

**TAXONOMIC INVESTIGATION OF MUONG NHE NATURE RESERVE,
VIETNAM: FOURTEEN SPECIES AND ONE VARIETY NEWLY
DOCUMENTED IN THE NATIONAL FLORA**

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ABSTRACT

We document the first occurrence of 14 species and one variety of vascular plants, from Muong Nhe Nature Reserve, Dien Bien province, Vietnam, as new records for the country. This floristically rich area, located in northwestern Vietnam near the border with Yunnan province, China, is recognized as an important center of plant biodiversity with numerous rare and endemic taxa. For each recorded taxon, detailed information on habitat, phenology, distribution, and voucher specimens is presented, accompanied by photographic evidence.

Keywords: Vascular plants, Muong Nhe Nature Reserve, Vietnam flora, new records.

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INTRODUCTION

Muong Nhe Nature Reserve is characterized by a distinctive topography, with high mountain ranges oriented in a northwest southeast direction and bordered to the southwest by Phou Den Din National Biosphere Reserve (Lao People's Democratic Republic). The area holds significant geographical importance for both ecological integrity and national security, particularly due to the A Pa Chai border crossing, which facilitates trade with Jiangcheng County, China. It also represents the headwater region of the Da River and encompasses largely undisturbed natural landscapes of high conservation value. Owing to its richness in biodiversity, the reserve is considered a priority area for nature conservation (Decision No. 1199/QD-UBND, 2016). Muong Nhe Nature Reserve is located in Dien Bien province, about 700 km northwest of Ha Noi Capital and about 220 km from the center of Dien Bien Phu City. It is one of the largest nature reserves in Vietnam, covering a total area of 46,577.19 hectares. The Nature Reserve has a complex topography, heavily dissected by many high mountain ranges and narrow valleys, generally sloping gradually downwards from Northwest to Southeast. According to previous studies and surveys, Muong Nhe Nature Reserve supports a range of characteristic montane forest ecosystems of northwestern Vietnam, with highly diverse flora and fauna, including numerous rare, endemic, and economically valuable species. Representative taxa include *Fokienia hodginsii* (Dunn) A. Henry & H. H. Thomas, *Aquilaria crassna* Pierre ex Lecomte, *Cephalotaxus mannii* Hook.f., etc.

The reserve is notable for its high plant diversity, comprising at least 1,086 species of vascular plants belonging to 606 genera and 172 families, including 119 rare species (Biodiversity Report, 2021; Survey of Timber Diversity, 2024). Of these, 119 species are considered threatened, including 51 species listed in the Vietnam Red Data Book, 54 species protected under Decree No. 84/2021/ND-CP, and 33 species assessed in the IUCN Red List (Decision No. 973/QD-UBND, 2025).

Despite its large area, botanical research in Muong Nhe Nature Reserve remains limited. Since the publication of earlier reports, several studies conducted in the reserve have documented species new to science as well as new records for the flora of Vietnam. Examples include recently described species such as *Ophiopogon muongnhensis* K. S. Nguyen, N.Tanaka & Aver. (Van et al., 2023), *Petrocosmea albocaerulea* B. H. Quang, T.D.Thien & Nuraliev (Tran et al., 2024), *Ophiorrhiza liuyanii* L.Wu, Y. H. Tan & K. S. Nguyen (Chu et al., 2024) and newly recorded species such as *Boehmeria pilosiuscula* var. *suffruticosa* Acharya, Friis & Wilmot-Dear (Vu et al., 2022), *Clerodendrum ervatamioides* C. Y. Wu (Heyjoong et al., 2022), *Ardisia scalarinervis* E.Walker (Do et al., 2025).

In this study, we report additional vascular plant specimens collected in Muong Nhe Nature Reserve between 2022 and 2025, which represent new records for the flora of Vietnam. The present report documents 14 species and one subspecies belonging to nine families. All newly recorded taxa, except *Aeschynanthus speciosus* Hook. and *Impatiens longiloba* Craib., are distributed in southern China. Some of these species are considered endemic to China, whereas others exhibit broader distribution ranges.

