

Lupinus reitzii (Fabaceae–Faboideae), a New Species of the *Lupinus lanatus* Complex from Southern Brazil

Mardiore Pinheiro and Silvia Teresinha Sfoggia Miotto

Depto. Botânica, IB-UFRGS, Campus do Vale, Porto Alegre, RS, Cep. 91.501-970, Brazil.
mardiorepinheiro@brturbo.com

ABSTRACT. *Lupinus reitzii*, a new species from southern Brazil, is described and illustrated. The new species belongs to the *Lupinus lanatus* complex and is closely related to *L. lanatus* and *L. magnistipulatus*, from which it is set apart principally by the size and shape of the stipules and by the shape and pubescence of the leaflets.

RESUMO. É descrita e ilustrada *Lupinus reitzii*, uma nova espécie do Sul do Brasil. *Lupinus reitzii* é relacionada com os táxons do complexo *Lupinus lanatus*, especialmente *L. lanatus* e *L. magnistipulatus*, diferenciando-se destas principalmente pelo tamanho e forma das estípulas, forma e pilosidade dos folíolos.

Key words: Fabaceae–Faboideae, *Lupinus lanatus* complex, *Lupinus reitzii*, southern Brazil.

During a revision of the genus *Lupinus* L. in the Brazilian state of Rio Grande do Sul (Pinheiro & Miotto, 2001), we had the opportunity to study the type material of *L. magnistipulatus* Burkart ex Planchuelo & Dunn and verify that some of the paratypes present morphological differences from the isotype (Reitz 2377, HBR). In 1961, Burkart, while analyzing the collections Smith & Reitz 9155 (HBR) and 10135 (US, HBR), wrote on these sheets that they represented a new species, which he dubbed *L. reitzii*, but never validated the name (Pinheiro & Miotto, 2001). Later, Planchuelo and Dunn (1989) considered these collections to represent young individuals of *L. magnistipulatus* and referred them to this species. Our analysis of specimens determined as *L. magnistipulatus*, with additional collections from southern Brazil, indicates that a new species is represented among these collections and is herein described.

Lupinus reitzii Burkart ex M. Pinheiro & Miotto, sp. nov. TYPE: Brazil. Santa Catarina: Varzeão, BR 282, km 476, 31 Oct. 1999 (fl), M. Pinheiro 207 (holotype, ICN; isotypes, K, MBM, MO). Figure 1.

Herbae probabiliter biennes, erectae, secundum caules

ramosae. Folia basalia unifoliolata et trifoliolata, altera 5-foliolata, interdum folia trifoliolata in ramis lateralibus; foliola late oblanceolata ad angusta oblanceolata, apice rotundato, marginibus undulatis, sparse utrinque lanosis, pili flavescentes, undulati et mixti; stipulae petiolo adnatae, parte distali libera, lanceolata vel lanceolato-caudata, apice acuminato, interdum acuto, dorsaliter lanosae, ventraliter glabrae. Racemi terminales, densiflori; bractae caducae, lanceolato-caudatae, dorsaliter lanosae, ventraliter glabrae. Flores rosei, roseo-purpurei vel colore indico tincti; calyx labio infero trifido, labio supero profunde bifido; alae oblongae, apice rotundato. Legumina lanosa; semina elliptica.

Plants probably biennial, herbaceous, erect, branched along the stem, (12)18.5–70 cm tall, sometimes in cushions more than 50 cm diam.; stem finely or densely lanate. Basal leaves unifoliolate and trifoliolate, evident only in juvenile plants; adult leaves sometimes trifoliolate in lateral branches, mostly 5- to 7(8)-foliolate; leaflets 3–8(9.5) × 1–3 cm, widely to narrowly oblanceolate, apically rounded, margins undulate, finely lanate on both sides, with sparse intertwined trichomes yellow-tinged, about 5–7 mm long; petioles 2.3–12.5(15) cm; stipules (11)18–70 mm, partly adnate to petioles, the free portion 8–38(49) × 3–9(13) mm, lanceolate to lanceolate-caudate, the apex acuminate, sometimes acute, glabrous adaxially, lanate abaxially. Terminal racemes, densiflorous, 25- to 50-flowered, 4.6–20.0 cm; peduncles (1.3)3–6.6(8.9) cm; rachis densely lanate; pedicels 1.5–4.7(6) mm, pilose as the rachis; bracts 10.7–16 × 2.1–4.2 mm, caducous, lanceolate-attenuate to lanceolate-caudate, lanate abaxially. Flowers 10–15.2 mm, pink, purple-pink, or indigo; bracteoles 2.5 mm long, lanceolate, rarely oblanceolate, glabrous within, finely to densely lanate outside; calyx glabrous within, finely to densely lanate outside; lower lip 11–14 × 2.7–4.5 mm, the apex trifid with central tooth 1.8–3.8 mm and lateral teeth 1.2–3.4 mm; upper lip deeply bifid, 6.3–9 × 4.1–6 mm; laciniae 1.8–2.8 mm wide, with a notch between them 4.1–6.9 mm deep; corolla with standard 13–16.8 × 7.8–12.3 mm, ovate, sometimes widely ovate or oblong-ovate; wings 13.5–18.4 × 4.7–7.6 mm, oblong, apex rounded, the claw 2.4–3.8 mm long;

