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**The genus *Typhonium* Schott (Araceae) in Java, Indonesia**

The genus *Typhonium* Schott comprises more than 70 species with a vast geographic range, extending from Mongolia through tropical regions of Asia and reaching as far south as northern and eastern Australia (POWO 2025). The genus consists of small, seasonal geophytic herbs with a (sub)globose tuber or short rhizome. Leaves vary in number and shape, ranging from simple to decomposed with diverse leaflet forms. Inflorescences typically emerge after leaf development on a short or long peduncle. The spathe, ovate to lanceolate, is divided by a constriction below the staminate zone, with a limb often coloured pale to deep purple, rarely whitish or pinkish. The spadix includes a basal pistillate zone, a sterile zone with staminodes, a staminate zone, and a sterile appendix that varies in length, shape, and orientation, from erect to pendulous, narrowly conical to tail-like (Serebryanyi *et al.* 2023).

The most recent taxonomic review of the genus *Typhonium* Schott in Indonesia was conducted by Hariri and Husaini (2020), who documented the presence of two species in Java: *T. flagelliforme* (G.Lodd.) Blume and *T. roxburghii* Schott. Historically, confusion regarding the identification of *T. roxburghii* led to its misclassification as *T. trilobatum* (L.) Schott in Java by previous researchers, including Backer and Bakhuizen van den Brink (1968), Soerjani *et al.* (1987), and Trimanto and Hapsari (2017). This misidentification was primarily due to the close morphological resemblance between the two species, particularly their trilobed leaf blade. However, a closer morphological examination reveals that *T. trilobatum* can be distinguished from *T. roxburghii* by its long,

filiform sterile flowers, which are intricately intertwined, a distinctive feature that sets it apart from other *Typhonium* species found in Java.

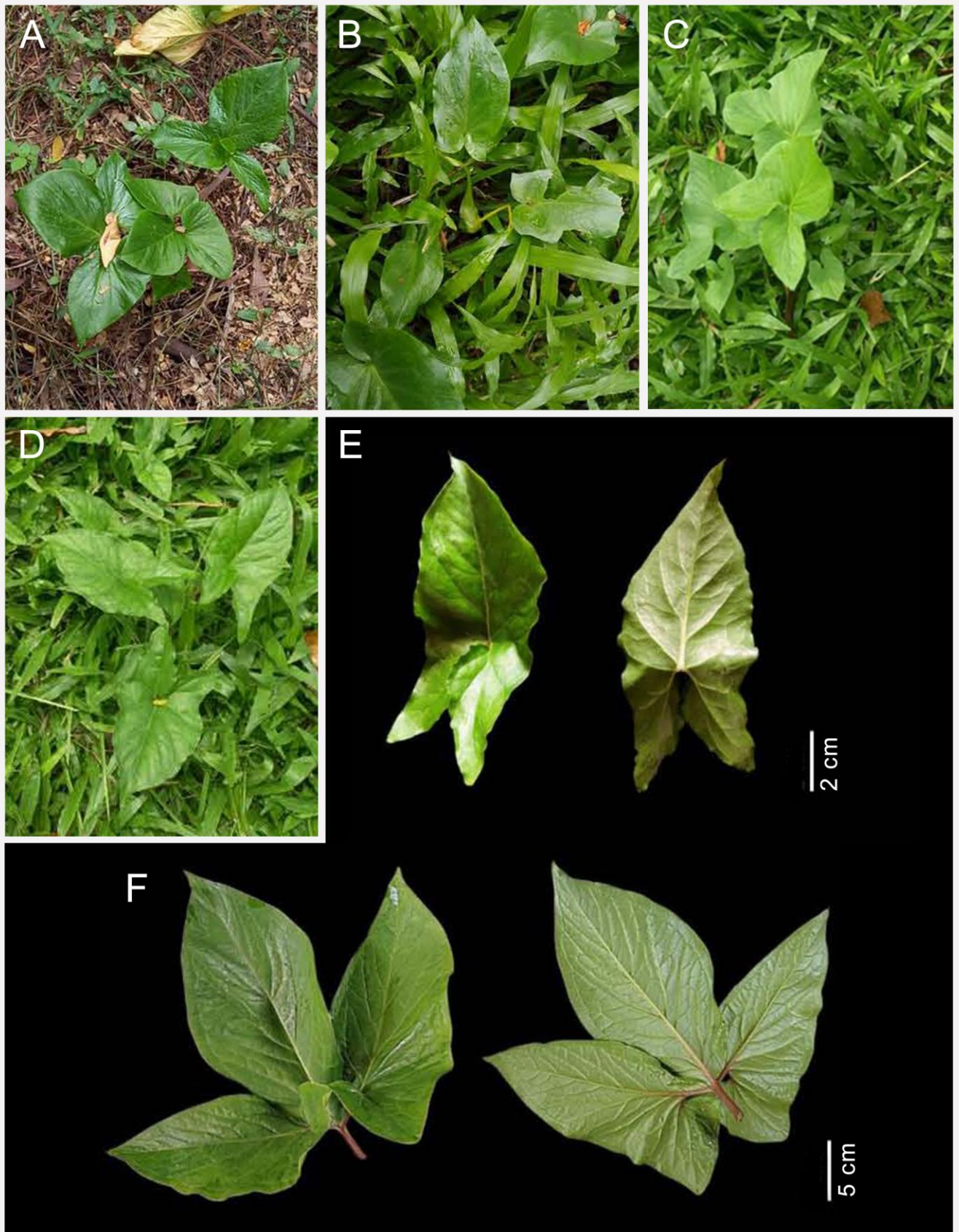
During botanical surveys conducted between 2024 and 2025, two previously unrecorded species of *Typhonium* were collected in Bogor: *T. blumei* Nicolson & Sivad. and *T. trilobatum*. Both species are non-native to Java, suggesting that their populations in Bogor are likely the result of naturalization. However, there is a lack of historical data regarding the introduction of these species to Java. This study provides detailed species descriptions, an updated identification key, and a brief discussion on the implications of these records.

