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Lagenandra kunkichirimuseumensis (Araceae), a new species from south Western Ghats, India

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ABSTRACT

Lagenandra kunkichirimuseumensis, a new species of *Lagenandra* from the Wayanad District of Kerala is described. The new species can be differentiated from all other described *Lagenandra* species by the absence of tail of the spathe limb and spadix appendix. Detailed morphological characters, notes on habitat, key to the genus *Lagenandra* of Western Ghats and color photographs are provided to facilitate easy identification in the field.

Keywords: Kerala, new species; south Western Ghats, Taxonomy, aquatic plants, Araceae

1. INTRODUCTION

The southern Western Ghats is considered a significant bio geographical hotspot area of the world. It has a unique status as an ancestral area holding varied concentrations of endemic species (Mathew et al., 2016; Karuppusamy, 2022; Ambarish & Sridhar, 2022). In-depth field study through here often lead to the discovery of new species (Dhatchanamoorthy et al., 2022; Mathew & Pichan, 2022; Vadhyar et al., 2022; Dhatchanamoorthy & Balachandran, 2022; Syed et al., 2023). In last year, an extensive field studies were conducted through the Wayanad region of south Western Ghats as a part of biodiversity documentation for setting up of Wayanad District Heritage Museum (WDHM) at Kunkichira, Kerala. It has resulted in the assortment of several interesting flowering plant specimens.

Lagenandra (Araceae), a genus of potential aquatic ornamental plants naturally distributed in the wetlands of the Indian subcontinent. About twenty (20) *Lagenandra* species have been recorded in the world of which India holds 8 taxa (POWO, 2023). A new species, *Lagenandra cherupuzhica* Biju et al., (2018) is recently added as new species from Kerala part of southern Western Ghats to the flora. A novel taxon of *Lagenandra* has been identified through careful examination of the plant specimens taken from Wayanad. Which is described here as *Lagenandra kunkichirimuseumensis* sp. nov.

2. MATERIALS AND METHODS

Critical analysis of the literature (Dalzell, 1852; De-Wit, 1978; Sivadasan and Babu, 1995; Sivadasan et al., 2001; Sasidharan, 2013; Bastmeijer, 2018; Biju et al.,

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2018; Sasikala et al., 2019; GBIF, 2023), as well as from the scrutiny of vouchers deposited in K, MH, TBGT and KUBH and information from and online databases (https://plants.jstor.org; https://www.ipni.org; https://www.tropicos.org; https://www.biodiversitylibrary.org and https://www.wcsp.science.kew.org) were carried out. The data presented was obtained through the study of live specimens in the wild, available herbarium materials and an in-depth literature survey. Photographs are provided for a better understanding of the morphological diversity. Its voucher material is stored in KUBH (Kerala University Botany Herbarium, Thiruvananthapuram), MH and SDCH.

3. TAXONOMIC TREATMENT

Lagenandra kunkichirimuseumensis J.Mathew & P.M.Salim, *sp. nov.* (Figure 1)

Diagnosis

Lagenandra kunkichirimuseumensis can be differentiated from all other described species by the absence of tail of the spathe limb and spadix appendix. Seed with a distinct bend is another peculiar character of this species among Indian *Lagenandra.*

Type

India, Kerala, Wayanad District, Dum Dum, shady streamlet near Cardamom plantations, 1910 m, 12 May 2023, *J.Mathew 4817* (holo KUBH!; iso MH!).

Evergreen large herb with creeping rhizome ca. 2–3.0 cm in diam. Cataphylls ca. 4.0–6.5 cm. 2 keeled. Petiole ca. 6.0–25.0 cm long, ca. 0.4–0.7 cm wide, sheath unequal. Leaf blades upper surface green/dark green, lower surface green/dark green, blades obovate to ovate, apex acute, base slightly rounded, unequal; margin entire, wavy, blade ca. 13.5–23.5 × 8–16 cm; midrib visible on both surfaces and prominent on the lower surface. Peduncle ca. 3–6 cm long, 0.3–0.5 cm width. Spathe light maroon or light purple, with slight warts on limb, ca. 5–6.5 cm long, kettle ca. 2.2–2.5 × 1.9–2.1 cm, dark maroon smooth longitudinal striations inside; limb ca. 2.5–2.8 × 2.1– 2.3 cm, un-twisted, opens widely, cream and/or maroon; limb abruptly pointed at tip and tail absent.

