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Microchirita bimaculata (GESNERIACEAE), A NEWLY RECORDED SPECIES FOR THE FLORA OF VIETNAM

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Abstract. Plant specimens coded as Dung 051120221 at Hanoi (HN) Herbarium of the Institute of Ecology and Biological Resources, were identified as *Microchirita bimaculata* (D. Wood) A. Weber & D. J. Middleton. This is a newly recorded species for the flora of Vietnam. The morphological comparison method is applied appropriately in the study. *Microchirita* in Vietnam includes 8 updated species: *M. aratriformis* (D. Wood) A. Weber & D. J. Middleton, *M. bimaculata* (D. Wood) A. Weber & D. J. Middleton, *M. hamosa* (R. Br.) Yin Z. Wang, *M. involucrata* (Craib) Yin Z. Wang, *M. lavandulacea* (Stapf) Yin Z. Wang, *M. minor* Z. B. Xin, T. V. Do & F. Wen, *M. purpurea* D. J. Middleton & Triboun, *M. rupestris* (Ridl.) A. Weber & D. J. Middleton. *M. bimaculata* is distinguished from the remaining 7 species by the characteristics of ”bracts absent; corolla yellow with a red-brown patch inside”. The identification key for species of the genus *Microchirita* currently known in Vietnam was established. *M. bimaculata* in Vietnam has been described in detail with accepted scientific name, synonym, morphological description, loc. class., typus, ecology, flower and fruit season, distribution, research sampling, images.

Keywords: *Microchirita bimaculata*, Gesneriaceae, Dak Nong, Vietnam, Thailand.

1. Introduction

The genus *Microchirita* (Gesneriaceae) is distributed from southern China to tropical Asia and includes 48 accepted species (POWO 2024) [1]. In Vietnam, there are 7 recorded

species [2]-[5] including *M. aratriformis* (D. Wood) A. Weber & D. J. Middleton, and *M. hamosa* (R. Br.) Yin Z. Wang, *M. involucrata* (Craib) Yin Z. Wang, *M. lavandulacea* (Stapf) Yin Z. Wang., *M. minor* Z.B.Xin, T.V.Do & F.Wen, *M. purpurea* D.J.Middleton & Triboun and *M. rupestris* (Ridl.) A.Weber & D.J.Middleton.

During studying samples at the HN Herbarium (Thiers 2024) [6], Institute of Ecology and Biological Resources and documents, plant specimens with the code Dung 051120221 (HN) were preliminarily identified as *Microchirita bimaculata*, which has yet recorded in Vietnam.

Microchirita bimaculata is a supplementary species in Vietnam's flora, playing an essential role in maintaining and enhancing biodiversity [7]. Although this species is currently not common, it significantly contributes to the ecosystem through genetic diversity, ecological balance, and environmental improvement. In the context of climate change and human impacts, *Microchirita bimaculata* and similar species support ecosystem resilience and adaptability.

The study of morphological characteristics of the specimens is necessary for their identification as *M. bimaculata* (D. Wood) A. Weber & D. J. Middleton. This is a newly recorded species for the flora of Vietnam.

2. Content

2.1. Materials and Methods

Materials: Specimens of *Microchirita* in Vietnam are stored in Hanoi Herbarium, Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology.

Methods: The morphologically compared method is used for the study. Major morphological characteristics are observed, described, recorded, and compared with other specimens of *Microchirita* and relevant documents [2]-[4]. An identification key has been established for *Microchirita* in Vietnam. Based on the key, the scientific name and description of the species was determined. Morphological characteristics of specimens coded as Dung 051120221 were compared with type specimens and original morphological description of *Microchirita immaculate*.

2.2. Results

2.2.1. Morphological description of *Microchirita bimaculata* (D. Wood) A. Weber & D. J. Middleton

Taxon 60(3): 778 (2011); C. Puglisi & D.J. Middleton, Gardens' Bulletin Singapore 69(2): 224-228 (2017).