*Typhonium blumei* Nicolson & Sivad., 1981  
 (Figs. 1, 2)

**Specimen examined.** Indonesia, West Java, Dramaga, IPB University, 27 January 2025, ASD Irsyam & MR Hariri ASDI 924 (FIPIA).

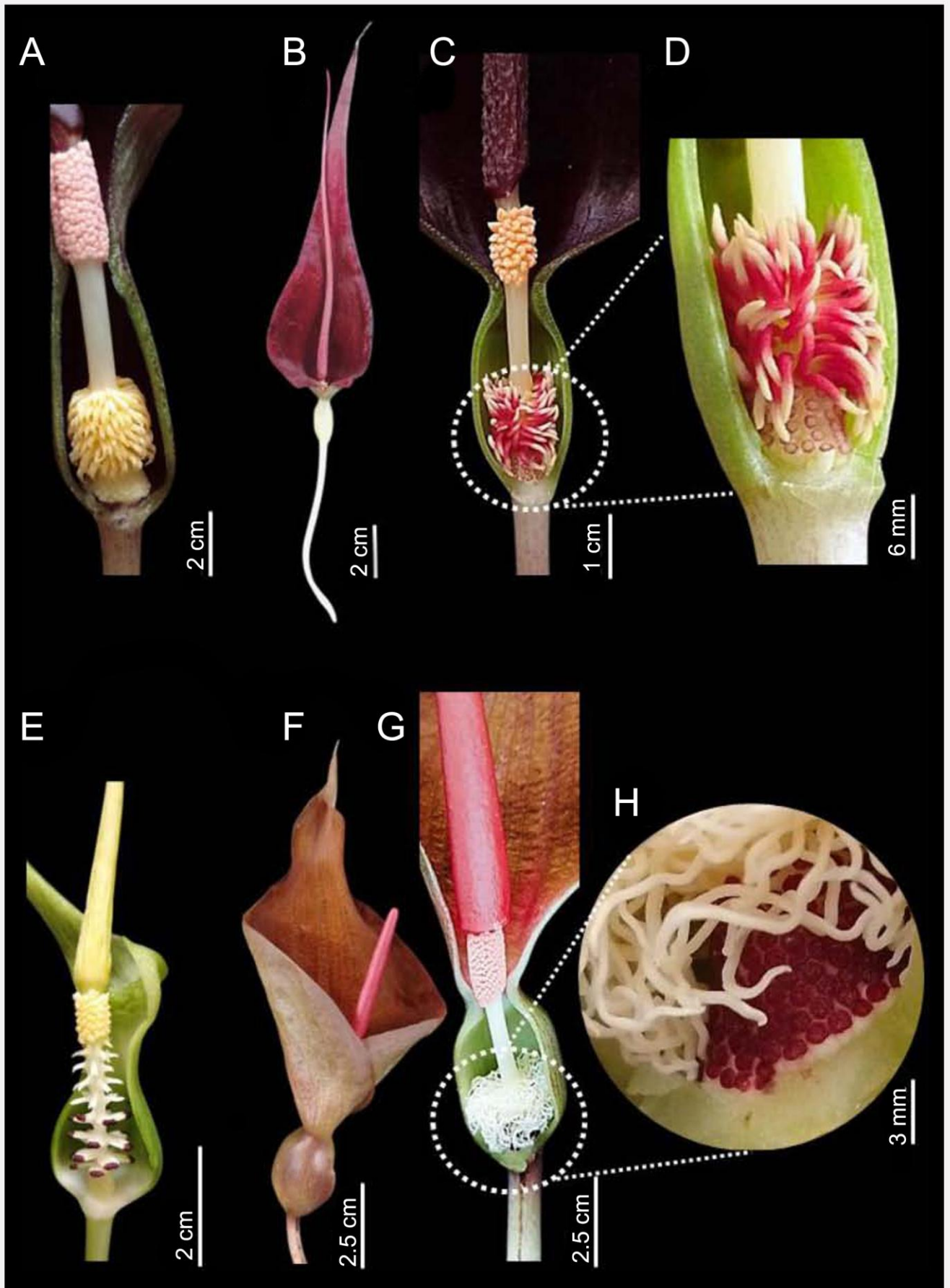
**Description.** *Tuberous herbs*, up to 18 cm in height; *tubers* subglobose, up to 3 × 1.3 cm, ca. 1 cm thick, usually surrounded by many smaller tubers. *Leaves* erect spreading; *sheath* adnate to petiole, persistent, up to 5 cm long, apex acute; *petiole* up to 15.3 cm long, brown; *leaf blade* sagittate; *anterior lobe* ovate to broadly ovate, 5–8.2 × 3.9–6.4 cm, apex acuminate; *lateral lobes* unequal, ovate-oblong, 3.2–4.6 × 1.7–3 cm; adaxial surface yellowish green to dark green, abaxial surface shiny pale green. *Inflorescences* solitary; *peduncle* ca. 9.2 cm long; *spathe* convolute; lower spathe persistent, green outside, green inside, ca. 1.8 × 0.8 cm; limb soon withering, ovate-lanceolate, ca. 8.5 × 4.8 cm, gradually tapering from well above the middle, maroon to purplish red, velvety; *spadix* erect, sessile, ca. 17.8 cm long; *pistillate flower zone* ca. 4 mm long, white; *pistillate flowers* in 5 whorls, densely arranged; pistils obconical, ca. 1

# Plate 7



**Figure 1.