

Dendrolobium polyneurum (S. T. Blake) H. Ohashi from Australia (Leguminosae-Papilionoideae: Desmodieae)

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ABSTRACT: *Desmodium polyneurum* S. T. Blake (Leguminosae-Papilionoideae: Desmodieae) described from Australia is regarded as a member of the genus *Dendrolobium* on the basis of its inflorescences having one flower per node, monadelphous stamens and reticulate tricolporate pollen grains. A revised description of the species is presented. *Dendrolobium polyneurum* (S. T. Blake) H. Ohashi is most similar to *Dendrolobium umbellatum* (L.) Benth.

KEY WORDS: *Desmodium polyneurum*, *Dendrolobium*, Leguminosae, Australia, Pollen morphology.

INTRODUCTION

Desmodium polyneurum S. T. Blake was characterized by the author as having close soft hairs covering almost all parts of the plant, leaflets with many prominent lateral veins, axillary racemes, early deciduous stipules, distinct bracteoles and few large articles. Blake (1954) considered this species a member of section *Tiliifoliae* Schindl. in subgenus *Dollinera* (Endl.) Schindl. (Schindler, 1926), which corresponds to subsection *Tiliifoliae* (Schindl.) H. Ohashi in section *Dollinera* of subgenus *Dollinera* (Ohashi 1971). Subgen. *Dollinera* is characterized by compound pseudoracemes with secondary bracts, monadelphous stamens, many-jointed pods and fine-reticulate pollen grains (Ohashi 1971). However, *Desmodium polyneurum* has racemes (i. e., one flower per node), white flowers, monadelphous stamens, a few-jointed pod without hooked hairs, distinct rim-arillate seeds, and well developed stipules which are connate at the base, and no secondary bracts. These characteristics clearly indicate that this species is not a member of *Desmodium* subgen. *Dollinera* but of genus *Dendrolobium*.

The genus *Dendrolobium* is characterized by having a solitary flower per node in the inflorescence, no secondary bracts, white or sometimes pale yellowish flowers, a long-clawed standard, monadelphous stamens, thick walled pods without hooked hairs, distinct rim-arillate seeds, well developed stipules often connate at the base on the side opposite the petiole, and coarsely reticulate pollen grains (Ohashi 1973, 1998). Pollen morphology is, therefore, an important diagnostic character of *Desmodium polyneurum* for determination of its taxonomic position. In this work pollen grains of this species are observed and are described for the first time with reconfirmation of gross morphological taxonomic characteristics.

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MATERIALS AND METHODS

This study is based mainly on critical examination of herbarium specimens kept in K and US. Abbreviations of the herbaria are according to Holmgren *et al.* (1990). Pollen sample was collected from a herbarium specimen, *Lazarides 6677* (US), and prepared by the standard acetolysis method (Erdtman 1960); dehydrated in the alcohol series and then in 3-methylbutyl acetate; air dried; and coated with gold. The examination and photomicrograph were used the Hitachi S-4100 scanning electron microscope. Measurements were made from approximately 20 well-formed grains.

RESULTS

Based on gross morphological characters and pollen morphology, as described below, *Desmodium polyneurum* S. T. Blake is considered to belong to *Dendrolobium*. Following taxonomic treatment is, therefore, proposed:

Dendrolobium polyneurum (S. T. Blake) H. Ohashi, comb. nov.

Figs. 1 & 2

Type: Australia, Northern Territory. *S. T. Blake 16474* (**Holotype** in BRI (n. v.); **Isotype** in K, US).

Desmodium polyneurum S. T. Blake in Austr. J. Bot. 2: 119, pl. 3 (1954).

Subshrubs, 60-120 cm high; stems numerous from a woody root-stock, erect, angular in the upper part, densely covered with ascending to recurved whitish or yellowish soft hairs. Leaves pinnately 3-foliolate; stipules deciduous, narrowly triangular, connate to the middle, 3-5.5 mm long, appressed pubescent outside, glabrous inside, ciliate; stipels persistent, free, filiform, 0.7-2 mm long. Petioles striate above, 5-20 mm long; rachis 10-23 mm long, not shorter than the petioles. Leaflets coriaceous, rather densely puberulent above, densely appressed or ascending sericeous below; lateral nerves 8-15 pairs, prominent, looped within but close to the margin; reticulate veins more or less distinct; terminal leaflet obovate, rounded to emarginate or apiculate or acute at apex, cuneate or obtuse at the base, 4-7.5 cm long and 2.3-4.5 cm wide; lateral leaflets smaller than the terminal one, oblong, equal or slightly oblique at the base.