MATERIALS AND METHODS

Specimen collection was conducted during expeditions by two research groups: one from the Institute of Biology, Vietnam Academy of Science and Technology, and the other from the Institute of Science and Technology Development for Regions, National Academy for Advanced Technology and Innovation, Ministry of Science and Technology, during 2023–2025. The specimens were identified using the taxonomic literature cited below and through morphological comparison with herbarium material deposited in Ha Noi (HN). In the account provided below, family delimitations follow the APG and PPG systems of classification (APG IV, 2016; PPG I, 2016), and families and species are arranged in

alphabetical order. Specimens of related taxa deposited in major Chinese herbaria (KUN, IBSC, and PE) were examined via the Chinese Virtual Herbarium (<https://www.cvh.ac.cn>). Additional comparative material from Asian herbaria, including K and P, was accessed as high-resolution digital images through herbarium websites and the Global Biodiversity Information Facility (GBIF, <https://www.gbif.org/>).

RESULTS

Taxonomic treatment

BALSAMINACEAE *Impatiens longiloba* Craib. (**Figs. 1a, b**)

References: Bull. Misc. Inform. Kew 1926: 161 (1926). Chayamarit, K. & al. (eds.) (2024). Flora of Thailand 16(3): 749–837.

Habitat, phenology. Evergreen broad-leaved forests; 300–600 m. Flowering in April–May, fruiting in May–July. The native range of this species is N. Thailand. It is an annual and grows primarily in the wet tropical biome.

Distribution. N. Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Leng Su Sin commune, Muong Nhe Nature Reserve, Growing along the stream in the dense forest, N 22°21'236"; E 102°20'072"; 562 m, 22 April 2024, *Bui Hong Quang, Vu Anh Thuong, Tran Duc Binh, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, TQA 708* [HN].

Notes. This species was hitherto considered endemic to northern Thailand. The present collection represents the first recorded addition to the flora of Vietnam. Growing in humid stream banks, it has a small population of approximately 100 individuals across about five communities. Its habitat is frequently affected by environmental factors such as flash floods and landslides during the rainy season, significantly impacting its population. Therefore, conservation efforts in its natural habitat are necessary.

COSTACEAE *Hellenia lacera* (Gagnep.) Govaerts (**Figs. 1c, d**)

References: Phytotaxa 151: 64 (2013). Govaerts, R., Nic Lughadha, E., Black, N., Turner, R. & Paton, A. (2021). The World Checklist of Vascular Plants, 8: 215.

Habitat, phenology. Evergreen broad-leaved forests; 1,000–1,300 m. Flowering in August – September, fruiting in September–October. The native range of this species is Nepal to China (Yunnan, Guangxi). It is a rhizomatous geophyte and grows primarily in the subtropical biome.

Distribution. China (Yunnan, Guangxi. South-Central, Southeast, East Himalaya, Tibet), Myanmar, Nepal, Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, Growing along the stream in the dense forest, N 22°22'19.6"; E 102°13'04.4"; 1,209 m, 5 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 281* [HN].

EUPHORBIACEAE *Mallotus tetracoccus* (Roxb.) Kurz (**Figs. 1e, f**)

References: J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 245 (1873). Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.) (2008). Flora of China 11: 1–622.

Habitat, phenology. Mountain slopes, forests; 800–1300 m. Flowering in April–May, fruiting in May. The native range of this species is the Indian Subcontinent to China (SW. Yunnan) and Indo-China. It is a tree that grows primarily in the wet tropical biome.

Distribution. China (SW. Yunnan, South-Central, East Himalaya, Tibet), Bangladesh, India, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°20'42.7"; E 102°21'44.8"; 553 m, 21 April 2024, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh,*

Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 616 [HN].

FABACEAE *Dalbergia dyeriana* Prain (Figs. 1g, h)

References: J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 70: 44 (1901). Wu, Z. & Raven, P.H. (eds.) (2010). Flora of China 10: 1–642.

Habitat, phenology. Mountain slopes, among bushes and thickets, along valleys;

700–1,500 m. Flowering in August–September, fruiting in September–October. The native range of this species is Central & S. China. It is a climber and grows primarily in the temperate biome.

Distribution. China (North-Central, South-Central, Southeast, Gansu, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan, Zhejiang), Vietnam (Dien Bien: Muong Nhe Nature Reserve).