** *Typhonium* in habitat: (A) *T. trilobatum*, (B) *T. flagelliforme*, (C) *T. roxburghii*, (D) *T. blumei*; and adaxial and abaxial leaf surfaces of (E) *T. blumei* and (F) *T. trilobatum*

# Plate 8



**Figure 2.** Floral parts of (A) *Typhonium roxburghii*, (B-D) *T. blumei*, (E) *T. flagelliforme*, (F-H) *T. trilobatum*. All spathes were dissected to maximise their illustrative value

mm long, white; stigma sessile, button-like, white with red margin; *staminodes* absent; *sterile portion* ca. 6 mm long, covered with curved and decurved acicular sterile flowers, red with white apex on the 1/3 part; naked interstice ca. 1 cm long, yellowish white; *staminate flower zone* cylindrical, ca. 7 mm long, orange; *staminate flowers* densely arranged, consisting of 2 stamens; *appendix* flagelliform, ca. 15.1 cm long, swollen at base, apex tapering, maroon, with ca. 2 mm long stipe.

**Phenology.** May–June and December–February.

**Distribution.** The species is naturally distributed from Southern China to Indochina, and from Nansei-shoto to Taiwan (Nicolson & Sivadasan 1981). In our study, *T. blumei* was collected from the IPB University campus in Dramaga, Bogor.

**Habitat and ecology.** It thrives in disturbed habitats, including abandoned areas, grassy fields, and roadsides, at an elevation of 250 meters asl. This species coexists in these habitats with *T. roxburghii* (Fig. 1).

