



## *Adesmia sessilifolia* (Fabaceae), a new species from a relictual landscape in southern Brazil

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### Abstract

In the context of a taxonomic study of *Adesmia* ser. *Psoraleoides*, an endemic group from grasslands in southern Brazil, the new species *Adesmia sessilifolia* was discovered. This species occurs in a restricted area that represents relictual connections in geomorphology in the South-Brazilian highlands. *Adesmia sessilifolia* resembles *A. paranensis* in having glabrous branches and leaves, pilose inflorescences, and arillate seeds, but differs in plant size and in having sessile leaves with apparent veins in both surfaces, as well as in its flowering and fruiting periods and geographic distribution. A description and illustration are provided together with a key for identification of the species of *Adesmia* ser. *Psoraleoides*.

**Key words:** *Adesmia* ser. *Psoraleoides*, grasslands, Leguminosae, taxonomy

### Introduction

The genus *Adesmia* DC. was circumscribed in the monogeneric tribe *Adesmieae* (Polhill 1981a), based on diagnostic characters such as the free stamen filaments and lomentaceous pods. The genus was placed in an isolated position, distant from the tribe Dalbergieae (*sensu* Polhill 1981b), but the most recent circumscription of Dalbergieae *s.l.*, based on analyses of molecular and morphological data, supports an *Adesmia* clade—containing the genera *Adesmia*, *Amicia* Kunth, *Zornia* J.F.Gmel., *Poiretia* Vent., *Nissolia* Jacq. and *Chaetocalyx* DC. with about 360 species in total—as a sister to the *Pterocarpus* and *Dalbergia* clades (Lavin *et al.* 2001, Klitgaard & Lavin 2005). The *Adesmia* clade is defined by the following synapomorphies: presence of herbaceous species (modified in some taxa), leaves with few opposite leaflets and pedicel confluent with the calyx (modified only in some species of *Nissolia*) (Lavin *et al.* 2001).

The genus *Adesmia* is endemic to South America, comprises about 230 species, and is widespread in Central Chile, South and West Argentina, extending through the Andean valleys into Bolivia and southern Peru, as well as Uruguay and southern Brazil (Burkart 1967a). The basal *Adesmia* lineages contain the high-Andean and temperate species, with an estimated divergence time around  $34.5 \pm 2.4$  Mya (Schrire *et al.* 2005). The temperate taxa from the Southern Hemisphere (as the *Adesmia* clade in dalbergioid legumes) probably had a secondary diversification in the grass biome of tropical regions, occupying mainly higher elevations in tropical areas (Schrire *et al.* 2005).

In southern Brazil, the genus *Adesmia* is represented by 17 species, belonging to subgenus *Adesmia* and is divided into four series (Burkart 1967b): *Muricatae*, *Subnuda*, *Bicolores* and *Psoraleoides* (Miotto 1993, Miotto & Leitão Filho 1993). *Adesmia* ser. *Psoraleoides* comprises eleven species with a distribution restricted to the highlands of southern Brazil, mainly in patches of grasslands and rock outcrops amongst

