



RESEARCH COMMUNICATION

Taxonomic notes on two endemic species of *Oberonia* Lindl. from Western Ghats, India

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Abstract

The genus *Oberonia* is known for its micro floral arrangement. Due to its minute structure, excess of new species are reported. The present paper reveals the synonymization of two recently described species of the genus *Oberonia* viz. *O. saintberchmansii* and *O. wynadensis* under *O. anamalayana* and *O. josephi* respectively. The original illustration and live dissected images of the species are provided for easy identification.

Keywords

Oberonia; heterotypic synonym; quadrate lip; Western Ghats

Introduction

Oberonia Lindl. is an old-world genus of mostly epiphytic herbs comprising 300 species (1). In India, 61 species have been reported in the genus (2), which is likely to be an overestimate; given the several new synonyms published in recent years (3). About 26 species have been recorded in the Western Ghats of India (4). The exploration of orchid study in the Southern Western Ghats resulted with the findings of two synonyms of newly described species of *Oberonia*. The present work is based on the examination of original protologue, type material and live collection from type locality.

Materials and Method

Taxonomic assessments were made based on available information from primary and secondary literature (2-11), herbarium specimens housed in India (CAL, CALI, KFRI, MH, MSSRF and TBGT), and living collection in Orchidarim in BSI, SRC, Coimbatore and Tamil Nadu Forest Genetics, Coimbatore, Tamil Nadu. Flowers and floral parts were also imaged with a SMZ1500 stereomicroscope and Scanning Electron Microscope imaged with SEM – Zeiss EvoM18.

Results and Discussion

1. *Oberonia anamalayana* J. Joseph, J. Indian Bot. Soc. 42: 222. 1964. (Holotype: INDIA, Tamil Nadu, Coimbatore, Waverly Estate Forest, 1500 m, 16.01.1961, *J. Joseph* 13537A).

Oberonia saintberchmansii Kad.V.George & J.Mathew, Species (India) 20: 112. 2019. **syn. nov.** (Holotype: INDIA, Kerala, Idukki District, way to Nedukandam, Cardomom Hills, 3rd mile, 1310 m, Jan 2014, KVG & SA 0126). (**Figure 1 & 2**).

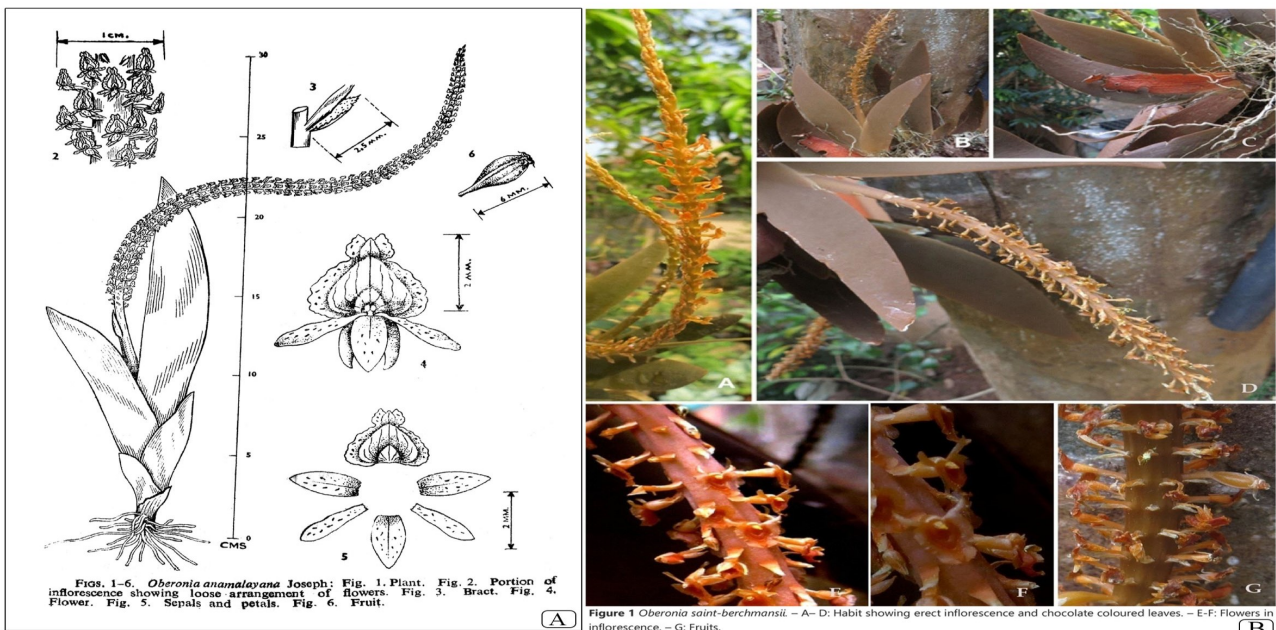


Figure 1: A. *Oberonia anamalayana* J. Joseph – Illustration (dissected images) from original protologue (1964), B. *O. saintberchmansii* Kad.V. George & J. Mathew - Illustration (dissected images) from original protologue in (2019), C. Live images of *O. anamalayana* at Eravikulam National Park.

