



## *Sonerila quangnamensis* (Tribe Sonerileae, Melastomataceae), a new species from the Truong Son Mountain Range, Vietnam

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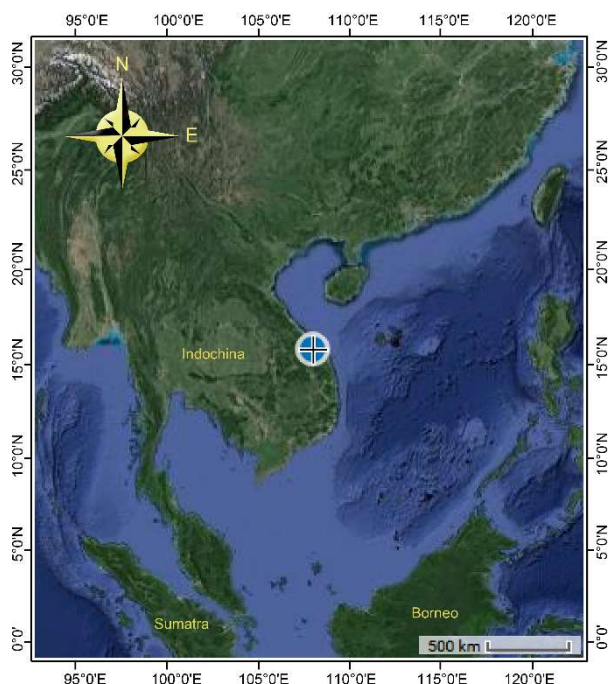
**ABSTRACT:** *Sonerila quangnamensis*, a new species from Truong Son Mountain Range, Vietnam, is described and illustrated here. Like *S. plagiocardia*, *S. quangnamensis* has obliquely ovate leaves, which are unequal in size within each pair. However, *S. quangnamensis* is obviously distinct in several characters: the cross-section of its stems and petioles is terete (vs. 4-winged), the adaxial surface of its leaves is covered with hispidulous-pilose (vs. puberulous), the hypanthium is unribbed (vs. 6-ribbed), and its anthers are uniformly yellow (vs. purple to purplish-pink, yellow-tinged towards the base).

**KEY WORDS:** biodiversity, endemism, Indochina, *Sonerila plagiocardia*, *Sonerila montana*, taxonomy.

### INTRODUCTION

*Sonerila* Roxb. (Roxburgh, 1820) represents a pantropical genus comprising an estimated 150 to 200 species (Sae Wai and Hu, 2023), distributed across tropical and subtropical regions from Asia to northern Oceania (Liu *et al.*, 2022). This genus is characterized by its small herbaceous or subshrub habits, 3-merous flowers, anthers with one or two apical pores, and stamens lacking a distinct anther connective (Chen and Renner, 2007; Renner *et al.*, 2001). *Sonerila* species predominantly occupy shaded, moist microhabitats within undisturbed forest ecosystems. These taxa are characteristically small, succulent, herbaceous plants. Significantly, many diagnostic characters observable in living plants are often not preserved in dried specimens, thereby complicating accurate identification when relying solely on herbarium material. The *Sonerila* species of the Indochina has been recently documented for national region (Chen, 1984; Li, 1994; Renner *et al.*, 2001; Newman *et al.*, 2007; Suddee *et al.*, 2014; Dang *et al.*, 2016; Shin *et al.*, 2020; Souladeth *et al.*, 2021; Phonpaseuth *et al.*, 2021; Sae Wai and Hu, 2023) and clearly shown that its species diversity is disregarded once upon a time or our database of this genus is insufficient. So far, four *Sonerila* species were recorded for Cambodia (Shin *et al.*, 2020), nine for Laos (Phonpaseuth *et al.*, 2021), thirteen for Vietnam (Dang *et al.*, 2016), and twenty-eight for Thailand (Sae Wai and Hu, 2022, 2023). The tropical and subtropical evergreen broad-leaved forests play important roles in conserving biodiversity and are considered one of the biodiversity hotspots (Cicuzza *et al.*, 2013; Fangliang *et*

