



## A new species of *Senegalia* (Fabaceae) from Brazil

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### Abstract

*Senegalia hoehnei* from the states of Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo, Pará, Paraná, and Santa Catarina, is described, illustrated, and compared to its probable nearest relative, *Senegalia martiusiana*.

**Key words:** Fabaceae, IUCN Red List, Mimosoideae, Brazil, *Senegalia*

### Introduction

Historically, the genus *Senegalia* has often been treated as part of *Acacia* s.l., but recent morphological and genetic studies have shown that this large genus is polyphyletic. Data derived from molecular studies have led to a better understanding of the relationships within the genus *Acacia* s.l., as well as the position of the genus within the Mimosoideae (Maslin *et al.* 2003a, Miller & Bayer 2003, Luckow *et al.* 2003, Miller *et al.* 2003, Rico-Arce & Bachman 2006, Seigler *et al.* 2006a, Bouchenak-Khelladi *et al.* 2010, Gómez-Acevedo *et al.* 2010, Murphy *et al.* 2010, Miller & Seigler 2012, Kyalangalilwa *et al.* 2013). Based on these data, *Acacia* s.l. is now regarded as comprising at least five genera, *Acacia* s. s., *Acaciella* Britton & Rose (1928: 98), *Mariosousa* Seigler & Ebinger (Seigler *et al.* 2006b: 415), *Senegalia* Rafinesque (1838: 119), and *Vachellia* Wight & Arnott (1834: 272) (see Miller & Seigler 2012 for overview of the new generic classification).

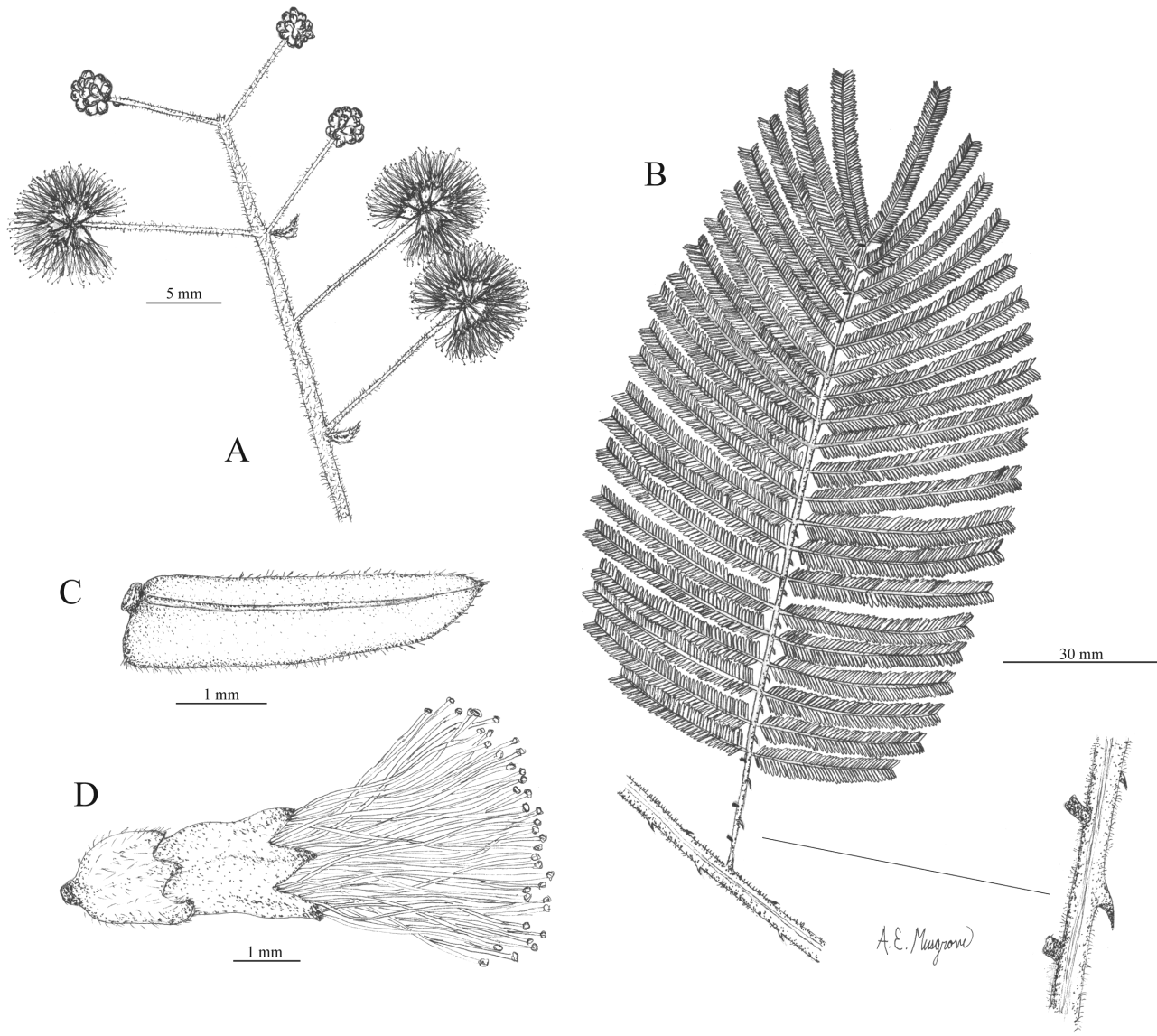
Members of *Senegalia* are shrubs, trees, or lianas, unarmed or armed with prickles, but without stipular spines. The prickles usually are scattered, but less commonly are grouped in twos or threes, usually at or near the nodes (Vassal 1972). Leaves are bipinnate and the petiole and primary rachis have sessile or stipitate glands of variable position. Flowers possess a more or less tubular nectary below the usually stipitate ovary. Inflorescences are globose heads or spikes, often grouped into complex terminal pseudo-inflorescences (synflorescences). Pods are dehiscent, separating into two valves at maturity, or less commonly indehiscent or separating into indehiscent one seeded articles. The seeds are uniseriate.

