

NOVÉ TAXONY V RODU GENTIANA ZE ZÁPADNÍHO SIČUANU

New taxa in the genus *Gentiana* of west Sichuan

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Abstrakt: V této práci se zabýváme několika druhy hořců z podrodu *Monopodiae* (H. Smith) Halda (Halda 1995), který zahrnuje trvalky monopodiálně větvené, s protáhle eliptickými semeny, pokrytými sítí mělkých hexagonálních prohlubní. Typovým druhem tohoto podrodu je *G. cephalantha* Franchet, polokřovitý uniformní druh nižších poloh.

Klíčová slova: taxonomy, *Gentiana*, Sichuan

Abstract: In this work we focus on several types of the genus including perennials of subgenus *Monopodiae* (H. Smith) Halda (Halda 1995) which includes the perennials monopodially branched with elongated elliptic seeds covered with a net-like shallow hexagonal dips. The type species is *G. cephalantha* Franchet.

Key words: taxonomy, *Gentiana*, Sichuan

During many trips to Sichuan, West China, we made research in the genus *Gentiana*. In this work we focus on several types of the genus including perennials of subgenus *Monopodiae* (H. Smith) Halda (Halda 1995) which includes the perennials monopodially branched with elongated elliptic seeds covered with a net-like shallow hexagonal dips. The type species is *G. cephalantha* Franchet.

The first group are species of the section *Monopodiae*.

G. stipitata Edgew. is a frequent species in West Chinese mountains and in Sichuan we can find two subspecies – in the west with subsp. *stipitata* and in NE Sichuan with subsp. *tizuenzis*. *G. stipitata* Edgew. subsp. *stipitata* is the most robust plant of the whole complex with prominent evergreen basal leaf rosette composed of ovate lanceolate leaves, 15-35 mm x 5-15 mm. Flowering shoots single, densely covered with almost sessile ovate or obovate leaves, 6-9mm x 3-6 mm. Almost campanulate calyx with leaf like ovate tips, 6-8mm x 2-3mm is very prominent. Campanulate corolla is 20-35 x 15-25mm large in many colours from grey blue to creamy white. This taxon covers the huge area-most of N India (Himachal Pradesh, Uttar Pradesh), N Nepal, S Tibet to W Sichuan. It inhabits predominantly the drier areas in subalpine and alpine tundra, rocky slopes and moraines. This taxon is relatively uniform.

G. stipitata Edgew. subsp. *tizuenzis* (Franch.) T. N. Ho is much more subtle in all characteristic, attractive flowers are slender and much bigger. Inhabits much drier mountains.

The most different taxon in this complex is the population at the clayish slopes around Litang in W China which creates cushionlike clumps on drier vertical or steep slopes and is prominent by sessile tetramerous flowers.



Fig. 1. A seed of *G. lawrencei* type



Fig. 2. *G. stipitata* ssp. *elegantissima*

***Gentiana stipitata* Edgew. subsp. *elegantissima* Halda et Jurášek subsp. nova**

Affinis subsp. *stipitata*, sed corolla tetramera, parva, ca 30 mm longa. Foliis minoribus.

Scapus brevis, 0-10 mm longus, uniflorus. Folia basalia, rosulata, anguste obovata, spathulata, 6-10 mm longa, 5-8 mm lata, basi \pm cuneata, integerrima. Calyx anguste campanulatus, ca 10 mm longus. Corolla parva, albidula vel lilacina, 20-30 mm longa, 20 in diametro, tubo ca 20 mm longo. Capsula ca 15 longa.

Similar to subsp. *stipitata*, but much smaller, with 4 lobed flowers. Stem single flowered. Leaves basal rosulate, narrowly obovate, spathulate, 6-10 mm long, 5-8 mm wide, base \pm cuneate entire. Calyx narrowly campanulate, circa 10 mm long. Corolla tiny, whitish or lilac, 20-30 long, 20 mm across, tube circa 20 mm long. Capsule circa 15 mm long.