*al.*, 1997). The Truong Son (Annamite) Mountain Range extends approximately 1,200 km from north to south, along the Vietnamese border with Laos and Cambodia (Averyanov *et al.*, 2003) and is covered by one of the largest contiguous natural forested areas (*ca.* 11,000 km<sup>2</sup>) in continental Southeast Asia (Yoganand and Signs, 2023). Its diversity of geomorphology, climate and hydrology have enriched different microhabitats of the tropical and subtropical vegetations which is characterized by remnants of primary or secondary evergreen forests on non-limestone mountains or karst landscapes (Averyanov *et al.*, 2003). The Annamite Mountain Range is one of the biodiversity hotspot having priority to study and conservation because it is a shelter of numerous endemic species and that many species are yet discovered in recent years (WWF, 2023). These areas are fragile and particularly susceptible to environmental fluctuations. Amid Vietnam's rapid economic progress, they face significant peril. Therefore, urgent attention needs to be paid to the biodiversity of the region. To continue our work on Melastomataceae in Vietnam (Lin *et al.*, 2022; Nguyen *et al.*, 2024), we discovered an unknown *Sonerila* species collected by the second author from Quang Nam province in Central Annamite, Vietnam. This species is morphologically related to *S. plagiocardia* Diels (Diels, 1932) by having asymmetrical and oblique foliage, but differs in its terete, hairy stem, densely hirsute lamina, and hypanthium. After morphological observation and consulting relevant literature, we confirm that the species is new to science, namely *Sonerila quangnamensis*.



**Fig. 1.** Distribution map of *Sonerila quangnamensis* (blue cross round circle) in the Central Annamite Mountain Range (The map is modified from <https://geocat.iucnredlist.org/editor>)

## MATERIAL AND METHODS

Morphological analyses of the novel species were conducted through field studies, a review of relevant literature (Chen, 1984; Li, 1994; Renner *et al.*, 2001; Chen and Renner, 2007; Suddee *et al.*, 2014; Dang *et al.*, 2016; Shin *et al.*, 2020; Phonpaseuth *et al.*, 2021; Souladeth *et al.*, 2021; Sae Wai and Hu, 2022, 2023), and examination of high-resolution images of type specimens from related species (<http://plants.jstor.org>). Fixed materials and dried voucher specimens of the new species were deposited in HN herbarium. Additionally, photographs documenting the habitat and habits were taken during field observations. Morphological characters were measured using a ruler and vernier caliper. The terminology employed in the description follows Beentje (2016). The assessment of conservation status is inferred from the IUCN Red List Categories and Criteria (IUCN, 2024).

