

***Curcuma corallina* (Zingiberaceae: Zingiberoideae), a new species from south-central Vietnam**

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ABSTRACT. *Curcuma corallina* N.S.Lý & Škorničk., a new ginger species discovered in the south-central region of Vietnam, is described here with colour plates and notes on its distribution, habitat, phenology, etymology, and a preliminary IUCN conservation assessment. It is placed in *Curcuma* subg. *Ecomatae* Škorničk. & Šída f. and, for diagnostic purposes, is compared to *C. rhomba* Mood & K.Larsen, which is superficially similar in overall plant habit, a lack of bracteoles, and flower colour, but differs in rhizome structure, and the shape, size and colour of various floral parts.

Keywords. *Curcuma rhomba*, *Curcuma* subgenus *Ecomatae*, deciduous forest, endemic species, monocots, Zingibereae

Introduction

Curcuma L. (Zingiberaceae: Zingibereae) is naturally distributed in South and Southeast Asia, and South China, with a few species extending to northern Australia and the South Pacific (Záveská et al., 2012; Leong-Škorničková & Newman, 2015; POWO, 2025). The highest species richness is found in monsoonal Southeast Asia (Leong-Škorničková et al., 2007, 2015a, 2015b, 2017; Wu & Larsen, 2000). With 177 accepted names (POWO, 2025), it is one of the largest genera of the ginger family. Based on morphology and phylogenetic studies, three subgenera are currently recognised: *Curcuma* subg. *Curcuma* L., *C.* subg. *Hitcheniopsis* (Baker) Schumann, and *C.* subg. *Ecomatae* Škorničk. & Šída f. (Záveská et al., 2012). Further information

on the genus and the general outline of *Curcuma* in Vietnam were recently given in Leong-Škorničková et al. (2015a, 2020, 2021) and are therefore not repeated here.

The most recent Flora of Vietnam (Nguyễn, 2017) lists only 19 species of *Curcuma*, but it does not include numerous species described prior to its publication such as *C. pambrosima* (Leong-Škorničková & Lý, 2010), *C. vitellina* Škorničk. & H.Đ.Trần (Leong-Škorničková et al., 2010), *C. leonidii* Škorničk. & Luu (Leong-Škorničková & Luu, 2013), *C. pygmaea* Škorničk. & Šída f. (Leong-Škorničková et al., 2013), *C. newmanii* Škorničk., *C. xanthella* Škorničk. (Leong-Škorničková & Trần 2013), *C. arida* Škorničk. & N.S.Lý, and *C. sahuynhensis* Škorničk. & N.S.Lý (Leong-Škorničková et al., 2015a). Since 2017, additional species have also been described (Luu et al., 2017; Nguyễn, 2017; Nguyễn et al., 2017, 2022, 2023; Trần et al., 2019), with the total number of species in Vietnam currently standing at 31, with all three subgenera well represented.

While carrying out floristic investigations in Ninh Thuan Province, south-central Vietnam in July 2007, the first author observed several sterile plants of an unknown species of *Curcuma* in Phuoc Binh National Park, Bac Ai District (formerly Phuoc Binh Nature Reserve, Ninh Son District, currently Nui Chua-Phuoc Binh NP, Khanh Hoa Province). In September 2022 and 2023, the same location was revisited to collect specimens, observe and photograph these plants in flower. The lack of conspicuous coma bracts and the shape of the flower, in particular the stamen with prominent blunt round knob protruding forward and positioned above the spur just below the thecae, placed this species in *Curcuma* subg. *Ecomatae* (Záveská et al., 2012). Critical examination of the flowers from living material, dried specimens, and comparison with type material and protologues of all related *Curcuma* species in Vietnam and neighbouring countries (e.g., Wu & Larsen, 2000; Nguyễn, 2017; Leong-Škorničková et al., 2022; Leong-Škorničková & Saensouk, 2023; Leong-Škorničková et al., 2023) revealed that these specimens are morphologically most similar to *C. rhomba* Mood & K.Larsen (Mood & Larsen, 2001), but differ in their vegetative and floral structures. The species is therefore described and illustrated here as *Curcuma corallina* N.S.Lý & Škorničk. Differences from other morphologically similar species such as *Curcuma cotuana* Luu, Škorničk. & H.Đ.Trần (Luu et al., 2017), *C. tuanii* H.T.Nguyen et al. (Nguyen et al., 2023), and *C. sahuynhensis* are also discussed.