HOLOTYPEUS HIC DESIGNATUS: PR no. 774465.

PATRIA DISTRIBUTIO: China austrooccidentali, provincia Sichuan: Litang; in clivis alpinis ad 4700 supra mare, leg. J. J. Halda et J. Jurášek, 15. 10. 2011.

Alpine slopes up Litang at 4700 up sea level.

The next taxon of the section *Monopodiae* is *G. szechenyi* Kanitz. It is very ornamental plant which resembles European *G. acaulis* L. but with white narrowly campanulate, up 80 mm long flowers. Typical *G. szechenyi* subsp. *szechenyi* creates compact carpets with olive green basal rosettes, with widely lanceolate leaves, with side rosettes almost sessile.

In the mountains around Kangding (Dashueshan, Gongkashan) are uniform populations of *G. szechenyi* with pure white or pinkish widely campanulate flowers with side rosettes on very long stolones (up 200mm long), which we named *G. szechenyi* Kanitz subsp. *stolonifera* Halda et. Jurášek.

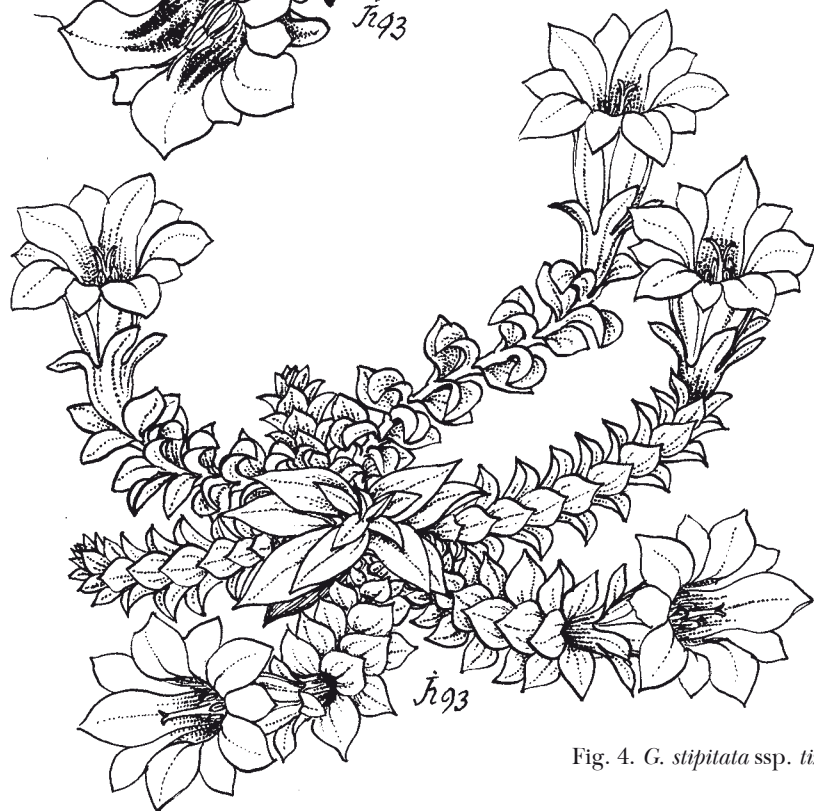
Fig. 3. *G. stipitata* ssp. *stipitata*Fig. 4. *G. stipitata* ssp. *tizuensis*



Fig. 5. *G. stipitata* ssp. *elegantissima*



Fig. 6, 7. *G. szechenyi* ssp. *stolonifera*

***Gentiana szechenyi* Kanitz subsp. *stolonifera* Halda et Jurášek subsp. nova**

Affinis subsp. *szechenyi* sed *stolonifera*. Foliis elongatis, 20-100 mm longis et 3-15 mm latis. Scapus erectus, 20-50 mm altus, uniflorus. Corolla campanulata, alba vel palide lilacina, 5 loba.