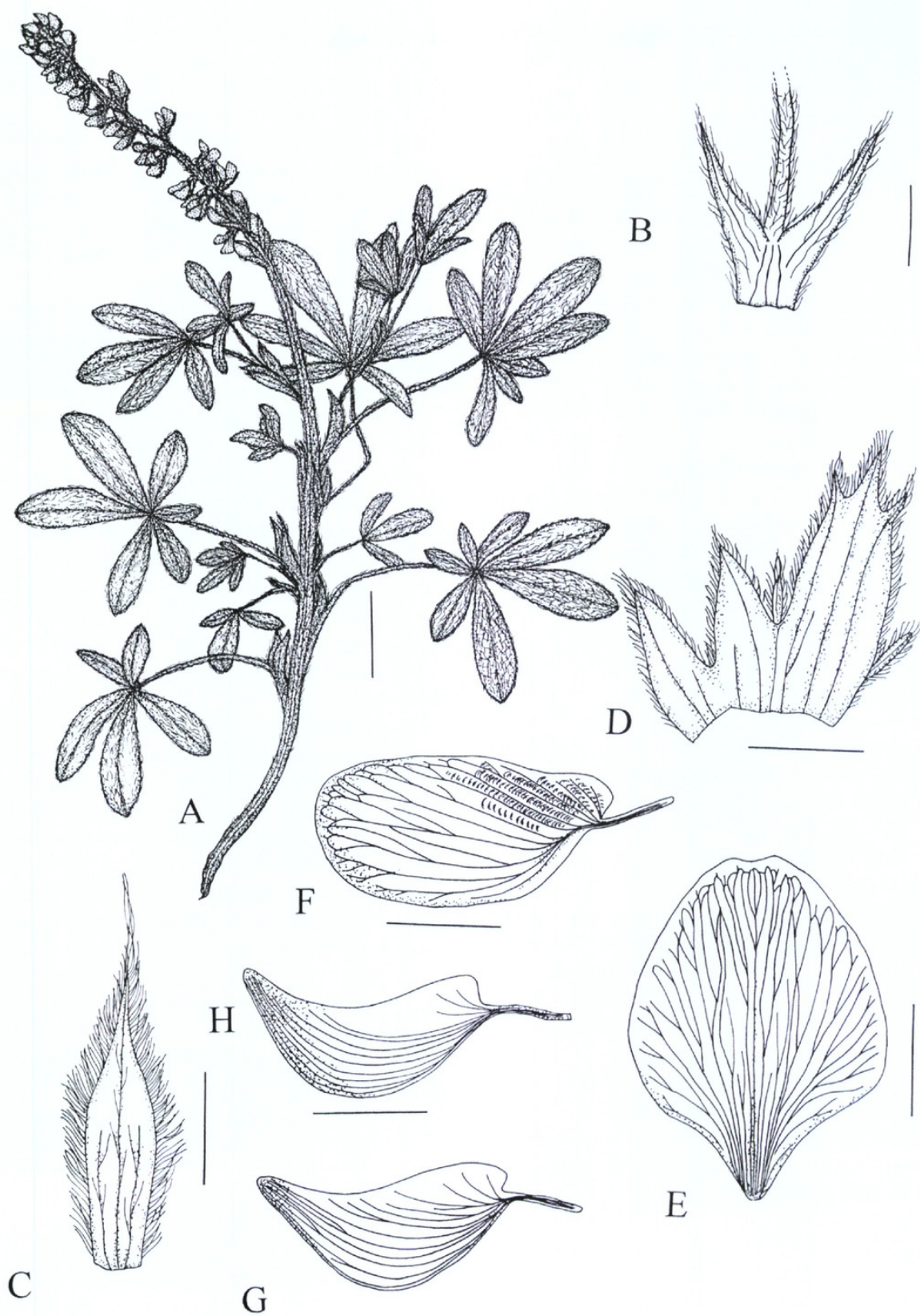


Figure 1. *Lupinus reitzii* Burkart ex M. Pinheiro & Miotto. —A. Flowering branch. —B. Stipules. —C. Bract, ventral view. —D. Calyx, inside surface. —E. Banner petal, ventral view. —F. Wing petal. —G, H. Keel petals. Scale bars = 4 cm in A; 2 cm in B; 5 mm in C–H. (A–G: drawn from the type, *M. Pinheiro* 207; H: *M. Pinheiro* 318.)

keels $12.6\text{--}16.6 \times 3.8\text{--}5.4$ mm, the apex falcate, straight or twisted upward, rarely abruptly falcate-arcuate, the claw $3\text{--}4.5$ mm long; ovary with 7 ovules. Legumes $(33)43\text{--}64(74) \times 7\text{--}9$ mm, densely lanate; seeds $4.2\text{--}4.6 \times 3\text{--}3.4$ mm, elliptic.

