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# *Chamaegastrodia nanlingensis* (Orchidaceae), a New Species from Guangdong, China

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**ABSTRACT.** *Chamaegastrodia nanlingensis* H. Z. Tian & F. W. Xing, a new species from Ruyuan county, in northern Guangdong, South China, is described and illustrated. It is similar to *C. poilanei* (Gagnepain) Seidenfaden & A. N. Rao, from which it differs in having smaller flowers, a yellow lip without a pair of elongate introrse lobules at the epichile lobe, a slightly erose margin, and much smaller dorsal sepals and petals.

**Key words:** *Chamaegastrodia*, China, Cranichideae, Goodyerinae, IUCN Red List, Orchidaceae.

The genus *Chamaegastrodia* Makino & F. Maekawa belongs to tribe Cranichideae, subtribe Goodyerinae, Orchidaceae (Dressler, 1993). There are five species recorded worldwide, viz. *C. asraoa* (J. Joseph & Abbareddy) Seidenfaden & A. N. Rao, *C. inverta* (W. W. Smith) Seidenfaden, *C. poilanei* (Gagnepain) Seidenfaden & A. N. Rao, *C. shikokiana* Makino & Maekawa, and *C. vaginata* (Hooker f.) Seidenfaden (Seidenfaden, 1994). They range across the Asian mainland from India (Meghalaya) eastward to Japan, associated with 30°N and southward to Vietnam and northern Thailand (Seidenfaden, 1994: fig. 7). There are four species recorded from China, which are mainly distributed in Hubei, Yunnan, Sichuan, and northeastern Tibet (Lang, 1999).

During 2004 fieldwork in Nanling National Nature Reserve in northern Guangdong, China, a new species of the genus *Chamaegastrodia* was found. The genus is also newly recorded for Guangdong province.

***Chamaegastrodia nanlingensis*** H. Z. Tian & F. W. Xing, sp. nov. TYPE: China. Guangdong: Xiaohuangshan, Ruyuan, Nanling Natl. Nature Res., 24°55'N 113°01'E, 1320 m, 7 Aug. 2004, H. Z. Tian & C. H. Li 67 (holotype, IBSC). Figure 1.

Species *Chamaegastrodiae poilanei* (Gagnepain) Seidenfaden & A. N. Rao proxime affinis, sed floribus minoribus,

sepalis dorsalibus 3.8–4.1 × 1.8–2 mm; petalis 4.5–4.8 × 1–1.3 mm; labiis flavis, 11.2–12.2 mm longis, Y-formibus, ad marginem leviter erosis, ad apicem 5.8–7 mm latis, lobis in lobo epichilii introrsis elongatis absentibus differt.

Plants leafless; rhizome slender, 25 cm, 2 mm diam., fleshy, horizontal, hazel in color, translucent; roots fleshy, short, thickset, 3.5 cm, 5 mm diam., dark and slender at the base, white and thickened at the apex, coralloid, with brick-red scales and scattered warts, producing sparse short branches; branches 1 cm, 5 mm diam., white. Stems ca. 14 cm, 4 mm diam., erect, light brown, covered with overlapping brick-red sheath scales from base. Scales ca. 7 to 15 per stem, membranous, decurrent at base and oblique at mouth, puberulous externally and fringed. Inflorescences lax, with 4 to 9 flowers, with a puberulous rachis, elongated during fruiting; fertile bracts maroon, ca. 8 × 3.2 mm, as long as or a little longer than the ovary, ovate to lanceolate, acuminate, erect, puberulous externally, enveloping the ovary, with one distinct vein; pedicel and ovary ca. 8 × 2 mm, fusiform, finely puberulous. Flowers non-resupinate; dorsal sepal fawn-colored, ca. 3.8–4.1 × 1.8–2 mm, ovate, acute, with a distinct midvein, puberulous externally and densely at the apex; lateral sepal fawn-colored, ca. 7–7.2 × 3.2–3.5 mm, falcate, acute, with 2 veins, one distinct and the other vein fainter, puberulous externally, densely so at apex; petals ca. 4.5–4.8 × 1–1.3 mm, falcate, acute, 1-veined; lip yellow, ca. 11.2–12.2 × 5.8–7 mm at apex, Y-shaped, margin slightly erose, saccate at base, epichile broadly 2-lobed, absent a pair of elongate introrse lobules, each lobe subquadrate, ca. 3.2–4 × 2.8–3.2 mm, outer margin running down to base of mesochile, narrower in middle and broader at base to form a sac, mesochile unequally fringed, the fringed claw ca. 5–5.4 mm; sac ca. 2–2.2 mm diam., with 2 calluses, one on each side of the sac; callus dark, gibbous,

