Tritaxis glabella (Euphorbiaceae) a new record for the flora of Vietnam

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Bổ sung loài *Tritaxis glabella* (Họ Euphorbiaceae) cho hệ thực vật Việt Nam

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ABSTRACT

The study reports the first record of Tritaxis glabella (Thwaites) R.Y.Yu & Welzen in the flora of Vietnam, confirming a significant eastward expansion of its geographical range within Southeast Asia. Based on field surveys and specimen collections conducted in 2024 at the Cu Lao Cham Nature Reserve, detailed morphological analyses were performed on fresh, dried, and alcohol-preserved materials. These findings were cross-referenced with taxonomic literature and plant specimens at the Vietnam National University of Forestry (VNUF), the Vietnam National Museum of Nature (VNMN), and the Herbarium of the Komarov Botanical Institute of the Russian Academy of Sciences (LE). The results confirm the presence of T. glabellus in Vietnam—a species previously known only from Southern India and Sri Lanka. In the study area, the species inhabits secondary dry evergreen forests at elevations of 50–150 m, reaching a height of up to 4 m, with a flowering and fruiting season from March to June. The voucher specimens of this species are housed in the herbarium of the Vietnam National University of Forestry (VNUF). The species is presented with a taxonomic description, ecology, geographical distribution, occurrence in Vietnam, and field photographs of new records. This discovery adds a fourth species to the genus Tritaxis in Vietnam, alongside T. poilanei, T. gaudichaudii, and T. annamensis.

***Từ khóa**:*
Euphorbiaceae, ghi nhận mới, Khu Bảo tồn thiên nhiên Cù Lao Chàm, Tritaxis, Tritaxis glabellus, Việt Nam.

TÓM TẮT

Nghiên cứu công bố loài ghi nhận mới Tritaxis glabellus (Thwaites) R.Y.Yu & Welzen cho hệ thực vật Việt Nam, đồng thời xác nhận sự mở rộng phạm vi phân bố của loài này về phía Đông trong khu vực Đông Nam Á. Thông qua các chuyến khảo sát thực địa về thực vật tại Khu Bảo tồn thiên nhiên Cù Lao Chàm vào năm 2024, nhóm nghiên cứu đã tiến hành phân tích hình thái chi tiết trên các mẫu tươi, mẫu khô và mẫu ngâm, kết hợp đối chiếu với tài liệu phân loại học và các bộ mẫu tại Trường Đại học Lâm nghiệp (VNUF), Bảo tàng Thiên nhiên Việt Nam (VNMN) và Viện Thực vật Komarov (LE). Kết quả khẳng định sự hiện diện của T. glabellus tại Việt Nam - loài vốn trước đây chỉ được biết đến ở Nam Ấn Độ và Sri Lanka. Tại khu vực nghiên cứu, loài này phân bố trong rừng thứ sinh thường xanh khô ở độ cao 50–150 m, đạt chiều cao tới 4 m và có mùa ra hoa - quả từ tháng 3 đến tháng 6. Mẫu tiêu bản khô của loài được lưu giữ tại phòng tiêu bản thực vật của Trường Đại học Lâm nghiệp (VNUF). Bài viết trình bày về loài ghi nhận mới gồm mô tả hình thái học, sinh thái học, phân bố địa lý và ảnh chụp mẫu ngoài thực địa. Phát hiện này đã bổ sung loài thứ tư cho chi Tritaxis tại Việt Nam, bên cạnh T. poilanei, T. gaudichaudii và T. annamensis.