Oberonia saintberchmansii was described from Idukki district, Kerala (5). The species was compared with only *Oberonia falconeri* Hook.f. (6) not with *O. anamalayana* J. Joseph. The photo plate of *O. saintberchmansii* is a typical species of *O. anamalayana* and earlier reported from Idukki and the major districts of Kerala. Later, *O. saintberchmansii* was erroneously synonymized under the name *O. brunoniana* (5 & 7). The characters viz., "lip reflexed, ovate in outline, gland dotted, glabrous, narrow and longitudinally elongated oblong around the disc, shallowly crenate, unlobuled; 2-lobuled at apex, orbicular, shallowly crenate, diverging; disc ovate, lanceolate, V-shaped," corresponds only to the species of *O. anamalayana* (Table 1). Therefore, *O. saintberchmansii* is validly placed here as synonym of *O. anamalayana*.

2. ***Oberonia josephi*** C.J.Saldanha, Indian Forester 100: 569. 1974. (Holotype: INDIA, Near Genkalbetta, Hassan district, Karnataka, 900 m, 09.10.1969, Saldanha 15247A).

Oberonia wynadensis Sivad. & R.T. Balakr., Nordic J. Bot. 9: 395. 1990. **syn. nov.** (Holotype: INIDA, Kerala, Wayanad district, Chembra Peak near Meppadi, ca 1300 m, 23.09.1984, Balakrishnan CU 40643. (Figure 3 & 4).

Oberonia josephi was reported in Thirunelly, Wayanad district, Kerala (8). Recently, this species distribution was recorded in Kozhikode (9). Sivadasan and Balakrishnan (10) discovered *Oberonia wynadensis* from Chembra peak, Wayanad district, Kerala. The authors (10) compared the species to *O. josephi* and *O. sebastiana* while describing it. It was described that, "*O. wynadensis* is similar to *O. josephi* but differs in that lateral lobes of the lip are narrowly falcate; lobules of the midlobe are spherical, crenulatr-serrulate margined, and semilunar. Flower looks similar to *O. sebastiana* but lack of a disc at the base of the labellum; 3 or 5 nerves in the lip; and extremely large lateral lobes".

