** 173 (4a) - **L.R. Landrum** 10611 (7) - **E. Langlassé** 556 (11a); 540 (13); 458 (16) - **J. Lanjouw** 1384, 2146 (7) - **J.P. Lanna** 568 (7) - **M.E. Lara** 60 (10) - **A. Lasseigne** 4966 (16) - **T. Lasser** 665 (10); 1534 (13) - **E.W. Lathrop** 5580 (9); 6006 (13); 5522 (17) - **R.M. Laughlin** 1218, 1572, 2289, 2553, 2807 (10); 277 (16) - **A.E. Lawrence** 219 (3); 795 (13) - **R.L. Lazor** 2945 (10) - **C. Leavenworth** 1255 (13) - **W. Leavenworth** 1901 (16) - **J.M. Leeuwenberg** 11763 (2) - **C. Le Gallo** 549 (4a) - **K.R.B. Leite** 315 (7) - **R.W. Lent** 1736, 3981 (10); 2154 (13) - **Bro. León** 767, 2602, 12777, 14118, 17336 (4a); 10666 (5); 12462 (15); 3778 (16); 5148, 13171 (11b) - **J. León** 1702 (13); 2926 (16) - **León de la Luz** 4070, 12294 (4a) - **E.C. Leonard** 2907, 3071, 3072, 3081, 3785, 4950, 7910, 8249, 9007, 9293, 11116, 11235, (4a); 3670, 3976, 7158, 7776, 7810, 8475, 9042, 9282, 9352, 9668, 11563, 14197 (9); 7997, 8192, 8572, 9391 (11a); 3240, 5054, 5121, 7650, 9466, 14292 (18) - **J. Leonel Salguero** 11 (10) - **F.M.R. Leprieur** *s.n.* (7) - **E. Lewis** *CEL* 02-060 (5) - **M. Lewis** 88843 (9) - **W.H. Lewis** 7476 (4a); 569 (10); 2594 (11b); 244 (12); 2301 (13); 3328 (16); 3376, 12106 (17); 2896 (19) - **J. Lezczano** 330 (19) - **N. Lezczano** 26 (16) - **F.M. Liebmann** 6308 (4b); 289 (9); 6317 (10); 14195 (13) - **R. Liesner** 5532, 11882, 12026 (2); 4229, 26611 (4b); 1483 (5); 17412, 21608 (7); 267, 5459, 10320 (9); 11694, 26580 (10); 64, 1588 (11a); 9256 (13); 4422 (16); 267A, 1988 (17); 527 (19) - **J. Lima** 774 (2) - **C.A.M. Lindeman** *s.n.* (3); 1239 (7) - 1701, 3185b (9) - **J.C. Lindemann** 619 (2); 929, 6198, 6933 (7); 158, 336, 1547, 4290, 13301 (9) - **J.J. Linden** 1948 (13) - **M. Lindig** 1044 (9) - **A.H. Lio-gier** 9899, 12410, 15917, 16944, 17049, 17367, 18839 (4a); 10418, 32736, 33832, 35847 (7); 18799, 24732, 26054, 37301, 38886 (9); 17049 (18) - **E.M. Lira** *C.* 604 (4a); 368 (15) - **Lister** 103, 187 (7) - **E. Lleras** *P17333* (7) - **S. Lobo** 218 (17) - **L.G. Lohmann** 465 (7) - **B. Løjtnant** 14986 (10) - **X. Londoño** 177 (3); 830 (4a); 14, 616 (7); 283, 373, 547, 613 (9); 56 (10); 145, 459 (13) - **E.M. López** 3072 (9) - **J.E. López Contreras** 1083 (16) - **L. López** 547 (9) - **E. López Garcia** 56 (10) - **R. López Luna** 493 (10); 338 (13) - **A. Lot** 1102 (9); 4003 (16) - **A. Loureiro** 38879 (7) - **K.S. Lowell** 488 (9) - **S.R. Lowrie** 185 (7) - **R. Lozano** 1275 (9); 1922 (10) - **H. Lugo** 2357, 2497, 4114, 4985, 5211, 5311 (9); 2497 (16) - **A. Luna** 206 (4a); 1007 (9) - **C.L. Lundell** 1587, 12405, 20292, 2332, 3548, 6430 (4a); 6751, 16144, 16360, 16665 (5); 16983 (9); 6434, 19598 (10); 17788 (11a); 6571 (13); 91, 550, 918, 6840, 15531, 15713, 16106, 17145 (15); 3862, 16106, 17240 (16); 555, 904, 16146 (18) - **J.L. Luteyn** 4799 (9); 10396, 12548 (10); 1687 (13) - **B. Lutz** 1374 (7) - **E. Lyonnet** 2658 (16) - **J.M. Maarten** 5568 (10); 5426 (19) - **P.J.M. Maas** 7150 (2); 6966, *P13109* (7); 7150 (9); 1635 (10); 1132 (13) - **J.S. McCorkle** *C-126* (11a); 199 (13) - **S. McDaniel** 11097, 16411, 16566 (7); 10048 (8); 8178, 17368 (9); 10158 (10); 5121 (12); 23266 (13); 14732 (16) - **J.M. McDougal** 3368 (4a); 3757 (9); 3463 (10); 3240 (13); 3125 (18) - **T. McDowell** 1889, 2424, 4365 (7) - **R.L. McGregor** 933 (18) - **H.S. McKée** 11182 (9); 11284 (10); 11101 (11a); 10955 (16) - **P.M. McKenzie** 781 (4a) - **G. McPherson** 1133 (8); 7179, 7220, 11692, 15958 (10); 7459 (12); 11298, 11499 (13); 6981, 6987, 10246 (16); 8290, 8442, 10289A (19) - **McRee** 10956 (4a) - **R. McVaugh** 360, 828, 13306, 14232, 17363, 19756 (10); 510, 21157 (11a); 500, 13357, 19101, 20165, 21152 (13); 722, 1498, 17925, 18051, 19975, 20761, 21022, 21144, 25036 (16) - **A. Macedo** 3734 (9) - **G.E.L. Macedo** 41 (3) - **E. Madrid** 292 (18) - **B. Madrigal** 679 (9) - **J.E. Madsen** 7085 (10) - **B. Maguire** 27275 (2); 23965, 24746, 53806 (7); 33758 (10); 32663, 45951A (13) - **G. Malme** 3357 (7) - **O. Malme** *A.3185b* (9) - **B.N. Manco** 14 (4a) - **S. Madriñan** 513 (13) - **M. Manna** 2 (4a) - **G. Manzanero** 1141 (10) - **Marcano** 3371 (9) - **G. Marín** 146 (9) - **S.A. Marshall** 6608 (16) - **S. Martén** 656 (14) - **R.F. Martin** 1281 (4a) - **M.A. Martín Ballestreros** *MB127* (2) - **Martínez** 34872 (11b); 34852 (12); 31463, 31503, 35000 (15) - **E.M. Martinez S.