
Two New Species of *Rhododendron* (Ericaceae) from Guizhou, China

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ABSTRACT. Two new species, *Rhododendron huangpingense* Xiang Chen & Jia Y. Huang and *R. lilacinum* Xiang Chen & X. Chen (Ericaceae), from Guizhou Province, China, are described and illustrated. *Rhododendron huangpingense* is close to the morphologically similar species *R. oreodoxa* Franch. var. *adenostylosum* Fang & W. K. Hu and the sympatric species *R. decorum* Franch., from which it differs by having short yellowish brown hairs on the leaves, the rachis 15–18 mm long, a rose-colored corolla with deep rose flecks, and the stigma ca. 3.5 mm wide. *Rhododendron lilacinum* differs from the morphologically similar and sympatric species *R. simsii* Planch. by having smaller leaves, a shorter pedicel, a pale purple corolla, a smaller calyx, and shorter stamens. Both of the new species appear to be quite rare and therefore their conservation is highly desired.

Key words: China, Ericaceae, Guizhou, IUCN Red List, *Rhododendron*.

Baili Rhododendron Nature Reserve, a 125.8-km² highland located in northwest Guizhou Province, China, is characterized by a huge natural *Rhododendron* L. population comprising approximately 35 species of the genus. In the years 2007 and 2008, we conducted an intensive taxonomic survey of *Rhododendron* in the area and, based on careful examination of the relevant literature (Ming, 1984; Fang & Ming, 1986; Hu, 1988; Zhang & Chen, 1990; Hu & Fang, 1994; Chen & Wu, 2003; Chen & Xie,

2005; Fang et al., 2005; Yang et al., 2006) and hundreds of similar herbarium specimens, we describe two previously undescribed species here.

1. *Rhododendron huangpingense* Xiang Chen & Jia Y. Huang, sp. nov. TYPE: China. Guizhou: Baili Rhododendron Nature Reserve, Pudi, 27°14'N, 105°51'E, 1719 m, 22 Apr. 2008, Xiang Chen 08024 (holotype, HGAS; isotype, MO). Figure 1.

Haec species inter congeneros sympatricos *Rhododendro decoro* Franch. simillima, sed ab eo foliorum indumento brevi flavidobrunneo, inflorescentiae rhachide 15–18 mm longa, corolla rosea atrorseo-punctata atque stigmatate ca. 3.5 mm lato distinguitur.

Evergreen shrubs or small trees, 2.8–5.2 m tall; bark grayish brown, exfoliating into thin and small irregular flakes; branchlets glabrous. Petiole 1.4–2 cm, glabrous; leaf blade oblong or oblanceolate-elliptic, 9–12(–15) × 2.7–4.5 cm, base cuneate or obtuse, apex obtuse or rounded, apiculate, adaxial surface dark green, glabrous, abaxial surface pale yellowish green, sparsely puberulent, hairs denser along veins and yellowish brown; midrib slightly grooved adaxially, prominent abaxially; lateral veins in ca. 16 to 18 pairs, obscure adaxially, slightly raised abaxially. Inflorescences racemose-umbellate, 8- to 11-flowered; bud scales deciduous; rachis 15–18 mm, sparsely glandular-puberulent; pedicels rose-colored, 1–



Figure 1. *Rhododendron huangpingense* Xiang Chen & Jia Y. Huang. —A. Flowering branch. —B. Androecium and gynoecium, with the corolla removed. —C. Detail of the leaf blade abaxial surface. Drawn by H. Xie from the holotype Xiang Chen 08024 (HGAS).

Table 1. Taxonomic comparison of *Rhododendron huangpingense* Xiang Chen & Jia Y. Huang, *R. oreodoxa* Franch. var. *adenostylosum* Fang & W. K. Hu (Hu, 1988; Hu & Fang, 1994; Fang et al., 2005), and *R. decorum* Franch. (Hu & Fang, 1994; Fang et al., 2005).

Characters	<i>R. huangpingense</i>	<i>R. oreodoxa</i> var. <i>adenostylosum</i>	<i>R. decorum</i>
Leaf blade abaxial surface color and vestiture	pale yellowish green, sparsely puberulent with yellowish brown hairs	pale green to whitish green, glabrous	whitish green, glabrous
Rachis length and vestiture	15–18 mm, sparsely glandular-puberulent	ca. 5 mm, glandular-tomentose	20–25 mm, sparsely glandular
Pediceal color and length	rose, 1–1.5 cm	purple, 0.5–1.5 cm	slightly reddish green, 2.5–4 cm
Corolla shape, color, and length	funnel-campanulate, rose, 4–5.5 cm	campanulate, pale pink, 3.5–4.5 cm	funnel-campanulate, usually white, 3–5 cm
Corolla scent and flecks	not fragrant, with deep rose flecks	not fragrant, with or without purple flecks	fragrant, with no flecks
Style length and stigma width	3.8–4.2 cm, ca. 3.5 mm	2.8–3.4 cm, 1.6–2.6 mm	3.4–4 cm, ca. 5 mm
Capsule length	1.9–2.4 cm	1.8–3.2 mm	2.5–4 cm
Geographic distribution	NW Guizhou, 1679–1719 m	W Sichuan, E Xizang, 3600–3900 m	SW China, 1000–3000 m

