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## *Passiflora xishuangbannaensis* (Passifloraceae): A New Chinese Endemic

Shawn E. Krosnick

Department of Evolution, Ecology and Organismal Biology, Ohio State University,  
1315 Kinnear Road, Columbus, Ohio 43212-1157, U.S.A. krosnick.2@osu.edu

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**ABSTRACT.** *Passiflora xishuangbannaensis*, a new species endemic to Yunnan Province, China, is described and illustrated. It is distinguished from other members of *Passiflora* supersection *Disemma* by being completely glabrous, having one to two flowers per node, thickened coronal filaments that are brown to purple at the base, deeply bilobed leaves with strong variegation along the three primary veins, and a v-shaped arrangement of numerous abaxial laminar nectaries.

**Key words:** China, *Decaloba*, *Disemma*, *Passiflora*, Passifloraceae, Xishuangbanna, Yunnan.

*Passiflora* L. is a primarily Neotropical genus with more than 530 species worldwide. Of these, approximately 20 species are native to the Old World, primarily distributed throughout mainland India, China, Southeast Asia, Australia, and the Pacific (De Wilde, 1972). All of these species are placed in subgenus *Decaloba*, supersection *Disemma* (Labillardière) J. M. MacDougal & Feuillet. As part of a phylogenetic study of *Disemma*, fieldwork in Yunnan Province, China, was completed, and during the course of this research a new species was found. At the time of collection, all plants were sterile; cuttings were taken, and the plants have since flowered continuously in the Plant Biology Greenhouses at the Ohio State University, Columbus, Ohio, U.S.A. Descriptions of the flowers and fruit were made based on the cultivated material.

***Passiflora xishuangbannaensis*** Krosnick, sp. nov. TYPE: China. Yunnan: Xishuangbanna, Jinghong County, N side of Da Du Gang Town near 2765 mile post on Hwy. 213, on side of trail in shady area near stream ca. 1.5 km E of Hwy. 213, mixed secondary forest and agriculture, 1200 m, 22°19.60'N, 100°58'E, 3 Mar. 2003, S. E. Krosnick & H. Wang 254 (holotype, OS; isotypes, HITBC, KUN, MO, NY). Figure 1.

A *Passiflora altilobata* planta glabra omnino, glandibus petioli dispositis prope laminam, foliis minus penitus bilobatis, nervo medio valde variegato, nectariis numerosis

dispositis ad lineam sub angula 20° abeuntibus, inflorescentiis 1–2 floris, floribus grandioribus, filamentis incrassatis coronarum purpureo-brunneis basi differt.

Weakly tendrillate, clambering vines, 1–3 m long, glabrous throughout; stem subtriangular, 2.5–5 mm diam., new shoot growth straight. Leaves alternate; stipules 0.5–1 × 1 mm, lanceolate, sessile, margins entire, deciduous; petioles 1.5–2.5 cm long, often with two short-cylindrical, glandular nectaries in the distal quarter, the nectaries 1–2 mm diam., short-cylindrical to 1 mm long, the nectariferous surface borne terminally; lamina 4.5–8.5 × 2.5–5 cm, white-variegated adaxially along the three major veins, margins entire, the lateral lobes greatly exceeding the midvein, creating a sinus about half as long as the leaf, midvein mucronate, mucro 1–2 mm long, abaxial surface light green, often with purple venation near base of lamina, laminar nectaries 8 to 12(to 15), discoid and sessile, arranged in two lines divaricating at a 20° angle from the midvein and running partway down the lateral lobes. Two flowers per node, one flower sometimes aborting during maturation; pedicels 1.5–2 cm long, bearing 3 floral bracts; floral bracts linear, 1–2 mm long, sessile, alternate and three-ranked, 0.5–1 cm beneath the articulation. Flower buds sub-conic; flowers 3.2–3.8 cm diam. at anthesis, with 3–5 mm long stipe, orientation of flowers upward, petals and sepals completely reflexed at anthesis, smelling strongly of lye; sepals 16–18 × 5–7 mm, triangular-ovate, acute and rounded at apex, abaxial surface light green, strongly veined, adaxial surface white basally, green at apex, margins membranous; petals 10–12 × 2–3 mm, lanceolate, white; hypanthium 0.8–1 cm wide; coronal filaments in 2 series, outer series 1 cm long, with ca. 33 to 35 filaments, thickened, purple-brown in the basal third, the upper portion bright yellow, wide spreading at anthesis, inner series 5 mm long, with ca. 90 to 100 filaments, purple-brown with a yellow-capitate apex; operculum 3–4 mm high, plicate, green with purple striations; limen 5–6 mm diam., annular, green, purple at outermost edge; nectary yellow, 2 mm deep; staminal filaments con-

