



Oreocharis tianlinensis, a new species of Gesneriaceae from the limestone area in northwestern Guangxi, China

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(Manuscript received 5 May 2022; Accepted 23 August 2022; Online published 6 September 2022)

ABSTRACT: The new species *Oreocharis tianlinensis* R.C. Hu, W.B. Xu & Y.Feng Huang is described and illustrated in this paper. It is morphologically similar to *Oreocharis aimodisca* Lei Cai, Z.L. Dao & F. Wen in leaves elliptic to ovate, calyx 5-parted to the base, corolla yellow, tube robustly tubular, gradually expanded from base to the throat, but differs in blade margin and abaxial main vein and lateral veins, petiole, and calyx densely rust-brown villosus outside; inflorescence 1 (or 2)-flowered, bracts 3; calyx lobes equal, margin entire; stamens 4, didynamous; capsule cylindrical, 3–3.5 cm long, glabrous. Also, *O. tianlinensis* is morphologically similar to *O. longifolia* (Craib) Mich.Möller & A.Weber, *O. aurantiaca* Burt and *O. muscicola* (Diels) Mich.Möller & A.Weber in the appearance and color of its flowers, but differs in leaf-blade broadly ovate, base shallow heart, margin crenate; inflorescence 1 (or 2)-flowered, bracts 3; filaments and pistil sparsely glandular puberulent; anthers oblong, separated.

KEY WORDS: Limestone flora, new species, *Oreocharis aimodisca*, *O. longifolia*, *O. aurantiaca*, *O. muscicola*, taxonomy.

INTRODUCTION

Oreocharis Benth (1876) is a large and complicated genus that belongs to Gesneriaceae. Based on molecular data and morphological evaluation, 11 previously recognized genera (i.e., *Ancylostemon* Craib, *Bournea* Oliv., *Briggsia* Craib, *Dayaoshania* W.T.Wang, *Deinocheilos* W.T.Wang, *Isometrum* Craib, *Opithandra* B.L.Brutt, *Paraisometrum* W.T.Wang, *Thamnochrus* W.T.Wang, *Tremacron* Craib and *Oreocharis*) are combined to form *Oreocharis* (Möller *et al.*, 2011). This genus now is expanded to comprise ca. 150 species that mainly occur in southern and southwestern China, Northeast India, Bhutan, Myanmar, Thailand, Vietnam, and Japan (Möller *et al.*, 2011, Lv *et al.*, 2021; Yang and Xi, 2021). China is the diversity center of *Oreocharis*, where more than 140 species have been recorded (GCCC, 2022).

In July 2013, during a traditional Chinese medicine resources survey in Tianlin County, northwestern Guangxi, China, we collected an unidentifiable species which leaves rosulate basal, cymes, corolla tube robustly tubular; it is similar to *Oreocharis*. In the following eight years, this population was regularly documented for flowering and fruiting at the same locality. Upon careful comparison with all species heretofore known in *Oreocharis* (Wang *et al.*, 1998; Möller *et al.*, 2011, 2016, 2017; Li *et al.*, 2017; Wei, 2019; Yang *et al.*, 2020; Cai *et al.*, 2020a,b,c; Chen *et al.*, 2020; Ling *et al.*, 2020; Qin *et al.*, 2020; Lv *et al.*, 2021; Yang and Xi, 2021), we concluded that this species is an undescribed species and reported it as a new species hereby.

TAXONOMIC TREATMENT

Oreocharis tianlinensis R.C.Hu, W.B.Xu & Y.Feng Huang, *sp. nov.*

田林馬鈴莖苔 Figs. 1–2

Type: CHINA, Guangxi, Tianlin County, Langping Town, Jialang Village, grows in the limestone areas, Alt. ca. 1 400 m, 11 August 2013, fl. *Tianlin Exped. 451029130811018* (holotype: GXMI!, isotype: GXMG!).

