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A Vouchered Record of *Rhipsalis baccifera* (J.S.Muell.) Stearn (Cactaceae) in Bandung, Indonesia

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ABSTRACT

Arifin Surya Dwipa Irsyam 2026. Catatan berbasis spesimen dari *Rhipsalis baccifera* (J.S.Muell.) Stearn (Cactaceae) di Bandung, Jawa Barat, Indonesia. Floribunda 9(1) 14 – 21 — Penelitian ini menyajikan catatan pertama berbasis spesimen dari *Rhipsalis baccifera* di Bandung, Jawa Barat, Indonesia, berdasarkan spesimen herbarium yang disimpan di Herbarium Bandungense. Laporan sebelumnya tidak dilengkapi dengan spesimen voucher dan metadata yang lengkap, sehingga membatasi kemungkinan verifikasi independen. Kajian spesimen herbarium yang dikombinasikan dengan kerja lapangan terarah di habitat perkotaan menghasilkan spesimen yang terdokumentasi dengan baik sesuai dengan prosedur standar. Keberadaan spesimen historis yang dikoleksi pada tahun 1951, bersama dengan koleksi terbaru, menunjukkan keberlangsungan jangka panjang spesies ini di wilayah tersebut dan mengindikasikan bahwa spesies ini telah mapan. Populasi di Bandung dalam penelitian ini berhasil ditentukan hingga tingkat subspesies, sehingga memberikan resolusi taksonomi yang lebih baik terhadap laporan sebelumnya. Temuan ini menetapkan dasar yang andal untuk verifikasi spesies serta berkontribusi pada peningkatan pemahaman mengenai distribusi spesies ini di Malesia, dengan implikasi terhadap penyebaran jarak jauh dan proses naturalisasi spesies epifit non-asli di lingkungan tropis perkotaan.

Kata kunci: Caryophyllales, Cereoideae, Epifit, Malesia, Rhipsalinae

Arifin Surya Dwipa Irsyam 2026. A vouchered record of *Rhipsalis baccifera* (J.S.Muell.) Stearn (Cactaceae) in Bandung, Indonesia. Floribunda 9(1) 14 – 21 — This study provides the first vouchered record of *Rhipsalis baccifera* in Bandung, West Java, Indonesia, based on herbarium specimens housed at Herbarium Bandungense. Previous reports lacked voucher specimens and complete metadata, limiting independent verification. Herbarium examination combined with targeted fieldwork in urban habitats yielded well-documented specimens following standard procedures. A historical specimen collected in 1951, together with recent collections, indicates long-term persistence of the species in the region and suggests that it is well established. The Bandung population is here assigned to the subspecies level, providing improved taxonomic resolution for previously reported records. These findings establish a reliable basis for species verification and contribute to a better understanding of the species' distribution in Malesia, with implications for long-distance dispersal and the naturalization of non-native epiphytic species in urban tropical environments.

Keywords: Caryophyllales, Cereoideae, Epiphyte, Malesia, Rhipsalinae

INTRODUCTION

The occurrence of *Rhipsalis baccifera* (J.S.Muell.) Stearn (Cactaceae) as a naturalized species in Indonesia was reported by Raihandhany and Wicaksono (2022). However, that account lacks cited voucher specimens and essential collection metadata, including collector identity, collection number, date, and herbarium deposition, thereby precluding independent validation. In the absence of verifiable voucher specimens, taxonomic records remain scientifically uncertain, as such specimens provide the only permanent and verifiable evidence of species identity and occurrence (Funk *et al*., 2005; Culley, 2013; Holmes *et al*., 2016).

Voucher specimens represent the fundamental evidentiary basis of plant taxonomy, ensuring the reliability, reproducibility, and long-term value of biodiversity data. They serve as permanent reference material that enables accurate species identification. Moreover, voucher specimens provide an essential foundation for subsequent taxonomic, ecological, phylogenetic, and biogeographical studies (Funk *et al*., 2005; Pleijel *et al*., 2008; Culley, 2013; Funk *et al*., 2018; Bell, 2020).

Rhipsalis baccifera is unique within Cactaceae as the only species with a natural distribution extending beyond the Americas. It is widely distributed throughout the tropical Americas and has undergone long-distance dispersal to Africa, Madagascar, the Comoros, Seychelles, and parts of tropical Asia (Barthlott, 1983; Cota-Sánchez & Bomfim -Patrício, 2010; Taylor & Zappi, 2020; POWO, 2026). Records from Malesia, including Indonesia (Raihandhany & Wicaksono, 2022), have important implications for understanding long-distance dispersal, historical biogeography, and potential anthropogenic introduction pathways. However, in the absence of verifiable voucher specimens, the occurrence of this species in Indonesia remains insufficiently substantiated.

This study aims to (1) provide a rigorously documented, vouchered record of *R. baccifera* in Bandung, West Java, Indonesia, and (2) resolve the taxonomic identity of the Bandung population at the subspecies level. By presenting complete specimen data in accordance with herbarium standards, this study establishes a verifiable reference for the species' occurrence in Indonesia and contributes to a more reliable understanding of its distribution, with broader implications for long-distance dispersal and the naturalization of non-native epiphytic species in Southeast Asia.