Materials and methods

Morphological observations and measurements were carried out on living flowering plants in their habitat at the type locality, and formed the basis of the description, which was further supplemented by observations of herbarium specimens, including flowers preserved in spirit. All extant herbarium material of *Curcuma* was examined at AAU, BK, BKF, BM, CMU, E, K, L, P, PSU, QBG, SING, and VNM (Thiers, continuously updated), as well as images of specimens available on JSTOR Global Plants (www.plants.jstor.org) and GBIF (www.gbif.org). The general terminology used follows Beentje (2016), and the style of description follows the recent works

of Leong-Škorničková et al. (2013, 2014, 2017, 2020, 2021, 2022). The preliminary conservation assessments are based on the guidelines of the IUCN Standards and Petitions Committee (2024).

On 1 July 2025, Ninh Thuan Province was subsumed into Khanh Hoa Province, with the political and administrative center located in Nha Trang City. On the same day, the two National Parks in Ninh Thuan Province, Nui Chua National Park and Phuoc Binh National Park were merged into Nui Chua-Phuoc Binh National Park. The information in the type citation, and in the section with additional specimens examined follows the information as given on the herbarium labels, with current administrative boundaries stated in square brackets.

Taxonomic treatment

***Curcuma corallina* N.S.Lý & Škorničk., sp. nov.**

Resembles *C. rhomba* Mood & K.Larsen in its overall plant habit, lack of bracteoles, flower colour, and anther shape, but differs in having a much-branched rhizome (vs rhizome unbranched, except a single branch leading to a new shoot); coral pink and larger corolla lobes (dorsal 23–36 × 8–13 mm, lateral 21–24 × 8–11 mm vs dorsal c. 19 × 5 mm, lateral c. 18 × 4 mm, all rich red); a larger, broadly obovate labellum (19–24 × 16–21 mm) with a bluntly bilobed apex and an incision not exceeding one-third the length of the labellum (vs labellum c. 17 × 9 mm, narrowly rhomboid with a sharply bilobed apex and incision extending beyond half the length of the labellum); larger, broadly ovate staminodes (18–26 × 14–20 mm) that are rich orange with a paler base (vs c. 17 × 11 mm, narrowly rhomboid, uniformly orange with dark red dots at the base); and a shorter, truncate to slightly emarginate anther crest c. 0.5 mm long, not exceeding the stigma (vs rounded crest c. 1 mm long, exceeding the stigma). – TYPE: Vietnam, Ninh Thuan Province [now Khanh Hoa Province], Bac Ai District, Phuoc Binh Commune, Phuoc Binh National Park [now Nui Chua-Phuoc Binh NP], Gia Nhong stream, 11°59'41.80"N 108°44'37.26"E, 405 m, 4 September 2023, *Lý Ngọc Sâm, Phan Nhật Minh & Cao Ngọc Giang Lý-1916* (holotype VNM [VNM00074443]; isotypes PHH, SING, VNM [VNM00074444]). (Figs 1, 2)

Terrestrial rhizomatous herb to 1.2 m tall. **Rhizome** much branched, main rhizome somewhat obovoid, 3.7–4.2 (–8) × 1.2–1.5 cm, branches 3.5–8.5 cm long, irregularly terete in cross-section, up to 1.5 cm diam., bearing secondary branches, pale brown/ochraceous externally, pale yellow internally, slightly aromatic; **root tubers** ovoid to fusiform, 2–4 × 1–2 cm. **Leafy shoot** with 4–8 leaves when flowering; **pseudostem** (8–)15–30(–37) cm long, composed of leaf sheaths; **bladeless sheaths** 3–5, (5–)10–27(–32) cm long, cream-white at base, tinged with rich brownish-red to pink-red distally, glabrous, fully decayed at anthesis; **leaf sheaths** white at base, gradually more green with reddish tinge, margin translucent whitish and puberulous; **ligule** 4–10 mm long, bilobed, lobes rounded to obtuse, hyaline, semi-translucent white, turning papery brown with age, somewhat pubescent; **petiole** 6.5–25 cm long (petiole of first