Differs from subsp. *szechenyi* in having long stolons, 50-200 mm long. Leaves elongate 20-50 mm long, 3-12 mm wide. Scape erect 20-50 mm tall, single flowered. Corolla campanulate, white or pale lilac, 5 lobed.

HOLOTYPUS HIC DESIGNATUS: PR 774464

PATRIA DISTRIBUTIO: China austrooccidentalis, provincia Sichuan: Kangding: Zheduopass, in pascuis alpinis ad 4600 m supra mare, leg. J. J. Halda et J. Jurášek, 20. 10. 2011.

Alpine pastures around Zheduopass at 4600 m up sea level

The next mentioned taxons belong to the section *Ornatae* (Marq.) Halda (Halda 1995). Type species is *G. sino-ornata* Balf. The common characteristic are narrow opposite leaves ± prominent hibernal rosette and terminal pentamerous flowers. The most frequent species of this section is *G. veitchiorum* Hemsl., which covers the huge area – Indic and Nepal Himalaya, Bhutan, NE Burma, W China (Tibet, Yunan, Sichuan). *G. veitchiorum* creates a different group among species of the section *Ornatae* with short wide leaves and very prominent



Fig. 8. *G. szechenyi* ssp. *stolonifera*

evergreen basal rosette with huge flashy green leaves. Flowering shoots are up 150 mm long, single flowered. Attractive deep blue corolla is up 70 mm long.

In the mountains around Kangding are the populations of prominently different gentians with violet blue smaller long tipped flowers on short erect densely leafed stems leaves and calyx lobes are narrowly lanceolate to lanceolate. Hibernial basal rosette absent. This taxon occurs in the highest zone of pygmy evergreen oaks.

***Gentiana quercetica* Halda et Jurášek spec. nova**

Affinis *G. veitchiorum* sed arosulata, erecta. Planta 60-100 alta, folia omnia caulina lato vel elongato lanceolata, decurrentia, 1,5-2 mm lata, et 9-20 mm longa. Scapus erectus uniflorus. Calyx ± campanulatus, 5 lobus, 15-20 mm longus. Corolla campanulata, atroviolaceocyanea, violaceo zebrina, 5 loba, 35 mm longa, ca 25 mm in diametro, tubo ca 30 mm longo.

Similar to *G. veitchiorum*, but without wintering rosette, stems erect, single flowered, 60-100 mm tall, leaves all cauline, widely lanceolate or elongate, narrowed, 1,5-2 mm wide and 9-20 mm long. Calyx ± campanulate, 5 lobed, 15-20 mm long. Corolla campanulate, deep violet blue, darkish striate, 5 lobed, 35 mm long, circa 25 mm across, tube circa 30 mm long.

HOLOTYPUS HIC DESIGNATUS: PR 774466

PATRIA DISTRIBUTIO: China austrooccidentalis, provincia Sichuan: Kangding: Zheduopass; in quercetis pygmaeis in vicinitate oppidi ad 4300 m supra mare, leg. J. J. Halda & J. Jurášek, 20. 10. 2011.

Pygmy forest of dwarf evergreen oaks under Zheduopass, 4300 m.



