

A NEW SPECIES OF *GENTIANA* (*GENTIANACEAE*) FROM LAOS

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A new species of *Gentiana* (*Gentianaceae*), *G. khammouanensis* Hul, is described and illustrated.

Keywords. *Gentiana*, *Gentianaceae*, Laos.

INTRODUCTION

Recent collections of plants from Laos have enriched the herbarium material available for new floristic accounts of the species in Indo-China. Many of these new collections have been made by botanists from the Royal Botanic Garden Edinburgh (E) under the framework of a Darwin Initiative Project in collaboration with the Forestry Research Centre, National Agriculture and Forestry Research Institute and Department of Biology, Faculty of Science, National University of Laos.

Examination of this new material has led to the recognition of a new species in the family *Gentianaceae*. *Gentiana khammouanensis* Hul can now be described and added to the 11 other species of *Gentiana* previously reported in the *Flore du Cambodge, du Laos et du Viêtnam* (Hul, 2003). Of the total of 12 species in Indo-China four are known from Laos.

***Gentiana khammouanensis* Hul, sp. nov. Fig. 1.**

Speciebus sinicis *G. bellae* Franchet et *G. macrauchenae* C.Marquand planta e basi ± intense multiramosa sine caule principali affinis sed ramis valde inaequalibus longitudine e 3 ad 15 cm variantibus (haud ut in duabus speciebus sinicis ± aequalibus 2–4.5 cm longis), capsulis lignosis e corolla ± exsertis rarissime in tubo inclusis stipite mediocri 6–14 mm longo (in *G. bella* semper inclusis, in *G. macrauchena* perfecte exsertis stipite c.50 mm longo) differt. – Type: Laos, Province de Khammouan, Nakai Nam Theun, 17°36'52"N, 105°43'15"E, 835 m, 22 v 2006, fl., fr., *Newman et al.* LAO 1220 (holo E (E00225257); iso E (E00225255, E00225256), National University of Laos, Faculty of Science, P).

Herbaceous plant without obvious main stems, 3–17 cm tall, generally branched from the base. *Basal leaves* in a rosette, petiolate, elliptic, elliptic-oblong or elliptic-obovate, (1–)2–4(–5) × (0.5–)1–1.5 cm; *cauline leaves* ± elliptic, ovate or obovate, 1–2 × 0.5–1 cm; *petiole* 2–7 mm long. *Inflorescences* terminal and axillary. *Flowers*