## TAXONOMIC TREATMENT

*Sonerila quangnamensis* K.S.Nguyen, H.H.Truong, Aver. & C.W.Lin, *sp. nov.*

### Figs. 2 & 3

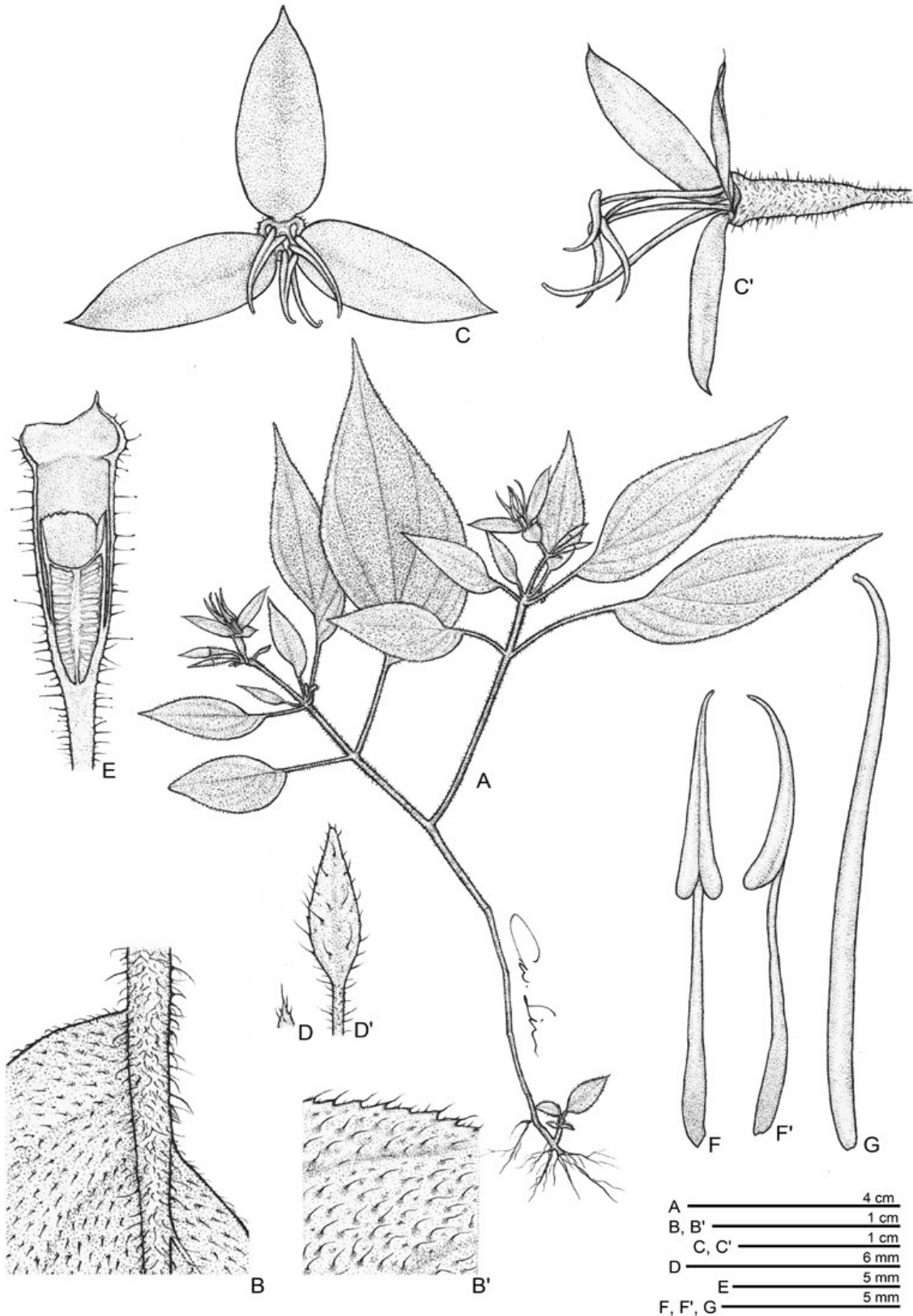
**Type:** VIETNAM. Quang Nam province: Dai Loc district, Dai Hong commune, Ngoc Thach village, Huu Nien mountain, evergreen broad-leaved forest on sandstone mountain, around point 107.966E 15.823N, elev. 400–600 m a.s.l., usually growing on mossy humid

rocks, locally not common, 5 Jan. 2024, Truong Hoang Hap, QN-DL 02 (holotype: HN!; isotype: HN!).