MATERIALS AND METHODS

The study was conducted in April 2026. It was primarily based on the examination of herbarium specimens housed at Herbarium Bandungense (FIPIA), School of Life Sciences and Technology, Institut Teknologi Bandung. Specimens of *Rhipsalis* collected from Bandung were analyzed to determine their taxonomic identity and to verify previous records of the genus in the region, based on morphological characters and associated collection data.

To complement herbarium observations, additional fieldwork was conducted in Bandung, West Java, Indonesia, to obtain well-documented voucher specimens. Sampling targeted urban habitats supporting epiphytic plants, including roadside trees, city parks, and residential green spaces. For each collection, detailed locality data, including geographic coordinates and elevation, were recorded. Specimens were collected directly from host substrates, with both vegetative and reproductive parts sampled to ensure accurate identification. Field collection followed the guidelines of the Royal Botanic Garden Edinburgh (2017).

All specimens were processed using standard herbarium methods (Bridson & Forman 1998), including pressing, drying under controlled conditions, and mounting on herbarium sheets. Each specimen was assigned a unique collection number and accompanied by detailed field notes on habitat and host. Complete metadata were recorded, including collector name, collection number, date, and precise locality. Specimens were identified using taxonomic references, including de Candolle (1828), Barthlott (1987),

Barthlott & Taylor (1995), and Sinkovic (2019). Botanical terminology in this study follows Beentje (2012). Voucher specimens were deposited in Herbarium Bandungense (FIPIA) and Herbarium Depokensis (UIDEP) (Thiers, 2026–continuously updated).

RESULTS AND DISCUSSION

Taxonomic Treatment

***Rhipsalis baccifera* (J.S.Muell.) Stearn**, Cact. J. (Croydon) 7: 107 (1939); Roux, Fl. South Africa. *Cassytha baccifera* J.S.Muell., Sexual Syst. Linn. Class. 1: ord. 1 (1771), nom. cons. *Cereus baccifer* (J.S.Muell.) Hemsl., Biol. Centr.-Amer., Bot. 1: 548 (1880). *Hariota cassytha* Lem., Cact. Gen. Sp. Nov.: 75 (1839), nom. illeg. superfl. *Rhipsalis cassytha* Gaertn., Fruct. Sem. Pl. 1: 137 (1788), nom. illeg. superfl. — Lectotype: J.S. Mueller, 111. syst. sex. Linnaei. class IX. ord. 1, tab. 29 (1770-77)!

Distribution. This species is naturally distributed across tropical and subtropical regions of the Americas, tropical Africa, and Madagascar (POWO, 2026).

Note. The species comprises five sub-species: *R. baccifera* subsp. *baccifera*, *R. baccifera* subsp. *cleistogama* M. Kessler, Ibisch & Barthlott, *R. baccifera* subsp. *erythrocarpa* (K. Schum.) Barthlott, *R. baccifera* subsp. *horrida* (Baker) Barthlott, and *R. baccifera* subsp. *mauritiana* (DC.) Barthlott (Barthlott, 1987; Barthlott & Taylor, 1995). Based on morphological characteristics, the specimens collected from Bandung are assigned to *Rhipsalis baccifera* subsp. *baccifera*.

R. baccifera* subsp. *baccifera (Figures 1–3)

Pendulous epiphyte, up to 1.5 m in length, with numerous trailing branches; stem cylindrical, elongated, up to 4 mm in diameter, green to reddish-brown in juvenile plants, becoming green in adult plants; aerial roots enveloped by a thin velamen layer; branches clustered and articulated; areoles scattered, woolly, bearing a few to numerous soft bristles; bristles ca. 2 mm long, deciduous, persist longer in juvenile plants. Flowers 1–2 per areole, sessile, bisexual, self-fertile; flower buds 3–5 mm long; pericarpel as long as or longer than perianth, ovoid to ellipsoid, 3–4 × 2–2.5 mm, yellowish green with or without a reddish tint, glabrous; sepaloid segments few, minute, triangular, margin serrulate, apex acute, membranous, yellowish-green, red at the apex; petaloid 4–6, ovate, 2.5–3 × 1.5–2 mm, apex obtuse, membranous, white; stamens 10, free, inserted on the receptacle, as long as perianth, white; anthers dithecal, basifixed, longitudinally dehiscent, white; ovary embedded in a hypanthium, 1-locular, ovules many; style thick, greenish white; stigmas 3, white. Berry globose to oblong-globose, 9–10 × 7–8 mm, translucent, pinkish to white. Seeds oblong, irregularly angled, ca. 1 × 0.5 mm, black, glossy, reticulate.

