

**A NEWLY RECORDED SPECIES *Galium asperifolium* (RUBIACEAE)  
FOR THE FLORA OF VIETNAM**

Tran The Bach<sup>1,2</sup>, Ha Minh Tam<sup>3</sup>, Nguyen Trong Tri<sup>4</sup>, Dao Thi Nhu Binh<sup>5</sup>,  
Hoang Huu Duy<sup>5</sup>, Cao Hoang Tuan<sup>5</sup> and Bui Thu Ha<sup>5,\*</sup>

<sup>1</sup>*Institute of Biology, Vietnam Academy of Science and Technology, Hanoi city, Vietnam*

<sup>2</sup>*Graduate University of Science and Technology, Vietnam Academy of Science  
and Technology, Hanoi city, Vietnam*

<sup>3</sup>*Faculty of Biology, Hanoi Pedagogical University 2, Vinh Phuc province, Vietnam*

<sup>4</sup>*Department of Microbial and Biochemical Technology,  
Vietnam National University of Forestry, Hanoi city, Vietnam*

<sup>5</sup>*Faculty of Biology, Hanoi National University of Education, Hanoi city, Vietnam*

\*Corresponding author: Bui Thu Ha, e-mail: [habt@hnue.edu.vn](mailto:habt@hnue.edu.vn)

Received March 6, 2025. Revised April 19, 2025. Accepted June 30, 2025.

**Abstract.** Plant specimens coded as LC202421 at Hanoi Herbarium, were identified as *Galium asperifolium* Wall. This is a newly recorded species for the flora of Vietnam. The morphological comparison method was applied appropriately in the study. The genus *Galium* in Vietnam includes 3 updated species: *G. aparine* L. auct. non L.: P. H. Ho, *G. asperifolium* Wall., and *G. rotundifolium* L. *G. asperifolium* Wall. is distinguished from the two other species by the characteristic of “basal vein 1”. An identification key for the species of *Galium* currently known in Vietnam was established. *G. asperifolium* in Vietnam was described in detail, including its scientific name, synonyms, morphological and ecological characteristics, flower and fruit season, distribution, research sampling, and various images.

**Keywords:** *Galium asperifolium*, Rubiaceae, Lai Chau, Vietnam.

## 1. Introduction

The genus *Galium*, belonging to the Coffee family (Rubiaceae), includes 645 accepted species [1]. The native range of this genus is worldwide, primarily in meridional to temperate regions, but it also occurs in alpine and arctic areas, as well as in subtropical and tropical zones at higher elevations [1].

The main characteristics used to identify this genus are: "Stem 4-angled; leaves in whorls of 4-10, mostly with a conspicuous midvein (1-nerved), sessile or subsessile; flowers typically 4-merous; calyx lobes obsolete; stamens with anthers exerted from the corolla; ovary crowned by an often 2-lobed disk, 2-locular; style branches 2, each with a capitate stigma" [2].

The number of species of this genus recorded in some Asian countries includes 63 species in China (of which 23 are endemic and four have unconfirmed occurrence) [2], and 3 species in India (*G. asperifolium* Wall., *G. aparine* L. auct. non L.: P. H. Ho, *G. elegans* Wall.) [3], 2 species in Thailand (*G. asperifolium* Wall., *G. elegans* Wall.) [4], 2 species in Vietnam [5], [6]. In the study by Yang et al. (2018) [7], a total of 194 species and variations (subspecies) of *Galium* were sampled to determine phylogenetic relationships using two nuclear and five chloroplast markers. The data are largely consistent with previous phylogenetic studies and confirm that *Galium* is non-monophyletic. Therefore, further research is needed to clarify the taxonomic structure of the genus *Galium* worldwide.

During the examination of specimens at the Hanoi Herbarium and through literature analysis (Thiers, 2025) [8], plant specimens labeled LC202421 (HN) were preliminarily identified as *Galium asperifolium*, a species not previously recorded in Vietnam.

A detailed study of the morphological characteristics of these specimens is necessary to confirm their identification as *Galium asperifolium* Wall. This represents a newly recorded species for the flora of Vietnam.

## **2. Content**

### **2.1. Materials and methods**

*Materials:* Specimens of *Galium* in Vietnam are stored at the Hanoi (HN) Herbarium, Vietnam Academy of Science and Technology.