1.5 cm, densely glandular-hairy. Calyx lobes 5 or 6, ca. 1.5 mm, broadly triangular or ovate, margin sparsely glandular; corolla funnellform-campanulate, rose-colored with deep rose flecks, 4–5.5 × 5.5–7 cm when flattened, lobes 6 or 7, suborbicular, ca. 1.7 cm, emarginate, tube base sparsely glandular both outside and inside, without nectar pouches; stamens 13 to 15, unequal, 2.5–3.5 cm, filaments densely puberulent near base, anthers pale brown, ca. 2.5 mm; ovary conoid, 4–5.5 mm, densely yellowish glandular; style pale yellowish white, 3.8–4.2 cm, glandular-hairy to the tip; stigma pale brown, ca. 3.5 mm wide. Capsule cylindrical, slightly curved, 1.9–2.4 × ca. 1 cm, with vestiges of glands.

Distribution, habitat, and IUCN Red List category. *Rhododendron huangpingense* is restricted to slopes in the Baili Rhododendron Nature Reserve, Pudi, Huangping County, Guizhou Province, China, where it grows in thickets dominated by *R. delavayi* Franch. and *R. agastum* Balf. f. & W. W. Sm. Since only two populations and a total of five mature individuals of this species were found in the area where the type collections were made, we make a preliminary conservation assessment for the species as Critically Endangered (CR), based on criterion D (population less than 50 mature individuals) of the IUCN Red List criteria (IUCN, 2001). Therefore, careful protection for the species is warranted. The current major threats to the species are human disturbance or damage (recreation/tourism), since its locality is a scenic spot in a rural mountain setting, and habitat loss (agriculture), despite the fact that the region is a provincial nature reserve. Fortunately, a few seedlings were found under the mature individuals, and one of the authors, Huang Jia-Yong, has collected seeds and begun a propagation experiment.

Phenology. The new species was observed in flower from April to May and in fruit from September to November.

Discussion. Species of *Rhododendron* subg. *Hymenanthes* (Blume) K. Koch sect. *Ponticum* G. Don subsect. *Fortunea* (Tagg) Sleumer are characterized by having glabrous branchlets, evergreen leaves without scales, terminal inflorescences, a 6- or 7-lobed corolla, 13 to 15 stamens, and a usually glandular ovary and style. Therefore, it is reasonable to assign *R. huangpingense* to this subsection. This new species is morphologically most similar to *R. oreodoxa* Franch. var. *adenostylosum* Fang & W. K. Hu, which belongs to the same subsection, but is an allopatric species found in Sichuan and Xizang provinces in China. In Baili Rhododendron Nature Reserve, the new species is most similar to the sympatric *R. decorum* Franch., also of the same subsection. These three taxa differ by the morphological characters listed in Table 1.

Paratype. CHINA. **Guizhou:** Baili Rhododendron Nature Reserve, Pudi, Huangping, 27°13'N, 105°51'E, alt. 1679 m, slope, in thickets dominated by *Rhododendron delavayi* and *R. agastum*, 21 Apr. 2008, *Xiang Chen 08018* (HGAS).

2. *Rhododendron lilacinum* Xiang Chen & X. Chen, sp. nov. TYPE: China. Guizhou: Baili Rhododendron Nature Reserve, Pudi, 27°13'N, 105°51'E, 1674 m, 20 Apr. 2008, *Xiang Chen 08008* (holotype, HGAS; isotype, MO). Figure 2.

Haec species *Rhododendro simsii* Planch. similis, sed ab ea foliis minoribus, pedicello brevioribus, corolla pallide purpurea atque calyce staminibusque brevioribus distinguitur.