Habitat and distribution. *Lupinus reitzii* was collected in sunny places on roadsides and bare rocky soils in the southern Brazilian states of Rio Grande do Sul, Santa Catarina, and Paraná.

Phenology. Flowering and fruiting plants were collected from October to January.

Etymology. The epithet "reitzii" is an homage to Brazilian botanist Raulino Reitz.

Pinheiro and Miotto (2001), after a morphological analysis of the isotype of *L. magnistipulatus* (R. Reitz 2377, HBR) and the paratypes (*L. B. Smith*, R. Reitz & R. M. Klein 7703, HBR, US; *L. B. Smith* & R. Reitz 10326, HBR, R, US; R. Reitz & R. M. Klein 7417, HBR), verified that these were the only specimens examined by Planchuelo and Dunn (1989) which belong to *L. magnistipulatus*, while the other paratypes examined belong to *L. reitzii*. Moreover, Pinheiro and Miotto (2001), during the revision of *Lupinus* in Rio Grande do Sul, based on the morphological analysis (stipules, leaflets, banner, and calyx) of *L. magnistipulatus* and *L. setifolius* Planchuelo & Dunn, concluded that both species are the same taxon, justifying the synonymization of *L. setifolius*. It should be emphasized that in the holotype photo of *L. magnistipulatus* (R. Reitz 2377, SI), there are many notes written by Burkart, who indicated that this specimen is identical to the specimen *B. Rambo* 36208 (isotype, PACA), designated by Planchuelo and Dunn as the holotype of *L. setifolius*.

Planchuelo and Dunn (1989) considered the presence of trichomes on the leaflets a distinguishing characteristic to separate *L. magnistipulatus* (hairy leaflets) from *L. setifolius* (glabrous leaflets). However, the analysis of *L. magnistipulatus* populations demonstrated an intraspecific variation concerning their pubescence (Pinheiro & Miotto, 2001). Moreover, it can be emphasized that the description of *L. magnistipulatus* sensu Planchuelo & Dunn also includes vegetative and reproductive morphological characteristics of *L. reitzii*, which has hairy leaflets.

The analysis of the *L. magnistipulatus* and *L. setifolius* types, as well as of a great number of specimens, in addition to field observations, allowed a better understanding of these taxon circumscriptions and the adoption of *L. reitzii* as a new species.

Lupinus reitzii is closely related to *L. magnistipulatus* and *L. lanatus* Benth. From *L. magnis-*

tipulatus it is set apart mainly through the morphology of the stipules and leaflets, as well as the flower color. The stipules in *L. reitzii* are lanceolate to lanceolate-caudate with an acuminate to acute apex, with the free part $8\text{--}38(49) \times 3\text{--}9(13)$ mm, while in *L. magnistipulatus* they are lanceolate to ovate-lanceolate with an acute apex, the free part $11\text{--}56.3 \times 4.4\text{--}22.0(25.2)$ mm; the leaflets in *L. reitzii* are widely to narrowly oblanceolate, both faces lanate with sparse intertwined yellow-tinged trichomes, while in *L. magnistipulatus* the leaflets are widely oblanceolate to obovate, glabrous or only occasionally lanose on both sides with sparse intertwined white trichomes. Flowers are pink to purple-pink, rarely indigo, in *L. reitzii*, while they are consistently indigo in *L. magnistipulatus*.

Lupinus lanatus differs from the new species by the densely white or whitened lanose, narrowly elliptic to elliptic-oblanceolate leaflets with plane margins and an obtuse or rounded apex, as well as the apices of the wings, which are rounded in *L. reitzii*, but have an obtuse beak in *L. lanatus*. The flowers in *L. lanatus* are blue or rarely white, contrasting with the pink, purple-pink, to deeper indigo of *L. reitzii*.

The geographical distribution of these *Lupinus* species is also distinct: *Lupinus magnistipulatus* is known from isolated scattered populations restricted to the montane fields from Rio Grande do Sul and Santa Catarina, in the highest and coldest environments of southern Brazil (Pinheiro & Miotto, 2001), while *L. reitzii* is widespread in southern Brazil; *L. lanatus* occurs in Santa Catarina and Rio Grande do Sul, where it is also widespread.