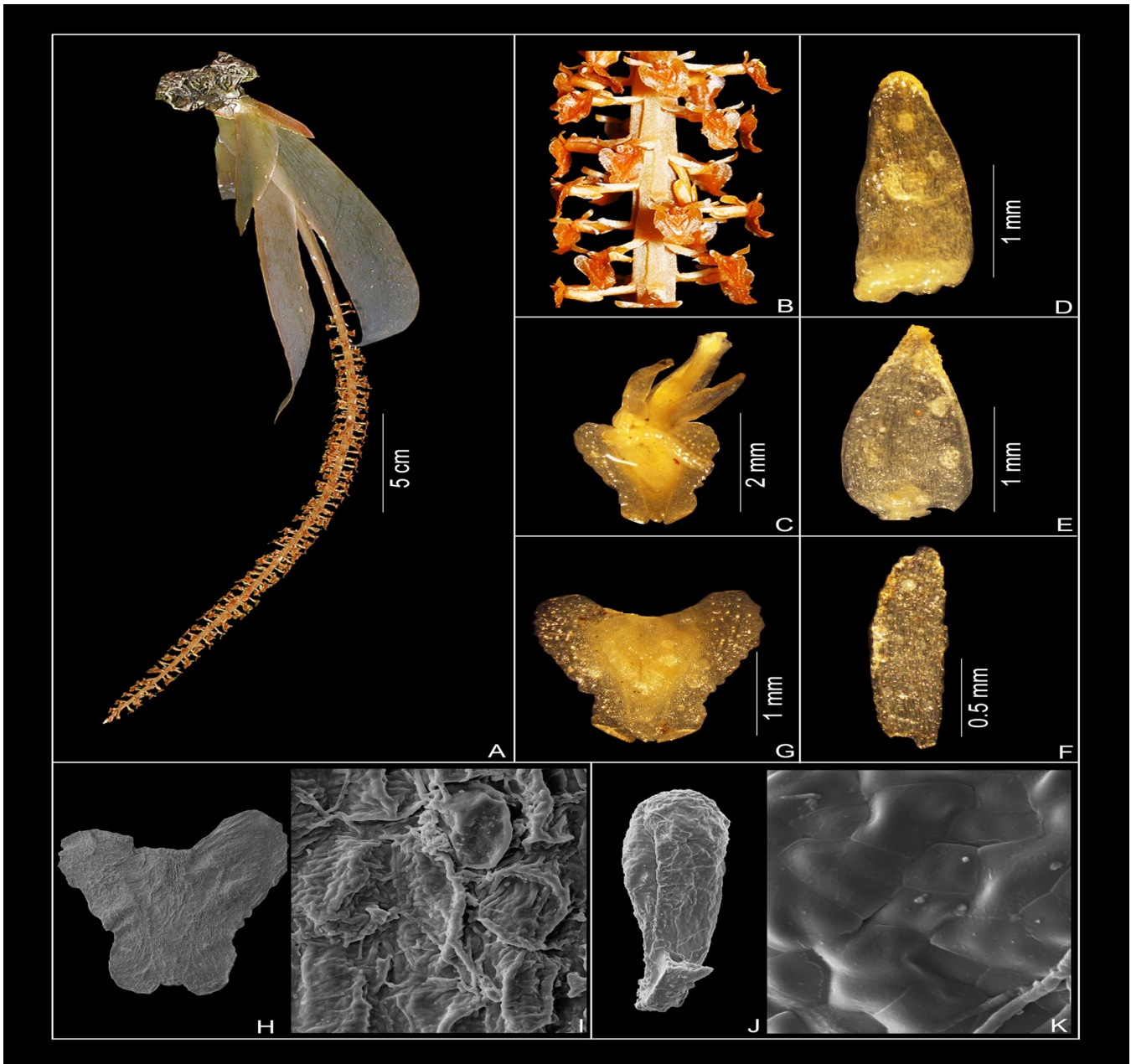


Figure 2: *Oberonia anomalayana* J. Joseph **A.** Habit, **B.** Inflorescence, **C.** Flower, **D.** Dorsal sepal, **E.** Lateral sepal, **F.** Petal, **G.** Lip, **H & I.** Lip (SEM Image & Surface of frontal view), **J & K.** Pollinia (SEM Image & Surface of frontal view).

Table 1. Comparison of diagnostic characters of *O. anomalayana* with *O. saint-berchmansii*

Characters	<i>Oberonia anomalayana</i> (8)	<i>Oberonia saint-berchmansii</i> (5)
Habit	Erect	Erect
Leaves	Ensiform, 5-17 × 2-4 cm	Ensiform, 15 × 2.5 cm
Inflorescence	Flattened and slightly winged, 20-30 cm long	Winged, up to 20 cm long
Flower	Sepals ca 2 × 1 mm, oblong, obtuse; petals as long as or a little longer than the sepals, lateral petals narrower than the sepals	Sepals sub similar or broader than petals, 1 × 0.5 mm, ovate or obliquely ovate, acute, entire. Petals 1 × 0.35 mm, oblong or linear, subacute
Lip	Lip olive brown, as long as or a little longer than the sepals, broad at the base, conical; side (lateral) lobes narrowly auriform, 1.5 mm long; midlobe very small, 0.5 mm long; lobule acute to obtuse, two lobulated having a shallow sinus with a minute mucro in between	Ovate to triangular; lateral lobes ovate to auriculate, 1.85 × 1 mm; midlobe 1 × 0.7 mm; lobule acute, encircled the sinus
Fruit	Brown, globose	Brown, globose