*Methods:* Morphologically comparison method was employed in this study. Major morphological characteristics were observed, described, recorded, and compared with other *Galium* specimens and relevant documents. An identification key was established for *Galium* species in Vietnam. Based on this key, the scientific name and description of the species were determined. The morphological characteristics of specimens coded as LC202421 were compared with type specimens and the original morphological description of *Galium asperifolium*.

### **2.2. Results**

#### **2.2.1. Morphological description of *Galium asperifolium* Wall**

Fl. Ind. 1: 381 (1820); Tao Chen & Ehrend. in Z.Y. Wu et al., Fl. China 19: 113 (2011) (Figures 1 and 2).

**Synonym.** *Galium mollugo* subsp. *asperifolium* (Wall.) Kitam. in Fauna Fl. Nepal Himalaya: 230 (1955).

Creeping or climbing herbs and usually much branched. Stems: 20 - 80 cm long, 4-angled to 4-winged, pubescent to glabrous. Leaves: are 4-8 in a whorl, sessile or with very short (ca. 1 mm) petiole; blade drying papery to leathery, adaxially dark green and

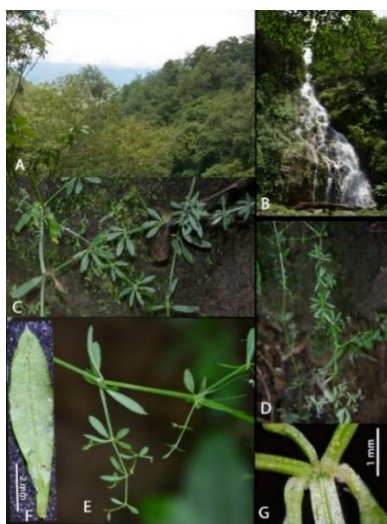
shiny, abaxially paler, oblanceolate-oblong, oblanceolate, obovate, linear to linear-lanceolate,  $5 - 25 \times 1 - 6$  mm; 2 surfaces pubescent to glabrous; base acute to cuneate; margins hairy or ciliate; apex obtuse, rounded, truncate, or emarginate and shortly mucronate; vein 1. Inflorescences: up to 18 cm long, terminal and axillary, several-to many-flowered cymes. Flowers: 4-merous, bisexual. Peduncles: glabrous to rarely pubescent, at most nodes with leaflike bracts (1 - 4 mm long). Pedicels: 0.2 - 2.5 mm long. Calyx lobes obsolete. Corolla: greenish, white or yellow, rotate, 1 - 3.5 mm in diameter, glabrous; lobes 4, triangular-ovate,  $0,53 - 0,66 \times 0,52 - 0,53$  mm. Stamens: 4, anthers exserted from the corolla. Ovary: inferior, elliptic, 0.2 - 0.5 mm high, crowned by an often 2-lobed disk, 2-loculed, each locule with a solitary ovule; style branches 2, joined below, each with a capitate stigma. Fruits [2]: dry, breaking into two mericarps; mericarps ellipsoid, 1 - 2 mm in diameter.

**Loc. class.:** Nepal. **Typus:** Wallich 6213A (Royal Botanic Garden Edinburgh (E), E00438217) [9]

**Ecology, flower, and fruit season:** *Galium asperifolium* was found growing in montane rainforests, wet places of Sin Suoi Ho commune, Lai Chau province in association with other genera such as *Polygonum*, *Aeschynanthus*, *Hedyotis*, *Henckelia*, *Stephania*, *Impatiens*, *Lindernia*, *Trichosanthes*, *Silvianthus*, *Paraboea*, *Drymaria*, *Chirita*, *Begonia*, *Ficus*, *Habenaria*, *Commelina*, *Disporum*, and *Globba* (Figures 3 and 4). Flower and fruit season in May-October.

**Distribution:** Afghanistan, Assam, Bangladesh, China South-Central, China Southeast, East Himalaya, India, Myanmar, Nepal, Pakistan, Sumatera, Thailand, Tibet, West Himalaya. In Vietnam, the species is found in Lai Chau (Phong Tho district, Sin Suoi Ho commune).

**Research specimens:** Lai Chau province (Phong Tho district: Sin Suoi Ho commune), 27/07/2024, Tran The Bach, Vu Anh Thuong, LC202421 (HN Herbarium).



**Figure 1. Habitat and morphology of *Galium asperifolium*'s stems and leaves**

**A, B. habitat; C, D, E. habit; F. leaf; G. leaves 4-8 in a whorl**

(Photos: Tran The Bach, 2024)

### 2.2.2. Identification key of genus *Galium* in Vietnam

1A. Basal veins 3-5.