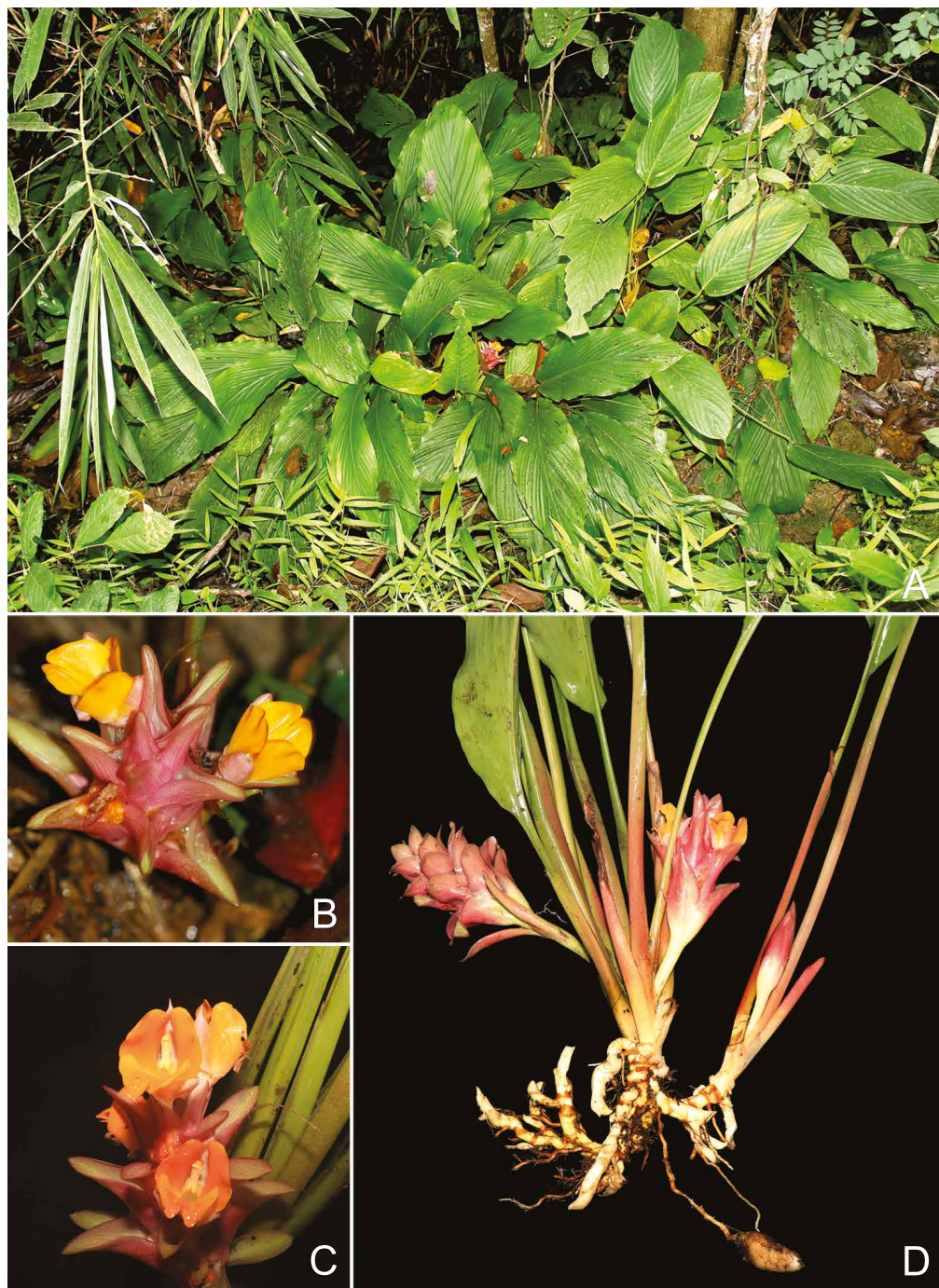


Fig. 1. *Curcuma corallina* N.S.Lý & Škorníčk. **A.** Flowering plant in natural habit. **B.** Inflorescence (top view). **C.** Flowers (front view). **D.** Basal part of a flowering plant showing rhizome with root tubers, pseudostem with leaf sheaths and petioles, and inflorescences. All from the type collection, *Lý-1916*. (Photos: A, B, N.G. Cao; C, D, N.S. Lý)