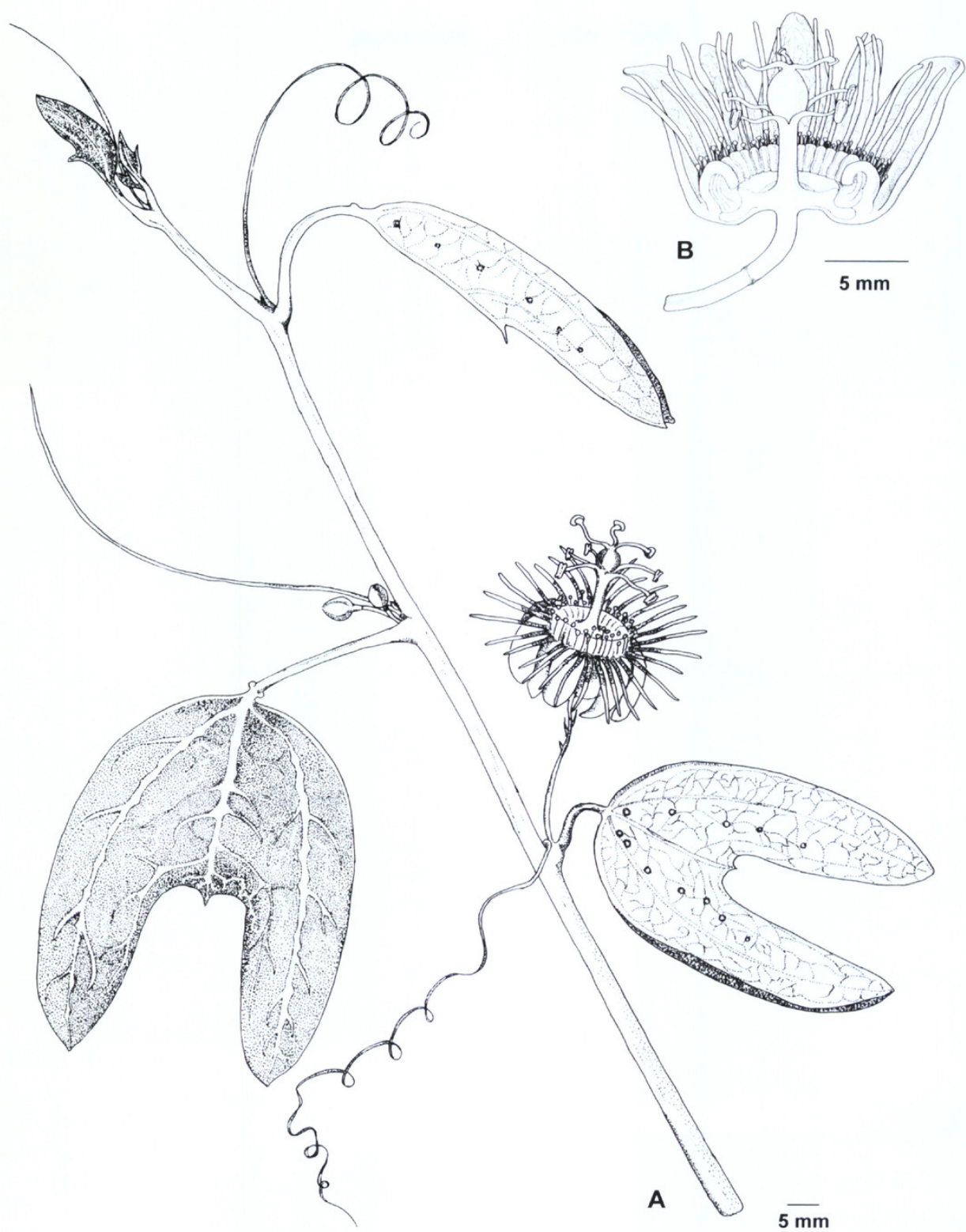


Figure 1. *Passiflora xishuangbannaensis* Krosnick. —A. Habit, shoot tip with buds and flower at anthesis. —B. Cross section of flower with detail of coronal filaments, limen, and operculum. Drawn by the author, from the holotype, Krosnick & Wang 254 (OS).

nate, 5–7 mm along androgynophore, the free portions 5–6 mm long, flat; anthers 3–4 mm long, versatile, elongated with a small basal protrusion; ovary 4–6 × 2–3 mm, ellipsoid, subtriangular in transverse section, sessile on the gynophore, glabrous; styles 5–7 mm long including stigmas, stig-

ma 1–2 mm wide, obliquely expanded at the apex, stigmatic surface papillate. Fruit 1.5 × 1 cm, ovoid, dark blue at maturity; arils yellowish orange, the distal margin fimbriate. Seeds 7 to 10 per fruit, 5–6 × 3–4 mm, 2 mm thick, obovate, foveolate-reticulate with 70 to 80 foveae per side.

