



Meiogyne konkakinhensis (Annonaceae), a new species from the central highlands of Vietnam

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Meiogyne Miquel (1865: 12; Annonaceae), with 33–39 species, are trees or shrubs characterised by distinctive corrugated grooved structure at the base of the adaxial surface of the inner petals, axillary or sometimes cauliflorous flowers and oblong multi-seeded indehiscent monocarps (van Heusden 1994, Johnson *et al.* 2019, Jaikhamseub *et al.* 2022). The species are collectively distributed in southern India, southern Central China, Southeast Asia, Australia, Melanesia and western Polynesia (van Heusden 1994, Thomas *et al.* 2012, POWO 2024). In Vietnam, six species of *Meiogyne* are known (Bân 2000, Jaikhamseub *et al.* 2022): *M. monogyne* (Merrill 1942: 163) Bân (1974: 1778), *M. subsessilis* (Ast 1938: 90) Sinclair (1956: 14), *M. hainanensis* (Merrill 1925: 131) Bân (1973: 1148), *M. rubra* Jaikhamseub, Damth. & Chaowasku in Jaikhamseub *et al.* (2022: 223), *M. virgata* (Blume 1825: 14) Miquel (1865: 12) and *M. vietnamica* Jaikhamseub, T.A.Le & Chaowasku in Jaikhamseub *et al.* (2022: 225), although Jaikhamseub *et al.* (2022) excluded *M. virgata* because they could not confirm any Vietnamese specimens.

During our botanical expedition in Kon Ka Kinh National Park, Gia Lai Province, Central Highland, Vietnam, in 2022, we encountered an unknown species of *Meiogyne* in primary broad-leaved evergreen forests. After a careful examination of the literature of the genus in Vietnam and surrounding countries (Ast 1938, Bân 2000, van Heusden 1994, Johnson *et al.* 2019, Jaikhamseub *et al.* 2022) and herbarium specimens including digitised images from FOF, FU, HN, K, KAG, MAK, P and VNM, we concluded that it was an undescribed species, and we here describe it as new to science.

Taxonomy

Meiogyne konkakinhensis B.H.Quang & Tagane, *sp. nov.* (Figs 1, 2)

TYPE:—VIETNAM. Gia Lai Province: Ayun Municipality, Mang Yang District, Kon Ka Kinh National Park, 14°13'12.71"N, 108°19'34.57"E, 1193 m elev., 14 Dec 2022, fl. & young fr., Oguri *et al.* Q362 (holotype HN 000076373; isotypes HN 000076374, KAG184835, KAG185540, MAK, TNS01353701, herbarium of Kon Ka Kinh National Park).

The new species is similar to *Meiogyne rubra* in its relatively small leaf size and reddish purple petals at maturity, but it is easily distinguished by yellowish brown hairy midrib on the adaxial surface of lamina (glabrous in *M. rubra*), smaller petals (outer petals 8.0–18.0 × 5.0–8.0 mm, inner petals 7.0–16.0 × 3.1–7.0 mm vs. 30.0–33.0 × 7.5–10.0 mm and 26.5–30.5 × 7.0–8.0 mm), and fewer and smaller stamens (76–80, 1.0–1.4 mm long vs. ca. 118, 1.5–2.2 mm long), fewer carpels (7–9 vs. 10–11) and more ovules per ovary (7–8 vs. 4).