1. INTRODUCTION

The genus *Tritaxis* Baill. (1858), a member of the Euphorbiaceae family, currently includes species formerly classified under the genus *Dimorphocalyx* Baill. [1, 2]. This is a relatively little-known genus comprising about 16 recognized species (Indo-Malesian) and distributed mainly in the tropical from Sri Lanka via Indomalesia to Australia [3, 4]. The characteristics of the genus *Tritaxis* are dioecious (rarely monoecious), pinnately venated leaves (mostly indistinct triple veins), white petals, and usually more than 10 (7–20) stamens, in which the outer stamens are usually separate or only attached to the base of the partially fused inner stamens [5]. In Vietnam, three species of this genus was recorded by Pham Hoang Ho (2003), namely: *Tritaxis poilanei* (Gagnep.) R.Y.Yu & Welzen (formerly *Dimorphocalyx poilanei* Gagnep.), *Tritaxis gaudichaudii* Baill., *Tritaxis annamensis* A. Chev. [6]. In 2024, during a field survey of the islands within the Cu Lao Cham Nature Reserve in central Vietnam, we collected an unusual species of *Tritaxis*, a species never before identified in the local plant list [7-9]. After careful morphological examination of the species and analysis of available literature as well as collections of different herbaria, namely VNF and LE (all acronyms following Thiers 2024) [10], this plant was identified as *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen (formerly *Dimorphocalyx glabellus* Thwaites) which was previously reported from India and Sri Lanka [11]. This is the first recorded instance of this species in the Vietnamese flora, data of which are presented in this paper.

2. RESEARCH METHODS

All collected and studied plant specimens of the newly discovered species are submitted and presently stored in the herbarium of the Vietnam National University of Forestry (VNF). Color photographs of the plants were taken in their natural habitats. Morphological observations and measurements were made on living plants, dried specimens, and alcohol-preserved materials. Morphological characters were described using the terminology proposed by Chakrabarty and Balakrishnan (1990) [11].

3. RESULTS AND DISCUSSION

Taxonomic treatmen

Tritaxis glabella (Thwaites) R.Y.Yu & Welzen, Taxon 68(5): 932. 2019; Govaerts et al., World Checkl. Bibliogr. Euphorb.: 1584 (2000). *Dimorphocalyx glabellus* Thw., Enum. Pl. Zeyl. 278. 1861; Hook. f., Fl. Brit. India 5: 403. 1887; Trimen, Handb. Fl. Ceylon 4: 54, fig. 84. 1898; Woodrow in J. Bombay Nat. Hist. Soc. 12: 371. 1899; Brandis, Indian Trees 581. 1906; Bourd., For. Trees Travancore 506. 1908; Pax and Hoffm. in Engler, Pflanzenr. IV. 147. iii: 32, figure 8. 1911; Haines, Bot. Bihar and Orissa 2: 115. 1921; Gamble, Fl. Pres. Madras 1337. 1925; Nair and Bhargavan in Indian J. For. 4: 158. 1981 (sphalm. "glabellatus") pro majore parte, excl. Bhargavan 47484. Types: Sri Lanka, Central Prov., no date; Thwaites CP 1046 (2167) (CAL: lectotype chosen herein); ibid., Thwaites CP 1046 (2167) (K: photo, G-DC: microfiche-2 sheets-isolectotypes). *Croton glabellus* Heyne apud. Wall. Cat. No. 8012 A and B. 1847, nomen nudum. *Croton ramiflorus* Graham, Cat. Pl. Bombay 182. 1839, e descr. Type: India, Maharashtra, Graham (n.v.). Trigonostemon lawianus sec. Mueil.-Arg. in Linnaea 34: 212. 1865 et in DC., Prodr. 15(2): 1105. 1866 (non *Croton lawianus* Nimmo 1839). *Dimorphocalyx lawianus* Hook. f., Fl. Brit. India 5: 404. 1887, synon. nov. Types: India, Malabar, Concan, etc., no date, Stocks, Law, etc. s.n. (MH-lectotype chosen herein, K: photo!).