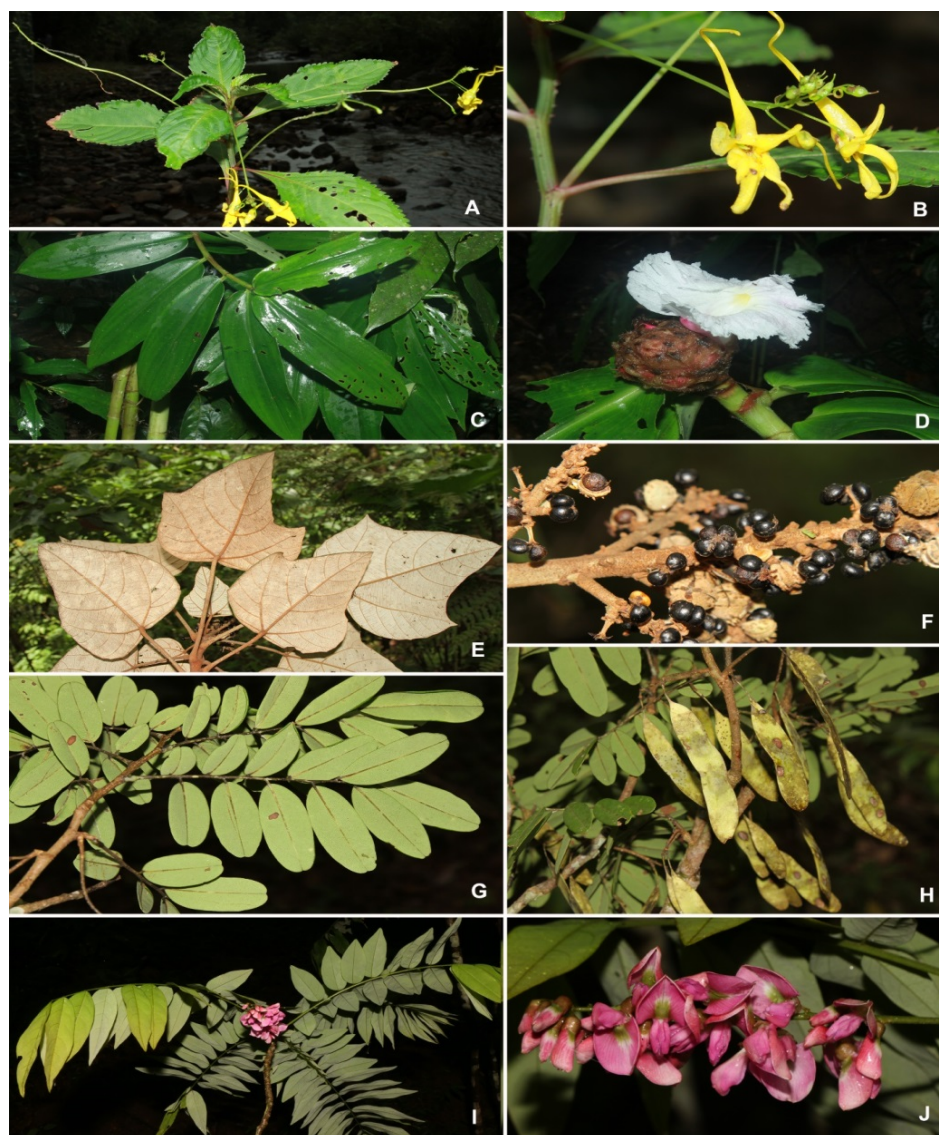


Figure 1. A–B. Balsaminaceae *Impatiens longiloba* Craib., C–D. Costaceae *Hellenia lacera* (Gagnep.), E–F. Euphorbiaceae *Mallotus tetracoccus* (Roxb.) Kurz Govaerts., G–H. Fabaceae *Dalbergia dyeriana* Prain, I–J. *Millettia pulchra* var. *laxior* (Dunn) Z. Wei [Photos T.D. Thien]

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°18'06.09"; E 102°22'21.48"; 1,016 m, 9 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh*, TQA 591 [HN].

FABACEAE *Millettia pulchra* var. *laxior* (Dunn) Z. Wei (**Figs. 1i, j**)

References: Z. Wei, Acta Phyto-tax. Sin. 23: 280. 1985. Wu, Z. & Raven, P.H. (eds.) (2010). Flora of China 10: 1–642.

Habitat, phenology. Thickets on riverbanks; 200–1,100 m. Flowering in August–September, fruiting in September. The native range of this variety is S. China to Hainan. It is a shrub or tree and grows primarily in the subtropical biome.

Distribution. China (South-Central, China Southeast, Hainan, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Yunnan), India, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°22'87.2"; E 102°13'24.9"; 985 m, 4 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh*, TQA 288, 522 [HN].