Synonym. *Chirita bimaculata* D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 368 (1972); Wood, Notes Roy. Bot. Gard. Edinburgh 33: 196 (1974); Burtt, Thai Forest Bull., Bot. 29: 87 (2001).

Herb: 50 cm tall, internodes 2-10 cm long. Stems: succulent, unbranched. Leaves: usually opposite, apart from the basal leaf; petiole 0.2-2.5 cm long, pubescent; leaves

green above, light green below, lanceolate or ovate, 3.2-30 × 1.4-19 cm; base cordate, rounded or attenuate; apex acuminate or acute; upper surface pubescent, lower surface glabrous or pubescent; leaf margins without hairs or with few hairs, entire; secondary veins 8-15 paired. Inflorescences: the peduncle is reduced to 15 mm long and usually grows along the petiole; bracts absent; the petiole is 5-20 mm long and pubescent; bud apex truncate or acuminate outside pubescent; flowers bilaterally symmetrical. Calyx: tube 0.3-1 mm long; lobe elliptic or lanceolate to linear, tip outside and margin pubescent, 5-10 × 0.7-1.8 mm; apex acuminate; margin entire, occasionally toothed. Corolla: to 21 mm long; petals fused, upper lip 2 lobes, lower lip 3 lobes; yellow with a red-brown patch (consisting of two red-brown spots fused) inside, pubescent; base of tube glabrous, broader part sparsely hairy; tube 10-19 mm long; lobes broadly elliptic, apex rounded, pubescent, upper lobes 1-4 × 2.5-5.1 mm, lateral lobes 2.5-5 × 3.3-6 mm, lower lobes 2.3-5.2 × 2.5-7.5 mm. Stamens: arising 5-11 mm above the corolla base; filaments straight, glabrous, 2-2.6 mm long, 0.2-0.6 mm wide; anthers pubescent, 1.1-2 × 0.6-1.1 mm. Disk: 0.2-0.9 mm high, white, glabrous. Pistil: 11.5-15 mm long; ovary 2-6 mm long, apex pubescent; style 5-7.5 mm long, pubescent; stigma 0.5-1.1 mm long, glabrous except for the hairy margin. Fruit: 1.5-5 cm long, 1.2-2 mm in diameter, usually curved, sometimes straight. Seeds: brown, narrowly elliptic, 0.3-0.4 × 0.1 mm.

Loc. class.: Thailand, Mae Klang Waterfalls, c. 50 km Southwest of Chiang Mai, c. 430 m.

Typus*:* Burtt, B.L. 5611 (holotype photo E [E00155280]).

Ecology, flower, and fruit season: In both Thailand and Vietnam, specimens of the species were collected at waterfalls. Flower and fruit season in November.

Distribution*:* India, Laos, Thailand. In Vietnam, species are found in Dak Nong (Dray Nur Waterfall).

Research specimens: Dak Nong (Dray Nur Waterfall), 5/11/2022, Ha Thi Dung, Dung 051120221 (HN Herbarium).

2.2.2. Identification key of genus *Microchirita* in Vietnam

1A. Bracts present

2A. Corolla violet, blue or red; corolla tube longer 12 mm .....*M. involucrata*

2B. Corolla white; corolla tube shorter 7 mm .....*M. rupestris*

1B. Bracts absent

3A. Corolla yellow with a red-brown patch (consisting of two red brown spots fused) inside ……..……..*M. bimaculata*

3B. Characteristics of the corolla are not as above

4A. The outer corolla lobes white

5A. The inside of the corolla with yellow vertical stripes; pistil 6-8 mm long, ovary 2-3 mm long .....*M. hamosa*

5B. The inside of the corolla without yellow vertical stripes; pistil about 16 mm long, ovary 14 mm long .....*M. minor*

