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RESEARCH ARTICLE

New Species of *Chionographis* (Melanthiaceae) from Eastern Indochina

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ABSTRACT: New species – *Chionographis actinomorpha* (Melanthiaceae) discovered on the border of central Vietnam and Laos is described and illustrated. Standard citations of type specimens, description, name etymology, data on ecology, phenology and distribution, as well as short taxonomic remarks for the new species are provided. The species differs from all its congeners in having antrorse, actinomorphic flowers with tepals of the same length. This fact may also imply that this new species retains more primitive character states than any other species of this genus. Discovery of this species in middle-east Indochina remarkably extends the generic range hitherto known to the far southwest.

KEY WORDS: *Chionographis actinomorpha*, Laos, Melanthiaceae, new species, plant diversity, plant taxonomy, Vietnam.

INTRODUCTION

Chionographis Maxim. is a small genus with 6 or 7 species of the family Melanthiaceae Batsch, spreading over southern China, southwestern Japan and southern Korea (Hara, 1968; Chen and Tamura, 2000; Tanaka, 2003, 2013; Huang et al., 2011). The discovery of a new species of this genus on the border between central Laos and Vietnam in eastern Indochina remarkably extends the generic range to the far southwest. In fact, the species grows in utterly tropical conditions. Having actinomorphic flowers with tepals of the same length, the discovered species may be regarded as the most primitive representative in the genus. The new species is described below with standard citations of type specimens, name etymology, data on ecology, phenology and distribution, as well as short taxonomic remarks.

TAXONOMIC TREATMENT

Chionographis actinomorpha Aver. et N. Tanaka, ***sp. nov.*** Figs. 1 & 2.

Type: Vietnam, Quang Binh Prov., Minh Hoa Distr., Dan Hoa municipality, Giang Man Mountain, Vietnam-Laotian border, about 6 km to N of Cha Lo borders station, 17°41’09”N, 105°45’54”E, elev. 1000–1100 m, 19 April, 2008, L.Averyanov, P.K.Loc, N.T.Vinh, N.S.Khang HAL 11722 (Holotype: LE; Isotypes: LE, Herbarium of the Center for Plant Conservation, Hanoi).

Perennial rosulate glabrous herb with a short vertical rhizome. Leaves many, all faced up, petiolate, evergreen; petiole broad, slightly conduplicate, shortly winged at the base, 1–1.5(2) cm long; leaf blade spatulate to elliptic, entire along margin, obtuse to blunt at apex, (1.5)2–3(3.5) cm long, (0.8)1–2(2.5) cm wide. Scape axillary, arising near apex of the leaf rosette, ascending to erect, simple, (6)8–15(20) cm tall, with (4)5–6(7) ovate to narrowly ovate bract-like small leaves (6)8–10(12) mm long. Inflorescence terminal, lax, straight, spike-like subraceme, (3)4–8(10) cm long. Flowers many, each on very short pedicel, ebracteate, white, antrorse, actinomorphic, 6–8 mm across, odorless. Tepals 6, free, spatulate (or typical spoon-shaped), proximal ca. two-thirds cylindrical-filiform, distal ca. one-third elliptic to narrowly obovate, blunt or rounded at apex, (3)3.5–4(4.5) mm long. Stamens 6, inserted at inner base of tepals, little shorter than tepals, 2.5–3.5 mm long; anthers basifixed, cordate-ovoid to subglobose, biloculate, extrorse. Ovary ellipsoid, obtusely trigonal toward apex, 1–1.5 mm tall, 0.8–1 mm across, with 3 locules; each containing 2 ovules. Styles 3, recurved, ventrally stigmatic with papillulae. Fruit an ellipsoidal or ovoid capsule, 3–4 mm long.

Etymology: The specific epithet refers to the actinomorphy of the flowers.