Description (Figs. 1, 2, 3): Trees or sometimes scandent shrubs, dioecious or

sometimes monoecious, to 4 m tall; bark smooth, grey to brown; branchlets whitish, grey, brown or reddish brown, 1-5 mm thick, smooth, initially angled, finally terete. Leaves elliptic to oblanceolate, sometimes ovate to ovate-lanceolate, 2-8 cm long, 0.7-4 cm wide, obtuse to acute or often cuneate at base, crenate-serrate to entire at margins, to acute or often obtuse to rounded or cuspidate at apex, thinly coriaceous to chartaceous, remaining green or turning brownish, black or blackish carmine above when dry, paler beneath; midrib flat above, raised beneath; lateral nerves 8-12 pairs, very slender, obscure to prominent above, faint to distinct beneath, arcuate or somewhat straight, anastomosing near the margin and joining superadjacents forming loops; tertiary nerves obscure to prominent, reticulate or often tending to branch into nerves of higher order (transverse-ramified); petioles 5-10 mm long, shallowly channelled above. Male inflorescences axillary, solitary or cymes 2-3-flowered, up to 8-10 mm long, often with up to 2-3 mm long peduncles; Flowers pedicels 2-4 mm long; calyx cupular, shortly 5-lobed, 2-4 mm high, 3-5 mm diam.; lobes triangular to deltoid; petals five, oblong, obovate to spatulate-obovate, rounded at apex, 4.5–5.5 mm long, 2–3 mm wide; disk glands five, transversely oblong to obcordate, yellow puberulous at apex or glabrous; stamens 5+ 5(–6), the outer free to shortly and partially fused, the inner ones united into a column; outer filaments 1–3 mm long, inner united column 3–5 mm long; anthers ellipsoid to orbicular. Female inflorescences axillary and terminal, solitary or 1–few-flowered, umbellate or up to 4 - 5 cm long raceme, often with 1–3 cm long peduncles; bracts oblong to linear, 2–4 mm long, 0.5–1mm wide. Flowers pedicels 3–7 mm long, evanescently and ochraceous-puberulous to tomentellous; sepals five, subequal, free, spatulate, elliptic-oblong to obovate; petals five, elliptic, broadly oblong to obovate or suborbicular, 4–6 mm long, 2–3 mm wide, caducous; disk shortly cupular-annular or forming a ring, entire or crenate, 3–4 mm in diameter; ovary subglobose or trigonous-ovoid, 2–4 mm long, 2.5–5 mm in diameter, three-lobed, ochraceous; styles 3, 3–4 mm long, mostly shortly connate below into a 0.5–1 mm long puberulous column; lobes bifid above, erect or spreading. Capsules subglobose, tricoccous, dark brownish when dry; sepals accrescent.

Flowering and fruiting: March to July.

Distribution: Southern India and Sri Lanka, Vietnam (Cu Lao Cham Nature Reserve).

Habitat: This species has been found in Southern India and Sri Lanka, at elevations up to 1100 m, common in dry regions on sheer bare rock outcrop (scarce in evergreen forests). In Vietnam it was observed in secondary evergreen broad-leaved lowland dry forests with domination of *Pandanus tectorius* Parkinson, *Phyllanthus reticulatus* Poir., *Licuala paludosa* Griff., *Connarus semidecandrus* Jack, *Horsfieldia amygdalina* (Wall.) Warb at elevations of 50 – 150 m. Locally common.

Specimens examined: Vietnam: Da Nang city (formerly Quang Nam province), Cu Lao Cham Nature Reserve, dry evergreen broad-leaved secondary forest, around point 15°56′38″ N & 108°28′44″ E, at elevation 150 m, 09 March 2024, Nguyen Huu Cuong, Vo Dai Hai, Nguyen Hai Dang (VNUF: NHC20240309010). Vietnam: Da Nang city (formerly Quang Nam province), Cu Lao Cham nature reserve, dry evergreen broad-leaved secondary forest, around point 15°56’16”N, 108°32’02”E, at elevation of about 50 m, 09 July 2024, Nguyen Huu Cuong, Nguyen Hai Dang (VNF: NHC20240702050).