FABACEAE *Mucuna sempervirens* Hemsl. (**Figs. 2a, b**)

References: J. Linn. Soc., Bot. 23: 190 (1887). Wu, Z. & Raven, P.H. (eds.) (2010). Flora of China 10: 1–642.

Habitat, phenology. Forests, thickets, riversides; 300–3,000 m. Flowering in March–April, fruiting in August–October. The native range of this species is Central & S. China. It is a climbing shrub or liana and grows primarily in the subtropical biome.

Distribution. China (Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang). Bhutan, NE. India (W. Bengal, Manipur, Sikkim), Japan, Myanmar. Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°23'12.3"; E 102°14'19.4"; 749 m, 24 March 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh*, TQA 198 [HN].

Notes. *Mucuna sempervirens* is easily distinguished by its distinct flower from most other species with large purple flowers and its leaves without persistent stipels. It is often confused with *M. macrocarpa*, which differs by its legume without a distinct rounded margin and with a coarser surface patterning, its bicoloured flowers with pubescent apex, and its leaves often with reddish hairs. *Mucuna calophylla* also lacks persistent stipels but has much smaller flowers and fruit, and has leaves usually densely silky abaxially. This species is used medicinally and for paper-making, starch, and oil (Wu, Z. & Raven, P.H., 2010).

FABACEAE *Spatholobus gengmaensis* C.F. Wei (**Figs. 2c, d**)

References: Bull. Bot. Res., Harbin 5(2): 53 (1985).

Habitat, phenology. Open forests or secondary forests, mountain tops, 500–800 m. Flowering in March–April. The native range of this species is China (Yunnan). It is a climbing shrub and grows primarily in the subtropical biome.

Distribution. China South-Central, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Chung Chải commune, Doan Ket village, Muong Nhe Nature Reserve, official patrol road, Border Marker Line 67–68, N 22°23'12.3"; E 102°14'19.4"; 749 m, 20 March 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh*, TQA 15, 146 [HN].

FABACEAE *Teyleria stricta* (Kurz) A.N. Egan & B. Pan (**Figs. 2e, f**)

References Phytotaxa 218: 208 (2015). Wu, Z. & Raven, P.H. (eds.) (2010). Flora of China 10: 1–642.



Figure 2. **A–B.** Fabaceae *Mucuna sempervirens* Hemsl., **C–D.** *Spatholobus gengmaensis* C.F.Wei, **E–F.** *Teyleria stricta* (Kurz) A.N.Egan & B.Pan, **G–H.** *Wisteria sinensis* (Sims) DC., **I–J.** Gesneriaceae *Aeschynanthus speciosus* Hook. [Photos T.D.Thien]

Habitat, phenology. Forests, among grasses; 700–1,200 m. Flowering in May–June, fruiting in September–October. The native range of this species is China (Yunnan) to Indo-China. It is a scrambling shrub and grows primarily in the wet tropical biome.

Distribution. China South-Central, Laos, Myanmar, Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°22'19.6"; E

102°13'04.4''; 1,209 m, 4 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 266, 317* [HN].

FABACEAE *Wisteria sinensis* (Sims) DC. (Figs. 2g, h)

References Prodr. 2: 390 (1825). Wu, Z. & Raven, P.H. (eds.) (2010). Flora of China 10: 1–642.

Habitat, phenology. Mountain forests; 500–1,800 m. Flowering in April–May, fruiting in May–August. The native range of this species is Central & S. China. It is a liana and grows primarily in the temperate biome.

Distribution. China (Anhui, Fujian, NE. Guangxi, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, S. Shanxi, Zhejiang), Japan, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°23'24.4''; E 102°13'68.0''; 833 m, 4 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, TQA 206* [HN].

GESNERIACEAE *Aeschynanthus speciosus* Hook. (Figs. 2i, j)

References Bot. Mag. 73: t. 4320 (1847). Middleton, D.J. (2016). Gardens' Bulletin Singapore 68: 1–63.

Habitat, phenology. Mountain forests; 1,000–1,300 m. Flowering in August, fruiting in September–October. The native range of this species is Peninsula Thailand to W. Malesia. It is an epiphytic subshrub and grows primarily in the wet tropical biome.

Distribution. Borneo, Jawa, Malaya, Sumatera, Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°22'10.6''; E 102°12'95.4''; 1,253 m, 5 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, TQA 321* [HN].