The genus *Senegalia* consists of approximately 100 taxa in the Americas (unpublished data), as well as 69 in Africa, 43 in Asia, and two in Australia (Maslin *et al.*, 2003a,b). Eight species occur in two or more areas. During the course of our work on the genus *Senegalia* of Brazil, a previously undescribed species was noted from herbarium materials of eastern and southeastern Brazil. This taxon is clearly distinctive and is herein proposed as new species.

*Senegalia hoehnei* Seigler, M. P. Morim, M. J. F. Barros, & Ebinger, *sp. nov.* (Fig. 1).

*Senegalia hoehnei* differs from other *Senegalia* species by twigs usually ridged, pubescent to tomentose with yellowish hairs to 0.5 mm, leaves 50–175 mm long, petiole 7–20 mm, with yellowish pubescence, mostly two columnar petiolar glands, 0.5–1.9 mm, similar but somewhat smaller glands between one to ten uppermost pinna pairs, leaflets 40 to 65 pairs per pinna, midvein subcentral, inflorescence a globose head 12–17 mm in diameter in terminal pseudo-paniculate clusters, receptacle slightly enlarged, elongated, and flowers sessile.

Type:—BRAZIL. Rio de Janeiro: Gávea, Horto Florestal, Distrito Federal, 28 July 1930, *F. Victoria 2734* (holotype: RB!; isotypes: F!, MO!, NY!).



**FIGURE 1.** *Senegalia hoehnei*. A: Leaf and petiolar glands; B: leaflet upper surface; C: inflorescence; D: flower. A from *Fonseca 16* (US), B, C, D *Mexia 4494* (US); drawn by Alexa Musgrove.