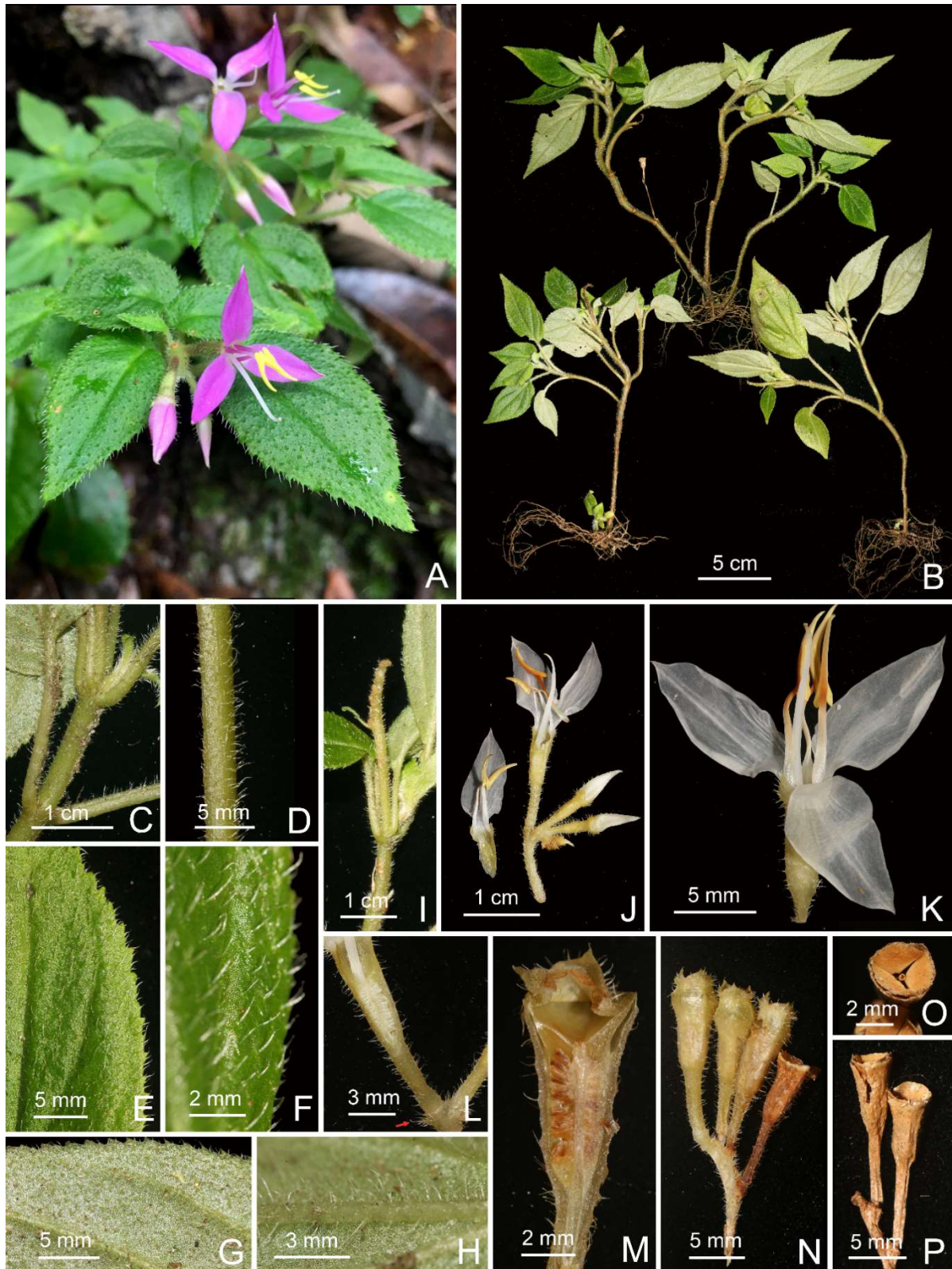
**Diagnosis:** Resembling *S. plagiocardia* in its obliquely ovate foliage, *S. quangnamensis* clearly differs in several key characteristics. It has terete (vs. 4-winged) stems and petioles, hispidulous-pilose (vs. puberulous) adaxial leaf surface, unribbed (vs. 6-ribbed) hypanthium, and uniformly yellow (vs. purple to purplish-pink, yellow-tinged towards the base) anthers.