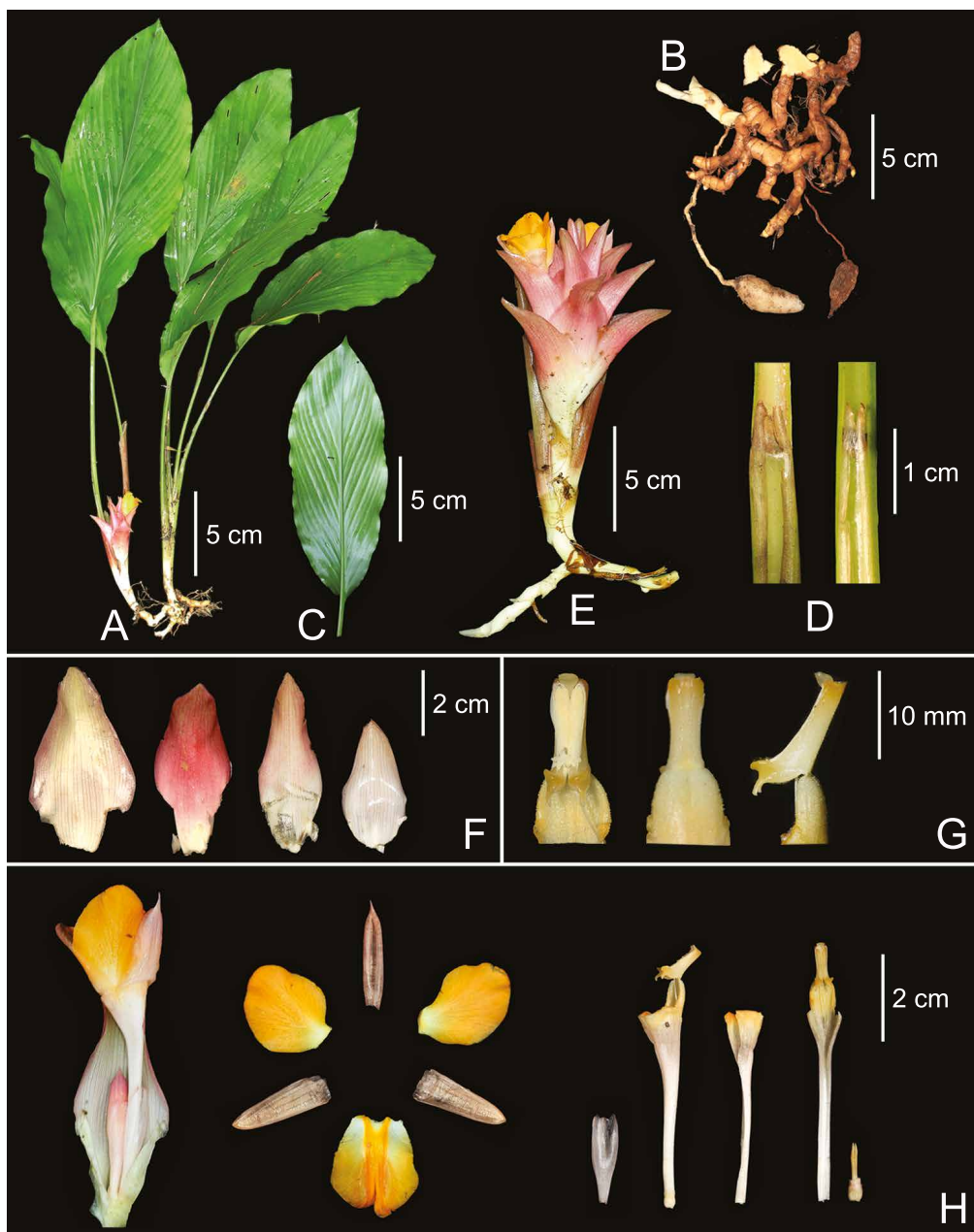


Fig. 2. *Curcuma corallina* N.S.Lý & Škorníček. **A.** Flowering plant. **B.** Rhizome with root tubers. **C.** Leaf (abaxial view). **D.** Ligules from a flowering plant (left) and a young plant (right). **E.** Inflorescence. **F.** Fertile bracts. **G.** Stamen in front, back and side views. **H.** A bract from the middle part of the thyse supporting two flowers followed by the flower dissection: dorsal corolla lobe, lateral staminodes, lateral corolla lobes and labellum, calyx, floral tube with ovary and stamen attached, longitudinal dissection of floral tube, and ovary and epigynous glands. All from the type collection, *Lý-1916*. (Photos: A, D, N.G. Cao; B, C, E–H, N.S. Lý)

outermost leaf shortest, innermost leaves longer), canaliculate, green, glabrous; *leaf blade* broadly elliptic to oblong elliptic, 29–48.5 × 9.5–17 cm, prominently plicate, adaxially green, glabrous throughout entire leaf blade, abaxially lighter green, glabrous, midrib glabrous, leaf margin light green, base attenuate or slightly cordate or rounded, slightly oblique, apex acute to attenuate, tip 0.5–1 cm long, pubescent. **Inflorescence** central, somewhat breaking through the pseudostem, many-flowered; *peduncle* (4.5–)7.5–16 cm long, 0.4–0.6 cm diam., mostly embedded within pseudostem, sparsely puberulous; *thyrses* 6–11 cm long, 4.5–6.5 cm diam. in the middle, composed of 9–24 fertile bracts, coma bracts absent; *fertile bracts* ovate with acute apex, (3.4–)4–6.3 × (1.1–)1.4–2.4 cm (largest at the base of the inflorescence), connate in basal 1/3(–1/4), gradually smaller and more ovate towards the apex, margins curved inwards, abaxially white at base with increasing degree of coral pink tinge towards apex and margins, adaxially whitish with green tinge distally, with hyaline margins and acute apices, sparsely puberulous on both sides, enclosing cincinnus with 2–3 flowers at the base of the inflorescence, gradually decreasing upwards to 1 flower; *bracteoles* absent. **Flowers** 5.5–7.4 cm long, much exserted from the bracts; *calyx* (14–)16–20(–24) mm long, 3-toothed, unilaterally split 8–10 mm, semi-translucent with pink-red tinge, sparsely pubescent at apex of teeth; *floral