Inflorescences axillary, racemose, 1-flowered at a node, densely flowered and shorter than the subtending leaf at first, then the rachis elongating with flowering, densely pubescent; peduncles 1-7 cm long; bracts deciduous, narrowly triangular, about 2 mm long, densely pubescent outside, glabrous inside; pedicels about 2 mm long in flower, 2-7 mm long in fruit; bracteoles at the tip of the pedicel, deciduous, ovate, about 1.5 mm long. Flowers white, about 8 mm long; calyx funnel form, 5.5-6.5 mm long, 4-lobed, the tube 2-3 mm long, densely pubescent both outside and inside; densely ciliate along the margin; upper 2 lobes connate nearly to the tip, 2.5-4 mm long; lateral ones narrowly ovate, 2-4 mm long, lowest lobe narrowly ovate, longer than the lateral lobe, 3-5 mm long. Corolla (according to Blake): standard obovate, clawed, *ca.* 10 mm long, 7 mm wide; wings adhering to the keel, 10 mm long, clawed, spurred near the base; keel as long as the wing, subobtusate, slightly incurved. Stamens monadelphous. Ovary hirsute; lower part of style with spreading hairs.

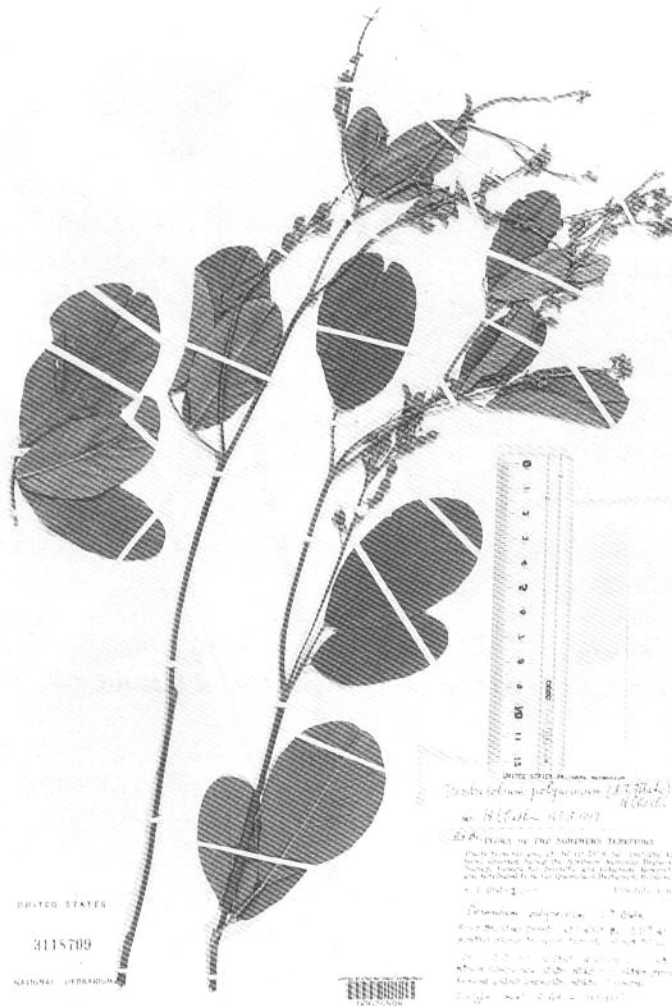


Fig. 1. Isotype of *Desmodium polyneurum* S. T. Blake (S. T. Blake 16474 US).

Pods sessile, indehiscent, (1-)3(-4)-jointed, densely covered with appressed sericeous hairs, the lower suture more deeply constricted than the upper one; articles elliptic (longitudinally oval), 7-8 mm long and 5 mm wide. Seeds rim-arillate.

Pollen grains tricolporate; (21-)22(-25) μm in polar axis, (16-)17(-18) μm in equatorial diameter; P/E= (1.20-)1.34(-1.47), subprolate to prolate, subcircular in equatorial view, semi-angular in polar view; colpi 0.7-0.9 the length of the polar axis, narrow, ca. 2 μm wide at the equator, narrowing rounded ends, colpus membrane with scattered granules, margins with a complete tectum; endoaperture less than 0.1-0.2 the length of the polar axis; sexine semitectate; sculpture of the mesocolpium reticulate to coarsely reticulate, lumina more or less hamulate, 1.0-2.5 μm in diameter, with free columellae elements. (Fig. 3)

Distribution: Endemic to Northern Territory in Australia.

