

**Sandemanina Hoehnei (Melastomataceae: Tibouchineae): Taxonomy,  
Distribution, and Biology**



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## SANDEMANIA HOEHNEI (MELASTOMATACEAE: TIBOUCHINEAE): TAXONOMY, DISTRIBUTION, AND BIOLOGY

SUSANNE S. RENNER<sup>1</sup>

Renner, Susanne S. (Department of Botany, Smithsonian Institution, Washington, DC 20560). *Sandemanian hoehnei* (Melastomataceae: Tibouchineae): taxonomy, distribution, and biology. *Brittonia* 39: 441–446. 1987.—*Sandemanian* Gleason, a monotypic melastome genus of Brazil, Venezuela, and Peru, is described and illustrated with accompanying notes on its habitat, distribution, reproductive biology, and tribal and generic relationships. *Sandemanian* belongs in the Tibouchineae tribe where it is related to *Comolia* and *Macairea*.

*Sandemanian hoehnei* is a species of shrubs endemic to the white sand savannas in the Amazonian lowlands in Brazil, Venezuela, and Peru. The taxonomic history of *Sandemanian* is short and confused. The first collection was made in Peru by Weberbauer in 1904; his material was described by Cogniaux (1908) as a species of *Leandra* in the Miconieae (which have baccate fruits). Material collected by Hoehne along the Rio Juruena in Mato Grosso (in 1909) was the basis for the second description of this entity as *Comolia hoehnei* by Cogniaux (1912). The species was described for the third time by Gleason (1939) as belonging to a new genus, *Sandemanian*, based on material collected by Christopher Sandeman in the same immediate area as the Weberbauer collection. Wurdack (1970) recognized that *Comolia hoehnei* was congeneric with *Sandemanian* and transferred it accordingly; he also suspected that all the collections represented variants of one wide-ranging species. My interest in *Sandemanian* stems from my study of a related genus, *Macairea* DC. (Renner, in prep.). I have seen about 40 collections from 19 different savannas, 80 percent of them made since 1968.

The following description is based on observations from the field (Brazil) and herbarium specimens at BR, F, G-DC, HBG, INPA, K, MARY, MG, MO, NY, R, S, SP, U, US, and VEN.

### SANDEMANIA Gleason

*Sandemanian* Gleason, Kew Bull. 8: 480. 1939.

### SANDEMANIA HOEHNEI (Cogn.) Wurd. (Figs. 1 and 3)

*Comolia hoehnei* Cogn., Comm. Linh. Telegr. Estr. Matto Grosso, Publ. 10, Anexo 5, Bot. 3: 9. 1912. *Sandemanian hoehnei* (Cogn.) Wurd., Phytologia 20: 370. 1970. TYPE: BRAZIL. MATO GROSSO: Rio Juruena, May 1909, *Hoehne 1829* (LECTOTYPE, here designated: BR!).

*Leandra purpurascens* Cogn., Bot. Jahrb. Syst. 42: 139. 1908 [1909], non *L. purpurascens* (DC.) Cogn., 1886. *Leandra cogniauxii* Ule, Notizbl. Bot. Gart. Berlin-Dahlem 6: 367. 1915, nom. nov. TYPE: PERU. SAN MARTIN: Moyobamba, 27 Aug 1904, *Weberbauer 4604* (HOLOTYPE: BR!; ISOTYPES: G-DC!, a specimen in B was destroyed, but is represented by a photograph, F neg. 16926!).

*Sandemanian lilacina* Gleason, Kew Bull. 8: 480. 1939. TYPE: PERU. SAN MARTIN: Rioja, ca 900 m, Aug 1938, *Sandeman 170* (HOLOTYPE: K!).

*Sandemanian glandulosa* Wurdack, Phytologia 5: 53. 1954. TYPE: BRAZIL. AMAZONAS: São Pedro, Rio Padauri, 27 Oct 1947, *Fróes 22658* (HOLOTYPE: NY!; ISOTYPES: MG!, US!).