POLYPODIACEAE *Davallia napoensis* F.G.Wang & F.W.Xing (Figs. 3a, b)

References: Novon 21: 380 (2011). Roskov Y. & al. (eds.) (2018). World Ferns: Checklist of Ferns and Lycophytes of the World. Species 2000 & ITIS Catalogue of Life Naturalis, Leiden, the Netherlands.

Habitat, phenology. Epiphytic on limestone substrate in humid places, near mountain summits; 1,200 m. The native range of this species is China (Guangxi). It is an epiphyte.

Distribution. China, Guangxi (Napo), Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Leng Su Sin commune, Muong Nhe Nature Reserve, N 22°17'50.29''; E 102°23'14.86''; 633 m, 7 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 334, 538* [HN].

POLYPODIACEAE *Lepisorus luchunensis* Y.X.Lin (Figs. 3c, d)

References: Fl. Reipubl. Popularis Sin. 6(2): 346 (2000). Roskov Y. & al. (eds.) (2018). World Ferns: Checklist of Ferns and Lycophytes of the World. Species 2000 & ITIS Catalogue of Life Naturalis, Leiden, the Netherlands.

Habitat, phenology. On tree trunks in evergreen broad-leaved forests; 1,500–1,600 m. The native range of this species is China (Yunnan). It is an epiphyte.

Distribution. China (Yunnan (Lüchun)), Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Leng Su Sin commune, Muong Nhe Nature Reserve, N 22°17'50.29''; E 102°23'14.86''; 633 m, 7 August 2023, *Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 333* [HN].