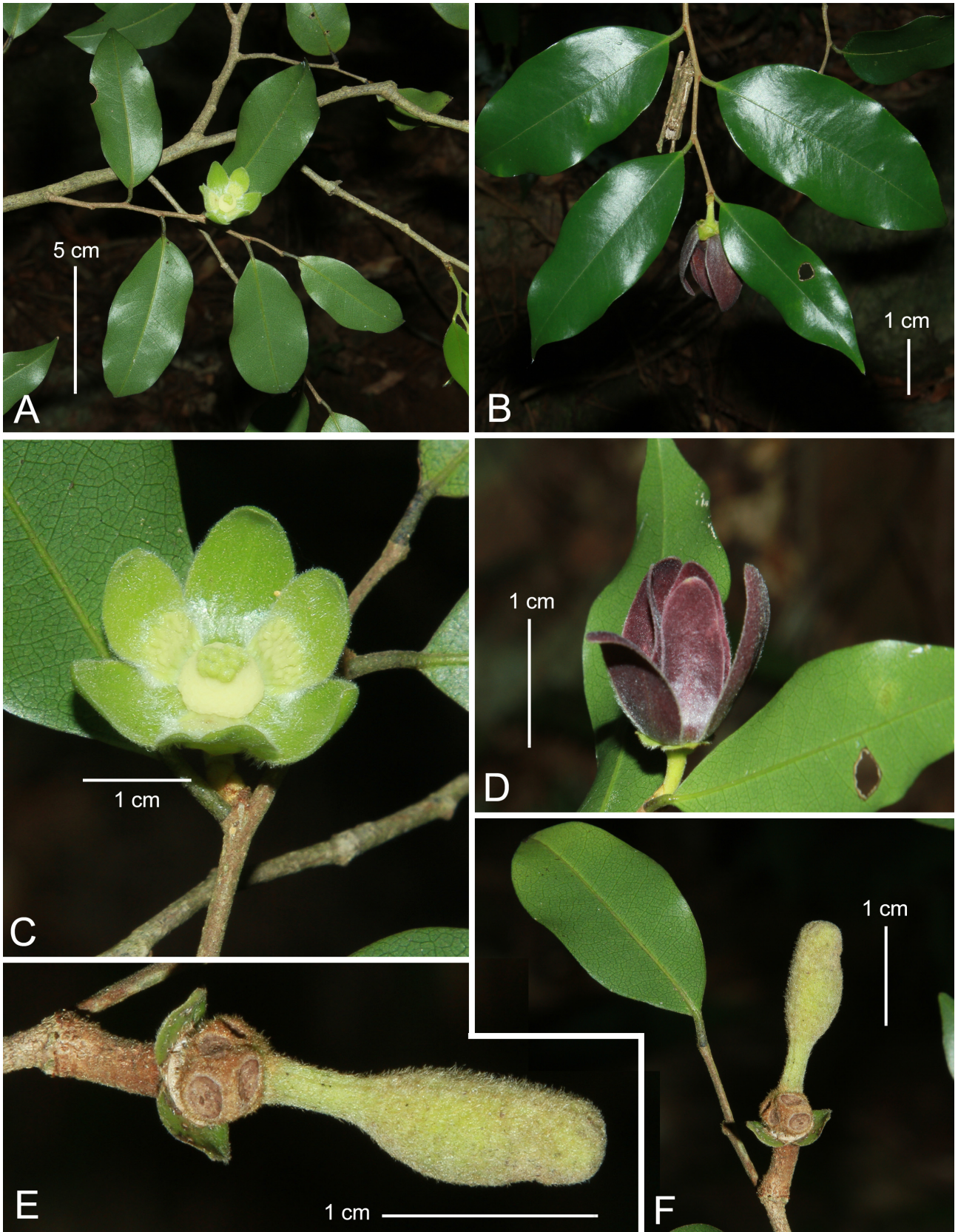


FIGURE 1. *Meiogyne konkakinhensis*. A. Flowering branch, view from underneath. B. Flowering branch after anthesis. C. Flower, front view. D. Flower after anthesis, side view. E, F. Fruiting branches, with one monocarp. Photos of *Oguri et al.* Q362 when it was alive, taken by B.H. Quang.