Australia. Northern Territory: Perennial with tufted, oblique to erect stems 60-90 cm high, white flowers. *Blake 16474* (Isotype in K, US); 39 miles S.W. of Dorisvale Station. On limestone soil with *Eucalyptus foelscheana*. Shrubby plant 3-4 ft. high with many stems arising from a common base. *Perry 2796* (K, US); 2.5 miles S. W. of Tipperary Homestead. Erect undershrub 2-3.5 ft. high, with numerous stems from base. Flowers white. 23 July 1961. *Lazarides 6677* (K, US-voucher for the description of pollen morphology); 6 miles N. Wilton River Crossing, red clay loam. Shrub to 1 m high, branching from base. *Byrnes 2627* (K).

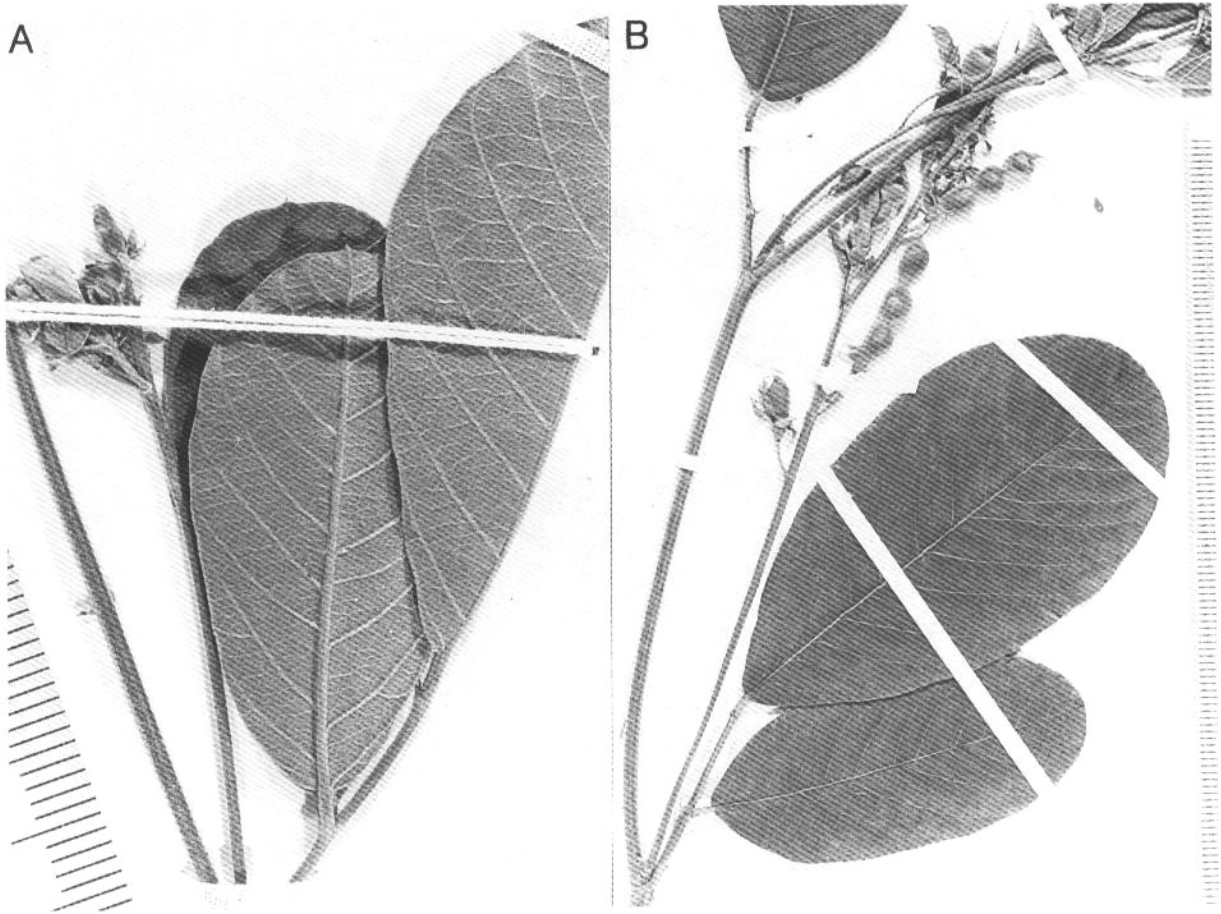


Fig. 2. Inflorescences of *Dendrolobium polyneurum* showing relative length of inflorescences; shorter than the subtending leaf when young (a: Lazarides 6677, US) and longer when in fruit (b: Blake 16474, US).