** 16949, 23363 (4a); 7362, 7725, 8247, 15381, 29360, 31555 (5); 13218 (8); 35169 (11a); 2960 (15); 1359, 31694 (16); 27983, 35679 (18) - 17189, 34787 (19) - **F.M. Martínez** 2182 (16); *F-2102* (18) - **G. Martínez-Calderón** 483 (11a); 239 (13) - **G.M. Martinez** 45 (12) - **L. Martorell** 546 (9) - **M.E. Mathias** 3463 (7); 3463 (17) - **S.**

- Matthias** 186 (13) - **L.A. Mattos Silva** 537, 1007, 1101, 3489 (7) - **E. Matuda** 3242 (4a); 3987, 26752 (10); 17286 (11a); 1939 (14); 2117, 3292 (16) - **H. Maturo** 282 (9) - **W.R. Maxon** 473, 10463 (4a); 8050 (9); 128, 7998 (10); 4653, 5266 (11a); 7546 (16); 1673, 10502 (18) - **S. Mayo** 1024 (7) - **W. Meier** 16903 (3); 11205, 16387 (9); 6212, 16899 (11a); 11168 (13); 15180 (18) - **M. Mejía** 6348, 7041, 7842, 9974, 23704, 35528 (4a); 2753 (4b); 18396 (9) - **T.M. Mejia Ordoñez** 36 (16) - **M. Melendez** 1066 (10) - **M. Mélinon** s.n. (7); 397 (9) - **A. Mendez Ton** 4943, 5027 (4a) - **R. Mendez** 98 (10) - **J. Mendietta** 531, 689, 927 (13) - **J. Menjívar** 3616, 3624 (8); 3403, 3517 (10); 3404 (11a); 3482 (13); 3481, 3654 (14); 3691 (16) - **F. Mereles** 619 (7); 2717 (9) - **J. Merilainen** 36 (4a) - **M.J. Metzler** 37 (10) - **Y. Mexia** 5328, 7218 (7); 6725, 8233, 9252 (9); 6850 (10); 6581 (11a); 628 (13); 597, 8717 (16) - **J.T. Mickel** 1463, 1485 (13) - **Z. Mijango** 132 (13) - **Miller #B5** (4a) - **G.S. Miller** 1184 (7) - **J.S. Miller** 5998 (4a) - **O.O. Miller** 184 (2) - **W. Milliken** 326 (2) - **C.F. Millsbaugh** 9132 (4a); 1968 (9) - **T. Miranda** 443 (3) - **K. Mizoguchi** 602 (7) - **B. Mogensen** 1143 (16) - **Mogg** 276 (2) - **H.N. Moldenke** 407, 3747 (4a) - **A. Molina** 18M.017 (3); 13291, 15628, 20845 (4a); 13894 (4b); 15503 (5); 205, 16075, 27555 (8); 18 N.S. 070, 10566 (9); 76, 620, 1432, 11987, 10566, 16067, 18494, 21108, 21605, 22361, 30671 (10); 3676, 16075, 25714 (11a); 11338 (11b); 18221, 14904 (13); 1433, 2766, 15446, 18651, 21091, 22013, 25824, 26149, 27483, 27554 (14); 15680, 30846 (15); 1085, 4051, 18651, 20662, 22466, 22858, 24610, 34262, 35161 (16); 17385, 18111 (17); 3541, 3814, 15818, 26229, 34261 (18); 10467 (19); 1811, 4051, 12880, 18631 (20) - **A. Monro** 153, 1018 (4a); 249, 1745, 2684 (5); 2194 (8); 409, 1987, 2194, 5827 (10); 2103 (11a); 1992 (14); 2267 (16); 4661 (17) - **O. Monsegur** 253 (4a) - **E.A. Montalvo** 6410 (10) - **J. Monterrosa** 222 (8); 918 (18) - **J.E. Montes** 68, 15286, 15401, 27498 (3); 1592, 2198 (9) - **M. Montiel** 048156, 048157, 048158 (10); 20 (12); 20 (16) - **Montoya** 42 (12) - **H.E. Moore** 1951, 4235, 5076, 5598 (10); 5149, 5697 (13); 5107 (16); 5665 (16); 1328 (18) - **L.E. Mora** 2407 (10) - **C. Moraga** 686 (9); 914 (13) - **C.O. Morales** 414 (16) - **J. Morales** 4973 (4a); 1746, 3895 (8); 1673, 5654, 7065 (10); 7382, 10597 (13); 4947 (14); 6336 (16) - **R. Moran** 18223 (16) - **I. Morel** 2505, 5041, 7088 (9) - **P.P. Moreno** 12276 (4a); 19230 (5); 23302 (9); 25020 (11a); 11935, 17704, 22726 (13); 17603 (14); 18123, 27169 (16); 2673 (18) - **S. Mori** 16579, 17004 (4a); 10767, 22086 (7); 8486 (9); 5916 (10); 1731 (13); 4075 (16); 4881, 26723 (17); 5315 (19) - **G. Morillo** 4256 (16) - **B.D. Morley** 758 (6) - **T. Morong** 1569 (3); 641, 755 (9) - **O. Morrone** 670, 1968 (3); 542, 1989, 2882, 4530, 4973, 5455 (9) - **C.V. Morton** 2914, 3433, 4143, 4528, 8753, 8879, 9972 (4a); 4276, 4306, 4390, 10198 (5); 6954 (8); 7633 (10); 2441 (16); 4441, 10194 (18); 7619 (19) - **H. Mosén** s.n. (3) - **B. Mostacedo** 105 (9) - **C.H. Muller** 2961 (10) - **P. Mutchnick** 354 (7) - **A. Mutinelli** 50 (3) - **E. Narvaez** 3356 (9) - **B. Nascimento** 606 (9) - **G.V. Nash** 1240 (4a) - **L. Née** s.n. (18) - **M. Nee** 47870 (2); 33770, 44822, 49193 (3); 3649 (4a); 47330, 25085 (5); 31755, 41359, 45215, 49530, 52814 (7); 8136, 8201, 8857, 9836, 10759, 33436, 33617, 40568, 47330, 47905, 48671, 49200, 49591, 54974 (9); 18645, 24676, 32791(10); 8853, 9124, 23843, 29907, 29773 (11a); 9616 (12); 6870, 7386, 7766, 24870 (13); 22602, 23073, 34030 (16); 9778 (17); 9295, 29937 (19) - **D. Neill** 5961 (3); 6840, 41680 (9); 2875, 4624 (16); 11562 (17); 2515 (18) - **C. Nelson** 3436 (9); 3648, 4034 (10); 4182 (13); 2087, 3021, 7474 (16); 2719 (17); 6654 (18) - **N.H. Nickerson** 2952 (4a) - **D.H. Nicholson** 28 (4a); 1893 (6) - **V. Nilsson** 536 (16) - **L.R. Noblick** 3180 (2); 3384, 4109 (7) - **A. Novelo** 30 (15) - **T.S. Nunes** 1213, 1222 (7) - **P. Nuñez** 7545, 11946 (10) - **L. Nusbaumer** 4257 (7) - **N. Obando** 136 (10) - **V.L. Ochoa** 161 (20) - **R.A.A. Oldeman** B-3485 (7) - **F.C.A. Oliveira** 544 (9) - **R.P. Oliveira** 365 (3); 66, 737, 867, 1373, 1381 (7) - **R.S. Oliveira** 445 (7) - **J. Oliver** 2 (7) - **B. Øllgaard** 9260 (3); 35024 (7); 8994, 34583, 35473, 37710, 53403 (9) - **C.R. Orcutt** 1488 (4a); 3544 (6) - **A.S. Ørsted** 14127, 14128, 14130 (4a); 14129 (4b) - **J.G. Ortega** 7058 (16) - **F. Ortiz** 20 (4a); 738 (11a) - **J.J. Ortiz** 559 (4a); 1087 (5) - **O.O. Ortiz** 1982 (4b); 516, 519 (9); 776, 1989, 2446 (10); 1757 (14); 2105 (17); 1988 (18); 783, 2026, 2303, 2348 (19) - **R.T. Ortiz** 326 (5); 2648 (15); 2171 (17); 204 (18); 1576 (19) - **S.L. Orzell** 23184 (4a) - **C.H. Ostenfeld** 55 (7); s.n. (9) - **J.I. Otero** 255 (4a) - **C.A. Padilla Gomez** 132 (14); 195 (16) - **G. Padilla** 48 (18) - **E. Palmer** 10, 362, 630, 27483 (4a); 535 (13); 10, 115 (16) - **M.R. Palmer** 3402 (4a); **W. Palmer** s.n. (4a); 1001 (18) - **J.L. Panero** 5060 (10) - **N. Paniagua Z.** 1130 (7) - **L.R. Parodi** 4410, 4412 (9) - **C.C. Parry** 535 (13) - **R. Paz** 168 (16) - **T.M. Pedersen** 1717 (8); 4155, 5899 (9) - **M. Peña** 1055 (13); 554 (15) - **F.W. Pennell** 9621, 18014 (4a); 3225, 3237, 3916, 4605, 8567 (9); 3415, 5025, 7223, 7227 (10); 1648, 2870, 3777 (13); 18012 (18) - **E. Pereira** 5374 (9) - **J.M. Perla** 19 (4b) - **N.A. Perogolo** 365 (7) - **C. Perret** 532 (16) - **P.M. Peterson** 7560, 7637 (2); 9533, 15095 (3); 6517 (4a); 15034 (7); 6722, 6940, 7072, 9439, 15034, 15096 (9); 7382, 9533, 9819 (10); 6767, 7032, 7071 7312, 7377 (11a); 371 (13); 7369 (14); 9520 (16); 6711, 7102, 7110 (17) - **H.W. Pfeifer** 1447, 1879 (8); 1414 (10); 1622 (16) - **D. Philcox** 7906 (7) - **L.R. Phillipe** 21252 (9) - **Phillipson** 594 (4a); 1651 (13) - **M. Piepenbring** 1865 (16) - **M. Pignal** 1502 (7) - **G.E. Pilz** 1313 (10) - **J. Pimentel** 598, 1182 (4a) - **G. Pinto** 130/81 (2); 1105 (13) - **C.V. Piper** 5219, 5281 (9); 5288 (11a); 5948 (13); 5257 (16) - **J. Pipoly** 24740, 24616, 24820 (4a); 11301 (7); 24344 (10); 3786 (17); 16833 (19) - **J.R. Pirani** 2154 (9) - **J.M. Pires** 48844, 51007, 52353 (7); 852, 1696a, 52138 (9) - **H. Pittier** 10749 (1); 1650 (3); 1615, 2342 (4b); 211, 1787, 2118, 2196, 4455, 7110, 6384, 9893, 14968, 11770 (9); 886, 5331 (10); 2247, 15209 (11a); 5422 (11b); 3114 (12); 1645, 6774, 8059, 11854, 12057 (13); 1616 (14); 4688, 4998, 7686, 10617 (16); 9492 (17); 875, 5339 (19) - **T.C. Ploewman** 7251 (7); 9047 (9); 7558 (11a); 2246 (13) - **E. Poeppig** s.n. (5) - **R.W. Pohl** 9991 (4a); 11406, 13826, 13834, 14136 (4b); 13410 (5); 14135 (8); 10790, 11365 (9); 10070, 10280, 10310, 10388, 10870, 10889, 11041, 11050, 11134, 11166, 11174, 11198, 11214, 11250, 11275, 11351, 11371, 11403, 11477, 13250, 13594, 13661, 13796, 15567 (10); 11522, 13121, 13827 (11a); 11522 (11b); 10829 (12); 10016, 10356, 10824, 10960, 10993, 11055, 11096, 11163 (13); 10994, 11179, 11481, 11694 (14); 9826, 10048, 10161, 10192, 10541, 11278, 11335, 11562, 12583, 13424 (16); 10791, 11692 (17); 10300, 10832, 10994, 11123, 12637 (18); 11675 (19) - **J. Polanco** 2013 (13) - **C.L. Pollard** 76, 157 (4a) - **O. Poncy** 1128, 2890 (7) - **F.W. Pope** 47 (9); 32, 735 (11a) - **O. Porsch** 180 (10) - **D.M. Porter** 4271 (17) - **W.Z. Pounds** 270 (10); 74 (11a) - **D. Prado** G. 95 (13); 276 (17) - **J. Prado** M. 223 (11a) - **G.T. Prance** 1823, 4311, 5158, 5954, 6451, 8926, 13723, 25017, 58699 (7); 10052, 15832 (13) - **M.F. Prévost** 787, 1969 (7) - **C.G. Pringle** 3808, 6663, 6701 (10); 1732 (11b); 1732, 11760 (13); 11293 (16); 3403, 3808 (18) - **G.R. Proctor** 7108, 7315, 17221, 20298, 29244 (4a); 29866 (5); 9585, 23405, 23834, 25592 (6); 9626, 16025, 17293, 24243, 29244, 33008, 42704 (9); 105 (11a); 29865 (15); 27281 (17); 38265 (18) - **G. Proctor** Cooper III 26 (9) - **J. Pruski** 1534 (4a) - **H. Puig** 5167 (10) - **A. Pulle** 227 (9) - **C.A. Purpus** 2905 (4a); 6206 (9); 3779, 5440 (10); 2157 (11a); 7813 (13); 5438 (15); 5978 (16) - **C. Quarín** 3388 (9) - **C. Quelal** 264 (9) - **G. Quenette** 35 (7) - **F. Quesada** 279 (17) - **J. Quesada** 928 (4b); 1646 (10); 901 (16) - **A. Questel** 600, 845, 4023, 4646 (4a) - **L. Quiñones** 982 (9) - **V. Quipuscoa** S. 316 (9) - **W. Quizhpe** 857 (9) - **G. Raddi** s.n. (7) - **Rafael** 1686 (19) - **G.A. Ramage** s.n. (6) - **B. Rambo** 40005, 46452, 47132 (3); 53497 (9) - **L. Ramella** LR2501 (9) - **M. Ramia** 8779 (7) - **E. Ramirez** G. 391 (4a); 98 (10) - **F. Ramírez** 1570 (13) - **M. Ramírez** 105 (10) - **N. Ramírez** 2769 (2) - **V. Ramírez** 2231 (10); 59 (11a); 248 (19) -

- Ramon de la Sagra 16 (4a); 44 (18) - H.J. Ramos 187 (12) - J.E. Ramos 2706, 2909 (9); 984 (10) - J.A. Ratter 1998 (7); 939, 2120 (9) - C. Raunkiaer 642, 951 (4a); 642, 2304 (7) - A.M. Raynal 15598 (9); 19643 (18) - J. Rebman 29186 (4a); 32016 (16) - K.M. Redden 2184 (7) - J.R. Reeder 4765 (10); 2137, 2156, 2373, 2399, 2423, 4156, 4333, 6345, 6346 (16) - R.D. Reeves 209 (7) - A.F. Regnell 308 (3); 308 (7) - A.L. Reina 124 (13) - P.R. Reitz 3775, 7079 (3); 2951, 8292 (7) - B.P. Reko 3474 (10) - S.A. Renvoize 4024 (3); 4744 (9); 4045, 5370 (10); 5364 (19) - J.L. Reveal 4020 (10); 4043 (13); 4020, 4061 (16) - J. Revilla 2136 (13) - A. Reyes-García 2227 (4a); 1491, 1895 (4b); 2460 (5); 1147 (9); 1023, 5204 (10); 1278 (12); 7284 (13); 1147 (16); 969, 1414 (18) - C. Reynel 5032 (7) - O.S. Ribas 1326 (3) - P.W. Richards 6531 (7) - L. Richey 98-246 (4a) - L. Rico 1177a (4a); 1177b (10); 1177c (15) - H.N. Ridley 24 (9); 27 (11a); 35 (18) - F. Riedle s.n. (4a) - L. Riedel s.n., 218, 963 (7); 1239 (13) - R. Rimachi 11761 (3); 5155, 5634 (7); 1148, 5634, 11045, 11452 (9) - P. Rios 80 (12) - E. Ritter von Friedrichsthal 1539 (4a); 549 (9); 549 (13) - J. Rivera 1847 (16) - Robert 332b (7) - Robertson s.n. (4a) - W. Robleto 1711 (11a); 1494 (11b); 62A (16) - M.J.N. Rodal 1325 (7) - A. Rodriguez 11939 (9); 11956 (10); 4896 (11a); 1801 (16) - D. Rodriguez 272 (10); 158, 649 (16); 3300 (20) - E. Rodriguez R. 1244 (7); 64 (16) - L. Rodriguez 1777 (10); 1235 (14) - V. Rodriguez 3422 (16) - K. Roe 767, 1903, 2207 (10); 1367 (13); 1432 (16) - R. Romero Castañeda 9096 (16) - R. Rojas 5738 (7); 739, 2869 (9) - N.A. Rosa 3388 (7); 3193 (13) - M. Rosas 830 (10) - J.M. Rosales 543 (4a); 1495, 1870 (16) - J.N. Rose 3660, 3739, 4159 (4a); 3484, 3624 (9); 14459 (10); 23525 (11a); 3502 (16) - Rouselle GU96/106 (7) - W.W. Rowlee 945 (13) - P. Ruben 8418 (4a) - D. Rubio 1776 (9) - R. Rueda 2608 (4a); 3355, 15294 (9); 15225, 17748 (11a); 9639, 16543 (13); 12891, 17662 (16); 2745, 3246 (17); 10699, 16351 (19) - N.P. Rugama 26 (16) - F. Rugel 111 (4a); 187 (5); 868, 872 (18) - H.H. Rusby 191, 358 (9); 861 (10); 516 (13) - D. Russell 31 (4a); G.F. Russell 769 (9); 769 (11a); 769 (17) - R.A. Russell 9388 (9) - J. Rzedowski 14254, 26926 (10); 17844 (13); 17729, 17880, 17932 (16) - F.M. Saavedra 13 (14) - J.L. Sadle #115 (4a) - J. Saer d'Héguert 280 (18) - P.A. Sagot 656 (7) - S.H. Salas 4213 (16) - A.E. Salazar 31 (13) - M. Saldias 4348 (3); 5029 (9) - J. Salick 7319 (9) - M. Salzmann s.n. (7) - F. Sánchez 170 (9) - J.G. Sánchez-Ken 672 (4a); 678 (12); 679 (19) - I. Sánchez Vega 9429 (9) - A.C. Sanders 11266 (10); 10476 (11a); 10349 (13); 17582 (16) - R.W. Sanders 1851, 1881 (4a) - J.C. Sandino 1584 (14); 4283 (19) - E. Sandoval ES-01763 (4a); 13 (10); 1467 (11a) - D. Santamaría 761 (17); 7441 (19) - S. Sant'Ana 996 (7); 775 (9) - F.J. Santana 5241, 5369 (10); 5494 (13); 2261, 2960 (16) - J.V. Santos 2269 (4a); 2650 (5); 3076, 3347 (10); 2500 (13); 2269 (15); 3534 (16) - N.Y. Sandwith s.n. (7); 1322 (13) - C. Sargent 295, 3236 (4a); 10114 (9) - A.C. Sarmiento 743 (2); 888 (7) - C.H.L. Sastre 7036, 7157 (4a); 2539, 4258 (9); 629 (13) - R.P. Saulea 1579 (4a) - J. Saunders 881 (4a); 1216 (9); 700 (13) - J. Schenck 2947 (3); 3754 (7) - M. Schessl 3410 (9) - R.A.A. Schnell 11692 (7); 11692 (9) - A. Schinini 6103, 15187, 16582, 23773, 28045 (3); 4728, 6200, 14045, 28066, 28255, (9) - W.A. Schipp 332 (4a); 1276 (5); 1368 (11a); 785 (13) - B.G. Schubert 1137 (17) - H.E. Seaton 393 (10) - P.J. Shank 4755 (12) - R.E. Schultes 6006 (9) - Schulz 10464 (2) - J. Schunke-Vigo 12146 (3); 1938, 2618, 7559, 10089, 12146, 16181 (7); 6138, 7467, 8241, 9550, 10214, 11669 (9); 7001, 9758 (11a); 2989 (13) - G.J. Schwarz 2290, 2542, 10232 (3); 2290 (9) - E. Schwindt 42, 119, 297 (9) - R.S. Secco 331 (7) - R.J. Seibert 628 (13) - R. Seidel 7793 (3); 2089, 2463 (7); 1185, 7813 (9); 2155 (18) - W. Seifriz 165 (13) - E. Seler 2446 (16) - T. Sendulsky 665 (3); 1990 (9) - A. Sermeño 33 (4b); 33 (16) - M. Serrano 4917 (3) - F.C. Seymour 3840 (4b); 845, 2831, 3841 (16) - J.A. Shafer 700, 1073, 2549, 2571, 3017, 7827, 8751, 10597, 13564 (4a); 12006 (5); 701, 2570, 12323 (9); 11684 (16); 11147 (18) - O.E. Shattuck 528 (9); 528 (13) - M. Short 222 (10); 185 (17) - K. Sidwell 407, 887 (10); 411, 819 (14); 610 (16) - R.J. Siebert 278 (8) - A.D. Skelding 3481 (9) - L. Skog 7106 (7); 7106 (9) - A.F. Skutch 2189, 3817, 3875, 3876, 4392, 4631 (9); 986, 3148, 4397 (10); 3821, 3863 (11a); 2226 (11b); 3862, 4040, 4655 (12); 1298, 2167 (13); 2155, 3871, 5391 (17); 1345 (18); 2206, 3674, 3680, 3802, 4460, 4571, 4649 (19) - A. Silva 168 (7) - B.M. Silva 2247 (7) - J.A. Silva 473 (2) - M.N. Silva 214 (9) - M.M. Silva-Castro 1027 (7) - F.A. Silverstone-Sopkin 3396 (9); 7266 (10); 7401 (11a); 5913 (18) - M.F. Simon 1564 (7) - D.R. Simpson 8 (5); 423 (9); 658 (13) - P.E.E. Sintonis 68, 2318, 2470 (4a); 215, 5918 (7); 215, 2861, 3062 (9) - V. Slane 121 (9) - D. Slood 354 (10); 217 (14) - J.K. Small 64, 2133, 2864, 3947, 4647, 7345, 8586, 8771 (4a) - A.C. Smith 10200, 10306 (4a); 3314, 3131, 10199 (9); 41015 (10) - D. Smith 1852, 2145 (9) - D.N. Smith 4026, 6991 (7); 4050 (9) - H.H. Smith 1976, 3131 (2); 2144, 2148 (3); 909, 2417, 4071, 13637 (7); 2147, 2148, 2258, 2531 (9); 2144 (10); 2142 (11a); 117 (13); 174 (16); 2417 (17); 2145 (18); 2148, 2258, 4407, 6806 (19) - J.D. Smith 3906 (13) - L.B. Smith 11783 (3); 3269 (4a); 2284, 6039, 6335 (7) - M.L. Smith 753, 888 (4a); 1710 (11a) - S.F. Smith 909 (7) - S.G. Smith 1295 (9); 1534 (18) - S.C. Snedaker D 51 (16) - G.L. Sobel 2155 (10) - T.R. Soderstrom 1126 (2); 1927 (3); 1036, 1071, 1198, 1415, 1872, 1948, 1957, 1976, 2132, 2190 (7); 974, 1357 (10); 2012 (12) ; 469, 611, 1212, 1402 (13) ; 2007 (19) - S.H. Sohmer 9683 (9) - E.R. Sohns 1590 (4a); 1689 (5) 1617 (9); 286, 1198, 1378, 1390 (10); 1685 (11a); 864 (13); 966, 1408, 1417 (16); 1406 (18) - D. Solano 5213 (8); 4709 (10); 5253 (19) - J.C. Solomon 9879, 12020 (3); 5714 (4a); 3240, 16698, 17024 (7); 1394, 1407, 1413, 6297, 6863, 14088 (9) - R. Soreng 2185 (16) - A. Soto 112, 1463 (10) - J.C. Soto 23139 (5); 13327 (11a); 75, 11337, 11346, 13209 (16); 23284 (18) - J. Soukup 3022 (17) - R. Souza 159 (3); 427, 840, 10115 (7) - D. Soza 295 (9) - B. Sparre 15516, 16128 (9); 17983 (11a) - M. Sparrow 27 (10) - R. Spellenberg 4596 (16) - D.L. Spellman 1713, 1598 (4a); 559 (13); 1661 (18) - C.R. Sperling 5771 (7) - Splitgerber 446 (7) - R. Spruce (17), (23), 412, 795, 1099 (7) - P.J. Stafford 138 (10); 154 (13) - A. Stahl 7 (7) - G. Stahel 2854 (2) - P.C. Standley 24889, 54545, 