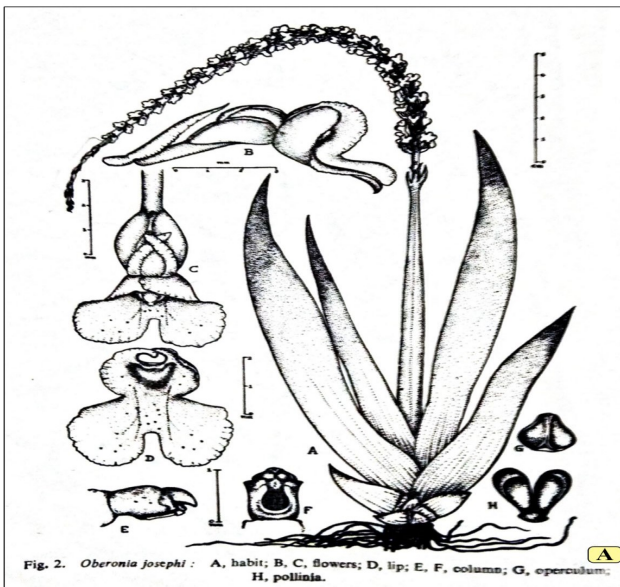
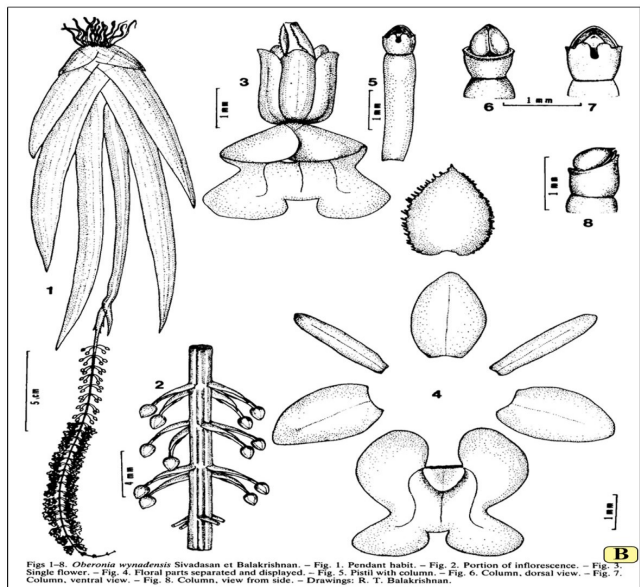


Fig. 2. *Oberonia josephi*: A, habit; B, C, flowers; D, lip; E, F, column; G, operculum; H, pollinia.



Figs 1-8. *Oberonia wynadensis* Sivadasan et Balakrishnan. - Fig. 1. Pendant habit. - Fig. 2. Portion of inflorescence. - Fig. 3. Single flower. - Fig. 4. Floral parts separated and displayed. - Fig. 5. Pistil with column. - Fig. 6. Column, dorsal view. - Fig. 7. Column, ventral view. - Fig. 8. Column, view from side. - Drawings: R. T. Balakrishnan.



Figure 3: A. *Oberonia josephi* C.J.Saldanha - Illustration (dissected images) from original protologue in (1974), B. *O. wynadensis* Sivad. & R.T.Balacr., - Illustration (dissected images) from original protologue in (1990), C. Live images of *O. josephi* from Chembra peak, Wayanad.

While analysing the original protologue of *O. josephi*, “Lip completely exposed 3-lobed, with a small semi-lunar callosity near insertion and papillae. Lateral lobes falcate, enveloping the column and overlapping each other at their tips. Midlobe broad, divided into 2 rounded crenulated-serrulated lobes separated by a well-defined quadrate sinus” were described. *O. josephi* and *O.*

wynadensis have no differentiating traits; all characters strongly resemble the same. The same species was also obtained at the original site, Chembra Peak in the Wayanad area (Table 2). After dissecting the live floral material, the species of *O. josephi* was determined. As a result, *O. wynadensis* is treated here synonym of *O. josephi*.

Table 2. Comparison of diagnostic characters of *O. josephi* with *O. wynadensis*

Characters	<i>Oberonia josephi</i> (12)	<i>Oberonia wynadensis</i> (10)
Habit	Acaulescent epiphyte	Acaulescent epiphyte
Leaves	Distichous, ensiform, up to 20-28 × 1.4- 1.5 cm	Distichous, ensiform, 1-17 × 0.5-1.6 cm
Inflorescence	25 cm long	25-33 cm long
Flower	3 mm across	3 mm across
Sepals	Sepal and petals deflexed; dorsal sepal 2 mm long, elliptic, obtuse; lateral sepals slightly longer and broader than dorsal	Sepals and petals deflexed; dorsal sepal 2.3-2.5 × 1.4-1.6 mm, ovate, oblong, obtuse; lateral sepals 2.2-2.3 × 1.5-1.75 mm, broadly ovate
Petals	Petal 2.5 × 0.75 mm, linear, narrower oblong	Petals 2.5 × 0.5 mm, linear, oblong
Lip	Lip quadrate in outline, 4 × 4 mm; lateral lobes falcate, entire; midlobe broad, 2 rounded crenulated-serrulate lobules separated by a well-defined quadrate sinus	Lip quadrate, 3.6-3.8 × 4.0 - 4.2 mm; lateral lobes entire; midlobe 1.25-1.75 × 3.5- 4.0 mm; lobules orbicular with a quadrate sinus in between