Diagnosis: *Oreocharis tianlinensis* is similar to *O. aimodisca*, but differs in blade margin and abaxial main vein and lateral veins, petiole, and calyx densely rust-brown villosus outside; inflorescence 1 (or 2)-flowered, bracts 3; calyx lobes equal, margin entire; stamens 4, didynamous; capsule glabrous.

Description: Perennial herbs; stemless. Leaves rosulate basal, blade elliptic to ovate, 2–3.5 × 1.5–2 cm, apex obtuse, base shallow heart, margin crenate, lateral veins 3–4 on each side of midrib, both sides densely impressed pubescent, margin and abaxially main vein and lateral veins densely rust-brown villous. Petiole 2–4 cm long, densely covered rust-brown villous. Cymes 1–3, axillary, 1 (or 2)-flowered; peduncle 5–7.5 cm long, densely villous; bracts 3, lanceolate, two large ones, ca. 4.5 × 1 mm, the small one ca. 2.5 × 0.5 mm. Pedicel 1–1.5 cm long, sparsely rust-brown villous. Calyx 5-parted to the base, narrowly lanceolate, ca. 8 × 2 mm, margin entire, outside densely rust-brown villous, inside sparsely pubescent. Corolla yellow, 3–3.5 × 1.5 cm, lower part forms red stripes, pubescent and sparsely rust-brown pubescent outside, sparsely glandular puberulent inside, tube robustly tubular, gradually expanded from base to