tube* (33–)36–47(–55) mm long, 2–3 mm diam. at base, 9–12 mm diam. distally, externally white at basal 2/3, gradually with pale pink tinge distally, glabrous at basal c. 1/3, sparsely puberulent distally, internally white at the base, gradually cream to pale yellow distally, mostly glabrous at basal 2/3, pubescent distally at the point of widening, with dorsally placed groove holding the style; *dorsal corolla lobe* triangular elliptic-oblong with mucronate apex and sides rolled inwards, 23–36 × 8–13 mm, coral pink and glabrous on both sides, mucro c. 2 mm long, with a few sparse hairs; *lateral corolla lobes* triangular elliptic with hooded blunt apex, 21–24 × 8–11 mm, glabrous, pale reddish outside, cream white inside, with translucent veins and hyaline margin; *labellum* broadly-obovate, 19–24 × 17–21 mm, 9–10 mm broad at base, 17–21 mm at widest point, apex bluntly bifid with an incision 7–9 mm long, white at base (except median band), gradually rich yellow-orange distally, with a darker and thicker median band running through the centre, abaxially glabrous, adaxially with dense short glandular hairs along the sides of the median band, glabrous towards margin; *lateral staminodes* unequally broadly ovate with obtuse to round apex, 22–26 × 14–20 mm, rich yellow-orange throughout but paler at base, adaxially with glandular hairs at basal 1/3, glabrous distally, abaxially glabrous, margin with a few glandular hairs at base. **Stamen** 12–15 mm long; *filament* 6–8 mm long, 7–8 mm broad at base, 1.5–2 mm broad at apex (the point of attachment to the connective), light yellow to pale orange, densely covered with glandular hairs; *anther* 8–9(–11) mm long, spurred, connective pale yellow-orange, darker at apex and spurs, densely covered with short glandular hairs (especially dorsally, less so on the sides); *anther spurs* 1–1.5 mm long, outward-pointing but slightly curved and with apex slightly pointing backwards, each with prominent blunt round knob protruding forward positioned above the spur just below the thecae; *anther crest* c. 0.5 mm long, entire, with irregularly truncated or slightly emarginate apex and margin, orange, with short glandular hairs; *anther thecae* 7–7.5 mm long, narrowly obovoid,

