

Platanthera nanlingensis (Orchidaceae), a new species from Guangdong Province, China

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A new species of Orchidaceae, *Platanthera nanlingensis* X.H. Jin & W.T. Jin from Guangdong in southern China is described and illustrated. It is very similar to *P. minor*, *P. whangshanensis*, and *P. kwangsiensis*, but differs by having short and densely flowered inflorescences; white flowers; spreading petals that do not form a hood with the dorsal sepal; a robust, 7.5 mm long spur that is shorter than or subequal to the ovary; a 1.5 mm long column; a narrow anther connective that is much shorter than anther thecae; rather large viscidia with slightly involute margins; and a rostellum with two separate bursicles.

Platanthera consists of about 100–150 species and is among the largest genera in the tribe Orchideae (Orchidaceae). It is distributed mainly in the temperate and subtropical humid mountainous areas of the northern hemisphere, with a few species extending to Central America and tropical Asia (Kraenzlin 1901, Lang 1999, Pridgeon *et al.* 2001, Pearce & Cribb 2002, Chen *et al.* 2009). *Platanthera* is characterized by having a tuberous rootstock or a fascicle of fleshy roots; leaves basal to cauline and grading into foliaceous bracts, sheathing at the base; lip usually entire, spurred; anther usually broad with a conspicuous connective; stigma lobes confluent, concave, lying below the rostellum, or on a convex surface surrounded by the rostellum, or sometimes of two separate, raised lobes placed in front of the spur mouth. However, on the

basis of morphological characters it is difficult to distinguish *Platanthera* from other genera in its traditional alliance, such as *Habenaria*, *Peristylus* and *Herminium* (Lindley 1835, King & Pantling 1896, 1898, Lang 1998, 1999, Pridgeon *et al.* 2001, Chen *et al.* 2009, Jin *et al.* 2012, Jin & Efimov 2012).

Recent studies on the molecular systematics of Orchideae have shed new light on this complicated generic alliance. Hapeman and Inoue (1997) and Bateman *et al.* (2003, 2009) indicated that *Platanthera* is close to *Gymnadenia*, *Dactylorhiza* and *Galearis* but rather distant from *Habenaria*, *Peristylus* and *Herminium*. Jin *et al.* (2014) stated that *Tsaiorchis* is a distinct genus, combined *Smithorchis* with *Platanthera*, and transferred *P. clavigera*, *P. latilabris*, *P. edgeworthii* and *P. biermanniana* from *Platan-*

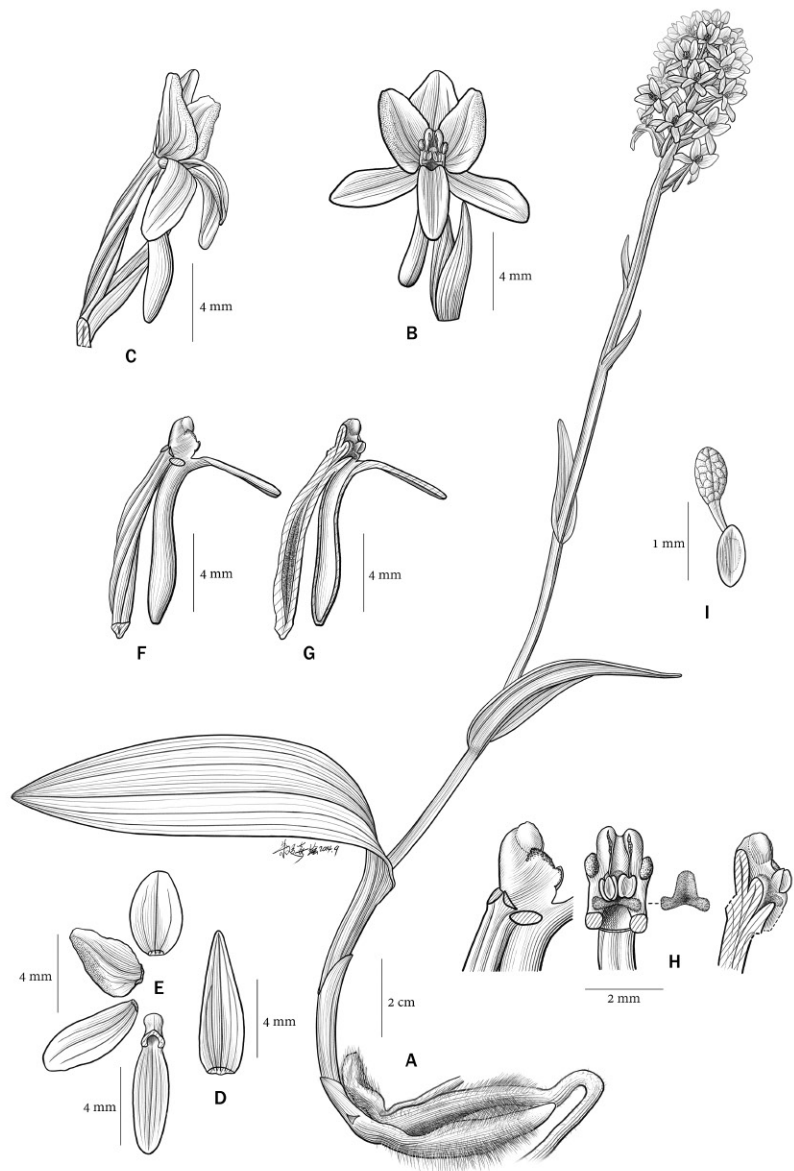


Fig. 1. *Platanthera nanlingensis* (from the holotype). — **A:** Habit. — **B:** Flower, front view. — **C:** Flower, side view. — **D:** Bract. — **E:** Sepals, petals and lip, flattened. — **F:** Ovary, column and lip, side view. — **G:** Ovary, column and lip, longitudinal section. — **H:** Column, side view, front view and longitudinal section. — **I:** Pollinarium.

thera to *Herminium* and its alliances. Therefore, the generic delimitation of *Platanthera* gradually became clearer.