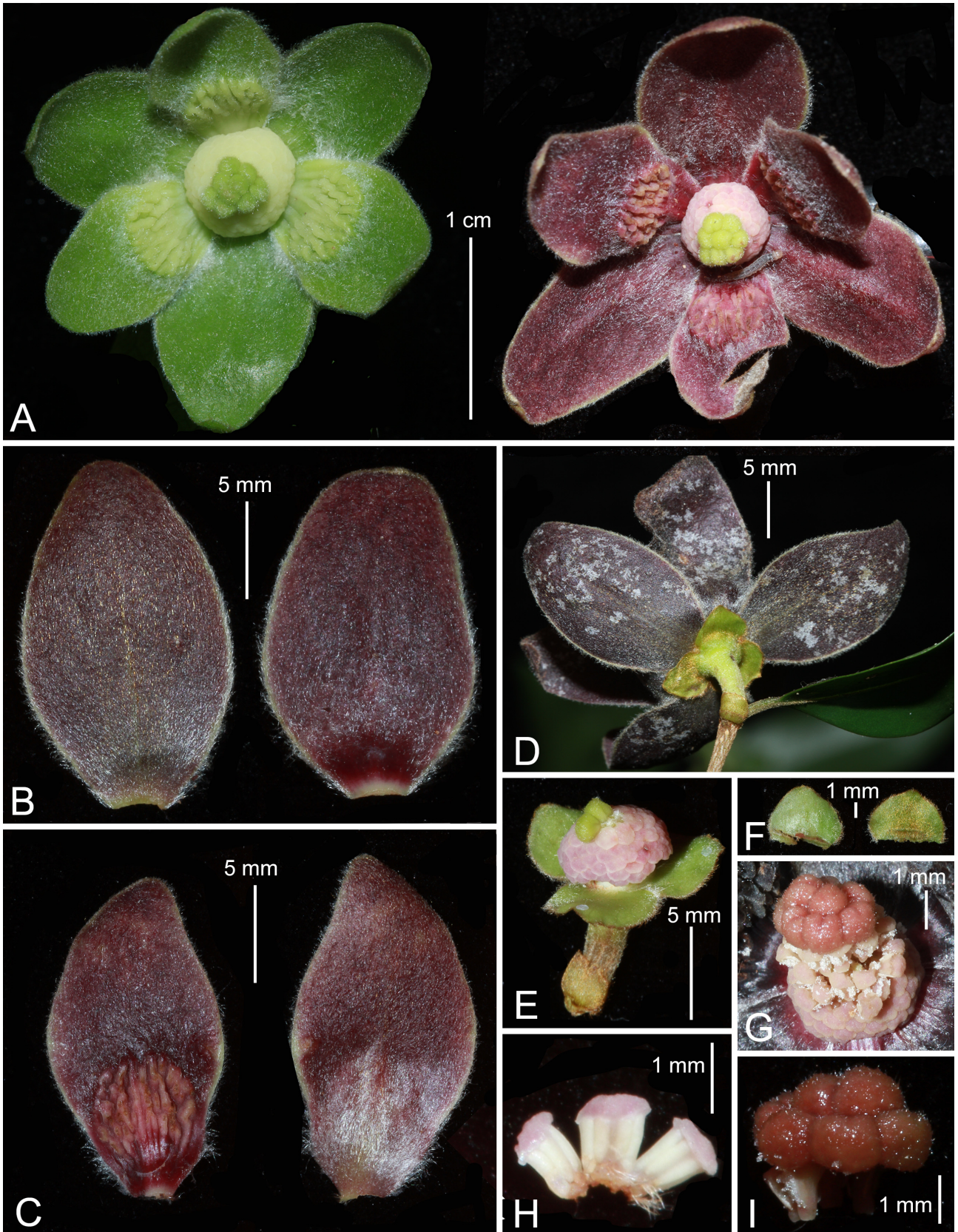


FIGURE 2. *Meiogyne konkakinhensis*. A. Flowers, front view, at early stage of anthesis (left), late stage of anthesis (right). B. Outer petals, adaxial (right) and abaxial (left) surfaces. C. Inner petals, adaxial (left) and abaxial (right). D. Flower, bottom view. E. Flower with petals removed showing sepals, stamens and stigmas. F. Sepals, abaxial (left) and adaxial (right) sides. G. Stamens, carpels. H. Stamens. I. Carpels. Photos of *Oguri et al.* Q362 when it was alive, taken by B.H. Quang.