**Description:** Lithophytic, monoecious, perennial multi-branched herbs. **Stems** erect to ascending, terete, suffrutescent at base, 15–20 cm tall, internodes 0.5–3.5 cm long, 2.5–4.5 mm thick, pale green to yellowish-green, minutely glandular trichomes (seen under magnification) and densely tuberculate-based hispidulous-pilose, glabrescent. **Leaves** opposite, decussate, isomorphic, unequal or subequal in each pair of sizes, held horizontally; petioles whitish-green, 1.1–3.6 cm long, grooved above, minutely glandular trichomes (seen under magnification) and densely tuberculate-based hispidulous-pilose; lamina chartaceous, asymmetrical or nearly so, obliquely ovate to widely lanceolate, 1.3–8 × 0.85–3.6 cm; adaxial surface bright green, hispidulous-pilose on both surfaces; apex attenuate, the base of the wide side rounded to obtuse, narrow side obtuse to cuneate, margins denticulate or serrate with rows of hispidulous-pilose; venation pinnate, primary vein and secondary veins shallowly grooved above, and prominent on the abaxial surface; secondary veins arising from both sides of primary vein in an alternate manner, with 2–4 veins on the wide side and *ca.* 1 vein on the narrow side.

**Bracts** minutely, inconspicuous, triangular, < 1 mm long, whitish-green; the first pair is sometimes dimorphic, with the larger one being well-developed, petiolate, leaf-like, lanceolate, up to 6.5 × 2 mm, apex attenuate, green, hispidulous-pilose. **Inflorescence** terminal, simple scorpioid cymes, erect, curved slightly forward, 4–11-flowered; peduncles terete, 1.7–2.1 cm long, whitish-green, hispidulous-pilose. **Flowers** 3-merous; pedicels *ca.* 6 mm long, whitish-green to reddish-green, covered with minutely glandular trichomes (seen under magnification), densely gland-tipped hispid and sparsely hispidulous-pilose. **Hypanthium** cylindrical to very narrowly campanulate, whitish-green to pinkish-green; *ca.* 7 mm long, 2.5 mm in diameter, minutely glandular trichomes (seen under magnification), gland-tipped hispid and sparsely hispidulous-pilose. **Calyx lobes** 3, widely triangular, 1.5–1.9 × 1.8–2.2 mm, apex acute, abaxially hispid or gland-tipped hispid. **Petals** 3, rosy pink, narrowly ovate, slightly asymmetric, *ca.* 13 × 6 mm, abaxially sparsely gland-tipped hispid. **Stamens** 3, isomorphic, glabrous; filaments slightly flat, 7–8 mm long, rosy pink to dark purplish-pink, anthers lanceolate, curved ventrally, deeply cordate at base, narrowing towards apex, 6–7 mm long, yellow, pore 2. **Ovary** *ca.* 4.5 mm long, 3-locular;



**Fig. 2. *Sonerila quangnamensis*** K.S.Nguyen, H.H.Truong, Aver. & C.W.Lin. **A.** Habit; **B, B'.** Portion of leaf, abaxial and adaxial surfaces; **C, C'.** Flower, front and side views; **D.** Bract; **D'.** Leaf-like bract; **E.** Longitudinal section of ovary; **F, F'.** Stamens, ventral and lateral views; **G.** Style and stigma.



**Fig. 3.** *Sonerila quangnamensis* K.S.Nguyen, H.H. Truong, Aver. & C.W.Lin. **A, B.** Habits; **C.** Stem, also showing petioles; **D.** Petiole; **E, F.** Portion of leaf, adaxial surface; **G, H.** Portion of leaf, abaxial surface; **I.** Inflorescence (flowers fall off), showing leaf-like bract; **J.** Inflorescence, also showing longitudinal section of ovary; **K.** Flower; **L.** Longitudinal section of ovary, also showing bracts (pointed out by the red arrow); **M.** Longitudinal section of an immature fruit; **N.** Inflorescence; **O.** Mature fruit, top view, **P.** same, lateral view. Photo A by H.H. Truong.