Spadix ca. 2.1–2.4 cm long; pistillate flower zone ca. 0.6–0.7 × 0.4–0.6 cm; sterile zone ca. 0.7–0.9 cm long; staminate flower zone ca. 0.4–0.7 × 0.3–0.4 cm; appendix ca. 0.1–0.2 × 0.1–0.2 cm, flattened at top, tail absent. Pistils ca. 60–75, closely arranged. Staminate flowers ca. 85–110. Infructescence up to 10 cm long, prolate, fleshy capsule up to 25–35, with warty out-growths. Seeds 4, size ca. 0.4–0.6 × 0.2–0.4 cm, longitudinally ridged with a prominent bend towards tip.

Habitat

The plants inhabit a shady streamlet in the Dumdum region of Wayanad forests of south Western Ghats. This is restricted to one locality in Dumdum rivulet, which is close to the Nilambur Forest Reserve. The population is spread along about 70 m on the side of a streamlet and consists of about 150 young and mature individuals. They are growing in association with another undescribed *Lagenandra*, *Persicaria chinensis* (L.) Gross and *Rhynchotechum permolle* (Nees) B.L. Burtt.

Etymology

The species epithet '*kunkichirimuseumensis*' refers Wayanad District Heritage Museum setting at Kunkichira to demonstrate Bio-cultural pride of Kerala. This species collection has been done as part of the biodiversity documentation for the same.

Other specimens examined (paratypes)

India, Kerala, Wayanad District, Dumdum, Same locality, 1910 m, 30 May 2023, *J.Mathew 4818; 4819* (SDCH!- SD College Herbarium, Alappuzha, Kerala).