Note: *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen in Southern India and Sri Lanka have minor differences from the Vietnamese type specimen, including tree up to 4m tall (vs. up to 8m tall), flowers from March to July (vs. throughout the year) and habitat in the mountainous area at an altitude up to 150 m alt. (vs. up to 1100 m altitude).

Figure 1. *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen: (A-F) Plants in natural habitat
(Photos, correction, and plate design by Nguyen Huu Cuong)

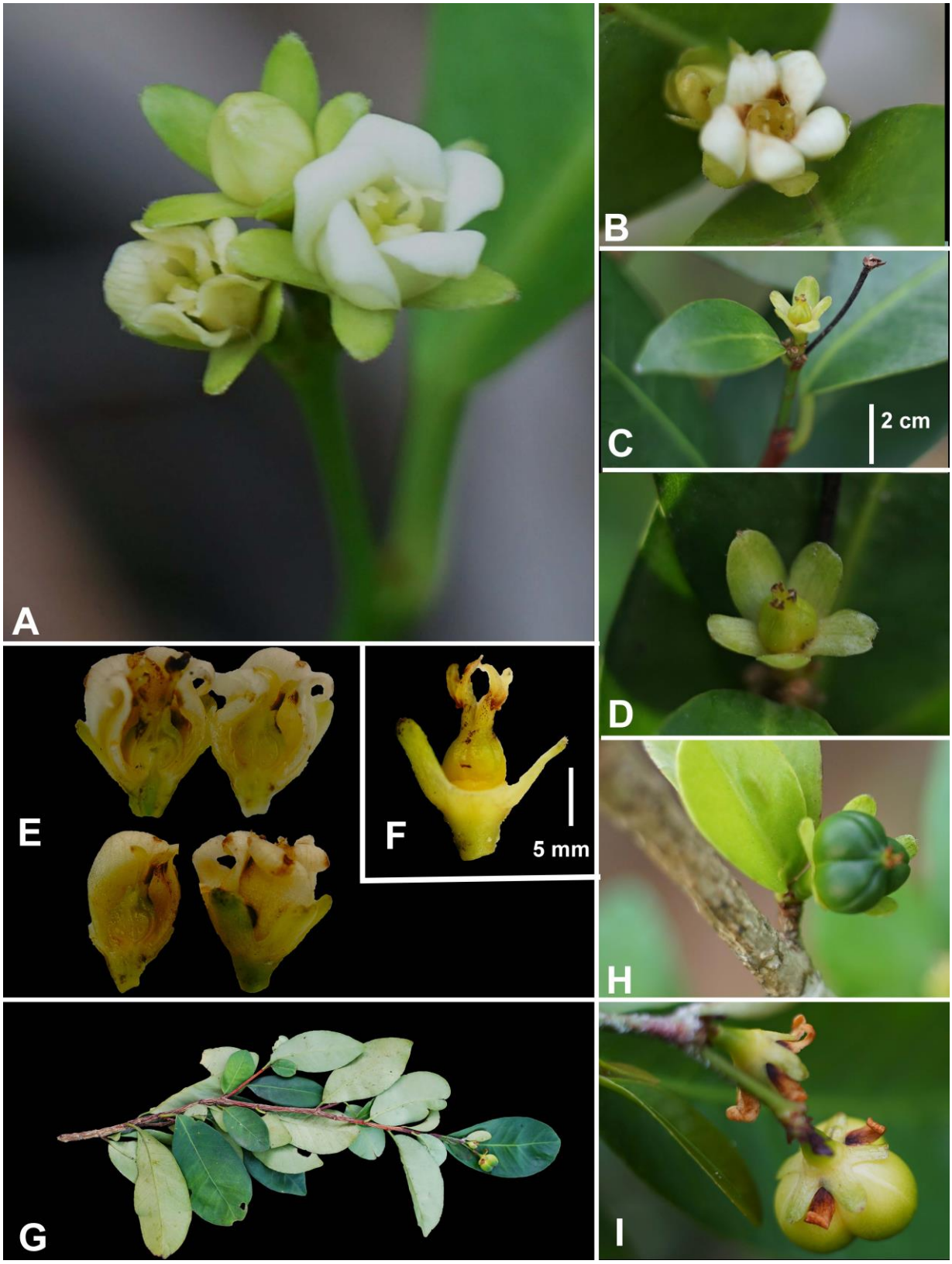

Figure 2. *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen: (A, B, E) Female flowers, views from different sides; (C, D, H, I) Fruits; (F) Pistillate flower; (G) Habitats

(Photos, correction, and plate design by Nguyen Huu Cuong)