Shrub, 1–1.5 (2) m high. Branchlets angled, as the petioles, and inflorescences loosely strigose with smooth, glandular or eglandular hairs, the gland tips ca-

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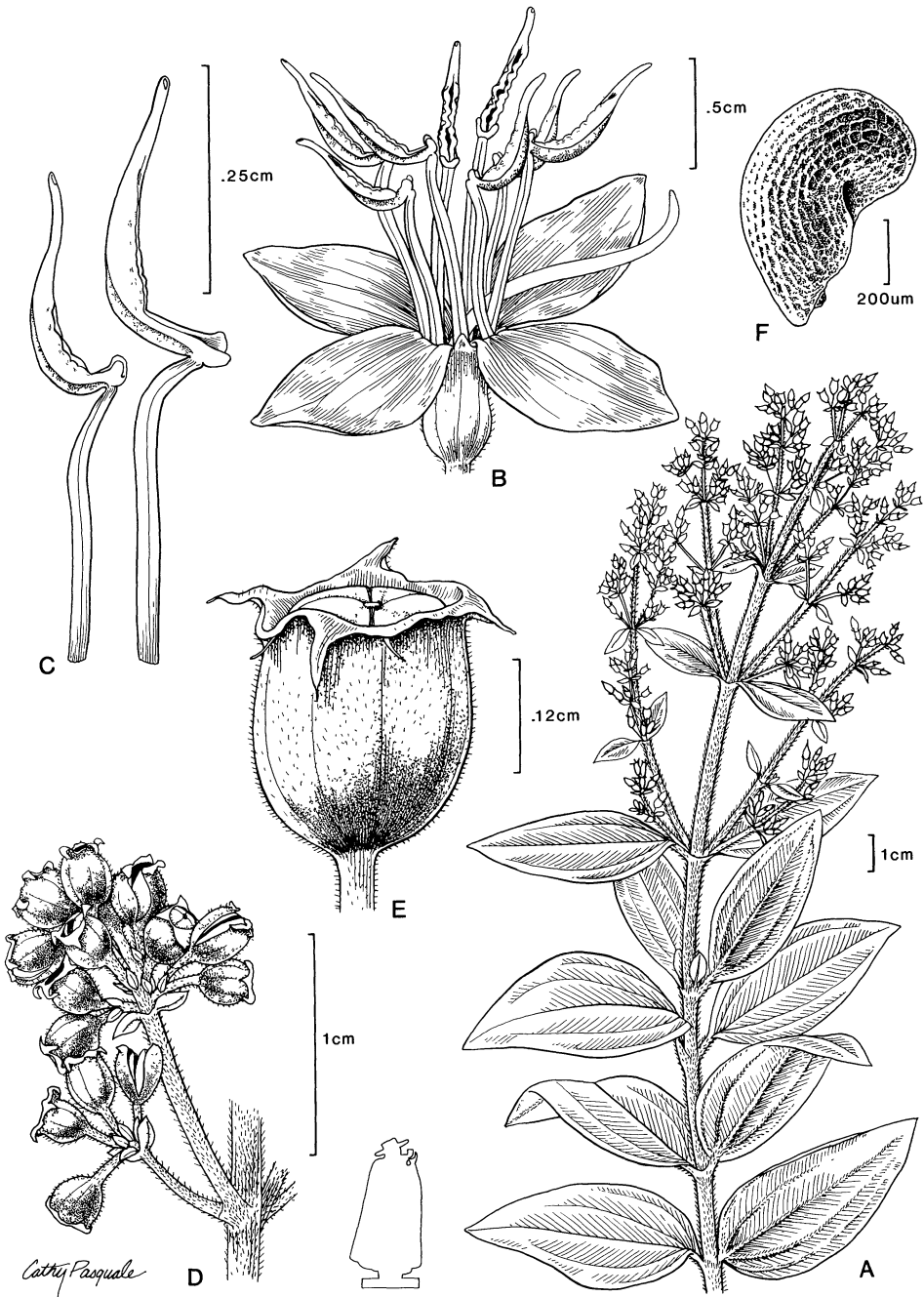