Scandent shrubs and lianas to 5 m long; twigs dark purplish brown, slightly flexuous, usually ridged, pubescent to tomentose with dense, curved to erect, yellowish hairs to 0.5 mm long; short shoots absent; prickles light to dark brown, sometimes darker above, flattened, recurved, woody, 0.5–2 x 1–2 mm at the base, usually pubescent at least at the base, persistent, in lines along the twig ridges, scattered on the petiole, and rachis. Leaves alternate, 50–175 mm long; stipules dark brown, linear, symmetrical, flattened, straight, herbaceous, 1–4 x 0.5–0.9 mm near the base, pubescent, early deciduous; petiole adaxially grooved, 7–20 mm long, pubescent with yellowish hairs to 0.5 mm long; petiolar gland mostly 2, one near the middle of the

petiole, one near the first pinna pair, columnar, 0.5–1.9 mm long, apex 0.4–0.9 mm across, orbicular, commonly expanded upward, flattened to depressed, glabrous; rachis adaxially grooved, 30–160 mm long, pubescent with yellowish hairs to 0.5 mm long, a columnar gland 0.5–1.1 mm long, between 1 to 10 terminal pinna pairs, and sometimes the lowermost pinna pairs, apex 0.3–0.9 mm across, orbicular, sometimes expanded upward (funnel-shaped), flat to depressed, glabrous; pinnae 15 to 24 pairs/leaf, 25–50 mm long, 3.5–9 mm between pinna pairs; paraphyllidia 0.3–0.9 mm long; petiolule 0.7–1.4 mm long; leaflets 40 to 65 pairs/pinna, opposite, 0.4–1.0 mm between leaflets, linear to linear oblong, 2.9–4.5 x 0.5–0.9 mm, glabrous, lateral veins not obvious, one subcentral vein from the base, base oblique, truncate on one side, margins lightly ciliate, apex acute, Inflorescence a densely 20 to 40-flowered globose head 12–17 mm across, in terminal pseudo-paniculate clusters, the main axis to 300 mm long; peduncles 3–13 x 0.3–0.6 mm thick, puberulent; receptacle slightly enlarged, elongated; involucre a small bract located along the peduncle, early deciduous; floral bracts spatulate, 0.5–0.9 mm long, puberulent, early deciduous. Flowers sessile, yellow; calyx 5-lobed, 1.5–2.0 mm long, puberulent; corolla 5-lobed, 2.4–3.2 mm long, mostly glabrous, lobes one-sixth the length of the corolla; stamen filaments 6–8 mm long, distinct; anther glands absent; ovary glabrous, stipe to 1.1 mm long. Legumes straight, flattened, not constricted between the seeds, oblong, 100–170 x 20–28 mm wide, chartaceous, transversely striated, glabrous, eglandular, dehiscent along both sutures; stipe 6–13 mm long; apex acute, beaked. Seeds immature seeds elliptical, with pleurogram.

**Distribution and ecology:**—This species occurs in the Atlantic Domain in dense ombrophilous and semi-deciduous forests, in the states of Bahia, Minas Gerais, Espírito Santo, Pará, Rio de Janeiro, São Paulo, Paraná and Santa Catarina. This domain is a global hotspot for conservation of biodiversity (Myers *et al.* 2000, Ribeiro *et al.* 2009). Although much of the vegetation cover in the Atlantic Domain has been removed or is profoundly altered, several new species are still being described. Much of the taxonomic diversity of the genus *Senegalia* in Brazil is present in this domain, comprising at least 11 endemic species, mostly present in Rain Forest and Restinga physiognomies.

**IUCN Red List category:**—Data Deficient DD. As noted above, much of the vegetation cover in the Atlantic Domain has been removed or is profoundly altered. Further, *Senegalia hoehnei* is apparently uncommon, we have seen fewer than 13 specimens. These factors suggest that this species may at least be Vulnerable, perhaps Endangered (IUCN 2010).

**Phenology:**—*Senegalia hoehnei* was observed in flower from February to March and in fruit from May to July.

**Etymology:**—Named after Frederico Carlos Hoehne, a pioneer of nature conservation in Brazil and a prolific and influential scientist, writer and manager of scientific institutions, participant in organizations in the scientific community. He collected extensively in much of Brazil (Andrade Franco & Drummond 2005, 2009).