Paratypes. BRAZIL. **Paraná:** Guarapuava, Guará, 5 Dec. 1968, G. Hatschbach 20492 (MBM, US); H. Brucher 3065 (K); São José dos Pinhais, 18 Oct. 1980, G. Hatschbach 43218 (K). **Rio Grande do Sul:** Bom Jesus, estrada para São José dos Ausentes, 16 Nov. 1997, J. A. Jarenkow & E. N. Garcia 3635a (PEL); Cambará do Sul, de Osvaldo Kroeff, para São José dos Ausentes, 5 Jan. 2000, S. T. S. Miotto & M. Pinheiro 1844 (ICN); Itaimbezinho próx. de São Francisco de Paula, 13 Nov. 1953, Rambo 54507 (B, PACA); Caxias do Sul, Vila Oliva, 29 Oct. 1985, M. L. Abruzzi 1027 (HAS); São Francisco de Paula, 30 Oct. 1995, S. T. S. Miotto et al. 1456 (ICN); estrada para Serra do Umbu, 23 Oct. 1998, A. Flores 239 (ICN); ca. 11 km do rio Pinto, 23 Nov. 1998, M. Pinheiro 128 (ICN); São José dos Ausentes, em direção a Silveira, 6 Jan. 2000, M. Pinheiro 310 (ICN); Silveira, ca. 2 km em direção a Bom Jardim da Serra, 6 Jan. 2000, M. Pinheiro 313 (ICN). **Santa Catarina:** Água Doce, margem do rio Chapecó, 4 Dec. 1964, L. B. Smith & Klein 13552 (R); próx. à Caçador, 2 Dec. 1964, L. B. Smith & Klein 13393 (B, R); 14 km E de Bom Jardim da Serra, 25 Nov. 1980, A. Krapovickas & R. Vanni 36933 (CETS); Bom Jardim da Serra, 6 Jan. 2000, M. Pinheiro 318 (ICN); Caçador, Campos das Palmas, 52 km O de Caçador Joaçaba, 24 Dec. 1956, L. B. Smith & R. Reitz 9155 (HBR); Capão Alto, SC 458,

km 181, a 12 km do trevo da BR 116, 30 Oct. 1999, S. T. S. Miotto 1763 (ICN); Campo Belo do Sul, km 163, ca. 12 km da divisa com o mun. Campos Novos, 30 Oct. 1999, M. Pinheiro 198a (ICN); Lages, km 247, perímetro urbano, 2 Nov. 1999, M. Pinheiro 225 (ICN); Ponte Serrada, BR 282, km 450, 31 Oct. 1999, M. Pinheiro 205 (ICN); para Faxinal dos Guedes, 13 Oct. 1964, L. B. Smith & Reitz 12480 (FLOR, R); para Xanxerê, 8 Nov. 1964, L. B. Smith & Klein 13054 (US); Ponte Alta do Norte, BR 116, km 165, 02 Nov. 1999, M. Pinheiro 221 (ICN); São Cristóvão do Sul, BR 116, km 198, 2 Nov. 1999, M. Pinheiro 223 (ICN); São Joaquim, nascente do rio Capivaras, serra do Oratório, 10 km E de Bom Jardim da Serra, 16 Jan. 1957, L. B. Smith & Reitz 10135 (HBR, US), 22 Oct. 1961, G. Pabst 6220 & E. Pereira 6393 (HB, PEL); Vargeão, BR 282, km 476, em direção a Faxinal dos Guedes, 31 Oct. 1999, M. Pinheiro 206 (ICN).

Acknowledgments. We are grateful to Marcos Sobral for his help, incentive, and suggestions; to Tarciso Filgueiras for the Latin description; to Márcia Vignoli da Silva for the illustrations; and to Capes, CNPq, and Pronex for financial support of our studies.

Literature Cited

- Pinheiro, M. & S. T. S. Miotto. 2001. Flora Ilustrada do Rio Grande do Sul, Fasc. 27. Leguminosae–Faboideae: Gênero *Lupinus* L. Bol. Instit. Bioci. Univ. Fed. Rio Grande do Sul 60: 1–102.
- Planchuelo, A. M. & D. B. Dunn. 1989. Two new species of the *Lupinus lanatus* complex. Ann. Missouri Bot. Gard. 76: 303–309.



Miotto, Silvia Teresinha Sfoggia. and Pinheiro, M. 2005. "Lupinus reitzii (Fabaceae--Faboideae), a new species of the *Lupinus lanatus* complex from southern Brazil." *Novon a journal of botanical nomenclature from the Missouri Botanical Garden* 15, 346–349.

View This Item Online: <https://www.biodiversitylibrary.org/item/14675>

Permalink: <https://www.biodiversitylibrary.org/partpdf/32576>

Holding Institution

Missouri Botanical Garden, Peter H. Raven Library

Sponsored by

Missouri Botanical Garden

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.