Shrubs, deciduous, ca. 2 m tall; branchlets thin, densely dark brown strigose. Petioles 3–6 mm,

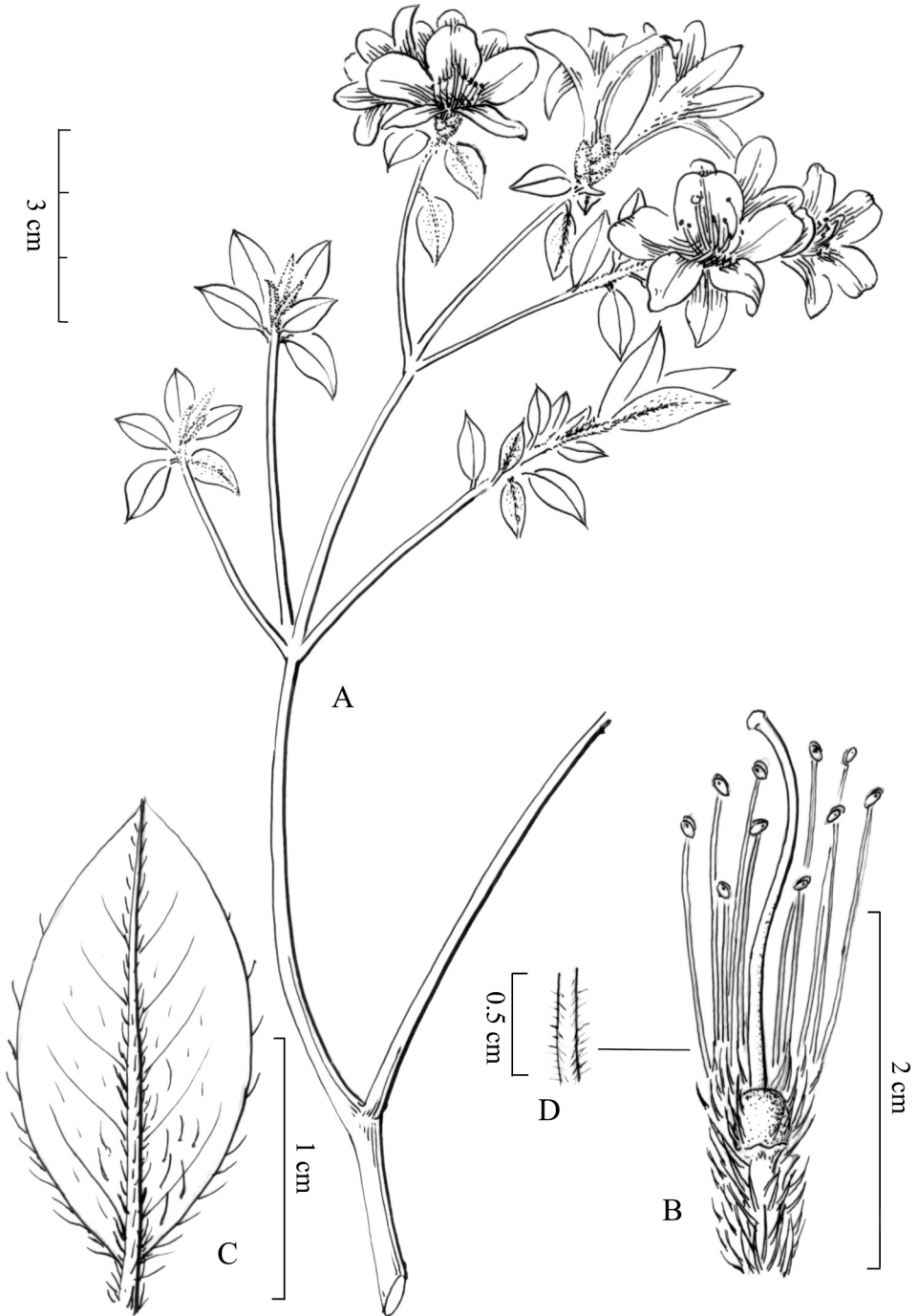


Figure 2. *Rhododendron lilacinum* Xiang Chen & X. Chen. —A. Flowering branch. —B. Androecium and gynoecium, with the corolla removed. —C. Enlargement of leaf blade abaxial surface. —D. Detail of filament base. Drawn by H. Xie from the holotype *Xiang Chen 08008* (HGAS).

densely dark brown strigose; leaf blade papery, somewhat thick, elliptic, $1.5\text{--}2.3 \times 0.7\text{--}1$ cm, margin entire, base cuneate or obtuse, apex acute, both surfaces coarsely pale brown strigose, hairs denser

along midrib and on abaxial surfaces; midrib conspicuous on both surfaces; lateral veins in 5 to 8 pairs, obscure adaxially, slightly raised abaxially. Inflorescence terminal, umbellate, 2- or 3-flowered;

Table 2. Taxonomic comparison between *Rhododendron lilacinum* Xiang Chen & X. Chen and *R. simsii* Planch. (Hu & Fang, 1994; Fang et al., 2005).