4B. The outer corolla lobes are not white

6A. The outer corolla tube is partly or completely white .....*M. aratriformis*
6B. The outer corolla tube is violet, purple
7A. Ovary glabrous, style glabrous .....*M. purpurea*
7B. Ovary pubescent, style pubescent .....*M. lavandulacea*

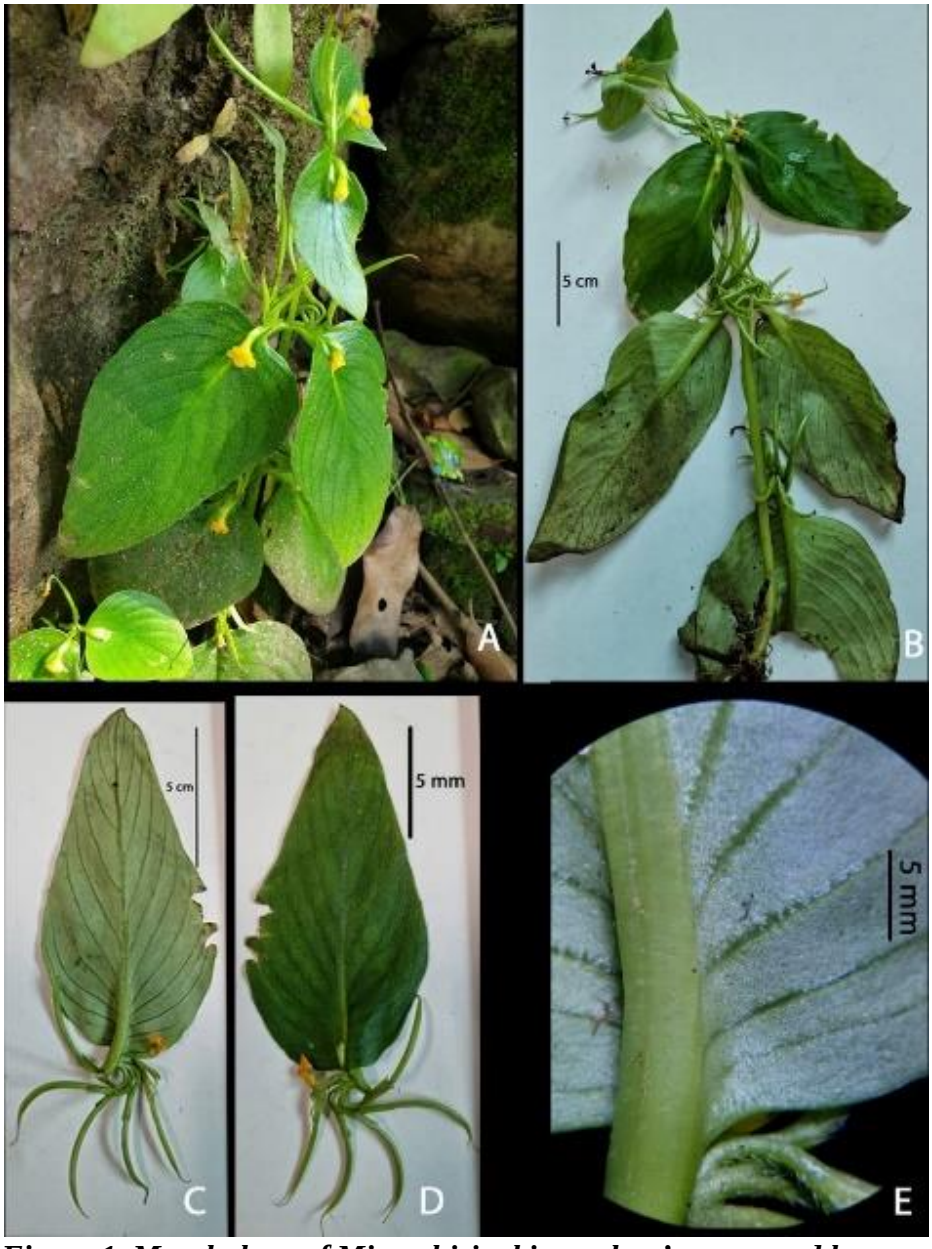

Figure 1. Morphology of Microchirita bimaculata's stems and leaves
A, B. flowering and fruiting branch, unbranched stem; C, D. leaves, inflorescences, fruits; E. leaf base (Photos: Vu Anh Thuong, 2024)