dehiscing along their whole length; pollen white. **Epigynous glands** 2, 7–9 mm long, c. 0.5 mm diam., apex acute, cream. **Style** thin, white, glabrous, held in groove in dorsal side of floral tube; **stigma** c. 1.5 mm long, c. 2 mm wide, cream, ostiole ciliate, facing upwards. **Ovary** cylindrical, 3–3.5 × 2–2.2 mm, trilocular, pale cream, sparsely pubescent, placentation axile. **Fruit** and **seeds** not seen.

Distribution. Endemic to south-central Vietnam; currently known only from the type locality in Nui Chua-Phuoc Binh National Park, Khanh Hoa Province.

Habitat and phenology. The species grows in the forest understorey and along stream banks in secondary semi-deciduous broadleaf forest at elevations of approximately 300–500 m, dominated by species such as *Shorea obtusa* Wall. ex Blume, *Dipterocarpus obtusifolius* Teijsm. ex Miq. and *Lagerstroemia calyculata* Kurz. It is also found in secondary broadleaf-bamboo mixed forest, where bamboo species such as *Bambusa procera* A.Chev. & A.Camus, *Pseudobambusa schizostachyoides* (Kurz) T.Q.Nguyen, and *Schizostachyum zollingeri* Steud. grow intermixed with timber species including *Lagerstroemia calyculata* Kurz, *Azelia xylocarpa* (Kurz) Craib and *Cratoxylum formosum* (Jack) Benth. & Hook.f. ex Dyer. Flowers from September to October; fruit not observed.

Etymology. The specific epithet is derived from Latin ‘*corallinus*’ and refers to the coral pink bracts and corolla lobes of the new species.

Proposed vernacular name and uses. *Nghệ hồng san hô*, *Nghệ san hô* (Vietnamese; coral pink turmeric). No uses were so far reported by the local people.

Provisional IUCN conservation assessment. Phuoc Binh section of the newly merged Nui Chua-Phuoc Binh National Park covers approximately 250 km² and is located on the eastern slopes of Da Lat plateau in the transition zone between three regions of Southeast, South-central, and Central Highlands of Vietnam. The new species is locally abundant in secondary semi-deciduous broadleaf forest and secondary broadleaf-bamboo mixed forest in the buffer zone of Phuoc Binh section of the Nui Chua-Phuoc Binh NP, which is legally protected. We therefore provisionally assess this species as Least Concern (LC) according to IUCN Standards and Petitions Committee (2024).

Additional specimens examined. VIETNAM: **Ninh Thuan Province [now Khanh Hoa Province]:** Bac Ai District, Phuoc Binh NP [now Nui Chua – Phuoc Binh NP], 11.99323°N 108.74378°E, 388 m, 8 Sep. 2022, *Lý Ngọc Sâm et al. Lý-1867* (VNM [VNM00074440]); ibidem, 11°58'58.85"N 108°44'58.62"E, 303 m, 3 Sep. 2023, *Lý Ngọc Sâm et al. Lý-1905* (VNM [VNM00074441]); ibidem, 11°59'14.42"N 108°44'52.33"E, 347 m, 4 Sep. 2023, *Lý Ngọc Sâm et al. Lý-1907* (VNM [VNM00074442]).

Notes. The main differences with the morphologically closest species, *Curcuma rhomba*, were already given in the diagnosis, but additionally these two species can be easily distinguished in the field by the shape and proportions of labellum and lateral

staminodes. Apart from the absolute sizes of the respective parts, the proportions of these parts differ between the two species (best seen in side view of the flower) with the lateral staminodes in *Curcuma corallina* being slightly longer than the labellum, while in *C. rhomba* the labellum is significantly longer than the lateral staminodes (for details of the flower of *C. rhomba*, refer to figure 2 in Leong-Škorníčková et al., 2022). Additionally, the flowering times of the two species are also distinct, with *Curcuma rhomba* flowering from late June to early August, while *C. corallina* flowers in September and October.