72832, 85472 (4a); 19136, 19878, 62204, 75416, 79364 (4b); 86936 (5); 23126 (8); 23117, 25955, 25987, 26065, 26651, 28142, 28320, 29523, 32022, 39648, 40837, 41296, 41665, 43476, 47060, 46876, 47168, 62914 (9); 21508, 26837, 33365, 39215, 47507, 49448, 57903, 60762, 62918, 63194, 68268, 81531, 82866, 87067, 87968 (10); 24122, 24910, 26009, 28535, 30230, 31609, 45151, 58104, 76153 (11a); 44523 (11b); 23712 (12); 20512, 23576, 24244, 27055, 62914, 79136 (13); 23109 a, 440071, 44236, 45498, 86730 (14); 91779 (15); 15177, 19421, 19870, 20109, 20660, 21138, 22316, 26077, 26693, 27870, 30807, 44888, 46695, 52803, 62085, 74114, 74531, 76224, 77080, 79009, 88381 (16); 37178, 45897 (17); 45532, 45820, 49785, 50068 (19); 12728, 22316, 23373, 23574, 24173, 24859, 26683, 26686 (20) - L.R. Stanford 870, 2502 (10); 1061 (18) - M.N.S. Stapf 828, 844, 860, 861, 862, 917, 918, 919 (9); 813, 847, 849, 858, 867, 871, 872, 874, 875, 878, 897, 900 (10); 904, 915 (11a); 854, 856, 878, 898, 899, 911, 913 (11b); 799, 810, 820, 921 (12); 791, 841, 843, 902, 919, 920, 940 (13); 855, 856, 873, 876, 877, 896, 903, 905 (14); 907, 908, 909 (16); 815, 939 (18); 554, 795, 804 (19) - H. Stehle 2607, 2086 (4a); 1945, 5436 (9) - B.A. Stein 1376 (11a); 1134 (12); 1149 (19) - J. Steinbach 9091 (3); 7111 (9); 8976 (10) - V.W. Steinmann 1913 (16) - B. Stergios 5876 (2); 19993 (10) - W.L. Stern 342 (9); 2032 (10); 1865 (16); 851 (17) - W.D. Stevens 17811 (4a); 16320 (4b); 16500, 25907 (5); 2259, 7214, 24108 (9); 14103, 25492, 25750 (10); 21238, 27794 (11a); 11474 (11b); 18061, 22444, 25234 (13); 16212, 23104 (14); 25220 (15); 13237, 22424 (16); 6390 (17); 6708, 11373 (19) - W.C. Steward P12839 (7) - J.A.

Steyermark 41967, 123600 (1); 57686, 88215, 107854, 108 440, 110955, 113905 (2); 91783, 103639 (3); 45305 (5); 116550, 121318, 131009 (7); 47347, 43405 (8); 45402, 12799, 61869, 118776, 88188, 90036, 91813 (9); 37137, 42603, 46406, 47982, 48627, 52868, 55106, 56098, 92125, 99450, 111910-A, 118178, 120079, 120152 (10); 116381, 124922 (11a); 42250, 49201, 61115, 89542, 107806-A, 126948, 127004 (13); 29294, 30083, 51810, 120268 (16); 88189 (18); 104658, 105551 (19); 92125 (20) - **W.R. Stimson** 3193, 5188 (4a) - **A.L. Stoffers** 1184 (4a); 238 (7) - **H.E. Stork** 2577 (10) - **R.M. Straw** 2450 (7) - **J.J. Strudwick** 4176 (7) - **T.F. Stuessy** 4140 (16) - **D. Sucre** 2752 (3); 2098, 6555, 10743 (7); 123 (16) - **A.M. Sugden** 1123 (9) - **L. Suin** 1266 (9) - **G. Sullivan** 1120 (9); 634 (13) - **D. Sutton** 299 (18) - **J.R. Swallen** 4419, 4516 (2); 3773, 8959 (3); 2452, 2489, 2512, 2625, 2641, 2706, 2897, 5200, 5248, 10694 (4a); 2750, 2823 (5); 5051, 8756, 9005 (7); 10900, 11138 (8); 1947, 3623, 3888, 4354, 8756, 30153 (9); 10904, 10973 (10); 10970, 11303 (13); 10903 (14); 2445, 2518, 2665, 2677, 2696, 2697, 2698, 2713, 2716, 2761, 2824, 2879, 2887, 2902 (15); 2396, 2398, 2418, 2635, 2694, 2717, 2808, 11008 (16); 2415, 2519, 2714, 2807, 2817 (18); 11008 (20) - **K. Systma** 3188 (9); 2901, 4358 (12); 1062 (13); 3055 (17); 3531 (19) - **J.Y. Tamashiro** 1181 (3) - **F. Tamayo** 2010 (20) - **E. Tameirão Neto** 439 (9) - **W.R. Tate** 364 (4b) - **T. Tateoka** 1031 (8); 1002 (9); 1003, 1004 (10); 1030 (14); 1001 (16) - **C.M. Taylor** 8138, 9481, 9508 (4a) - **J. Taylor** 18156 (9); 11866 (10); 17404 (11b); 18043 (16) - **N. Taylor** 328 (18) - **R.J. Taylor** 4471 (4b); 4520 (13); 4577 (14) - **L.O.A. Teixeira** 104.091, 104565 (7) - **O. Téllez** 9882, 12194 (10); 12998 (13); 3940, 4330 (14); 3021, 3669 (15); 3368, 10788, 12323, 12462 (16) - **P. Tenorio L.** 3483 (4a); 3503, 6890 (10); 15802, 16092 (13); 2725, 14739 (16) - **H. Teppner** 316 (9) - **C. Thiébaud** 371 (4b) - **C. Thieme** 5585 (11a); 5585 (16) - **W. Thomas** 4490, 9927, 9982, 10027, 11431, 11570 (7); 10027, 10636, 11423 b, 13691 (9); 6682 (10) - **S.A. Thompson** 385, 7798, 9777, 11378 (4a); 8230 (9); 4690 (17) - **S.S. Tillet** 738-549 (18) - **M. Timaná** 712 (7); 705 (9); 1907 (17) - **G. Tipaz** 803 (16) - **S. Tiwari** 462 (7) - **A.M. Ton** 4609 (14) - **A.S. Ton** 1183, 1446, 1582 (10); 1653, 3077, 3294 (13); 3180, 3269 (16) - **A.Tonduz** 7234, 9492 (4a); 13748 (4b); 12858, 13755 (9); 7207, 7234 (10); 7199, 12858 bis (11b); 8186, 11397 (12); 9213 (17) - **R.A. Toro** 377 (9) - **R. Torres C.