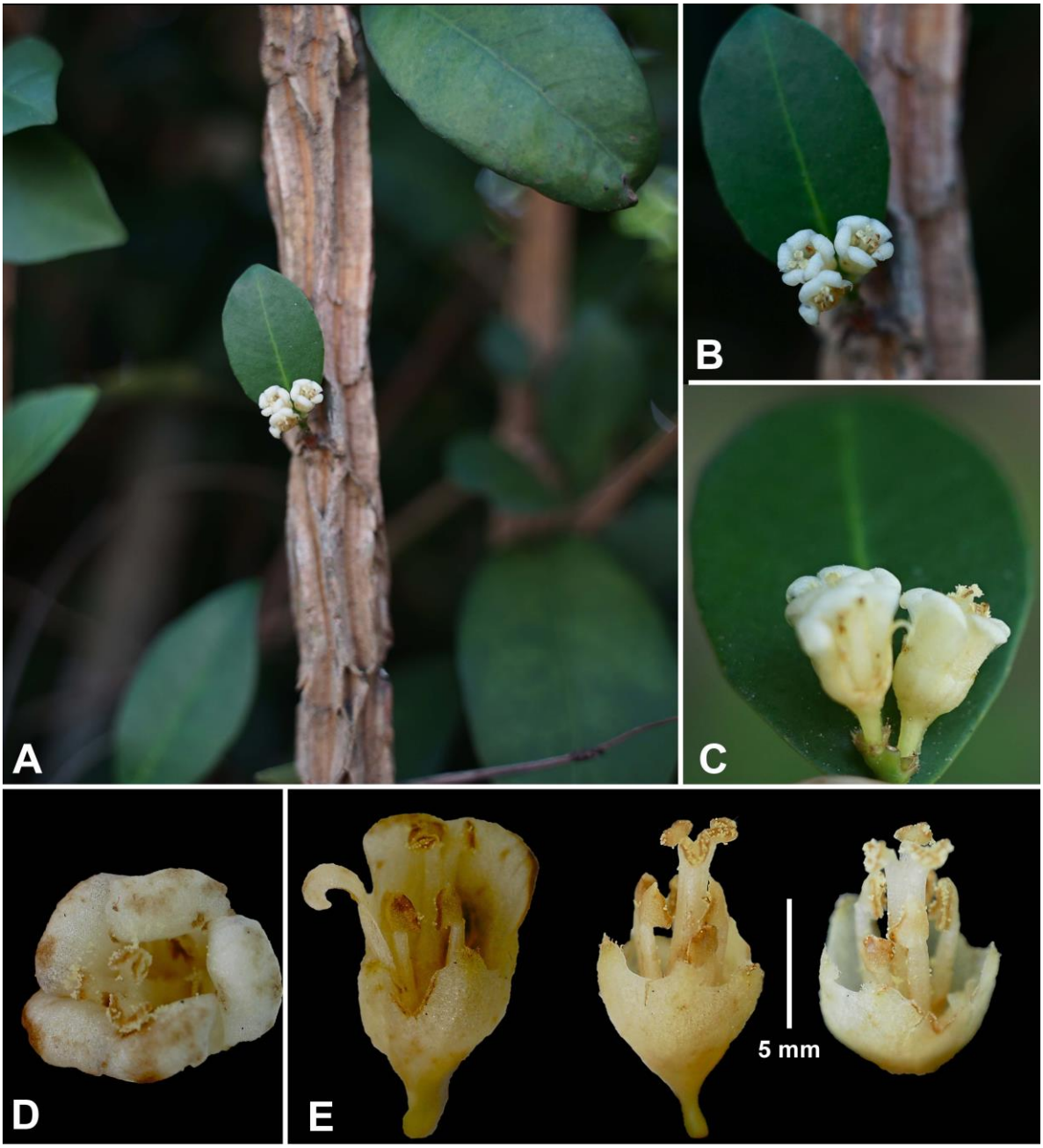

Figure 3. *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen: (A - C) Habitat; (D) Male flower (top view); (E) Male flower (side view)

(Photos, correction, and plate design by Nguyen Huu Cuong)

4. CONCLUSION

The botanical surveys and specimen collections in 2024 within the Cu Lao Cham Nature Reserve confirm the presence of *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen in the Vietnamese flora, marking a major eastward expansion of the species' geographical range from its previously known limits in Southern India and Sri Lanka. This discovery adds a significant taxon to the genus in Vietnam, which was previously represented only by *Tritaxis poilanei*, *T. gaudichaudii*, and *T. annamensis*.

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REFERENCES

[1]. Rafaël Govaerts, D. G. Frodin & A. Radcliffe-Smith (2000). World checklist and bibliography of Euphorbiaceae (with Pandaceae): Introduction; Euphorbiaceae: general references; Euphorbiaceae: Aalius-Crossophora. Royal Botanic Gardens, Kew, Kew.

[2]. POWO (2024). *Tritaxis glabella* (Thwaites) R.Y.Yu & Welzen. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet: kew.org (Accessed 15 February 2026).

[3]. Tapas Chakrabarty & Gopal Krishna (2020). An overlooked new variety of *Tritaxis glabella* from India with a note on the consequent new synonyms of *Croton lawianus* (Euphorbiaceae). Plant Science Today. 7(3): 302-307.