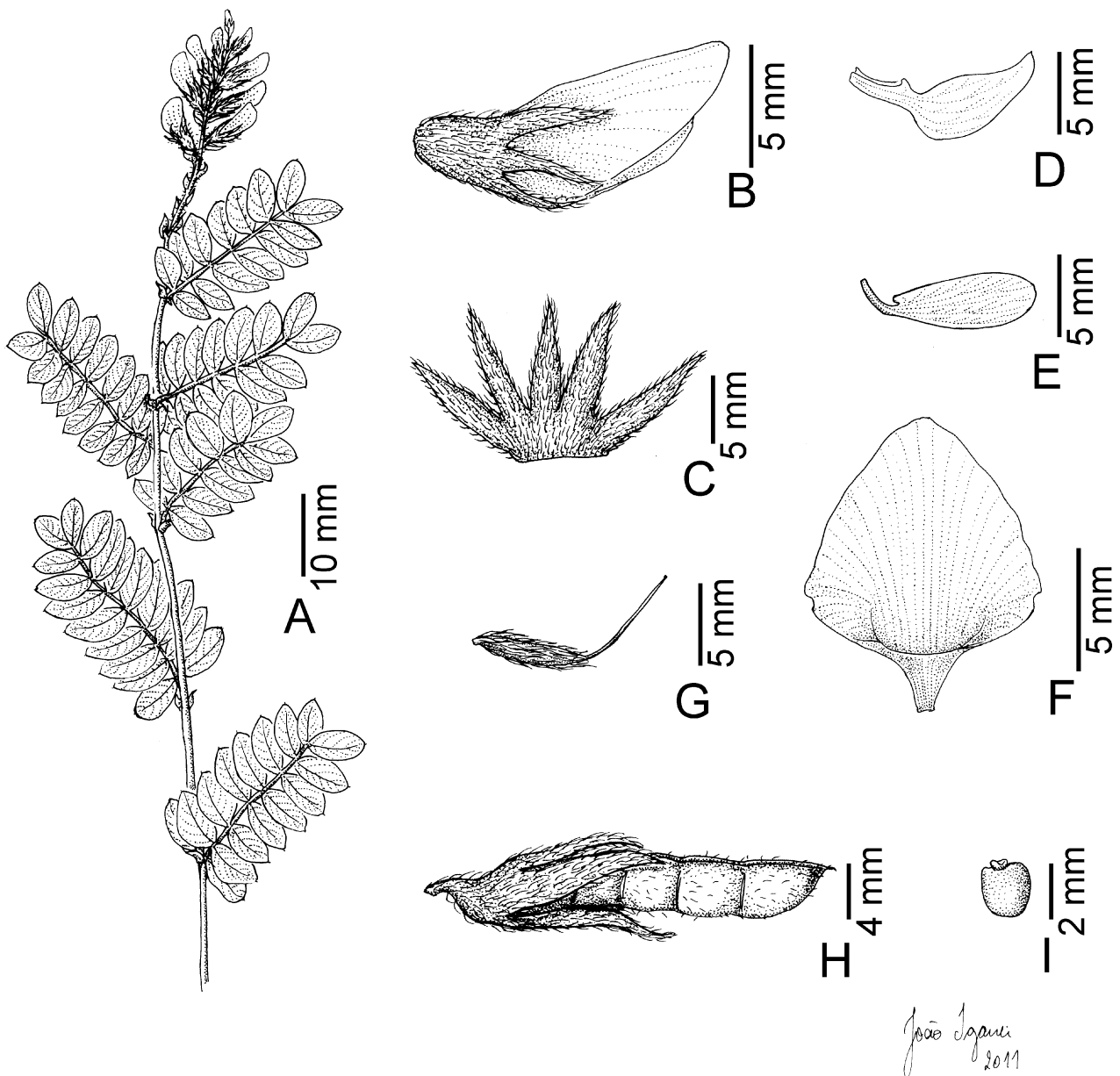
forests dominated by *Araucaria angustifolia* (Bertol.) Kuntze (Miotto & Leitão Filho 1993, Miotto & Waechter 1996). The species are characterized by being perennial herbs, shrubs and subshrubs, with pinnate leaves, fruit a plane hemicraspedium, with persistent semireplum and several ovules, and seeds with a well-developed aril in most species. In the context of a taxonomic study of *Adesmia* ser. *Psoraleoides* a new species is discovered, which is described below.

## Taxonomy

### *Adesmia sessilifolia* Iganci & Miotto, *sp. nov.* (Figure 1)

*Ad Adesmia* ser. *Psoraleoides* *pertinens*, *A. paranensis* Burkart *similis*, *sed foliis sessili (non longi petiolata), foliola ovate-lanceolate (non oblongis), visibilibus venis ramosis (vs. mediana visibilibus sola) et 35 cm alta (vs. 70–90 cm alta) differt.*

Type:—BRAZIL. Rio Grande do Sul: São Francisco de Assis, em campo, 16 January 1991, fl. and fr., Z. Machado 1236 (holotype ICN, isotype K).



**FIGURE 1.** *Adesmia sessilifolia*. A. Branch. B. Flower. C. Calyx. D. Keel. E. Wing. F. Banner. G. Gynoecium. H. Pod. I. Seed. A–G from Z. Machado 1236 (ICN); H–I from Valls *et al.* 12864 (ICN, CEN). Drawn by J.R.V. Iganci.