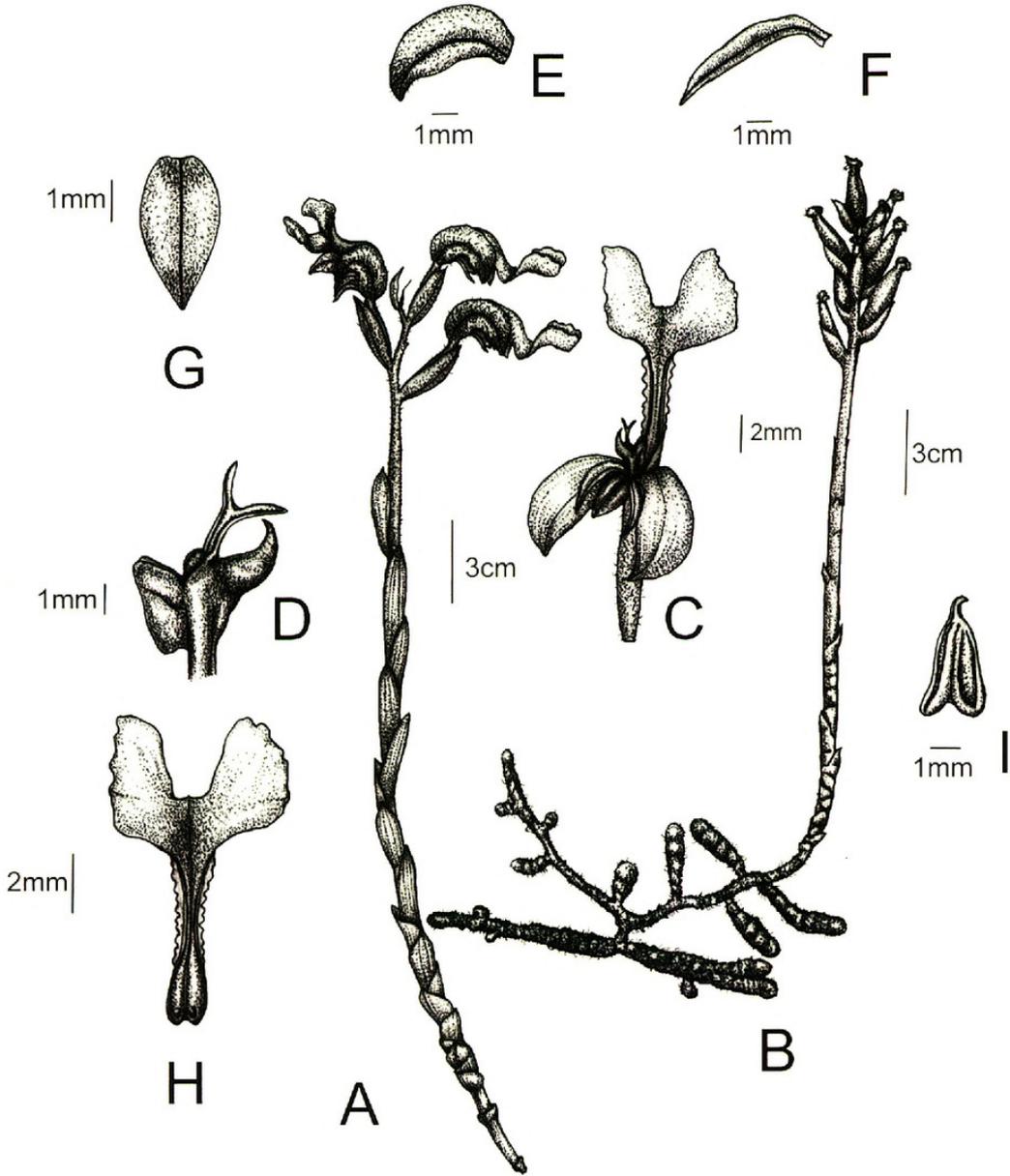


Figure 1. *Chamaegastrodia nanlingensis* H. Z. Tian & F. W. Xing. —A. Habit with flowers. —B. Habit with fruits. —C. Flower. —D. Column, lateral view. —E. Lateral sepal. —F. Petal. —G. Dorsal sepal. —H. Lip. —I. Anther, inside view. A, C–I drawn from the holotype H. Z. Tian & C. H. Li 67 (IBSC); B drawn from the paratype H. Z. Tian & A. Q. Hu 358 (PE).