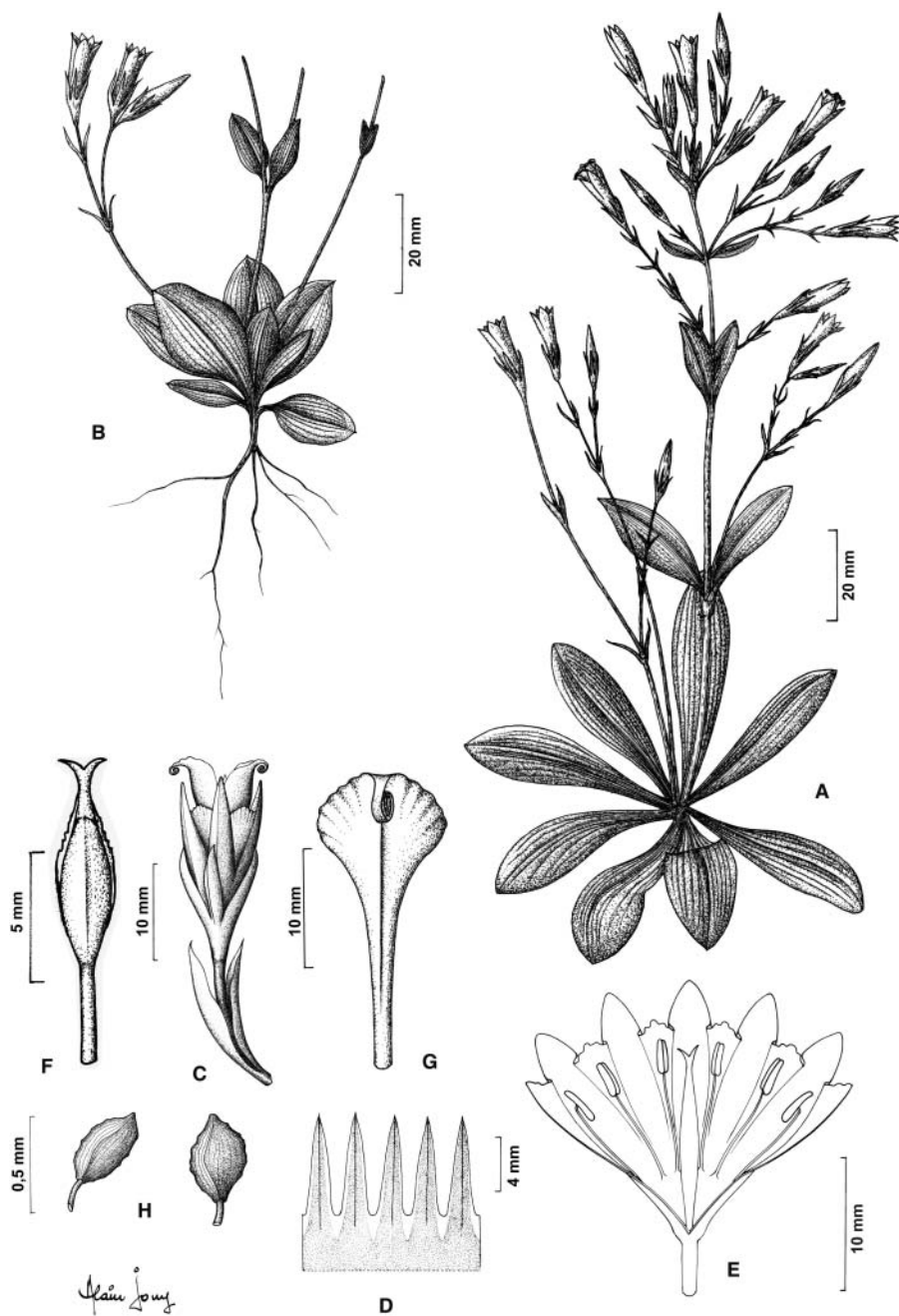


FIG. 1. *Gentiana khammouanensis* Hul. A, habit; B, basal part of another plant; C, flower with a partly exerted capsule; D, calyx; E, flower dissection; F, gynoecium; G, fruit; H, seeds.

5-merous, pale blue, generally in a simple cyme, sometimes appearing solitary, due to the sequence of maturity, (15–)17–22 mm long, \pm pedicellate; pedicels 1–2.5(–3.5) cm long. *Bracts* and bracteoles leafy, narrowly ovate to linear, 5–7 \times 1–1.5 mm. *Calyx* tube 3–5 mm long, lobes narrowly triangular, 6–7 \times 1 mm, \pm acuminate at the apex, keeled dorsally. *Corolla* tube 12–17 mm long, narrowly campanulate; lobes triangular, 3–4 \times 2.5–3 mm, plicae with a broadly ovate free part, 1–1.5 \times 2–2.5 mm, obtuse, margin \pm erose. *Stamens* 5, included, filaments inserted c.4 mm above the corolla tube base, 4–5 mm long; anthers oblong, 2–2.5 mm long. *Ovary* ovoid or ovoid-oblong, glabrous, stipitate; stipe 4–4.5 mm long; style 2–2.5 mm long; stigma 2-lobed. *Fruit*: capsules \pm exserted, rarely included in the corolla tube, obovoid, 4–5 \times 5–7 mm, bivalved, bearing an erose crest, surmounted by 2 stigmatic branches, short and revolute, stipitate by 6–14 mm. *Seeds* numerous, ovoid or ellipsoid, angular.

Distribution. *Gentiana khammouanensis* is currently known only from a single locality in Laos, Nakai Nam Theun, in Khammouan Province, at 835 m altitude.

Habitat and ecology. Open wet areas, in rocky places, at forest margins at middle altitudes.

Conservation assessment. *Gentiana khammouanensis* is currently known only from its type locality within the Nakai Nam Theun National Protected Area. The open grassy areas where it has been found are relatively frequent in this area and it seems highly likely that this species will be found in other localities. As there is no evidence of decline then an assessment of Least Concern (LC) would be appropriate.