Fig. 9. *G. quercetica*



Fig. 10. *G. quercetica*



Fig. 11. *G. veitchiorum*

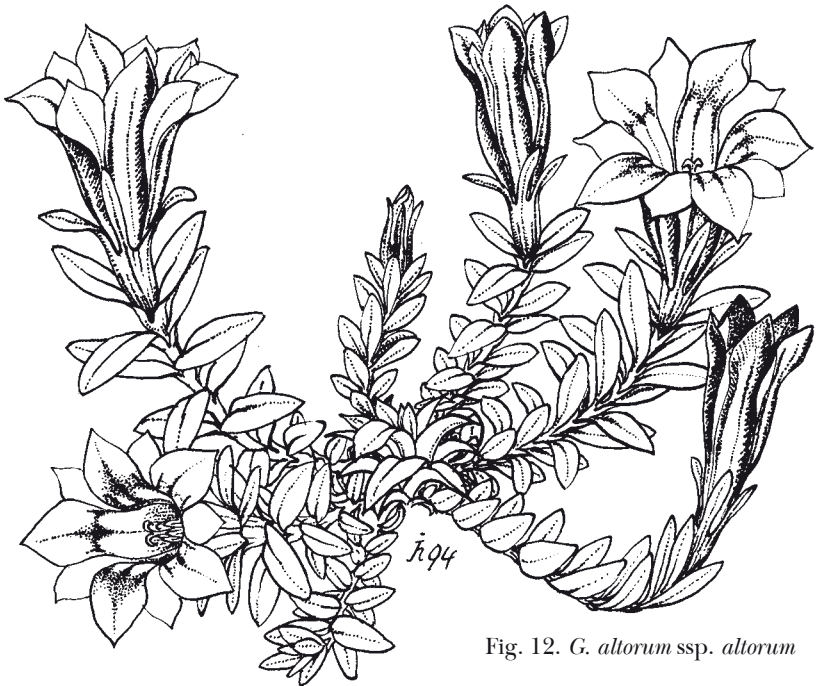


Fig. 12. *G. altorum* ssp. *altorum*



Fig. 13. *G. allorum* ssp. *purpurea*

Fig. 14. *G. helophila* ssp. *dolichocalyx*



Fig. 15. *G. helophila* ssp. *helophila*

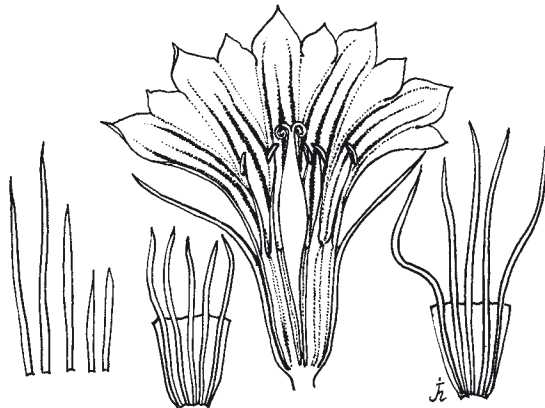


Fig. 16, 17. *G. lawrencei*



Fig. 18. *G. oreocharis*



Fig. 19. *G. altorum* ssp. *purpurea*



Fig. 20. *G. oreocharis*

The next member of the section *Ornatae* which we mention is *G. altorum* H. Smith ex Marq. Typical *G. altorum* subsp. *altorum* (which is a meadow plant) creates smaller clumps of leafed stems with obovate leaves, with tiny basal hibernal rosette, with revolute 5-10mm long leaves. Bright blue flowers have yellow and violet strips outside. Calyx lobes tiny, leaflike. This taxon is closely relative to *G. veitchiorum*, but much smaller in the all characteristics, with a bit inflate corolla. We have encountered these plants in many Sichuan mountains.

***Gentiana altorum* H. Smith ex Marq. subsp. *purpurea* Halda et Jurášek var. nova.**

Affinis var. *altorum*, sed ramosa, multiflora. Planta densa, fere glabra. Folia parva, purpurea, turionum basaliom innovationum elongato-lanceolata, folia caulina ovato lanceolata, decurrentia. Corolla azureo – coerulea, ca 30 mm longa, atroviolaceo striata.

Similar to var. *altorum*, but much smaller, creating very dense cushions of purplish leaves. Basal leaves narrowly lanceolate, cauline leaves narrowed ovate lanceolate. Corolla azure blue, circa 30 mm long, with dark violet stripes.

HOLOTYPE HIC DESIGNATUS: PR 774463

PATRIA DISTRIBUTIO: China austrooccidentalis, provincia Sichuan: Litang; in clivis verticalibus argillaceis ad 4600 m supra mare, leg. J. J. Halda et J. Jurášek, 15. 10. 2011.