FIG. 1. *Sandemanina hoehnei*. A. Habit. B. Flower. C. Stamens, antesepalous and antepetalous. D. Branchlet of the infructescence. E. Fruit. F. Seed.

ducos. Leaves opposite, petiolate, estipulate, blades ovate, 4.5–6.5 (10) × 1.5–4 cm, basally obtuse or rounded, apically acute, 5 (9)-nerved, the lateral pairs of primary nerves arising at the blade base, upper surface smooth, lower surface on the midrib and the lateral pairs of primary nerves substrigose with subulate glandular or eglandular hairs, the veinlets finely reticulate, sparsely hirsute with glandular or eglandular hairs or lacking hairs, the veinlets and areoles densely papillose; petioles 0.4–1 cm long. Inflorescence a many-flowered, terminal panicle to 18 cm long, flowers hermaphroditic, 4-merous, pedicels 1 mm long, hypanthium narrowly campanulate, 2.2 × 2 mm, calyx lobes triangular, 1.1–1.2 mm long. Petals thin, narrowly elliptic, apically acute, pale purple with darker blotches at the base, 3–4.5 × 1.2–2 mm. Stamens slightly dimorphic, filaments 3.4–3.8 or 3–3.6 mm long, glabrous; anthers ca 2 mm long, the connective prolonged below the pollen sacs 0.8–1.0 or 3–3.5 mm long and modified at the base into 2 blunt, ventral lobes. Ovary free from the hypanthium wall, globose, glabrous, 2-locular; style arising abruptly from the ovary apex, filiform, sigmoid; stigma punctiform. Fruit a loculicidal, many-seeded capsule, 2.2 × 2 mm. Seeds 0.8–0.9 mm long, cochleate, testa shallowly tuberculate to slightly foveolate.

Additional specimens examined: VENEZUELA. AMAZONAS: Neblina Massif, Cañon Grande, along the Río Mawarinuma between the mouth of the canyon and the first major fork, 0°50'–0°51'N, 66°02'–66°06'W, *Davidse 27252* (MO, US, VEN); Neblina, camp IV, 15 km NNE of Pico Phelps, 0°51'N, 65°57'W, *Liesner 16729* (NY, US). PERU. SAN MARTIN: Moyobamba, Jesus del Monte, *Sandeman s.n.* (NY). BRAZIL. ACRE: Cruzeiro do Sul, *Rosa 692* (US). AMAZONAS: Mun. Itapiranga, Rio Uatumã, left bank upriver behind Igarapé Catitú, *Cid 473* (INPA, NY, US); Humaitá, 7°31'S, 63°10'W, Transamazônica, km 132, *Janssen 463* (INPA), *Bahia 69* (US); Nova Prainha, *Mota s.n.* (INPA no. 60650); Manaus-Itacoatiara, km 202, near Rio Urubú, *Prance 3732* (F, INPA, K, NY, U, US), *Prance 4876* (INPA, US); Manaus-Caracarái, km 45, INPA reserve, *Renner 199* (CAS, HBG–2 sheets, INPA, US), *Albuquerque 1126, 1158, 1161* (INPA), *Carreira 27* (INPA, NY, US), *Cesar* (INPA), *Coelho 1834* (INPA), *Lisbóia 09, 126* (INPA), *Macedo 36* (INPA), *Monteiro 162* (INPA), *Pires 162* (INPA), *Ribamar 376* (INPA), *Silva s.n.* (INPA no. 68841), *Vieira 14* (INPA); Manaus-Caracarái, km 125, *Rodrigues 9773* (INPA), *Albuquerque 1399* (INPA), *Huber 10668* (US); Humaitá-Jacarecanga road, km 62, 7°45'S, 62°32'W, *Teixeira 1181* (INPA, US); Borba on the Rio Madeira, 3 mi E of town, 4°23'S, 59°35'W, *Todzia 2211* (INPA, MARY, US), 2224 (US), *Cid 3865* (INPA, NY, US); above Terra Preta, campina of the Rio Surubim, 4°29'S, 58°33'W, *Cid 4037* (INPA, NY, US); Rio Padawiri, *Trill 315* (K). MATO GROSSO: Rio Juruena, *Hoehne 1830* (BR, SP); Sararé, 58°55'W, 13°50'S, *Pires 16401* (US). PARA: Rio Cururú, Rio Tapajós, Missão Velha, *Egler 830, 958* (US); Serra do Cachimbo, *Pires 6096* (NY), *Prance 25242* (MO, NY, S, U, US). RONDÔNIA: Igarapé Preto, *Ribeiro 1098* (US).