Table 1. Characteristics distinguishing *Passiflora xishuangbannaensis* from *P. altebilobata*.

	<i>P. xishuangbannaensis</i>	<i>P. altebilobata</i>
Pubescence	glabrous	hirsutulous
Stem shape	subtriangular	round
Leaf variegation	present on all major veins of the lamina in both juvenile and adult leaves	limited mottling present on juvenile leaves, absent in adult leaves
Leaf shape	leaves strongly two-lobed with sinus 0.2–0.3 times the length of the lateral lobes	leaves strongly two-lobed, mid lobe truncate, sinus 0.3–0.6 times the length of the lateral lobes
Petiole nectaries	sometimes absent; if present, paired, located in the distal quarter of the petiole	paired, located midway along the petiole
Abaxial laminar nectaries	8–12(–15), discoid, arranged at a 20° angle from the midvein	2(–4), paired near the apex of the midvein
Flowers per node	1–2	10–20
Flower diameter at anthesis	3.2–3.8 cm	0.75–1 cm
Coronal filaments		
Outer series	thickened to 10 mm, purple-brown at base, upper ¾ yellow	thin to 5 mm, white throughout
Inner series	5 mm long, purple-brown with yellow-capitate apex	1 mm long, pale yellow with subcapitate apex
Fruit size	1.5 × 1 cm, ovoid	1 × 1 cm, round
Habitat	1200 m, sunny or shady, wet edge of forest	900 m, wet, shady, in dense forest

*Phenology.* Specimens not flowering in wild population at the time of collection (early March); flowering continuously in greenhouse conditions in Columbus, Ohio.

*Etymology.* The specific epithet is based on the unique area of endemism, the Xishuangbanna Prefecture, which encompasses three counties (Jinghong, Mengla, and Menghai) in Yunnan, China.

DISCUSSION

*Passiflora xishuangbannaensis* was collected in Jinghong County in the Xishuangbanna Prefecture from one of three individual plants observed at the type locality. Upon later visits in 2003, two of the larger plants were noted to have disappeared. The habitat is sandy wet forest openings near streams in both sunny and shady locations, with agricultural fields bordering the opposite sides of the streams. The site of this collection is now under construction for a new highway and the forest may no longer be present. Thus, for conservation purposes, its status should be considered endangered. However, given the proximity of similar habitats in Mengla and Menghai Counties, it is possible that *P. xishuangbannaensis* may still be found there.

*Passiflora xishuangbannaensis* was not in flower at the time of collection. Cuttings were made for cultivation, and there was no observed difference between the vegetative aspects of the field-collected

and cultivated material. The cultivated plants have flowered continuously throughout the year in the greenhouse; however, *Passiflora xishuangbannaensis* does not appear to be self-compatible. Hand pollination was performed using pollen from *P. xishuangbannaensis* as well as other closely related species, including *P. cupiformis* Masters and *P. papilio* H. L. Li. All self-pollination events failed, whereas all out-crossed flowers set fruit. Viability tests of the seeds were not performed. Given the self-incompatibility observed in this species, the conservation of more than one haplotype is important.

*Passiflora xishuangbannaensis* is similar to the Yunnan native *P. altebilobata* Hemsley, but is easily distinguished by several morphological and habitat features (Table 1). *Passiflora xishuangbannaensis* is a weakly tendrillate, clambering herb, while *P. altebilobata* is a strong climber. *Passiflora xishuangbannaensis* is completely glabrous, whereas *P. altebilobata* is hirsutulous on the stems, leaves, and inflorescences. The abaxial laminar nectaries are arranged in a v-pattern in *P. xishuangbannaensis*, while in *P. altebilobata* there are two (to four) large, paired nectaries located near the apex of the midvein. Additionally, *P. xishuangbannaensis* has one- to two-flowered inflorescences, while *P. altebilobata* has 10 to 20 flowers per inflorescence. *Passiflora xishuangbannaensis* has larger and more colorful

flowers than *P. altebilobata*, which has pale green sepals, petals, and coronal filaments (Table 1).

The habitats of *Passiflora xishuangbannaensis* and *P. altebilobata* appear to differ: *P. xishuangbannaensis* is found in open, wet, sunny or shaded locations at 1200 m, whereas *P. altebilobata* is found at lower elevations, ca. 900 m, under dense forest in shaded areas. *Passiflora altebilobata* is also found most frequently northwest of Xishuangbanna, throughout Simao and Lin Cang Counties, whereas *P. xishuangbannaensis* is only found within Xishuangbanna.

*Paratype.* U.S.A. **Ohio:** Columbus, Ohio State University Plant Biology Greenhouse, in cultivation, *Krosnick 401* (OS).

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