In Vietnam, *Curcuma corallina* might also be confused with *C. tuanii*, *C. cotuana*, and *C. sahuynhensis* by general habit, and colour and shape of the leaves, inflorescences and flowers. All three species can be segregated from *Curcuma corallina* by the presence of the bracteoles and L-shaped anther with prominent 3–5 mm long anther spur (for details of the flowers and anthers refer to figures in Leong-Škorníčková et al., 2015a, 2022; Luru et al., 2017). *Curcuma corallina* is the second species from *Curcuma* subg. *Ecomatae* discovered in the former Ninh Thuan Province (currently subsumed under Khanh Hoa Province). The first species, *Curcuma arida*, was described from semi-arid forest of Nui Chua NP, a site about 70 km southeast of Phuoc Binh NP, but the species are morphologically very different and cannot be confused with each other even in herbarium material (see figures 1 & 2 in Leong-Škorníčková et al., 2015a).

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References

- Beentje, H. (2016). *The Kew Plant Glossary: An Illustrated Dictionary of Plant Terms*, 2nd ed. UK: Royal Botanic Gardens, Kew.
- IUCN Standards and Petitions Committee (2024). *Guidelines for Using the IUCN Red List Categories and Criteria*, ver. 16. Prepared by the Standards and Petitions Committee. Available from: <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.
- Leong-Škorníčková, J. & Luru, H.T. (2013). *Curcuma leonidii*, a new species from southern Vietnam. *Phytotaxa* 126(1): 37–42.
- Leong-Škorníčková, J. & Lý, N.S. (2010). *Curcuma pambrosima* sp. nov. (Zingiberaceae) from central Vietnam. *Nord. J. Bot.* 28: 652–655.
- Leong-Škorníčková, J. & Newman M.F. (2015). *Gingers of Cambodia, Laos & Vietnam*. Singapore: National Parks Board, Singapore Botanic Gardens.