***Typhonium trilobatum* (L.) Schott, 1829**

(Figs. 1, 2)

**Specimen examined.** Indonesia, West Java, Bogor, BRIN Cibinong area (ex Raiser), 27 December 2024, ASD Irsyam & MR Hariri ASDI 916 (FIPIA).

**Description.** *Tuberous herbs*, up to 70 cm in height; *tubers* discoid, up to 5.2 × 3.6 cm, ca. 2.2 cm thick, with many smaller tubers. *Leaves* erect spreading; *sheath* adnate to petiole, persistent, up to 14 cm long, apex acute; *petiole* up to 71 cm long, brown; *leaf blade* usually deeply 3-lobed, juvenile leaves cordate and undivided; *anterior lobe* ovate to broadly ovate, 7–22.7 × 4.9–12.6 cm, apex acuminate; *lateral lobes* unequal, ovate to deltoid, 3.9–21.3 × 2.5–12.3 cm; adaxial surface dull yellowish green to dark green, abaxial surface shiny pale green. *Inflorescences* solitary; *peduncle* ca. 4.9 cm long, elongating in fruit; *spathe* convolute; lower spathe persistent, greenish brown outside, greenish white inside, ca. 3.7 × 2 cm; limb soon withering, ovate, ca. 16.1 × 10.7 cm, gradually tapering from well above the middle, apex acuminate, dark red and turning brown; *spadix* erect, sessile, ca. 12.2 cm long; *pistillate flower zone* ca. 1 cm long, maroon; *pistillate flowers* in 9 whorls, densely arranged; pistils ovoid to subovoid, ca. 1 mm long, white; stigma sessile, button-like, maroon; *staminodes* absent; *sterile portion* ca. 7 mm long,

covered with whitish, intertwined, filamentous sterile flowers, white; naked interstice ca. 2.2 cm long, creamy white; *staminate flower zone* cylindrical, ca. 1.5 cm long, peach; *staminate flowers* densely arranged, consisting of 2 stamens; *appendix* conical, ca. 7.2 cm long, truncate at base, apex blunt, red, with ca. 1 mm long stipe.

**Phenology.** May–June and December–February.

**Distribution.** This species is native to a range extending from India to southern China and the Malay Peninsula. Additionally, it has been introduced to various regions, including Borneo, the Ivory Coast, the Philippines, Singapore, Trinidad and Tobago, and the Windward Islands (Nicolson & Sivadasan 1981). In this study, the species was found in Nanggewer village, Cibinong, Bogor.

**Habitat and ecology.** The spontaneous population of *T. trilobatum* was discovered in teak-dominated vegetation, abandoned areas, and roadsides at the National Research and Innovation Agency in Cibinong, Bogor, at an elevation of 149 meters a.s.l.

Our discovery expands the known diversity of *Typhonium* species on Java to four (Fig. 1). The species can be reliably differentiated based on vegetative and floral characters, with particular emphasis on the morphology of the spathe, spadix, and sterile flowers — key diagnostic features in the taxonomy of the genus (Nicolson & Sivadasan 1981). These characteristics are critical for distinguishing between the four species identified (Fig. 2). For accurate identification, an updated identification key is provided below.

**An updated key to the genus *Typhonium* of Java** (modified after Hariri *et al.* 2019).

1. a. Leaves usually hastate or sagittate ..... 2  
    b. Leaves usually trilobed ..... 3
2. a. Upper portion of spathe yellowish green to green; sterile section of the spadix is covered with two types of sterile flowers: white with purple tip, club-shaped at the lower part and short, awl-shaped at the upper part .....  
    ..... *T. flagelliforme*  
    b. Upper portion of spathe maroon to purplish red; sterile section of the spadix is covered with one type of sterile flowers: red with white tip, curved and decurved acicular shapes ..... *T. blumei*

3. a. Lower portion of spathe green inside; the appendix of spadix conical with blunt apex; sterile flowers white, long, filiform, intertwined; stigma maroon ..... *T. trilobatum*  
 b. Lower portion of spathe brownish red inside; the appendix of spadix flagelliform with tapering apex; sterile flowers creamy yellow, short, aciculate, spreading and decurved; stigma creamy white .....  
 ..... *T. roxburghii*

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