Trees to 5 m tall with brown bark. Young twigs densely covered with short brown fulvous hairs, old twigs greyish brown, glabrous. Leaves alternate, petiolate; leaf blades oblong-elliptic to ovate-oblong, 2.9–8.2 × 0.9–3.5 cm, adaxial surface dark pale green, glossy, glabrous except midvein, abaxial surface pale green, sparsely covered with long appressed white hairs, apex acuminate, acumen up to 0.6 cm long, margin entire, base acute to cuneate, midrib sunken, covered adaxially with short yellowish brown hairs, prominent, covered abaxially with appressed long white hairs, secondary veins 9–12 on each side, more or less parallel but curving gradually towards leaf margin, prominent on both surfaces, tertiary veins reticulate; petioles 0.2–0.6 cm long, dark brown to black when dry, covered with appressed long white hairs. Inflorescences in axils of leaves or rarely on old branches below leaves, 1-flowered; pedicels 4–6 mm long, densely fulvous hirsute, with 2–3 bracts near base; bracts broadly ovate 1–2 mm long, glabrous adaxially, densely covered with yellowish brown hairs abaxially, apex obtuse to rounded. Sepals 3, broadly ovate-triangular, 2.5–3.5 × 4.0–4.5 mm, olive-green *in vivo*, yellowish brown *in sicco*, sparsely covered adaxially with appressed white hairs, densely covered abaxially with appressed yellowish brown hairs, margin ciliate, apex acute. Petals green, becoming dark reddish purple with age *in vivo*, yellowish brown or blue-grey *in sicco*; outer petals spreading at anthesis, ovate-oblong, 8.0–18.0 × 5.0–8.0 mm, tomentose with white hairs on both surfaces, mixed abaxially with yellowish brown hairs, apex obtuse to acute, margin ciliate; inner petals erect or spreading at anthesis, ovate-oblong to rhombic-ovate, 7.0–16.0 × 3.1–7.0 mm, the hairs same as on outer petals, apex obtuse to acute, margin ciliate, with a glabrous, corrugated patch on proximal 1/3 of the adaxial surface. Stamens 76–80, wedge-shaped, 1.0–1.4 mm long, anther connectives truncate, glabrous. Carpels 7–9 per flower, ca. 2.0 mm long; ovary densely yellowish brown, hairy, stigmas subglobose, ca. 1 mm in diam., sparsely setose; ovules 7–8 per ovary. Fruit of 5–6 monocarps; fruiting peduncle ca. 1.0 cm long. Monocarps (immature) cylindrical, 1.1 cm long, 0.6 cm in diam., densely covered with erect yellow hairs, apex and base round. Seeds not seen.

Distribution:—Vietnam (so far known only from the type locality).

Habitat:—Evergreen broad-leaved forest (transition from hill forest to lower montane forest), 1190 m.

Etymology:—Named for the Kon Ka Kinh National Park.

Phenology:—Flowers and young fruits in December.

Vernacular name:—*Thiếu nhụy kon ka kinh* (Vietnamese).

Conservation status:—Data deficient (DD). Currently, *M. konkakinhensis* is known only from a single location in the Kon Ka Kinh National Park. In our field excursion, we found one small population with less than 10 mature individuals, which satisfies criteria of D, critical endangered (CR). However, considering a total area of the national park is 417.8 km² mostly covered with thick, evergreen broad-leaved forests, more populations could exist in the park and surrounding areas.

Notes:—*Meiogyne konkakinhensis* is characterised by the several characteristics (Table 1). By a combination of these characteristics, *M. konkakinhensis* is clearly distinguished from the other species of *Meiogyne* in Vietnam and surrounding countries. Among the species in Vietnam, it is most like *M. rubra*, but clearly differs in having the diagnostic characteristics mentioned above (Table 1).

TABLE 1. Morphological comparison of *Meiogyne konkakinhensis* and *M. rubra* (the latter based on Jaikhamseub *et al.* 2022).

Morphological characters	<i>M. konkakinhensis</i>	<i>M. rubra</i>
Leaf blade shape and size (cm)	oblong-elliptic to ovate-oblong, 2.9–8.2 × 0.9–3.5	elliptic-ovate to elliptic, 4.9–10.5 × 1.6–3.2
Number of secondary nerves per side	9–12	10–16
Petiole length (cm)	0.2–0.6	0.4–0.8
Sepal shape and size (mm)	broadly ovate-triangular, 2.5–3.5 × 4.0–4.5	ovate, 7.0–9.5 × 5.5–6.0
Pedicel length (mm)	4–6	ca. 7
Petal colour	green at early stage of anthesis, dark reddish purple at late stage <i>in vivo</i> , yellowish brown or blue-grey <i>in sicco</i>	red throughout the anthesis <i>in vivo</i> , dark brown to blue-grey <i>in sicco</i>
Outer petal shape and size (mm)	ovate-oblong, 8.0–18.0 × 5.0–8.0	narrowly ovate, 30.0–33.0 × 7.5–10.0
Inner petal shape and size (mm)	ovate-oblong to rhombic-ovate, 7.0–16.0 × 3.1–7.0	narrowly ovate, 26.5–30.5 × 7.0–8.0
Number of stamens per flower	76–80	ca. 118
Stamen length (mm)	1.0–1.4	1.5–2.2
Number of carpels per flower	7–9	10–11
Number of ovules per ovary	7–8	4

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