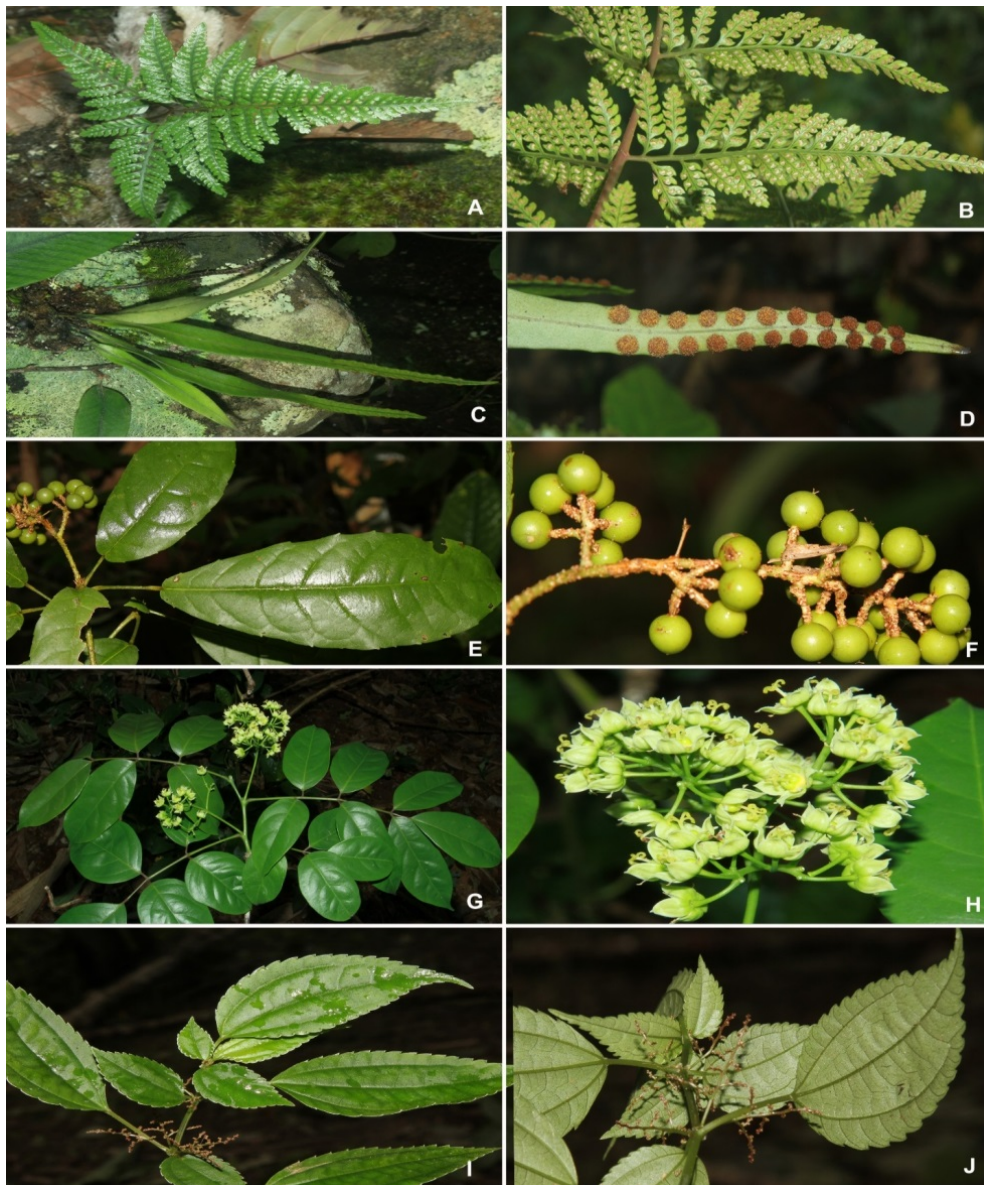


Figure 3. **A–B.** Polypodiaceae *Davallia napoensis* F.G.Wang & F.W.Xing, **C–D.** *Lepisorus luchunensis* Y.X.Lin, **E–F.** Salicaceae *Bennettiodendron leprosipes* (Clos) Merr., **G–H.** Simaroubaceae *Picrasma chinensis* P.Y.Chen, **I–J.** Urticaceae *Pilea scripta* (Buch.-Ham. ex D.Don) Wedd. [Photos T.D.Thien]

SALICACEAE *Bennettiodendron leprosipes* (Clos) Merr. (**Figs. 3e, f**)

References: J. Arnold Arbor. 8: 11 (1927). Wu, Z., Raven, P.H. & Hong, D. (eds.) (2007). Flora of China 13: 1–548.

Habitat, phenology. Evergreen broad-leaved forests; 400–1,800 m. Flowering in

March–April, fruiting in May–November. The native range of this species is Arunachal Pradesh to S. China and Thailand, Sumatera to Jawa. It is a shrub or tree and grows primarily in the wet tropical biome.

Distribution. China (Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Yunnan),

Bangladesh, India, Indonesia (Java, Sumatra), Myanmar, Thailand, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Leng Su Sin commune, Muong Nhe Nature Reserve, N 22°17'50.29"; E 102°23'14.86"; 633 m, 4 August 2023, Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 627,726 [HN].

SIMAROUBACEAE *Picrasma chinensis* P.Y.Chen (**Figs. 3g, h**)

References: Acta Bot. Austro Sin. 1: 71 (1983). Wu, Z. & Raven, P.H. (eds.) (2008). Flora of China 11: 1–622.

Habitat, phenology. Sparse forests, mountain thickets; 600–1,400 m. Flowering in April–May, fruiting in June–August. The native range of this species is Tibet to China (Yunnan, Guangxi). It is a tree and grows primarily in the temperate biome.

Distribution. China (Guangxi, Xizang, Yunnan), Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°22'9.57"; E 102°14'6.53"; 725 m, 23 April 2024, Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 734 [HN].

URTICACEAE *Pilea scripta* (Buch.-Ham. ex D.Don) Wedd. (**Figs. 3i, j**)

References: Ann. Sci. Nat., Bot., sér. 4, 1: 187 (1854). Wu, Z. & Raven, P.H. (eds.) (2003). Flora of China 5: 1–505.

Habitat, phenology. Shaded moist places in broad-leaved forests; 2,000–3,000 m. Flowering in August, fruiting in August. The native range of this species is NE. Pakistan to China (W. Yunnan). It is a perennial or subshrub and grows primarily in the subtropical biome.

Distribution. China (S. Xizang, W. Yunnan), Bhutan, N. India, Myanmar, Nepal, Vietnam (Dien Bien: Muong Nhe Nature Reserve).

Specimens examined. Vietnam: Dien Bien province, Sin Thau commune, Muong Nhe Nature Reserve, N 22°22'8.72"; E 102°13'24.9"; 985 m, 5 August 2023, Vu Anh Thuong, Tran Duc Thien, Pham Duc Chinh, Nguyen Thi Thanh, Bui Hong Quang, Do Van Hai, Tran Duc Binh, TQA 354 [HN].

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- Decision No. 973/QD-UBND dated May 14, 2025. of the People's Committee of Dien Bien Province approving the Technical Outline of the Project "Establishing Muong Nha National Park based on upgrading Muong Nhe Nature Reserve".
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