** 1915 (4a); 11473 (5); 12581 (9); 11549 (11a); 16788 (16) - **O. Tostain** 1683 (7); 1128 (9) - **O. Tovar** 4141, 4144 (16) - **S.M. Tracy** 9050, 9094, 9320 (4a) - **S. Tressens** 6108 (3) - **M. Troetsch** 22 (9) - **S. Tsgaru B-729** (7) - **J.M. Tucker** 693, 733 (10); 694 (11a); 777 (13); 488 (16) - **R. Tún Ortiz** 1598 (11a) - **T.G. Tutin** 412 (9) - **E.L. Tyson** 5666, 5802 (8); 3078 (9); 5061, 5070 (11a); 2422 (12); 1378, 1689, 6656 (13); 1806, 3096, 5150, 6028 (16); 2598, 3327 (17) - **E. Ule** 4993, 8017 (7); 6225 (9); 8017 (16) - **L.M. Underwood** 252, 1642 (4a) - **A. Urbina** 181 (17) - **E.M. Urbina** 253 (9) - **J. Utley** 6424, 6463 (4a) - **E.J. Valeur s.n.** (4a); 307 (9) - **J. Valls** 2580 (3) - **F.M. Valverde** 6504 (11a) - **H. van der Werff** 7762, 9494 (9); 7316, 12172, 15616 (10); 4901 (13) - **Van Dolmen** 20 (18) - **Van Proosdij** 1025 (16) - **M. Vanilda** 130 (7) - **R. Vanni** 339, 3305 (9) - **J.D. Varela** 16 (9) - **C. Vargas** 14689 (7) - **H. Vargas** 746 (7); 6355 (10) - **I.G. Vargas** 2768 (9) - **M. Vargas** 342, 1051 (7) - **R.I. Vargas** 3746 (4a); 96 (5) - **Vásquez** 107 (15) - **B. Vasquez** 608 (4a) - **M. Vazquez Avila** 390 (9) - **M. Vasquez Torres** 2238 (18) - **R. Vasquez** 18647 (7); 18830 (9); 27196 (10) - **R. Vavrek** 64 (3) - **S. Vega** 19 (14) - **M. Velayos MV7033** (7) - **M. Véliz** 99.7712 (4b); 1586 (9); 14498 (10); 7024 (15) - **A. Veloz** 2097 (4a) - **Ventenat s.n.** (7) - **E. Ventura** 2300 (4a); 443, 2156, 2606 (16) - **W.C. Verboom** 5075 (4a); 5075 (8); 5035 (9) - **R. Villacorta** 2328 (4a); 2718 (14); 2324, 2693 (16); 2198 (18) - **P.C. Vincelli** 68 (16) - **M.A. Vincent #13300** (4a) - **J.L. Vivaldi** 338 (4a) - **P.C. Vogl** 944 (10) - **H.F.A. von Eggers** 2380 (4a); 6224 (9); 15572 (11a); 15553 (20) - **C. von**

Hagen 1342 (5) - **G. von Langsdorff** 405 (7) - **H.W. von Rozynski** 589 (4b); 589 (10) - **K. von Sneidern** 164 (7); 164 (10) - **H. von Tuerckheim** 7696 (4a); 8623 (11a); 1481, 8620 (12); 1028, 8781 (13); 715 (14); 809 (16) - **H. von Wedel** 1856 (9); 2086 (11a) - **R.L. Walker** 1244 (16) - **B. Wallnöfer** 5981 (15); 5958 (16) - **C. Walsh s.n.** (7) - **D.B. Ward** 3306, 5345 (4a) - **Warning s.n.** (4a) - **R. Wasum** 5961 (3) - **P. Weatherwax** 180 (4a); 94 (9); 180, 1715 (11a) - **R.E. Weaver** 1657 (12) - **H. Webber** 204 (4a) - **G.L. Webster** 9943 (2); 3832, 4058, 4998 (4a); 11898 (8); 31039 (9); 31039 (10) - **C. Weigelt s.n.** (7) - **A.L. Weitzman** 145 (10) - **K. Wendelberger** 398 (9) - **L. Werling** 517 (11a) - **F. Werner** 188 (10) - **J.G. Wessels Boer** 1158 (9) - **A.S. Weston** 2099 (13) - **D.A. White** 205 (16) - **C. Whiteford** 2024, 2826, 4486, 8269, 10212 (4a); 1660 (4b); 2025, 106019 (5); 5163 (9); 1676 (10); 490 (11a); 114, 9331 (13); 2826 (15); 2138, 8163 (16); 214 (17) - **I.L. Wiggins** 430, 7148 (16) - **A.E. Wight** 118 (18) - **J.T. Witherspoon** 8815 (4b); 8866 (10) - **R.L. Wilbur** 2556 (4a); 11289, 63341, 63701, 70209 (17); 10214, 11300 (19) - **J.R. Wiley** 23 (4a); 400E (15); 562 (16) - **L.O. Williams** 42920 (4b); 399, 781, 3717 (7); 4339, 6097, 7184, 12112, 41632 (8); 27506, 7136, 28449, 42666, 42756, (9); 9468, 10722, 14517, 14661, 15100, 22295, 23032, 41246 (10); 8271, 15089 (11a); 24776 (11b); 6081, 10408 (13); 16851, 26039 (14); 10343, 10736, 15956, 16928, 26436, 26703 (16); 8615, 8960 (17); 24919 (19); 10407, 16928 (20) - **R.S. Williams** 954, 41822 (3); 773 (13) - **P. Wilson** 7309, 8051, 11363 (4a); 169, 9332, 11309, 11467 (5); 350 (7); 11449 (15); 11421 (18) - **R. Wingfield** 13695 (10) - **J.R.I. Wood** 4134, 4600, 4839, 10551 (3); 4088, 4583, 11301 (9); 3756, 4392 (10); 3801, 4260 (13); 4734 (16) - **R. Woodbury s.n.** (4a); s.n. (18) - **R.E. Woodson Jr.