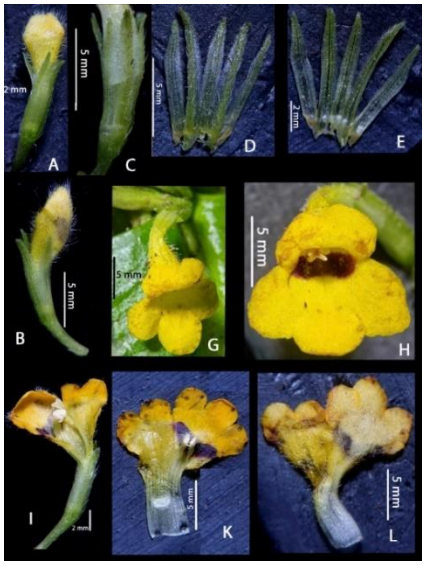

Figure 2. Morphology of Microchirita bimaculata's flowers
A. apex of flower bud truncate; B. apex of flower bud acuminate; C-E. calyx; G-H. bilaterally symmetrical flowers, petals fused, upper lip 2 lobes, lower lip 3 lobes; I-L. corolla opened (K: consisting of two red-brown spots fused)
(Photos: Vu Anh Thuong, 2024)

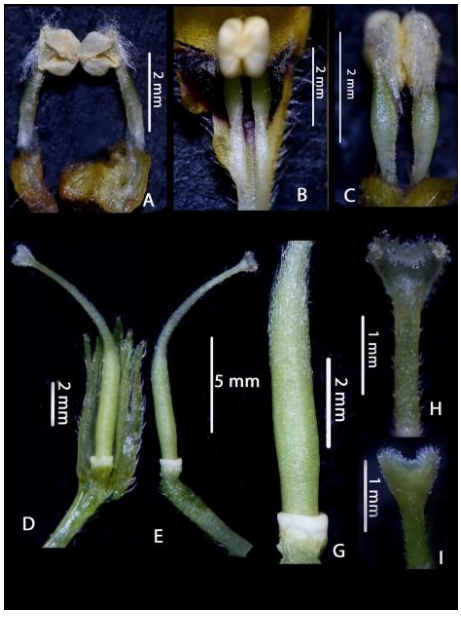

Figure 3. Morphology of Microchirita bimaculata's stamens and pistil
A-C. filament straight, anther pubescent; D. calyx opened, pistil; E. pistil; G. disk at the base of ovary; H-I. style and stigma
(Photos: Vu Anh Thuong, 2024)

2.2.3. Discussion

M. bimaculata is distinguished from the other 7 recorded *Microchirita* species in Vietnam by the characteristics of ”bracts absent; corolla yellow with a red-brown patch (consisting of two red-brown spots fused) inside”.

This species has not been evaluated by the IUCN. It is identified in Vietnam from one set of specimens collected in Dak Nong province. This species also has not been found in other provinces, therefore its conservation status is recommended as DD.

The proposed Vietnamese name is “Tai voi nhỏ hai đốm,” in which "Tai voi nhỏ" is the genus name, “hai đốm” is the meaning of the species epithet “bimaculata” e.g. two red-brown spots inside the corolla.

3. Conclusions

Microchirita bimaculata (D. Wood) A. Weber & D. J. Middleton is a newly recorded species for the flora of Vietnam. Up to now, the genus *Microchirita* has been recorded with 8 species in Vietnam.

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

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