Small and ramose shrublets, up to 35 cm, perennial, with xylopodium, stems slightly lignified and branches glabrous except for brownish trichomes covering the inflorescences. Leaves paripinnate, sessile, 6–8 pairs of leaflets; leaflets ovate-lanceolate, 10–13 × 5–8 mm, apices obtuse and mucronate, both surfaces completely glabrous, chartaceous, glands absent, primary and secondary veins pronounced. Stipules lanceolate, 4 mm long. Racemes short, few-flowered, 4–9 cm long; bracts 5–6 mm long, triangular to lanceolate; pedicels 2–5 mm long, initially erect, curved after anthesis. Flowers yellow, 10–14 mm long; calyx 8–9 mm long, pubescent, campanulate, teeth 5, these 6–7 mm long; banner 9–11 × 10–14 mm, ovate to suborbicular, glabrous; wings 10–12 mm long, glabrous; keel 10–12 mm length, glabrous; stamens 10, filaments free; ovary 6–7 mm long, sessile, sericeous, style 8 mm, stigma punctiform. Fruit a hemicaspedia, dark brown, with 4–6 articles, subquadrangular, 4 × 4 mm. Seeds subdeltoid, 2 mm in diameter, with a developed dark brown aril.

**Distribution:**—*Adesmia sessilifolia* is only known from the central-western part of Rio Grande do Sul state, Brazil, in grasslands above outcrops of basalt close to sandy soils.

**Etymology:**—The epithet refers to the sessile leaves.

**Additional specimens examined:**—BRAZIL. Rio Grande do Sul: Santiago, litossolo sobre basalto, 23 March 1991, fr., *J.F.M. Valls, Gomes, Moraes & Oliveira 12864* (ICN, CEN); Quevedos, estrada Jarí-Quevedos, 9 December 2004, fl. and fr., *S. Bordignon, R. Cancelli & R. Backes s.n.* (ICN).

**Discussion:**—*Adesmia sessilifolia* is similar to *A. paranensis* Burkart (1954: 521) by having glabrous branches and leaves, pilose inflorescences and seeds with well-developed dark brown arils. It differs from that species in the size of the leaflets, by having sessile leaves with rounded leaflets with pronounced veins on both surfaces. Flowers and fruits appear later in the summer (December to March), compared with *A. paranensis* (October to December, rarely in February). In addition, *A. sessilifolia* differs in its geographic distribution, occurring in grassland on basaltic relicts in central-western Rio Grande do Sul, while *A. paranensis* is restricted to the core area of the fields on basalt, at higher elevations, between 840 and 1300 m, in the states of Santa Catarina and Paraná.

### Key to species of *Adesmia* ser. *Psoraleoides*

1. Slightly lignified plants, subshrubs and shrubs ..... 2
  - Herbaceous plants ..... 7
2. Pedicels erect, even in fruit. Leaflets 1.6–5.0 × 0.6–2.2 mm, generally conduplicate ..... *A. tristis*
  - Pedicels reflexed after anthesis. Leaflets 6.0–20.0 × 2.1–10.0 mm, generally flat ..... 3
3. Branches and leaves glabrous, only the inflorescences pubescent ..... 4
  - Branches, leaves and inflorescences pubescent ..... 5
4. Plants up to 35 cm tall; leaflets 10–13 × 5–8 mm, pinnately veined ..... *A. sessilifolia*
  - Plants 70–90 cm tall; leaflets 5.5–15.0 × 2.0–4.8 mm, single-veined ..... *A. paranensis*
5. Inflorescences lax; flowers 7–9(–10) mm in length ..... *A. rocinhensis*
  - Inflorescences dense; flowers 14.0–19.5 mm in length ..... 6
6. Plants with prominent leaf scars and persistent stipules; racemes short, corymbose, aril absent ..... *A. reitziana*
  - Plants without leaf scars; racemes long, seeds arillate ..... *A. psoraleoides*
7. Racemes with axillary flowers at the base ..... *A. araujoii*
  - Racemes or panicles without axillary flowers ..... 8
8. Leaflets broadly elliptic, suborbicular or obovate, 3.0–7.0 mm wide ..... 9
  - Leaflets elliptic, oblong, obovate or rarely ovate, 0.7–2.8(–4.0) mm wide ..... 10
9. Leaves with 2–4(–5) pairs of leaflets. Pedicels 6.5–7.5 mm long. Hemicraspedium with 2–4(–5) orbicular articles ...
  - ..... *A. valsii*
  - Leaves with (3–)5–8(–9) pairs of leaflets. Pedicels 1.5–5.0 mm long. Hemicraspedium with (2–)4–7 subquadrangular articles ..... *A. sulina*
10. Hemicraspedium articles 2.5–3.5 × 1.6–3.3 mm. Seeds with very short aril ..... *A. ciliata*
  - Hemicraspedium articles 3.5–4.8 × 2.7–3.5 mm. Seeds with well-developed aril ..... *A. arillata*

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