Ecology: Primary mixed forests of broad-leaved and coniferous trees like *Dacrydium elatum*, *Fokienia hodginsii* and *Pinus dalatensis* var. *anemophila* on shaly stratified sandstone. Terrestrial and lithophytic rosulate herb adpressed on mossy, very steep rocky slopes or on shady humid cliffs of mother rocks along

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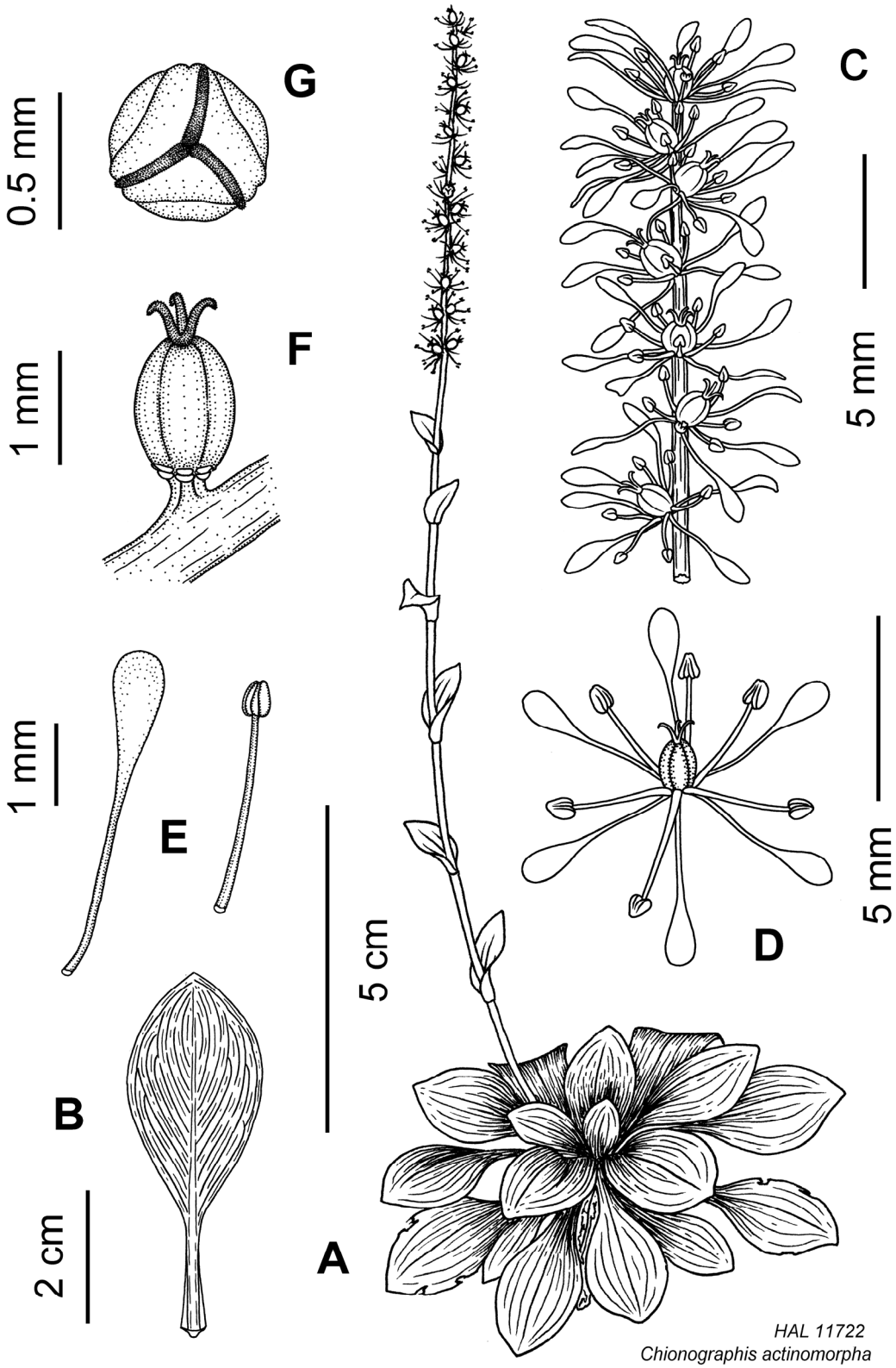