DISCUSSION

Affinity of the species

Dendrolobium polyneurum (S. T. Blake) H. Ohashi is characteristic and distinct in the genus in its habit and in having the terminal leaflet with a long rachis and elongate racemes. It is most similar to *Dendrolobium umbellatum* (L.) Benth. in the leaves and pods. The former is a subshrub with elongate racemes while the latter is a tree or shrub with usually umbellate to shortened (or rarely elongate) racemes. These differences show a clear evolutionary trend in *Desmodium* and its allied genera (Ohashi 1973); tree or shrub to subshrub, and branches with axillary subumbels or short racemes to elongate racemes. It may be supposed, therefore, that *Dendrolobium polyneurum* is derived from *Dendrolobium umbellatum*. *Dendrolobium* shows a wide range of variation in the area of Northern Australia-New Guinea-Melanesia (or Southwestern Pacific in Hollis & Brummitt, 1992) and is differentiated into several species, i. e., *Dendrolobium arbuscula* (Domin) H. Ohashi, *D. polyneurum* (S. T. Blake) H. Ohashi, *D. stipatum* S. T. Blake, and *D. umbellatum* (L.) Benth.

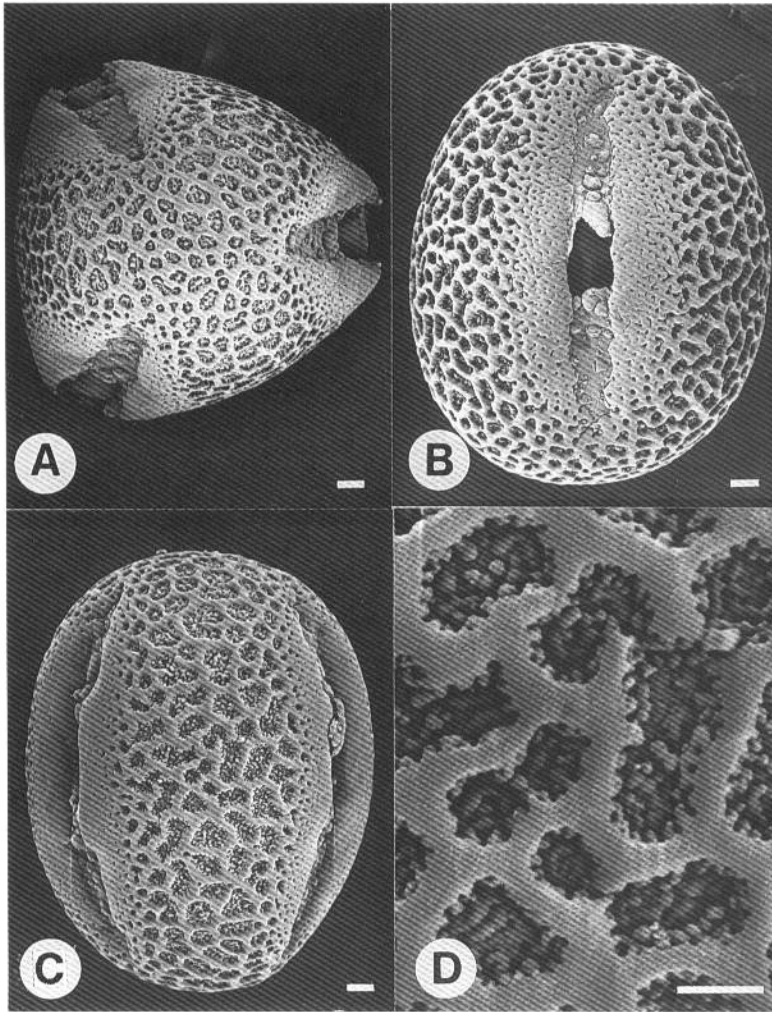


Fig. 3. Pollen grains of *Dendrolobium polyneurum*. A. Polar view; B. Equatorial view. C. Equatorial view showing mesocolpium; D. Enlarged mesocolpium showing hamulate lumina with free columellae elements. Scale bar = $1\mu\text{m}$. Voucher specimen: *Lazarides 6677* (US).

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摘 要

產自澳洲的澳洲山螞蝗 (*Desmodium polyneurum* S. T. Blake) 因其花序上每節具一朵花、雄蕊為單體、花粉為三溝孔粒，故鑑定為木山螞蝗屬 (*Dendrolobium*) 之成員，並將其學名重新組合後改成為澳洲木山螞蝗 *Dendrolobium polyneurum* (S. T. Blake) H. Ohashi。本種最為相近的植物為白木蘇花 *Dendrolobium umbellatum* (L.) Benth.。

關鍵詞：澳洲木山螞蝗、木山螞蝗屬、豆科、澳洲、花粉形態。

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