- Leong-Škorničková, J. & Saensouk, S. (2023). *Curcuma*. In: Chayamarit, K., Balslev, H., Newman, M.F., Barfod, A.S., Esser, H.-J., Simpson, D.A., Parnell, J.A.N. & Sangvirodjanapat, S. (eds), *Zingiberaceae, Flora of Thailand*, vol. 16, pt. 2, pp. 414–476. Bangkok: The Forest Herbarium, Department of National Parks, Wildlife and Plant Conservation.
- Leong-Škorničková, J. & Trần, H.Đ. (2013). Two new species of *Curcuma* subgen. *Ecomatae* (Zingiberaceae) from southern Vietnam. *Gard. Bull. Singapore* 65: 169–180.
- Leong-Škorničková, J., Šída, O., Jarolímová, V., Sabu, M., Fér, T., Trávníček, P. & Suda, J. (2007). Chromosome numbers and genome size variation in Indian species of *Curcuma* (Zingiberaceae). *Ann. Bot.* 100: 505–526.
- Leong-Škorničková, J., Trần, H.Đ. & Newman, M.F. (2010). *Curcuma vitellina* (Zingiberaceae), a new species from Vietnam. *Gard. Bull. Singapore* 62: 111–117.
- Leong-Škorničková, J., Šída, O. & Trần, H.Đ. (2013). *Curcuma pygmaea* sp. nov. (Zingiberaceae) from Vietnam and notes on two related species *C. parviflora* and *C. thorelii*. *Nord. J. Bot.* 31(6): 639–647.
- Leong-Škorničková, J., Šída, O. & Bouamanivong, S. (2014). Three new ginger species (Zingiberaceae) from Laos. *Blumea* 59: 106–112.
- Leong-Škorničková, J., Lý, N.S. & Nguyen, Q.B. (2015a). *Curcuma arida* and *C. sahuynhensis*, two new species from subgenus *Ecomata* (Zingiberaceae) from Vietnam. *Phytotaxa* 192: 181–189.
- Leong-Škorničková, J., Šída, O., Záveská, E. & Marhold, K. (2015b). History of infrageneric classification, typification of supraspecific names and outstanding transfers in *Curcuma* (Zingiberaceae). *Taxon* 64(2): 362–373.
- Leong-Škorničková, J., Middleton, D.J., Triboun, P. & Suddee, S. (2017). *Curcuma prasina* (Zingiberaceae), a new species from Thailand. *Edinburgh J. Bot.* 74(2): 245–250.
- Leong-Škorničková, J., Soonthornkalump, S. & Suksathan, P. (2020). *Curcuma cinnabarina* and *C. eburnea* (Zingiberaceae: Zingiberoideae), two new species from Thailand. *Edinburgh J. Bot.* 77(3): 391–402.
- Leong-Škorničková, J., Soonthornkalump, S. & Thongbai, W. (2021). Four new *Curcuma* species from Thailand. *Blumea* 65: 244–253.
- Leong-Škorničková, J., Soonthornkalump, S., Niwesrat, S. & Lim, S.Q. (2022). *Curcuma lindstromii* (Zingiberaceae: Zingiberoideae), a new species from southeastern Thailand. *Gard. Bull. Singapore* 74(2): 243–250.
- Leong-Škorničková, J., Soonthornkalump, S., Lindström, A.J., Niwesrat, S., Lim, S.Q. & Suksathan, P. (2023). *Curcuma maxwellii* and *C. rubroaurantiaca* (Zingiberaceae, Zingiberoideae), two new species from Thailand. *Phytokeys* 235: 237–248.
- Luu, H.T., Trần, H.Đ., Nguyễn, T.Q.T. & Leong-Škorničková, J. (2017). *Curcuma cotuana* sp. nov. (Zingiberaceae: Zingibereae) from central Vietnam. *Nord. J. Bot.* 35(5): 552–556.
- Mood, J. & Larsen, K. (2001). New curcumas from South-east Asia. *New Plantsman* 8: 207–217.
- Nguyễn, Q.B. (2017). *Flora of Vietnam: Zingiberaceae Lindl.*, vol. 17, 489 pp. Hanoi: Publishing House for Science and Technology.
- Nguyen, Q.B., Hoang, A.T., Nguyen, V.D., Tran, T.V.T., Nguyen, P.H., Nguyen, M.C. & Nguyen, T.T. (2017). A new record species for Flora of Vietnam - *Curcuma singularis* Gagnep. (Zingiberaceae). *VNU J. Sci., Nat. Sci. Techn.* 33(1): 25–29.
- Nguyen, D.D., Le, T.A., Hoang, Q.H., Le, Q.T. & Nguyen, E. (2022). Two new taxa of *Curcuma* sect. *Ecomata* (Zingiberaceae: Zingibereae), from coastal Central Vietnam. *Biodiversitas* 23: 2512–2519.

- Nguyen, H.T., Nguyen, N.A., Averyanov, L., Nguyen, D.D. & Le, C.T. (2023). *Curcuma tuanii* (Zingiberaceae) a new species of subgenus *Ecomata* from northern Vietnam based on morphological and molecular evidence. *Acta Bot. Bras.* 37: e20230028.
- POWO (2025). *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. <http://powo.science.kew.org>. Accessed 1 Aug. 2025.
- Thiers, B. (continuously updated). *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden. <http://sweetgum.nybg.org/science/ih/>. Accessed 1 Aug. 2025.
- Tran, T.L., Cao, N.G., Tran, M.N., Nguyen, M.K., Ha, V.L. & Ly, N.S. (2019). First record of *Curcuma sparganiifolia* Gagnep. (Zingiberaceae) from Vietnam. *Biosci. Discov.* 10(1):10–15.
- Wu, D.L. & Larsen, K. (2000). *Zingiberaceae*. In: Wu, Z.Y., Raven, P. & Hong, D.Y. (eds), *Flora of China*, vol. 24, pp. 322–377. Beijing: Science Press; and St. Louis: Missouri Botanical Garden Press.
- Záveská, E., Fér, T., Šída, O., Krak, K., Marhold, K. & Leong-Škorničková, J. (2012). Phylogeny of *Curcuma* (Zingiberaceae) based on plastid and nuclear sequences: Proposal of the new subgenus *Ecomatae*. *Taxon* 61(4): 747–763.