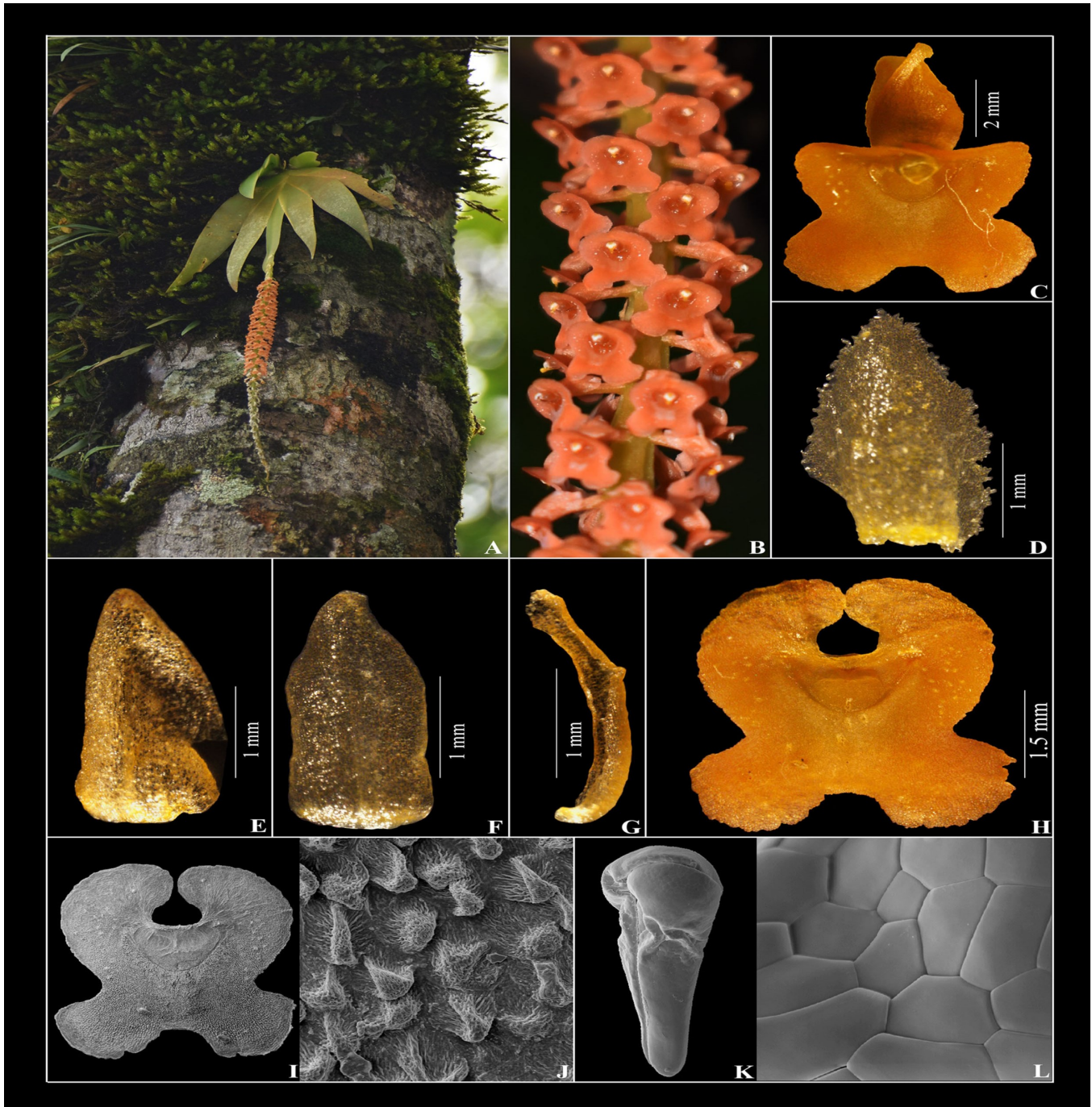


Figure 4: *Oberonia josephi* C.J.Saldanha A. Habit, B. Inflorescence, C. Flower, D. Bract, E. Dorsal sepal, F. Lateral sepal, G. Petal, H. Lip, I & J. Lip (SEM Image & Surface of frontal view), K & L. Pollinia (SEM Image & Surface of frontal view).

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Authors' contributions

MS and KK addressed the problem on newly described species of *Oberonia* and collected pertinent source of literature. CM scrutinized the manuscript. The authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

Ethical issues: None.

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