**Common name:**—Hoehne's senegalia

**Additional specimens examined (paratypes):**—BRAZIL. Bahia: 10 km W de Camacan, 850 m, 16 March 2007, *A. M. Amorim et al.* 6940 (NY, RB, CEPEC); Rodovia, Itajuípe-Ubaitabe, 12 km N de Barro Central; 24 April 1965, *R. P. Belém & M. Magalhães* 875 (NY); Rodovia, 27 km NW of Caatiba, 1000 m, 3 March 1978, *S. A. Mori et al.* 9407 (NY). Minas Gerais: Mata Atlântica, Caratinga-Matão, 16 June 1984, *P. M. Andrade & M. A. Lopez* 394 (F, NY); Viçosa, Agricultural College Lands, 690 m, 21 March 1939, *Y. Mexia* 4494 (A, F, MO, WIS, US). Espírito Santo: Santa Teresa. Valsugana Velha, 13 March 1986, *W. Pizziolo* 311 (RB, MBML). Pará: 10 km N from the state limit, route BR-019, 230 m, 16 July 1987, *S. Tsagaru & Y. Sano* B264 (MO). Paraná: Carvalho, 13 September 1911, *P. Dusén s.n.* (S); Volta Grande, 18 August 1911, *P. Dusén* 12063 (S, US); Picadão Cambará-Col. Limeira, 50–100 m, 14 February 1968, *G. Hatschbach* 18593 (F, US); Rio de Janeiro: Mont d'Organ, *G. Gardner* 360 (F); Rio de Janeiro: Rio de Janeiro, Matas das Obras Públicas, fundos da sede do Horto Florestal da Gávea, 4 June 1930, *J. G. Kuhlmann, s/nº* (RB 2693); Magé. Parque Nacional da Serra dos Órgãos, Santo aleixo, Alta Ventania, 31 March 2010, *M. J. F. Barros, et al.* 69 (RB). Santa Catarina: Tres Barras, Garuva, 150 m, 25 May 1957, *R. Reitz & R. M. Klein* 3991 (NY, US). São Paulo: São Paulo, Instituto de Botânica, 10 km S and 1 km E of center of São Paulo, 800 m, 7 February 1961, *C. G.*

Fonseca 16 (NY, US); Cidade Jardim, 20 March 1946, *W. Hoehne s.n.* (F); Estrada Arariguama-Pirapora, 17 July 1991, *S. Romaniuc Neto et al.* 1195 (HUEFS).

**Discussion:**—*Senegalia hoehnei* is a member of a group of species morphologically similar to *Senegalia martusiana* (Steudel, 1841: 148) Seigler & Ebinger (Seigler *et al.* 2006a: 57). Nearly all specimens were originally identified as *Acacia adhaerens* (Martius, 1837: 122) Bentham (1842: 517). [= *Senegalia martusiana*]. *S. hoehnei* may be separated from *S. martusiana* by the longer leaves with 15 to 24 pairs of pinnae (6 to 17 pairs in *S. martusiana*), and by the sessile flowers (pedicellate on a stalk 0.9–1.5 mm in *S. martusiana*). The short hairs of the twigs, petiole and rachis, less than 0.5 mm long, also separate *Senegalia hoehnei* from the other three members of this group of species, *S. martusiana*, *S. mattogrossensis* (Malme, 1931: 45) Seigler & Ebinger (Seigler *et al.* 2006a: 58), and *S. podadenia* Britton & Killip (1933: 24).

## Acknowledgements

We acknowledge the assistance of Curators of the above-mentioned herbaria for provision of specimens and information valuable for this study and the artist Alexa Musgrove for drawings of the new species. The authors wish to thank several colleagues for advice concerning questions of nomenclature and general taxonomic advice, in particular, K. N. Gandhi. We wish to acknowledge support by the National Science Foundation (NSF DEB 04-15803) and by the American Philosophical Society (1992).

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