### Variation and Distribution

The leaf blades in *Sandemanía* are stiff, brittle, and dry with a greenish to light brown color. The cuticle on the lower surface is densely papillose with some short, glandular papillae. In some specimens additional long glandular hairs (to 1 mm) are present (*Liesner 16729*, *Albuquerque 1399*, *Egler 830*), while others lack long glandular hairs (*Renner 199*, *Weberbauer 4604*, *Pires 16401*). This variation does not correlate with other characters and does not warrant formal recognition.

It appears that *Sandemanía hoehnei* has a disjunct distribution with some populations separated from each other by several hundred kilometers (Fig. 2). The explanation is that *Sandemanía hoehnei* is a pioneer on white sand savannas (Anderson et al., 1975; Braga & Braga, 1975; pers. observ.), a type of open, evergreen, sclerophyllous vegetation on sandy soils found scattered throughout the Amazon basin, sometimes near black-water rivers, sometimes surrounded by forest. Near Cerro de la Neblina (Venezuela), the habitat has been reported as "rocky slope above river." *Sandemanía* is presently known from 19 different white sand savannas. Before 1968, only seven collections at four different localities as far as 1600 km apart had been made; it is likely that there are many more as yet unvisited white sand islands within the dispersal range of *Sandemanía hoehnei*.

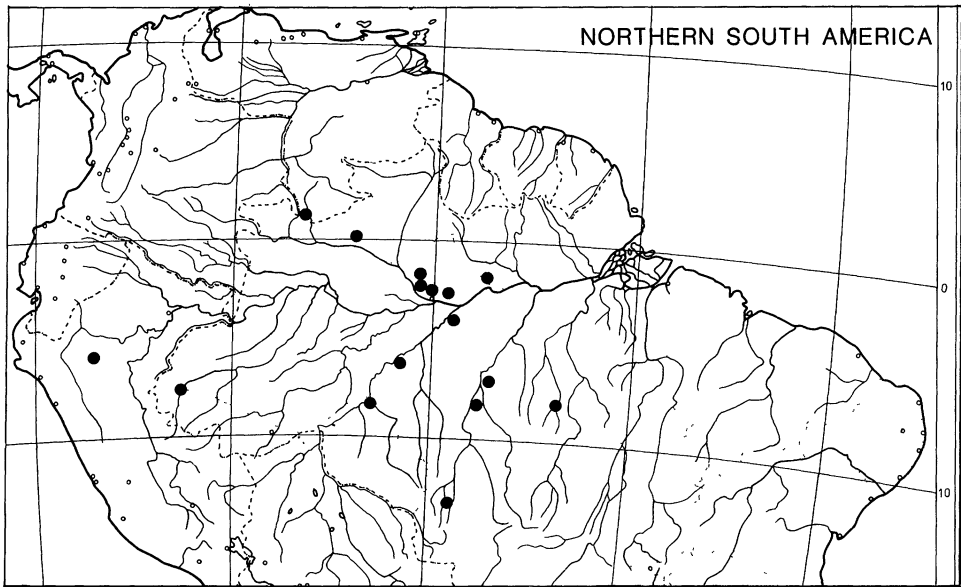


FIG. 2. Distribution of *Sandemanina hoehnei*.