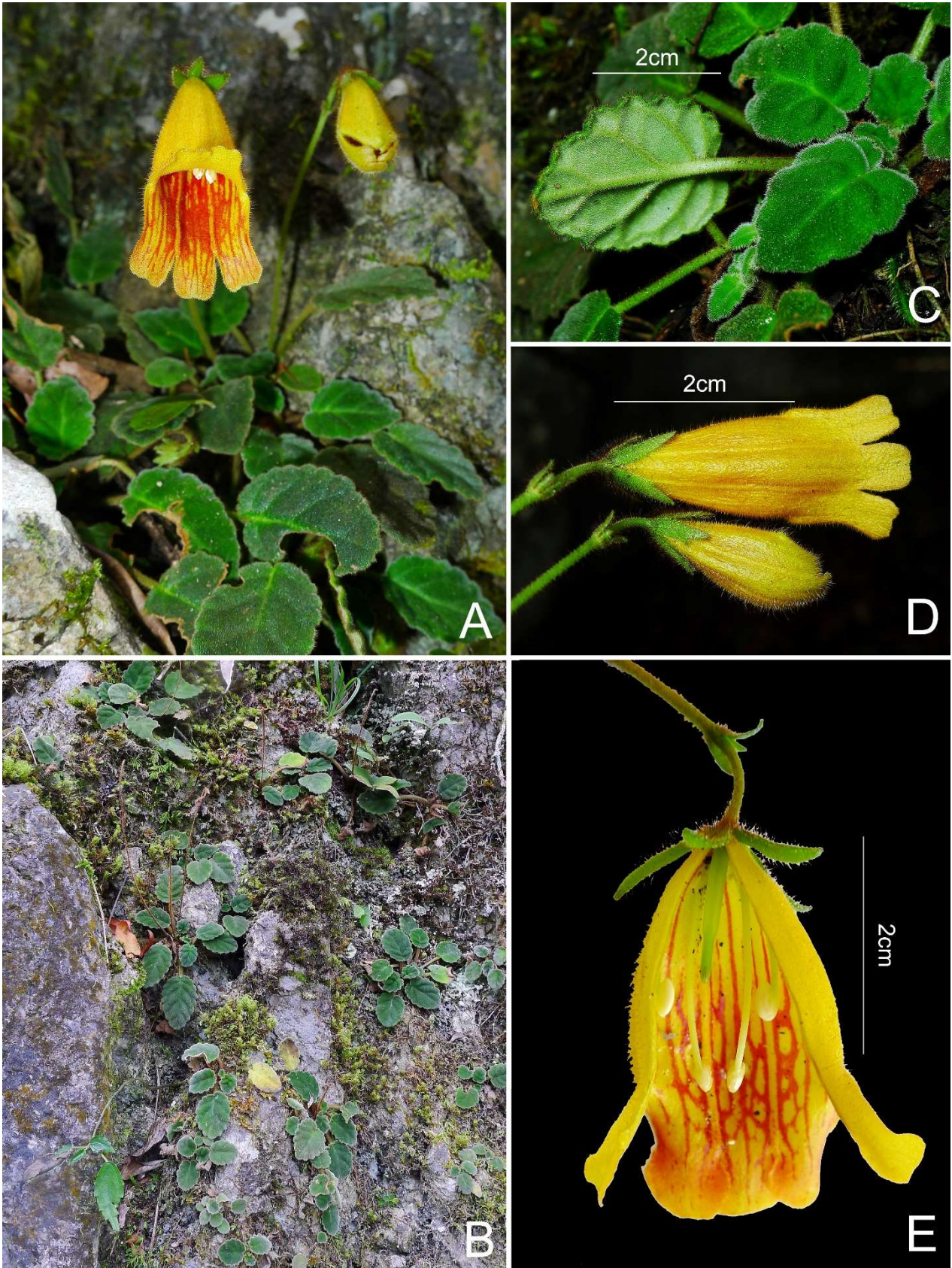


Fig 1. *Oreocharis tianlinensis*: A. Flowering habit, B. Habitat, C. Leaves, D. Back view of flowers, E. Opened flower and bracts.