TABLE 1. Comparison of *Sonerila quangnamensis*, *S. plagiocardia* and *S. montana*

	<i>S. quangnamensis</i>	<i>S. plagiocardia</i>	<i>S. montana</i>
<b>Stem</b>			
vestiture	tuberculate-based hispidulous-pilose	subglabrous	scattered bristles
wings	absent	4-winged	absent
<b>Leaf</b>			
	strongly oblique	strongly oblique	not oblique or slightly oblique
petiole length (cm)	1.1–3.6	2–10	0.5–4
size (cm)	1.3–8 × 0.85–3.6	2.5–18 × 3.5–10	3–10.5 × 2–3.7
base	wide side rounded to obtuse, narrow side obtuse to cuneate	deeply cordate	cuneate to rounded, truncate or slightly cordate
adaxial vestiture	hispidulous-pilose and sparsely puberulous or minutely scabrescent	puberulous	minutely strigose
<b>Inflorescence</b>			
section of peduncle	terete	quadrangular	terete
vestiture	hispidulous-pilose	very sparsely glandular trichomes or puberulous	scattered long stipitate glandular trichomes
<b>Flower</b>			
hypanthium ribs	unribbed	6-ribbed	unribbed
anthers colour	uniformly yellow	purple to purplish-pink, yellow-tinged towards the base	uniformly yellow
flowering time	January	October to November	October to March
<b>Distribution</b>	Central Vietnam	Cambodia, China, Laos, Malaysia, Thailand and Northern Vietnam	North Thailand

ovary crown *ca.* 1.8 mm high; ovules numerous. **Styles** filiform, pale pink, *ca.* 15 mm long; stigma capitate. **Fruit** a capsule, cupuliform, *ca.* 6 × 4 mm.

**Distribution and ecology:** The new species is currently only found in its type locality in Dai Loc District, Quang Nam province, Truong Son Mountain Range, Vietnam. It usually grows on mossy humid rocks of sandstone mountains covered by evergreen broad-leaved forest at an elevation of 400–600 m a.s.l. Flowering and fruiting of *Sonerila quangnamensis* were observed in early January.

**Conservation status:** From the year of 2022 to current time, our field surveys of several mountains having similar vegetation type and habitats to the new species, e.g. Hai Van pass (border between Thua Thien-Hue and Da Nang provinces), Hoa Bac district (Da Nang province), A Luoi and Nam Dong district (Thua Thien-Hue province), and Que Son, Dai Hiep, Nong Son and Dong Giang districts (Quang Nam province) in Central Truong Son Mountain Ranges have not recorded any more populations of *Sonerila quangnamensis*. The new species is only found at Huu Nien Mountain (Dai Hong district) in which *ca.* 150 matured plants scatter on an area of 500–700 km<sup>2</sup> with its area of occupancy (AOO) exceeding 15 km<sup>2</sup>. This population has not been exploited for ornamental purposes, but it is somewhat affected by tourist activities of Khe Lim ecotourism area, a part of Huu Nien Mountain. According to available data the conservation status of the new species is preliminarily assessed Endangered (EN: B1ab(iii,v) + B2ab(iii, v)) following the IUCN Red List Categories and Criteria Version 16 (IUCN, 2024).

**Etymology:** The specific epithet refers to its type locality, Quang Nam province. The Vietnamese name

“Son linh quang nam” is proposed.

**Note:** This new species is most distinctive for its asymmetrical, obligate, hairy foliage. This combination of characteristics sets it apart from other species known in Vietnam. *Sonerila quangnamensis* bears the closest resemblance to *S. plagiocardia*, a widespread species found across China, Cambodia, Laos, Malaysia, Thailand, and Northern Vietnam (Chen and Renner, 2001). Among the *Sonerila* species in Indochina, the newly discovered species shares similarities with *S. montana* J. Wai & J.M. Hu (Sae Wai and Hu, 2023) from northern Thailand. Both species are small herbaceous plants with dense hairs on stems, leaves, and inflorescences. However, despite these superficial resemblances, they exhibit significant differences in detailed morphological characteristics. A detailed comparison of the three *Sonerila* species is presented in Table 1.

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