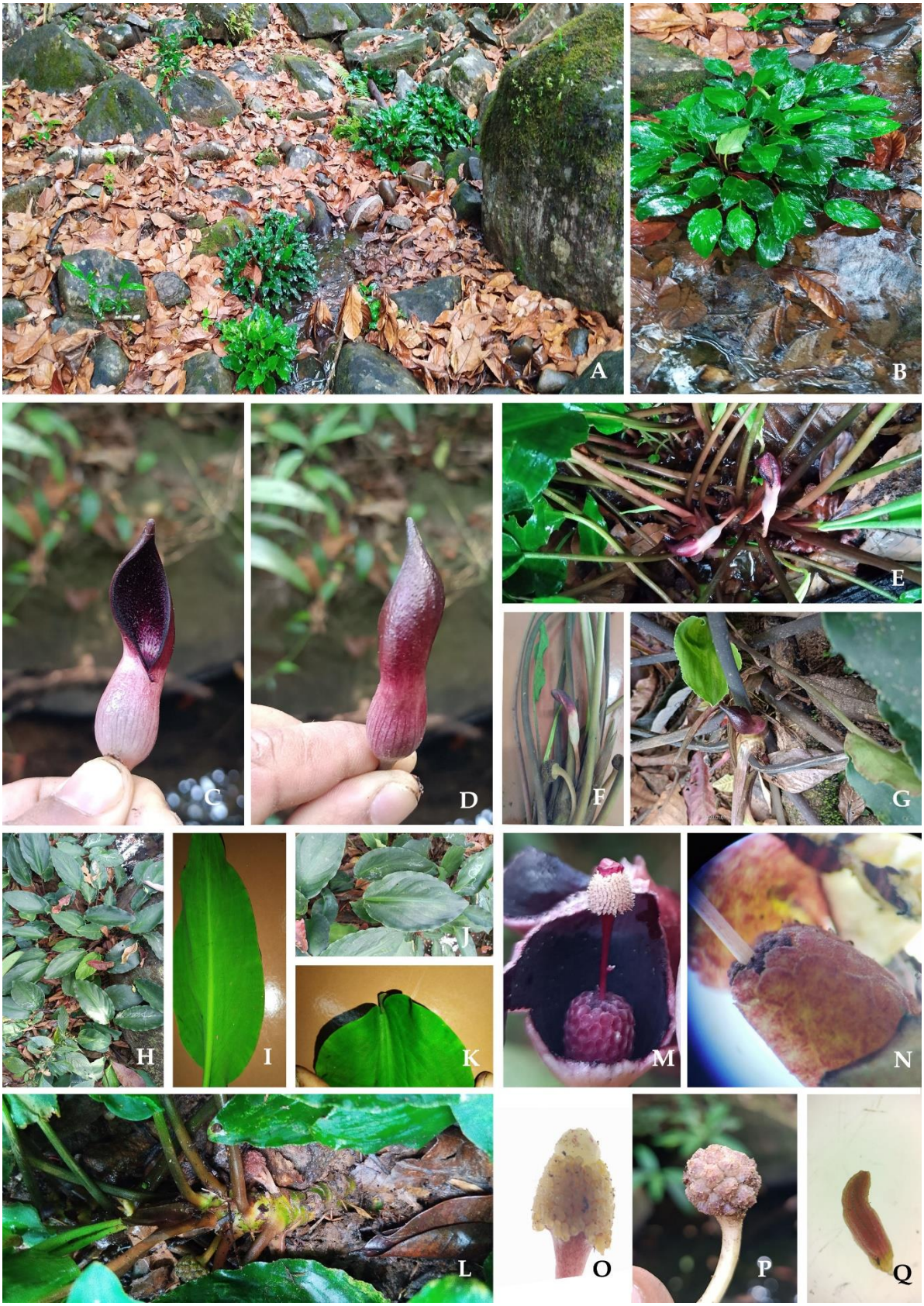

Figure 1 *Lagenandra kunkichirimuseumensis* J.Mathew & P.M.Salim; A–B: Habit, from type locality; C–D: Inflorescence; E–G: Flowering twig; H–K: Leaf; L: Creeping rhizome; M: Spathe cut open exposing spadix; N: Pistillate flower zone; O: Staminate flower zone; P: Infructescence; Q: Seed.

Figure 2 *Lagenandra* species with green leaves (Morphologically allied plants of the new species) of Western Ghats. A–B: *Lagenandra meeboldii* (Engl.) C.E.C. Fisch.; C: *L. nairii* Ramamu. & Rajan; D: *L. ovata* (L.) Thw.; E–F: *L. toxicaria* var. *barnesii* C.E.C. Fisch.; G: *L. toxicaria* var. *toxicaria* Hook. f.

A taxonomic key to *Lagenandra* species of Western Ghats including the new species

1 Abaxial side of the leaf reddish purple…… ……..…… 2
1 Abaxial side of the leaf green or pale green ……..…….. ……..…… 4
2 Pistillate part verticillate……*L. keralensis*
2 Pistillate part subglobular……..…3
3 Leaf orientation horizontal over soil……..... *L. cherupuzhica*
3 Leaf orientation vertical or oblique……..…. *L. meeboldii* (Red)
4 Spathe distinctly warty outside ……..……..... *L. ovata* (Figure 2D)
4 Spathe smooth or merely roughened outside by papillae ……..…..…….…..…. 5
5 Pistillate part verticillate……..……..…*L. nairii* (Figure 2C)
5 Pistillate part subglobular……..……..……6
6 Spathe limb tail absent……..……..…*L. kunkichirimuseumensis*
6 Spathe limb tail present……..……..……7
7 Leaf Lamina ovate……..... *L. meeboldii* (Green) (Figure 2A, 2B)
7 Leaf Lamina elliptic-lanceolate……..…….…..……8
8 Spathe is about 12 cm long, opening with wide gap…….. *toxicaria* var. *barnesii* (Figure 2E, 2F)
8 Spathe is about 6 cm long, open by a smaller gap……...*L. toxicaria* var. *toxicaria* (Figure 2G)

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Informed consent

Not applicable.

Ethical approval

The ethical guidelines for plants & plant materials are followed in the study for sample collection & identification.

Conflicts of interests

The authors declare that there are no conflicts of interests.

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Data and materials availability

All data associated with this study are present in the paper.

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