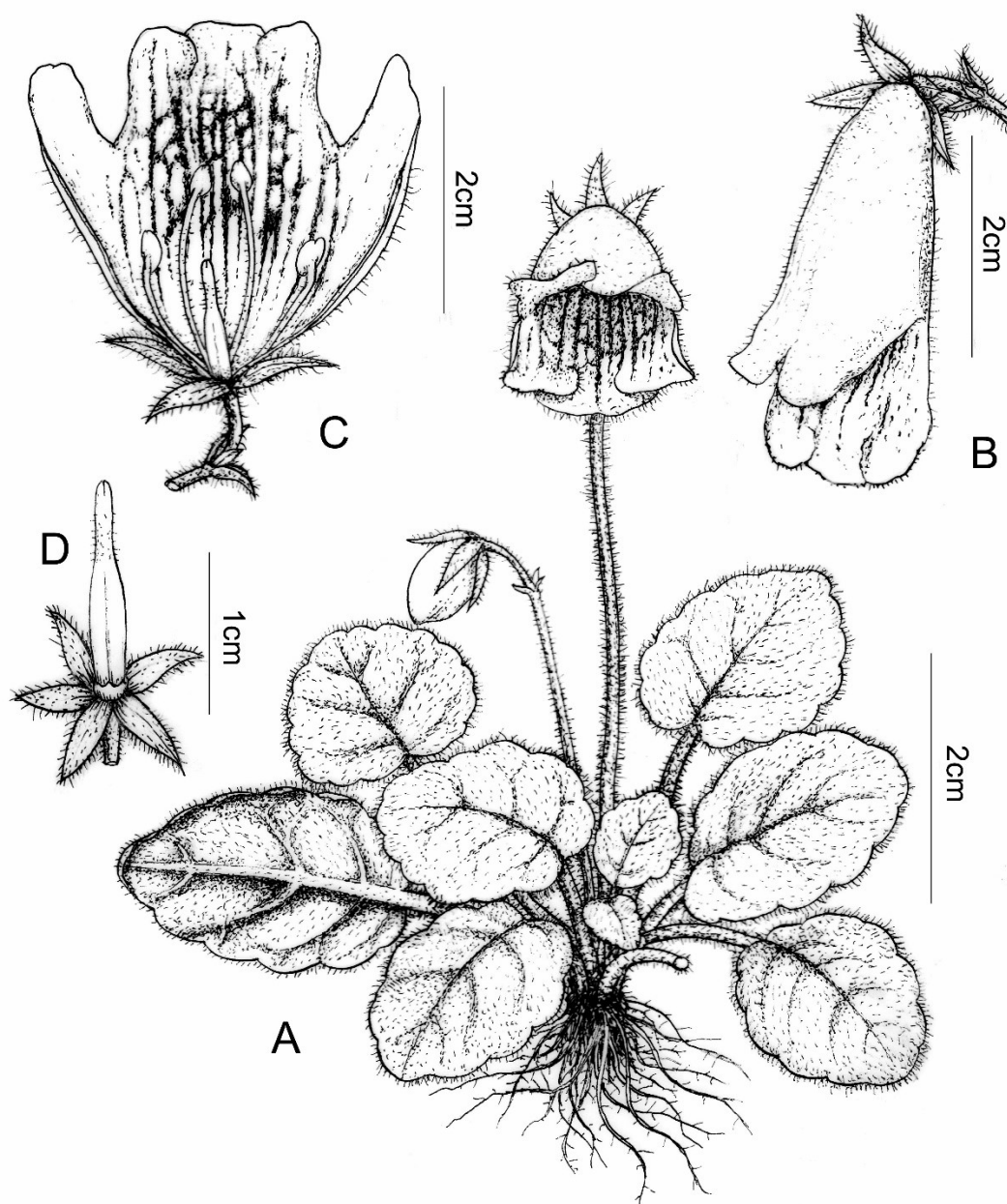


Fig 2. *Oreocharis tianlinensis*: A. Habit, B. Lateral view of flower, C. Opened flower and bracts, D. Calyx and pistil. Drawn by Xin-Cheng Qu based on the holotype.

the throat, 1.8–2.3 cm long, 6–10 mm in diameter; limb 2-lipped; adaxial lip 7 mm long, 2 shallowly lobed, lobes ca. 3 mm long; abaxial lip ca. 1.2 cm long, 3 lobed to middle, lobes ca. 6 mm long. Stamens 4, didynamous; adaxial stamens ca. 1.3 cm long, adnate to ca. 5 mm above corolla tube base; abaxial stamens ca. 1.7 cm long, adnate to ca. 2 mm above corolla tube base; filaments sparsely glandular puberulent, anthers oblong, ca. 3.5 mm long. Disc annular, ca. 1.5 mm high, quinquelobed. Pistil ca. 1.3 cm long; ovary long cylindrical, ca. 9 mm long, about 1.5 mm in diameter; style 2–4 mm long, puberulent. Capsule cylindrical, 3–3.5 cm long, glabrous.

Phenology: Flowering from July to August, and fruiting from October to November.

Etymology: The specific epithet is derived from the type locality, Tianlin County, Guangxi, China.

Distribution and habitat: *Oreocharis tianlinensis* can only be found in Langping Town, Tianlin County, northwestern Guangxi, China. It grows in the limestone areas, especially in the crevices near the top of the hill, at an elevation of 1300–1400 m. The upper small trees are mainly *Pseudotsuga brevifolia* W. C. Cheng & L. K. Fu, *Sinosideroxylon pedunculatum* (Hemsl.) H. Chuang, *Carpinus pubescens* Burk., *Lindera tonkinensis* Lec.; the

**Table 1.** The characters comparison between *Oreocharis tianlinensis*, *O. aimodisca*, *O. longifolia*, *O. aurantiaca* and *O. muscicola*.