Vertical clayish slopes up Litang, 4600 m.

On steep or vertical clayish slopes up Litang is frequent quite different *G. altorum* which creates dense carpet-like clumps of short tiny leafed stems mostly only 20-50mm long with tiny leaves which are purple suffused. Corolla is bright azure blue. This taxon we are describing as subsp. *purpurea*.

The most common taxon from this group is *G. lawrencei* Burkill. The holotype of this species is kept in Edinburgh Herbarium with W. W. Smith note: „This is the plant which came from Max Leichtlin 18. 3. 1905, designated as *Gentiana* sp. (*turquoise*). It is the true species described by Burkill in Gard. Chron. 3 ser. XXXVIII (1905) 30..... Seeds were collected by M. Jules Brocherel on a journey in to Mongolia from Lake Baikal.“ The next authors only copied original description: „First described from plants raised from Siberian seed, collected in the neighbourhood of Lake Baikal; this species has subsequently been found to have a wider distribution in a southern direction, probably between Lake Baikal and Tibetan border.“ (Marquand)

Why Brocherel came to the conclusion that it's site of discovery was the environs of Baikal surprises me, but the comparison of our collections of the vicinity of Kukur lake with Brocherel's sheet in Edinburgh was evident that this is the same plant. Farrer's holotype collected at Minshan (Gansu) is very robust plant (Brocherel's plant is tiny) and both belong to the same species, where Burkill's name have a priority.

The next relative species is on the high ridges up Litang, is *G. helophila* Balf. f. et Forrest subsp. *dolichocalyx* (T. N. Ho) Halda, with huge turquoise flowers up 90mm long, growing in low carpets of pygmy rhododendrons. It is the most robust species of the section *Ornatae*.

***Gentiana oreocharis* Halda et Jurášek spec. nova**

Affinis *G. lawrencei*, sed arosulata, parvula, multiflora. Scapus humilis, usque ad 40 longus ± ramosus, ca 1-5 florus. Folia basalia obovata, folia terminalia anguste lanceolata, 4-20 mm longa, 0,7-3 mm lata, basi ± cuneata, integerrima. Calyx anguste campanulatus, ca 15 mm longus, 5 lobus. Corolla parva, 30-40 mm longa, anguste campanulata, azurea, 20 mm in diametro.

Similar to *G. lawrencei*, but smaller, without wintering rosette, with 1-5 flowers on stem. Stem ± branched, usually up 40 mm long.

Basal and lower leaves obovate, upper leaves narrowly lanceolate, 4-20 mm long, 0,7-3 mm wide, ± cuneate at base, entire. Corolla small, 30-40 mm long, 20 mm across, tube circa 20 mm long, campanulate, azure blue. Capsule circa 15-20 mm long.

HOLOTYPEUS HIC DESIGNATUS: PR no. 774467

PATRIA ET DISTRIBUTIO: China austrooccidentalis, provincia Sichuan: Litang; in summo collis, solo argillaceo, in stratumuscorum, ad 4900 m supra mare, leg. J. J. Halda et J. Jurášek, 15. 10. 2011. Clayish moosy hilltops at 4900 m.

On the top above the Litang monastery on windy moosy drier tundra is common tiny plant like a miniature *G. lawrencei* with short leafed stems with 1-5 pale turquoise blue flowers. In the culture is more sensitive to overwatering, but still growable. This taxon we named *G. oreocharis*.

We have introduced all the newly described taxons into the culture several years ago. All of them have turned out to be good ornamental plants.

On the rich above the Litang monastery we have found rarely intermediary plants (presumably hybrids between *G. oreocharis* and *G. helophila* subsp. *dolichocalyx*). We have brought several plants, the classification of which we have not yet finished. Additional research in the locality will be needed. Curiously SW China is rich in autumn – blooming species of the gentians, while there is only a few spring – blooming species.

LITERATURE CITED

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