2A. Basal veins 5, stem with small spines.....*G. aparine* (auct. non L.: P. H. Ho).

2B. Basal veins 3, stem pubescent, without small spines.....*G. rotundifolium*.

1B. Basal vein 1.....*G. asperifolium*.

### 2.2.3. Discussion

*G. asperifolium* Wall. is distinguished from the other two species by the characteristic of “basal vein 1”.

*Galium* sp. was first mentioned by Pham HH (2000) [6]. The species is distinguished from three species of the genus *Galium* by the following characters: "Petiole 4-6 cm long, stamens 5" in *Galium* sp., while three species have the characters of "Petiole < 1 cm long, stamens 4".

This species has not been evaluated by the IUCN [10]. In Vietnam, it is identified from a set of specimens collected in Lai Chau province. It has not been recorded in other provinces; therefore, its conservation status is recommended as Data Deficient (DD).

The proposed Vietnamese name is “Vấn vương lá thô” in which “Vấn vương” is the genus name, “lá thô” is the meaning of the species epithet “*asperifolium*”.



**Figure 2. Morphology of *Galium asperifolium*'s flowers: A. a cyme of flowers; B. opened flower; C. top view of flower; D. side view of pistil, petals**  
(Photos: Vu Anh Thuong, 2024)



**Figure 3. Some genera of dicotyledones growing near *Galium asperifolium***  
**A. *Polygonum*; B. *Aeschynanthus*; C. *Hedyotis*; D. *Henckelia*; E. *Stephania*;**  
**F. *Impatiens*; G. *Lindernia*; H. *Trichosanthes*; I. *Silvianthus***  
 (Photos: Tran The Bach, 2024)





**Figure 4.** Some genera of dicotyledones (A-E) and monocotyledones (F-I) growing near *Galium asperifolium*. A. *Paraboea*; B. *Drymaria*; C. *Chirita*; D. *Begonia*; E. *Ficus*; F. *Habenaria*; G. *Commelina*; H. *Disporum*; I. *Globba*  
(Photos: Tran The Bach, 2024)

### 3. Conclusions

*Galium asperifolium* Wall. is a newly recorded species for the flora of Vietnam. Up to now, the genus *Galium* has been recorded with three species in Vietnam.

The detailed description of *G. asperifolium* presented in the study includes its accepted scientific name, synonym, morphological characteristics, and loc. class., typus, ecology, flower and fruit season, distribution, and research sampling.

**Acknowledgements.** We would like to thank Project DTDL.CN-72/22 for providing funding to complete the article and the HN herbarium for granting access to specimens of the genus *Galium*.

## REFERENCES

- [1] <https://powo.science.kew.org/> [Accessed January 6, 2025].
- [2] Tao C & Friedrich E, 2017. *Fl. China* 19. Science Press, Beijing & Missouri Bot. Garden Press, St. Louis, 113.
- [3] Hook F, 1881. *Galium. The flora of British India*, 3, London, 204.
- [4] <https://botany.dnp.go.th/eflora/index.html> [Accessed January 6, 2025].
- [5] Nguyen TB, Nguyen KK & Vu XP, 2005. Rubiaceae. *Checklist of plants in Vietnam* 3. Agriculture Publishing House (in Vietnamese).
- [6] Pham HH, 2000. *Galium. An illustrated flora of Vietnam* 3. Youth Publishing House, Ho Chi Minh City, 221-222 (in Vietnamese)
- [7] Yang LE, Meng Y, Peng DL, Nie ZL & Sun H, 2018. Molecular phylogeny of *Galium* L. of the tribe Rubieae (Rubiaceae) - Emphasis on Chinese species and recognition of a new genus *Pseudogalium*. *Molecular Phylogenetics and Evolution* 126, 221-232.
- [8] Thiers B. Index Herbariorum: A global directory of public herbaria and associated staff, New York Botanical Garden's Virtual Herbarium. [Online], Available: <https://sweetgum.nybg.org/science/ih/>. [Accessed January 6, 2025].
- [9] Mill RR, 1996. The *Galium acutum* and *G. asperifolium* species complexes in the Eastern Himalaya. *Edinburgh Journal of Botany*, 53(2), 209.
- [10] IUCN, (2019) *Guidelines for Using the IUCN Red List Categories and Criteria*, Version 14. Prepared by the Standards and Petitions Subcommittee. <http://cmsdocs.s3.amazonaws.com/RedListGuidelines.pdf>.