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# A New Species of *Heterostemma* (Apocynaceae, Asclepiadoideae) from Vietnam

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**ABSTRACT.** A new species in Apocynaceae, *Heterostemma xuansonense* T. B. Tran & Joo-Hwan Kim, is described from Vietnam; illustrations and a comparison with related species are also provided. *Heterostemma xuansonense* distinctly differs from *H. grandiflorum* Costantin by the flower color, the absence of a peduncle, and the size of the corona.

**Key words:** Apocynaceae, Asclepiadoideae, *Heterostemma*, IUCN Red List, Phu Tho, Vietnam.

The genus *Heterostemma* Wight & Arn. comprises approximately 30 species and is widely distributed in Burma (Myanmar), China, India, Indonesia, Laos, Malaysia, Nepal, New Guinea, the Philippines, Sri Lanka, Thailand, Vietnam, and Australia (Li et al., 1995). In Vietnam, eight species of *Heterostemma* have been recognized (Costantin, 1912; Ho, 1993; Li et al., 1995; Tran, 2005): *H. acuminatum* Decne., *H. balansae* Costantin, *H. grandiflorum* Costantin, *H. oblongifolium* Costantin, *H. luteum* Costantin, *H. siamicum* Craib, *H. suberosum* Costantin, and *H. villosum* Costantin. We have confirmed a new species of *Heterostemma* among the collections from Phu Tho Province in Vietnam. The type locality is in Xuan Son in Phu Tho District, and the plants have been found growing on limestone in humid evergreen forest near the road at ca. 1000 m elevation. The new species differs from *H. grandiflorum* by the flower color, the absence of a peduncle, and the size of the corona. We herein describe and illustrate this new species as *H. xuansonense* T. B. Tran & Joo-Hwan Kim.

***Heterostemma xuansonense*** T. B. Tran & Joo-Hwan Kim, sp. nov. TYPE: Vietnam. Phu Tho: Thanh Son, Xuan Son, 2 July 2003, V. X. Phuong 6360 (holotype, MO; isotype, HN). Figures 1, 2.

Haec species *Heterostemmati grandifloro* Costantin et *H. oblongifolio* Costantin similis, sed a hoc laminae foliaris venis basalibus praesentibus atque flore majore, ab illo petiolo atque coronae lobis brevioribus, ab ambobus inflorescentia sessili, pedicellis brevioribus, corolla purpureo-rubella, sepalis triangularibus atque folliculo angustiore distinguitur.

Liana, at least 80 cm in length; stems pubescent, longitudinally grooved; internodes 5–20.5 cm. Petioles 1.2–2 cm, pubescent; leaves entire, opposite, pubescent on both surfaces, leaf blade oblong, ca.  $7.5 \times 3$  cm, acuminate, base rounded to obtuse, oblique, with a group of glands adaxially; basal veins 3, lateral veins 5 to 6 pairs, diverging from the midribs  $30^\circ$ – $45^\circ$ . Inflorescences umbelliform, 1- to 6-flowered; peduncle absent; pedicels to 7 mm, with brown-red indument. Flowers ca. 2 cm diam.; flower buds 5-angled, ca. 1 cm diam.; sepals triangular, calyx tube 0.5–0.6 mm, lobes ca.  $1.5 \times 1$  mm; external calyx surface glabrous to pilose, brown; internal surface glabrous, striped, yellow-brown, with 5 glands at base; corolla rotate, purple-red; corolla tube with equal lobes, 5–6 mm, lobes wider than long, pilose on both surfaces, margin ciliate; corona ca. 2.5 mm diam., pilose on both surfaces; corona lobes rounded, ca.  $1 \times 1$  mm; pollinium ca.  $0.22 \times 0.18$  mm; corpusculum ca. 0.17 mm high; gynostegium stelliform from above, ca. 0.5 mm diam.; ovary 2-carpellate, pilose, 0.8–1 mm high. Follicles in pairs, corniform, arcuate, glabrous, ca.  $11 \times 0.4$  cm.

**Distribution and habitat.** *Heterostemma xuansonense* is endemic to Vietnam. It has been found growing on limestone in humid evergreen forests near the road at ca. 1000 m elevation.

**IUCN Red List category.** *Heterostemma xuansonense* should be considered Critically Endangered (CR B1ab[i]) according to IUCN Red List criteria



Figure 1. *Heterostemma xuansonense* T. B. Tran & Joo-Hwan Kim. —A. Habit. —B. Floral bud. —C. Flower. —D. Follicles. —E. Pollinarium. Drawn from the holotype V. X. *Phuong* 6360 (MO).

(IUCN, 2001). The extent of occurrence is estimated to be less than 100 km<sup>2</sup>, and the species is known to exist at only a single location (Xuan Son commune). The continued decline of the known population is likely because the species is found near the side of the

road, and the habitat is likely to be disturbed by road construction and repair.

*Phenology.* The new species was observed to flower and fruit in July.