** 1399, 1453 (13) - **A.L. Woolston** G87, G.146 (9) - **G.J.N. Woronow** 2460, 4868, 5744 (9); 2460 (11b); 2706 (13); 2182 (16) - **R.D. Worthington** 17634 (7) - **F. Woytkowski** 8349 (7) - **C. Wright** 747, 748 (4a); C. Wright 3457 (5); 614 (9); 3465 (15); 749 (16); 51, 97, 3878 (18) - **R.P. Wunderlin** 322, 8302, 8445 (4a) - **J.J. Wurdack** 1048, 1096, 1807 (7); 1806 (9); 2674 (10) - **H. Wydler** 250 (7) - **K.N. Yoshida Arns** 971 (7) - **K. Young** 333 (9); 293 (10) - **S.M. Young** 23 (7); 75, 83 (9) - **T.G. Yuncker** 4811, 5651, 6012, 17332 (4a); 17407 (9); 5898, 8594 (13); 6388 (14); 8226 (16) - **V. Zak** 3206 (9); 1037, 1272, 1488, 3124, 3858 (10) - **P. Zamora** 4866 (16) - **O. Zambrano** 1406 (9) - **T. Zanon** 15451, 16225, 26883, 27454, 31159, 32386, 35093 (4a); 12877, 32050, 32876, 44044 (9) - **E.M. Zardini** 11294, 12433, 38918, 44839, 47492 (3); 3399, 6357, 6693, 10912, 11313, 11455, 20302, 21062, 31734, 32624, 34080, 42937, 46707, 48926, 60202 (9) - **J.L. Zarucchi** 1714 (9); 4594, 6068 (10); 1739 (13) - **E. Zent** 2188 (9) - **S. Zona** 951, 936 (4a); 951 (6) - **F.O. Zuloaga** 4355 (2); 737, 2693, 3045 (3); 2368, 4355 (7); 2287, 5689, 7310 (9); 3933, 4510, 4746 (13); 3941 (19); 4355 (20) - **R. Zúñiga** 8 (9)

Author's abbreviated biography

Riccardo Maria Baldini was born in Italy [Tuscany, Massa Marittima (prov. of Grosseto)] on March 15, 1958. After humanistic high school ("Liceo Classico") he began his academic studies at the University "La Sapienza" in Rome and later at the University of Florence where he obtained a degree in Natural Sciences with a thesis on the Rhamnaceae of Italy and Mediterranean area and later a PhD in Plant Biosystematics with a thesis on the genus *Phalaris* L. (Poaceae). After 12 years as curator at the Central Italian Herbarium (FI) he obtained the title

of full-time researcher (Aggregate Professor), a position he has held to date, teaching Systematic Botany (Comparative Botany) for the course of study in Natural Sciences. After a period of research focused on the Mediterranean Flora and in particular on the Tuscan Archipelago, since 2002 he began studying Paleo- and Neotropical Poaceae and historical Neotropical collections. The meeting with the late teacher and friend Prof. Rodolfo Emilio Giuseppe Pichi Sermolli (1912-2005) brought him closer than ever to the field of Tropical Botany and the endless but interesting issues of botanical nomenclature. From 1992 to 2008 he acted as Assistant Editor of the *Journal Webbia* and from 2008 to present day as the Editor in Chief. He was also President of the FT herbarium (formerly the Italian Colonial Herbarium, also known as the Tropical Herbarium of Florence, currently the Tropical Herbarium Study Center). Between 2011 and 2018 he organized three International Symposia on Tropical Botany with the aim of promoting interest in this field of study among the younger generation of botanists. His

activity as a teacher-scholar continued abroad in Mesoamerica (El Salvador, Panama) and South America (Brazil). The taxonomic research activity has led him to frequent visits to numerous herbaria in Europe including BAS, BM, K, G, LINN, MA, MPU, P, PI, RO, UPS, W, and in non-European countries such as CAY, HUEFS, LAGU, MHES, MO, NY, PMA, R, VPT, US, in addition to collaborating with many others. The scientific production amounts to over 160 scientific papers as well as numerous participations in international conferences in Brazil, Chile, Denmark, El Salvador, Panama, Portugal, United Kingdom, United States. Recently he joined a team dedicated to the study of *Cocos nucifera* L. in the Pacific Ocean, in collaboration with the Montgomery Botanic Center (Miami, USA) and the Conservatoire et Jardin Botaniques de Geneva. After retirement, he expects to continue with his research interests in tropical Poaceae, the history of tropical botanical collections, and botanical nomenclature.



Figure 53. Riccardo M. Baldini during the expedition in Acre (2010, Brazil, Rio Chandless – Rio Purus).