Taxonomic traits	<i>O. tianlinensis</i>	<i>O. aimodisca</i>	<i>O. longifolia</i>	<i>O. muscicola</i>	<i>O. aurantiaca</i>
Leaf-blade	broadly ovate, base shallow heart, margin crenate	oval to ovate, base cordate or auriculate, margin crenate	narrowly elliptic to oblanceolate, base attenuate, margin serrulate	narrowly elliptic to lanceolate, base often slightly oblique, narrowly to broadly cuneate, margin serrate to serrate-crenate	elliptic to ovate or obovate, base cuneate, margin irregularly crenate to serrate
Petiole	densely rust-brown villous	brown villous and pubescent	grey to brownish pubescent	densely rust-brown villous	densely rust-brown woolly and villous
Calyx	outside densely rust-brown villosus, inside sparsely pubescent, margin entire	both sides densely pubescent, margin denticulate	outside sparsely brownish pubescent, inside glabrous, margin entire	outside sparsely white pubescent and rust-brown villous, margin entire	outside sparsely woolly, inside glabrous, margin entire
Corolla	inside sparsely glandular puberulent	inside puberulent in the throat and on adaxial lobes	inside sparsely glandular puberulent	inside glandular pubescent	inside glabrous
filaments	sparsely glandular puberulent	sparsely pubescent	glabrous	sparsely puberulent	glabrous
Anthers	oblong, separated	oblong, separated	reniform, connected in pairs	reniform, connected in pairs	reniform, connected in pairs
Pistil	sparsely glandular puberulent	densely pubescent	glabrous	glabrous	glabrous
Capsule	glabrous	puberulent	glabrous	glabrous	glabrous

shrub layer mainly has *Myrsine semiserrata* Wall., *Ficus tuphagensis* Drake, *Rhamnus leptophylla* Schneid., *Tirpitzia ovoidea* Chun & F. C. How ex W. L. Sha and so forth; the herbaceous layer mainly has *Asplenium wrightii* Eaton ex Hook.; *Polygonatum punctatum* Royle ex Kunth, *Polystichum fraxinellum* (Christ) Diels, *Paphiopedilum micranthum* T. Tang & F. T. Wang, *Rohdea tonkinensis* (Baill.) N. Tanaka and so forth.

Additional specimens (paratypes): CHINA, Guangxi, Tianlin County, Langping Town, Nongyang Village, grows in the limestone areas, Alt. 1310 m, 2 July 2021, fl., *Qin Ying, et al CWA0388* (IBK & PE).

Notes: *Oreocharis tianlinensis* is similar to *O. aimodisca* in leaves elliptic to ovate, calyx 5-parted to the base, corolla yellow, tube robustly tubular, gradually expanded from base to the throat, but differs in the inflorescence, bracts, calyx, stamens, capsule. Also, *O. tianlinensis* is morphologically similar to *O. longifolia* (Craib) Mich.Möller & A. Weber, *O. aurantiaca* Burtt and *O. muscicola* (Diels) Mich.Möller & A. Weber in the appearance and color of its flowers, but differs in leaf-blade broadly ovate, base shallow heart, margin crenate; inflorescence 1 (or 2)-flowered, bracts 3; filaments and pistil sparsely glandular puberulent; anthers oblong, separated. Due to the absence of DNA molecular evidence, it is currently impossible to discuss the taxonomic status of *Oreocharis tianlinensis* in *Oreocharis*. A detailed comparison between *Oreocharis tianlinensis*, *O. aimodisca*, *O. longifolia*, *O. aurantiaca* and *O. muscicola* is presented in Table 1.

Preliminary conservation status: Three populations were found with more than 250 mature individuals and less than 1000 in a total area of about 8 km². After eight years of observation, the population remained stable. Thus, the species could be considered Endangered (EN)

according to IUCN Red List Criteria (IUCN, 2022).

ACKNOWLEDGMENTS

The authors are grateful to Prof. Yan Liu (IBK) Dr. Bin-Shen Luo (LSBG) and Dr. Hui-Zhe Feng (Zaozhuang University) for the useful comments and assistance with improving the manuscript. We also thank Mr. Xin-Cheng Qu (GXMI) for the handsome illustrations, Yun-Kai Nong (GXMI), Ping Yang (IBK), Gao Xie (IBK), Su-Yun Nong (IBK) and Chun-Lan Su (IBK) for their assistance with fieldwork. This study was supported by the Survey and Collection of Germplasm Resources of Woody & Herbaceous Plants in Guangxi, China (GXFS-2021-34), National Plant Specimen Resource Center Project (E0117G1001) and Traditional Chinese medicine industry research special project (201207002).

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