sessile, subglobose; column ca.  $2.8 \times 0.6$  mm, short, at front with 2 processes; stigmatic processes 2, flat, oblong, fleshy, attached to the column vertically; anther ca.  $2 \times 1$  mm, lanceolate, acuminate, cordate at base; rostellum forked, erect, ca. 1.1 mm, as long as the anther cap peak. Capsule ellipsoid, ca.  $11 \times 5$  mm, 4-ridged, splitting, brick-red when mature, with persistent wizened flower.

*Distribution and habitat.* The natural habitat of this species was in humus-rich soil, in evergreen broad-leaved forests; it was collected from 1300–1570 m elevation. Species found with *Chamaegastrodia nanlingensis* include *Castanopsis eyrei* (Champion ex Benth) Tutch, *Dicranopteris dichotoma*

(Thunberg) Bernhardt, *Parakmeria lotungensis* (G. L. Chun & C. H. Tsoong) Y. W. Law, and *Smilax china* L. Plants of the new species were also found in Shikengkong and Jigongkeng, which are also within the Nanling National Nature Reserve. The plants are so inconspicuously leafless that they are easily overlooked. Nanling National Nature Reserve is located on the south slopes of the Nanling mountain range, which has a typically subtropical flora, lying between  $24^{\circ}38'N$  and  $25^{\circ}00'N$  (Chen et al., 1999). Other species of *Chamaegastrodia* were discovered in the same distributional area.

*IUCN Red List category.* *Chamaegastrodia nanlingensis* has been collected from Ruyuan county,

Table 1. Morphological comparison between *Chamaegastrodia nanlingensis* and *C. poilanei*.

| Character             | <i>C. nanlingensis</i>   | <i>C. poilanei</i>   |
|-----------------------|--|--|
| Dorsal sepal (mm)     | 3.8–4.1 × 1.8–2  | 7 × 4  |
| Petals (mm)           | 4.5–4.8 × 1–1.3  | 7 × 1.5  |
| Lip color             | yellow   | orange-yellow  |
| Lip (mm)              | 11.2–12.2 × 5.8–7  | 16 × 13  |
| Epichile              | Y-shaped; absence of a pair of elongate introrse lobules at the epichile lobes | Y-shaped; with a pair of elongate introrse lobules at the epichile lobes |
| Mesochile length (mm) | claw ca. 5–5.4   | claw ca. 6–8   |

from only four locations in Guangdong province, and one location in Hunan province, China. It appears to be endemic to the Nanling mountain range. Its population size is estimated to number fewer than 250 mature individuals. According to IUCN Red List criteria (IUCN, 2001), the new species should be treated as Endangered (EN).

**Phenology.** Flowering in early August and lasting for about one week; fruiting from mid-August to October.

**Relationships.** *Chamaegastrodia nanlingensis* is similar to *C. poilanei* but differs in the relative sizes of the lip, dorsal sepals, and petals, and in the absence of a pair of elongate introrse lobules at the epichile lobe, which has just an erose margin. More detailed morphological comparisons are given in Table 1.

**Paratypes.** CHINA. **Guangdong:** Ruyuan, Xiaohuangshan, Nanling Natl. Nature Res., 21 Aug. 2005, *H. Z. Tian & A. Q. Hu* 358 (PE); Shikengkong, Nanling Natl. Nature Res., 24 Oct. 2004, *H. Z. Tian & F. G. Wang* 230 (IBSC); Xiaohuangshan, Nanling Natl. Nature Res., 10 Aug. 2006, *H. Z. Tian & Y. K. Wu* 556 (IBK, IBSC); Jigongkeng, Nanling Natl. Nature Res., 12 Aug. 2006, *H. Z. Tian & S. Y. Liu* 570

(IBSC). **Hunan:** Lanshan, Bantang Nature Reserve, 9 Aug. 2007, *X. L. Yu* 070136 (CSFI).

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