There are currently about 60 species of *Platanthera* known from China, of which 20 are endemic (Lang 1999, Chen *et al.* 2009, Jin & Efimov 2012). Most species are distributed in alpine regions in Tibet Autonomous Region and Yunnan Province, and a few species, e.g. *P. minor* and *P. angustata*, are distributed in subtropical to tropical regions. During our fieldwork in Nanling

National Nature Reserve, Ruyuan County, Guangdong Province, southern China, a new and distinctive species of *Platanthera* was discovered.

Platanthera nanlingensis X.H. Jin & W.T. Jin, *sp. nova* (Figs. 1–3)

TYPE: China. Guangdong Province, Ruyuan County, Nanling National Nature Reserve, Babaoshan, in forest, elevation 1048–1500 m a.s.l., 19 May 2014 Jin X. H. 14167 (holotype PE!).



Fig. 2. Habit of *Platanthera nanlingensis* (holotype).



Fig. 3. Inflorescence of *Platanthera nanlingensis* (holotype).

ETYMOLOGY: The specific epithet refers to Nanling Mountain, where this species was found.

Plants terrestrial, ca. 30 cm tall. Rootstock fusiform, fleshy, ca. 4.5–5 cm long, diameter ca. 0.5–0.7 cm, with new buds initiating near stem base. Terminal parts of old rootstock usually elongate, clavate and root-like, ca. 5 cm long. Roots several, clavate and fleshy, ca. 2–3 cm long. Rootstock and root densely covered with long villous hairs. Stem erect, prominently quadrangular, with three tubular sheaths at base, alternate, ca. 0.5 cm, 1.5 cm and 4 cm long, respectively. Leaves 2–5, scattered, sessile, elliptic-lanceolate, basal one largest, ca. 9.8×2.8 cm, subacute; grading into 3–4 sterile bracts, linear-lanceolate, ca. $1.4\text{--}7 \times 0.4\text{--}1.8$ cm, acuminate. Inflorescences cylindric, ca. 5 cm long, densely 25- to 30-flowered. Floral bracts linear-lanceolate, ca. $5\text{--}9 \times 2\text{--}3$ mm, acuminate, shorter than or subequal to ovary. Flower white; pedicel and ovary cylindric, 9.5–11 mm

long, slightly beaked at top; dorsal sepal ovate-elliptic, ca. 5×3 mm, erect, obtuse, 3-veined; lateral sepals oblong-lanceolate, ca. 5.5×2 mm, spreading, obtuse, 3-veined; petals obliquely ovate, ca. 4.5×2.5 mm, spreading and not forming a hood with dorsal sepal, obtuse, 3- to 4-veined, outer edge and apex slightly thickened; lip entire, fleshy, ligulate-oblong, ca. 5×1.5 mm, obtuse, 3-veined; spur pendulous, robust, cylindric, shorter than or subequal to ovary and pedicel, ca. $7.5 \times 1\text{--}1.2$ mm, slightly curved forwards, terminal part swollen and apex subacuminate; column short, 1.5 mm long; anther thecae parallel; connective narrow, ca. 0.5 mm wide; pollinarium ca. 1.4 mm long, pollinium ellipsoid, with conspicuous caudicle and viscidium, caudicle ca. 0.65 mm long, viscidium oblong, ca. 0.7×0.3 mm, margins slightly involute, located in rostellar bursicle; staminodes subglobose, relatively obvious; rostellum erect, each lateral lobe extending into a bursicle formed by two invo-

Table 1. Diagnostic characters of *Platanthera nanlingensis* and morphologically closely similar species.

Character	<i>P. nanlingensis</i>	<i>P. minor</i>	<i>P. whangshanensis</i>	<i>P. kwangsiensis</i>
Inflorescence	densely flowered	sparsely flowered	sparsely flowered	sparsely flowered
Flower colour	white	yellowish green	yellowish green	yellowish green
Dorsal sepal and petals	not forming a hood	forming a hood	forming a hood	forming a hood
Spur	7.5 mm long, shorter than or subequal to ovary	12–18 mm long, longer than ovary	10–16 mm long, longer than ovary	3 mm long, shorter than ovary
Column	1.5 mm long	3–4 mm long	1.5 mm long	1 mm long
Anther connective	narrow, much shorter than anther thecae	wide, longer than anther thecae	narrow, much shorter than anther thecae	wide, longer than anther thecae
Bursicles	present	absent	absent	absent

luted margins; stigma lobes confluent, forming a concave surface. Flowering in May.

DISTRIBUTION AND HABITAT: Apparently endemic. *Platanthera nanlingensis* grows in rock cracks in humid, evergreen, broad-leaved forest in northern Guangdong Province at about 1000–1500 m a.s.l.

Platanthera nanlingensis is very similar to *P. minor*, *P. whangshanensis* and *P. kwangsiensis* by having 1–3 widely spaced leaves that grade into 3–4 sterile bracts, one stigma, the middle sepal not ciliate, and an entire lip. However, *P. nanlingensis* is readily distinguished from them by several characters (Table 1). In addition, these four species grow in different habitats. *Platanthera minor* is widespread in China, occurring in central, eastern and southern parts of the country, and growing on fertile soil in humid, evergreen, broad-leaved forest. *Platanthera nanlingensis* grows in rock cracks in humid, evergreen, broad-leaved forest in northern Guangdong. *Platanthera whangshanensis* inhabits moorlands in eastern China, and *P. kwangsiensis* grows in grasslands in northern Guangxi.

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