Fig. 1. *Chionographis actinomorpha* Aver. et N.Tanaka. A: Flowering plant. B: Typical leaf. C: Portion of inflorescence. D: Flattened flower, frontal view. E: Tepal and stamen. F: Ovary with tepals and stamens removed, side view. G: Ovary and styles, view from above (all drawn from the type – "*Averyanov et al., HAL 11722*" by L. Averyanov and T. Maisak).

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Fig. 2. *Chionographis actinomorpha* Aver. et N.Tanaka. Flowering plant in native habitat and distal portion of typical inflorescence (type specimens – "*Averyanov et al., HAL 11722*").

tops of mountain ridges at elevations 1000–1100 m a.s.l. Flowers in March–April. Not common.

Distribution: The new species distributed in central Laos (Khammouan Province, Nakai District) and central Vietnam (Quang Binh Province, Minh Hoa District). Endemic to sandstone mountain formations of central Laos and Vietnam.

Notes: The new species was observed and collected on cliffy slopes facing south-east of Giang Man Range which represents a natural border between Laos and Vietnam. Obviously it may also be found on similar sandstone ridges existing in neighbouring inland areas of both countries where rich primary forests still exist.

The new species is most closely allied to *Chionographis chinensis* Krause (Krause, 1929) occurring in southern China, but differs from it in having actinomorphic (vs. zygomorphic) flowers with typical spoon-shaped tepals (vs. clavate tepals gradually widening toward apex) of equal (vs. unequal) length. Further, it is a noteworthy fact that the flowers are shortly pedicellate and ascending at the early and peak of anthesis. In contrast, in *C. chinensis*, flowers are sessile and slightly nodding or at most horizontal at the same flowering phase. Comparison of most important discriminative characters between new species and its closest allies are presented in following table.

The discovery of this species in central Laos and Vietnam remarkably extends the geographical range of this Sino-Japanese genus to the far southwest. There is a possibility that further surveys may disclose additional new habitats of *Chionographis* in the gap regions between middle-east Indochina and southern China. At the same time, it is also suggestive of the great importance of the primary forests existing there, as they embrace such a unique relict species with its natural aboriginal suite. It seems likely that the forests largely retain archaic pristine character, allowing ancient species, like the one here described, to grow, as in the remote past.

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Table. Comparison of several characters between three allied species of *Chionographis*

Character	*C. actinomorpha*	*C. shiwandashanensis*	*C. chinensis*
Pedicel	shortly present	shortly present	(almost) absent
Direction of flower at early and mid anthesis	ascending	horizontal	horizontal or slightly descending
Number of tepals in flower	6	6	6 or 5
Tepal length	equal	equal	unequal
Tepal shape	Spatulate (distal part somewhat abruptly widened)	filiform	unequal narrowly clavate (distal part gradually widened)
Floral symmetry	actinomorphic	actinomorphic	zygomorphic
Anther	bilocular	unilocular	sub-bilocular

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中南半島西部發現的白絲草屬（黑藥花科）新種

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摘要：本文新發現一種在越南中部與寮國邊界的白絲草屬新種*Chionographis actinomorpha*，並提供模式標本引用、分類描述、命名詞源、生態習性、物候學及地理分布等資訊。本種花直立，輻射對稱，且花被片等長等特徵與同屬其它物種具有明顯的差異。本種的發現也大大擴展了白絲草屬在中南半島最南的分布範圍。

關鍵詞：*Chionographis actinomorpha*、寮國、黑藥花科、新種、植物多樣性、植物分類學、越南。

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