### Reproductive Biology

Phenological observations were made in a white sand savanna situated on the Manaus–Caracaraí road (BR-174), km 45 from 1977 to 1982 and again in 1984 (Renner, 1984). Adult plants flowered every year from the beginning of May through July, i.e., at the beginning of the dry season. Fruiting began immediately after flowering and lasted from August into mid-October until the end of the dry season. Observations on fruit dispersal were made at the same locality (Macedo, 1977; Macedo & Prance, 1978; David Oren, pers. comm.).

The flowers (Fig. 1B) have no odor or nectar. They are pollinated by small female halictid and medium-sized *Melipona* bees which collect the pollen. Plants at the study site on the Manaus–Caracaraí road were found capable of agamospermous reproduction (Renner, 1984). The breeding system of *Sandemanina hoehnei* seems to be a combination of occasional outcrossing and apomixis. Because of the limited size of the habitat islands, populations of *Sandemanina hoehnei* sometimes consist of a few hundred shrubs; as a result of this particular combination of habitat isolation and breeding system, a high degree of inbreeding seems likely. In fact, there is little heterogeneity among plants from well collected savannas.

The capsules (Fig. 1E) are picked at by several species of birds, but it is unlikely that any seeds survive the crushing and gut passage. The regular mode of dispersal is the dissemination of the small seeds (0.8–0.9 mm) (Fig. 3) by air currents.

### Intergeneric Relationships

The shape of its seeds (Figs. 1F, 3) clearly places *Sandemanina* in the Tibouchineae, a neotropical tribe defined by having cochleate seeds (Cogniaux, 1891). Whiffin and Tomb (1972) considered the seeds of *Sandemanina* as being similar to those of the tribe Microlicieae which they described as having “a foveolate surface pattern, which is formed by the cells of the testa.” This character of the testa surface is not reliable. In many clearly tibouchinoid species the periclinal

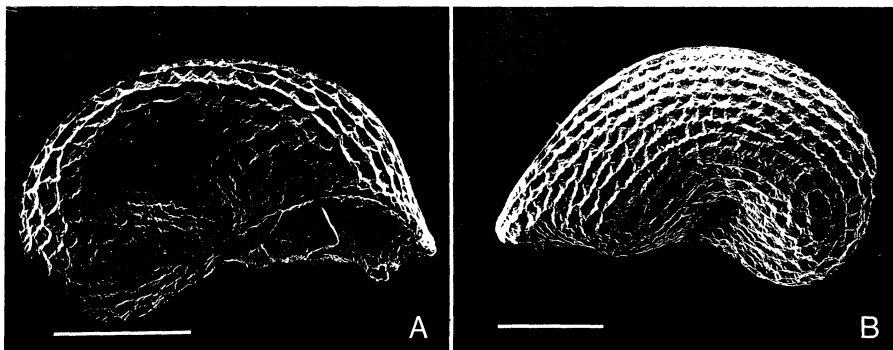


FIG. 3. Scanning electron micrographs of *Sandemania hoehnei* seeds. A. Pires 16401, bar = 250  $\mu\text{m}$ . B. Renner 199, bar = 200  $\mu\text{m}$ .

testa cell walls collapse during the development of the seeds. This gives the surface of ripe seeds a lightly foveolate appearance.

Within the Tibouchineae, *Sandemania* is most closely related to *Comolia*, *Macairea*, and *Tibouchina*. The first two genera have four-merous flowers and sometimes two-locular ovaries. *Tibouchina* has four- to eight-merous flowers and isomery in the ovary cell number. However, *Sandemania hoehnei* cannot be accommodated in any of them because of its unique combination of a glabrous ovary and ventrally bilobed connectives with large, paniculate inflorescences and seeds with a shallowly tuberculate testa. *Macairea* and *Tibouchina* with similar inflorescences have glandular or eglandular hairs on the ovary apex and often on the filaments too. *Macairea* has dorsal connective appendages (not ventral ones like *Sandemania*). *Comolia*, which is the only taxon with stamens similar to those of *Sandemania*, has solitary, axillary flowers or small cymes. It therefore seems best to maintain *Sandemania* as a well defined monotypic genus.

#### Acknowledgments

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