Characters	<i>R. lilacinum</i>	<i>R. simsii</i>
Leaf blade shape, dimensions, and margin	elliptic, 1.5–2.3 × 0.7–1 cm, margin entire	ovate, elliptic-ovate, 1.5–5 × 0.5–3 cm, margin finely toothed
Pedicle length	2.5–3 mm	8 mm
Calyx length	ca. 1 mm	ca. 5 mm
Corolla shape and length	funnelform, ca. 2 cm	broadly funnelform, 3.5–4 cm
Corolla color and flecks	pale purple, with purple flecks	rose or bright to dark red, with dark red flecks
Stamen length	1.8–2.2 cm	3.5–4 cm
Distribution and altitude	NW Guizhou, ca. 1673–1674 m	most of the provinces in southern China, 500–2700 m

bud scales persistent, externally coarsely light brown strigose, margin ciliate; rachis very short; pedicel 2.5–3 mm, densely coarsely pale yellowish strigose. Calyx lobes triangular, ca. 1 mm, covered by pale yellowish strigose hairs; corolla funnelform, pale purple, ca. 2 cm; lobes 5, oblong, 1.3–1.5 cm, with purple flecks; corolla tube densely puberulent on the inner surface; stamens 10, unequal, 1.8–2.2 cm, slightly longer than corolla; filaments linear, densely puberulent near the base, anthers purplish brown, ovate, 1.5–2 mm; ovary ovoid, ca. 2 mm, densely pale yellow strigose; style longer than stamens, ca. 2.5 cm, glabrous.

Distribution, habitat, and IUCN Red List category. *Rhododendron lilacinum* is restricted to slopes in the Baili Rhododendron Nature Reserve, Pudi, Huangping County, Guizhou Province, China, where it grows in thickets dominated by *R. delavayi*, *R. irroratum* Franch., and *R. agastum*. The preliminary conservation assessment for the species is Endangered (EN), based on criterion D (population less than 50 mature individuals) of the IUCN Red List criteria (IUCN, 2001), since approximately 10 populations and fewer than 200 mature individuals were found in the area where field observations were conducted. Habitat loss (agriculture) and human disturbance (recreation/tourism) are the current major threats to the species as described for *R. huangpingense*. Fortunately, several new seedlings were found under the mature plants.

Phenology. The new species was observed in flower from April to May.

Discussion. *Rhododendron lilacinum* features strigose branchlets, deciduous and strigose leaf blades with no scales, and a terminal inflorescence, which are characteristic features of section *Tsutsusi* Sweet subg. *Tsutsusi* (Sweet) Pojark.; we therefore assign the new species to this section. This new species is similar to the sympatric *R. simsii* Planch., which belongs to the same section and is distinguished by the characters described in Table 2.

Paratype. CHINA. **Guizhou:** Baili Rhododendron Nature Reserve, Pudi, 27°13'N, 105°51'E, alt. 1673 m, slope, in thickets dominated by *R. delavayi*, *R. irroratum*, and *R. agastum*, 20 Apr. 2008, *Xiang Chen 08009* (HGAS).

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Literature Cited

- Chen, Xiang & H. Xie. 2005. A new subspecies and a new record of *Rhododendron* in Guizhou. *Guizhou Sci.* 23(3): 54–55.
- Chen, Xun & H. M. Wu. 2003. *Rhododendron* Species from Guizhou, P. R. China. Science and Technology Press of Guizhou, Guiyang.
- Fang, M. Y., R. C. Fang, M. Y. He, L. Z. Hu, H. B. Yang & D. F. Chamberlain. 2005. *Rhododendron*. Pp. 260–455 in Z. Y. Wu, P. H. Raven & D. Y. Hong (editors), *Flora of China*, Vol. 14. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.
- Fang, R. Z. & T. L. Ming. 1986. *Rhododendron*. Pp. 338–557 in Z. Y. Wu (editor), *Flora Yunnanica*. Science Press, Beijing.
- Hu, L. Ch. & M. Y. Fang. 1994. *Flora Reipublicae Popularis Sinicae*, Tomus 57(2). Science Press, Beijing.
- Hu, W. K. 1988. *Materiae ad floram Rhododendri Sinici*. *Acta Phytotax. Sin.* 26: 301–305.
- IUCN. 2001. *IUCN Red List Categories and Criteria*, Version 3.1. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge, United Kingdom.
- Ming, T. L. 1984. A revision of subgenus *Hymenanthus* (*Rhododendron* L.) in Yunnan-Xizang. *Acta Bot. Yunnan.* 6(2): 141–171.

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- Yang, C. H., G. Y. Li, L. X. Deng, J. Y. Chen & Y. L. Jiang. 2006. A study on *Rhododendron* species and ornamental characteristics in Baili Dajuan Nature Reserve of Guizhou. *J. W. China Forest. Sci.* 35(4): 14–18, 39.
- Zhang, X. S. & X. Chen. 1990. *Rhododendron*. Pp. 195–233 in Flora of Guizhou Editorial Committee (editors), *Flora of Guizhou*. The People's Press of Guizhou, Guiyang.