[4]. PC Van Welzen & AF Van Oostrum (2015). Revision of the Malesian species of *Dimorphocalyx* (Euphorbiaceae). Blumea-Biodiversity, Evolution and Biogeography of Plants. 59(3): 191-201.

[5]. HK Airy Shaw (1974). Notes on Malesian and Other Asiatic Euphorbiaceae. Kew Bulletin. 281-331.

[6]. Pham Hoang Ho (2000). An Illustrated Flora of Vietnam. Vol. 2. Young Publishing House, Ho Chi Minh City. 182-295.

[7]. Pham Thi Kim Thoa, Nguyen Van Hieu, Nguyen Thi Thu Hang, Nguyen Hai Dang, Vo Dai Hai & Nguyen Huu Cuong (2024). Plant diversity in special use forests, Quang Nam province. Vietnam Journal of Forest Science. 2: 48-59.

[8]. Nguyen Hai Dang, Vo Dai Hai & Nguyen Huu Cuong (2026). Assessment of forest status dynamics in Cu Lao Cham, Tan Hiep commune, Da Nang city. Vietnam Journal of Forest Science. 2: 104-116.

[9]. Nguyen Hai Dang, Vo Dai Hai & Nguyen Huu Cuong (2024). Current status of harvest and use of non-timber forest products in Hon Lao island, Cu Lao Cham. Vietnam Journal of Forest Science. 2: 60-69.

[10]. BM Thiers (2025). Index Herbariorum. Available at http://sweetgum. nybg. org/science/ih.

[11]. T Chakrabarty & NP Balakrishnan (1990). Genus *Dimorphocalyx* Thw.(Euphorbiaceae) in India. Proceedings/Indian Academy of Sciences. Springer. 285-299.