Affinities with other species in the genus. *Gentiana khammouanensis* is close to the species *G. bella* Franchet, from Burma and China, and *G. macrauchena* C.Marquand, from China (Ho & Liu, 2001), in lacking a principal stem and in the strong branching from the base. It may be distinguished by the branches which are often very unequal and may be between 3 and 15 cm long; the elliptic, elliptic-oblong or elliptic-obovate basal leaves, (1–)2–4(–5) \times (0.5–)1–1.5 cm; the flowers mostly paired, sometimes appearing solitary due to the sequence by which they mature; and the \pm exserted capsules, stipitate by 6–14 mm. In the other two species the branches are \pm equal, varying from 2 to 4 cm long; the basal leaves are \pm generally ovate, ovate-orbicular or obovate, 0.8–1.5(–3) \times 0.5–1 cm; the flowers are solitary or paired; the capsules are stipitate by 5 mm and included in *Gentiana bella* whilst, in *G. macrauchena*, the stipe is longer, to c.5 cm long, and completely exserted.

In addition *Gentiana khammouanensis* is distinct from the other Indo-Chinese species and would key out in the second group of species in the key to *Gentiana* in the *Flore du Cambodge, du Laos et du Viêt Nam* (Hul, 2003: 28). A new key, including the new species, is presented here in the format of the *Flore du Cambodge, du Laos et du Viêt Nam*:

Key to the species

1. Flowers solitary.
 2. Fruits obovate, exserted, long-stipitate by 7–11(–18) mm _____ 1. *G. loureiroi*
 - 2'. Fruits elliptic-oblong, included in the corolla, short-stipitate by c.2 mm _____
_____ 2. *G. primulaeflora**
- 1'. Flowers many, paired or fasciculate.
 3. Inflorescences multiflowered; flowers (4–)6–15(–20), multifasciculate.
 4. Robust herb with stems \pm woody or small shrub, (25–)30–50 cm tall; flowers 3–3.5 cm long; fruit ellipsoid-oblong _____ 3. *G. cephalantha*
 - 4'. Slender herb, stems not woody, never more than 20 cm tall; flowers less than 2 cm long; fruit obovoid.
 5. Herb less than 10 cm tall; flowers c.12 mm long; calyx lobes unequal (2 small and 3 large) _____ 4. *G. bokorensis*
 - 5'. Herb 10–20 cm tall; flowers 17–19 mm long; calyx lobes equal _____
_____ 5. *G. leroyana*
 - 3'. Inflorescences few-flowered; flowers 2–4(–6), in simple cymes, sometimes appearing verticillate.
 6. Herb with stems \pm erect, sometimes exceeding 10 cm tall.
 7. Flowers mostly more than 10 mm long; calyx lobes triangular.
 8. Corolla tube narrowly campanulate; ripe fruit on a stipe 6–14(–15) mm long.
 9. Plant without an obvious main stem, branched from the base; basal leaves elliptic, elliptic-oblong or elliptic-obovate, generally in a rosette; flowers (15–)17–22 mm long; ripe capsules \pm exserted _____
_____ 6. *G. khammouanensis*
 - 9'. Plants with a marked main stem, not branched from base; basal leaves ovate or obovate, generally strongly branching from base; flowers 10–12(–15) mm long; ripe capsules completely exserted _____
_____ 7. *G. langbianensis*
 - 8'. Corolla tube infundibuliform; ripe fruit on a stipe 7–8 mm long _____
_____ 8. *G. jouyana*
 7. Flowers mostly less than 10 mm long; calyx lobes ovate-spathulate _____
_____ 9. *G. moniliformis*
 - 6'. Herb \pm caespitose, \pm tufted, never more than 10 cm tall.
 10. Stems not stoloniferous; flowers less than 2 cm long; corolla plicae with a triangular free part; fruits obovoid.
 11. Leaves elliptic-oblong or oblong, sometimes spatulate; ripe capsule \pm exserted, with a stipe 5–6 mm long _____ 10. *G. greenwayae*
 - 11'. Leaves elliptic or subobovate; ripe capsule included, on a stipe c.2 mm long _____ 11. *G. tonkinensis*

* In 2002 *Gentiana primulaeflora* was moved to *Metagentiana primuliflora* (Franchet) T.N.Ho & S.W.Liu, in Ho et al., Bot. Bull. Acad. Sin. 43: 89 (2002).

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- 10'. Stems stoloniferous; flowers 2–2.5 cm long; corolla plicae with the margin obliquely truncate; fruits ellipsoid-oblong or obovoid-oblong _____
_____ 12. *G. lowryi*

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