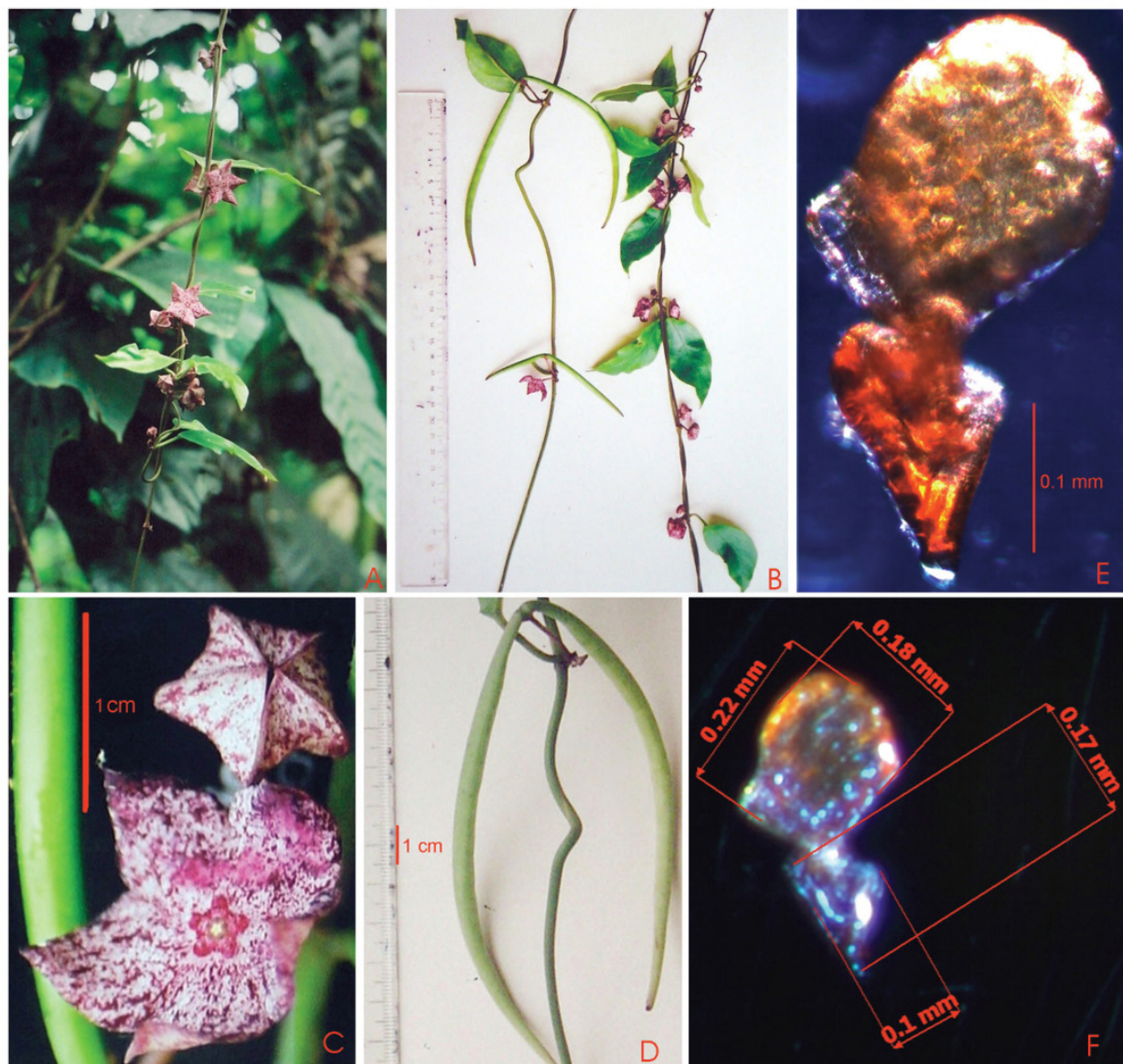


Figure 2. *Heterostemma xuansonense* T. B. Tran & Joo-Hwan Kim. —A. Habit. —B. Flowering branch. —C. Floral bud, flower. —D. Follicles. —E, F. Pollinarium. A, photo of the type plant taken at the type locality; B–D, from the type *Phuong* 6360; E, F, light microscopy images of the HN isotype (imaging performed at the Department of Life Science, Kyungwon University, Korea).

**Etymology.** The epithet of the new species is derived from the type locality (Xuan Son commune).

**Relationships.** *Heterostemma xuansonense* is closely related to *H. grandiflorum*, with which it shares the large flower (ca. 2 cm diam.) and the presence of three basal veins on the leaf blade. The new species differs mainly by its purple-red corolla (vs. yellow in *H. grandiflorum*) and in the absence of a peduncle (vs. peduncle 0.9–3 cm in *H. grandiflorum*). *Heterostemma oblongifolium*, another closely related species, distinctly differs from *H. xuansonense* in having a short peduncle and in the color and diameter of the flowers. The three species are compared in Table 1.

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Table 1. Morphological comparison of *Heterostemma xuansonense* and similar species.

	<i>H. xuansonense</i>	<i>H. grandiflorum</i>	<i>H. oblongifolium</i>
Basal veins on leaf blade	3	3	none
Petiole length (cm)	1.2–2	(2–)2.5–6.5	1.2–3(–4.5)
Leaf size (cm)	ca. 7.5 × 3	(7–)10–19 × (3.5–)5–10.5	7.5–14(–17.5) × (2.8–)3.5–5.4(–7)
Peduncle length (mm)	absent	9–25(–30)	1–2
Pedicel length (mm)	to 7	10–15(–40)	(8–)12–22(–35)
Flower diameter (cm)	ca. 2	ca. 2	1–1.5
Flower color	purple-red	yellow	yellowish or orange
Sepal shape	triangular	ovate	oblong
Corona lobe length (mm)	ca. 1	ca. 3	0.8–1.5
Follicle dimensions (cm)	ca. 11 × 0.4	10–12 × 0.7–1	12–13.5 × 0.9–1

Technology, for helping us collect specimens of *Heterostemma*.

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