Distribution. The subspecies is native to the Neotropics, encompassing the Caribbean, eastern Mexico and Florida, Central America, and northern South America, with its range extending southward to Paraíba in northeastern Brazil (Barthlott & Taylor, 1995). Its occurrence in Bandung was previously reported by Raihandhany and Wicaksono (2022).

Habitat and ecology. *R. baccifera* subsp. *baccifera* occurs as an epiphyte in urban environments in Bandung, growing on trees such as *Pterocarpus indicus* Willd. (Fabaceae) and *Swietenia macrophylla* King (Meliaceae), at elevations up to 758 m. It is commonly found in roadside plantings, parks, and residential areas, where suitable host substrates and favorable microclimatic conditions support its establishment. Seed dispersal is likely mediated by frugivorous birds, as reported in previous studies, with small, sticky seeds passing intact through the digestive tract and subsequently germinating at deposition sites (Raihandhany & Wicaksono, 2022). The presence of both juvenile and reproductive individuals indicates successful persistence under urban conditions.

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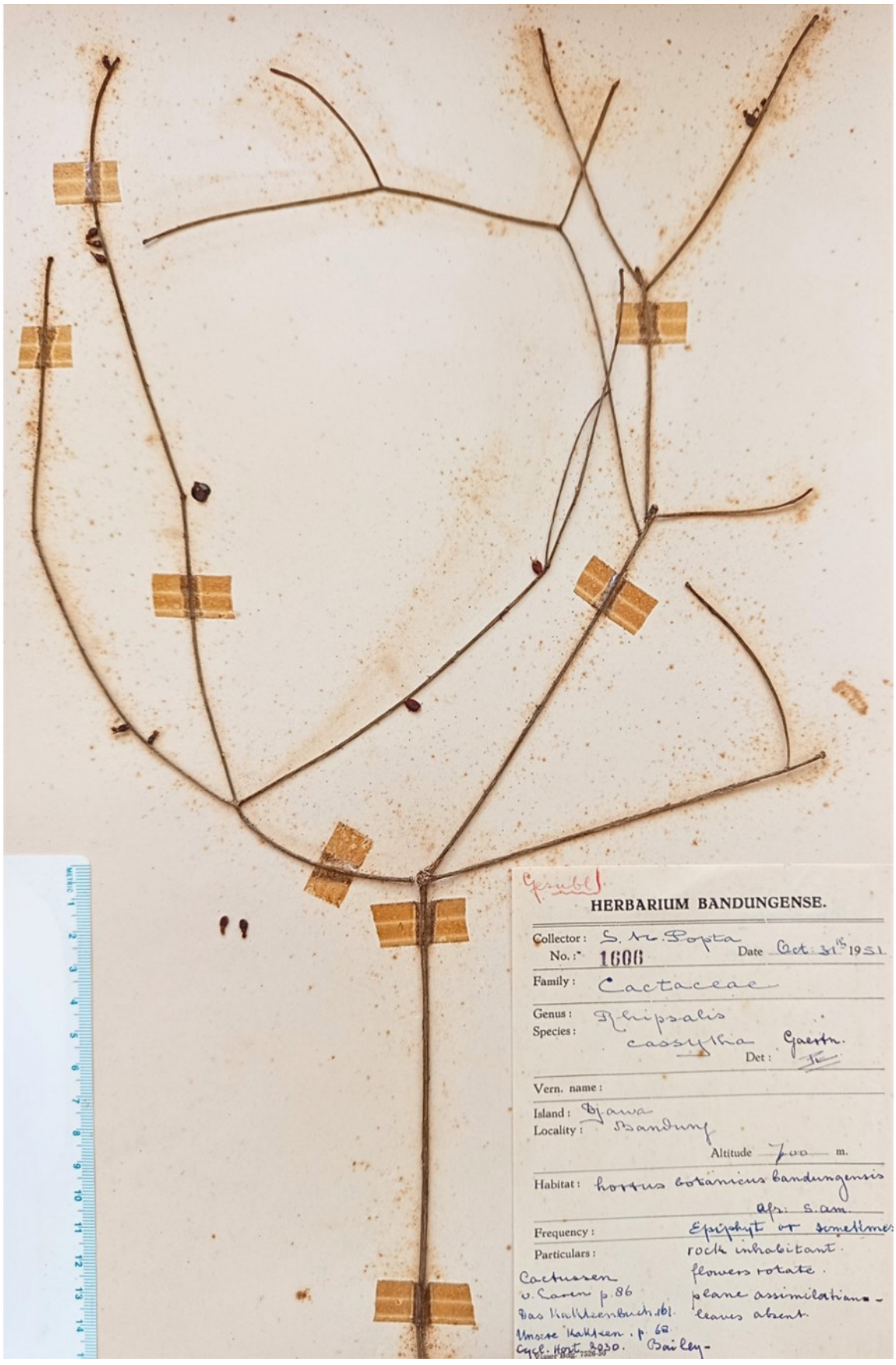

Figure 1. The earliest herbarium specimen of *R. baccifera* subsp. *baccifera* recorded from Bandung (*Popta 1606*, 1951).

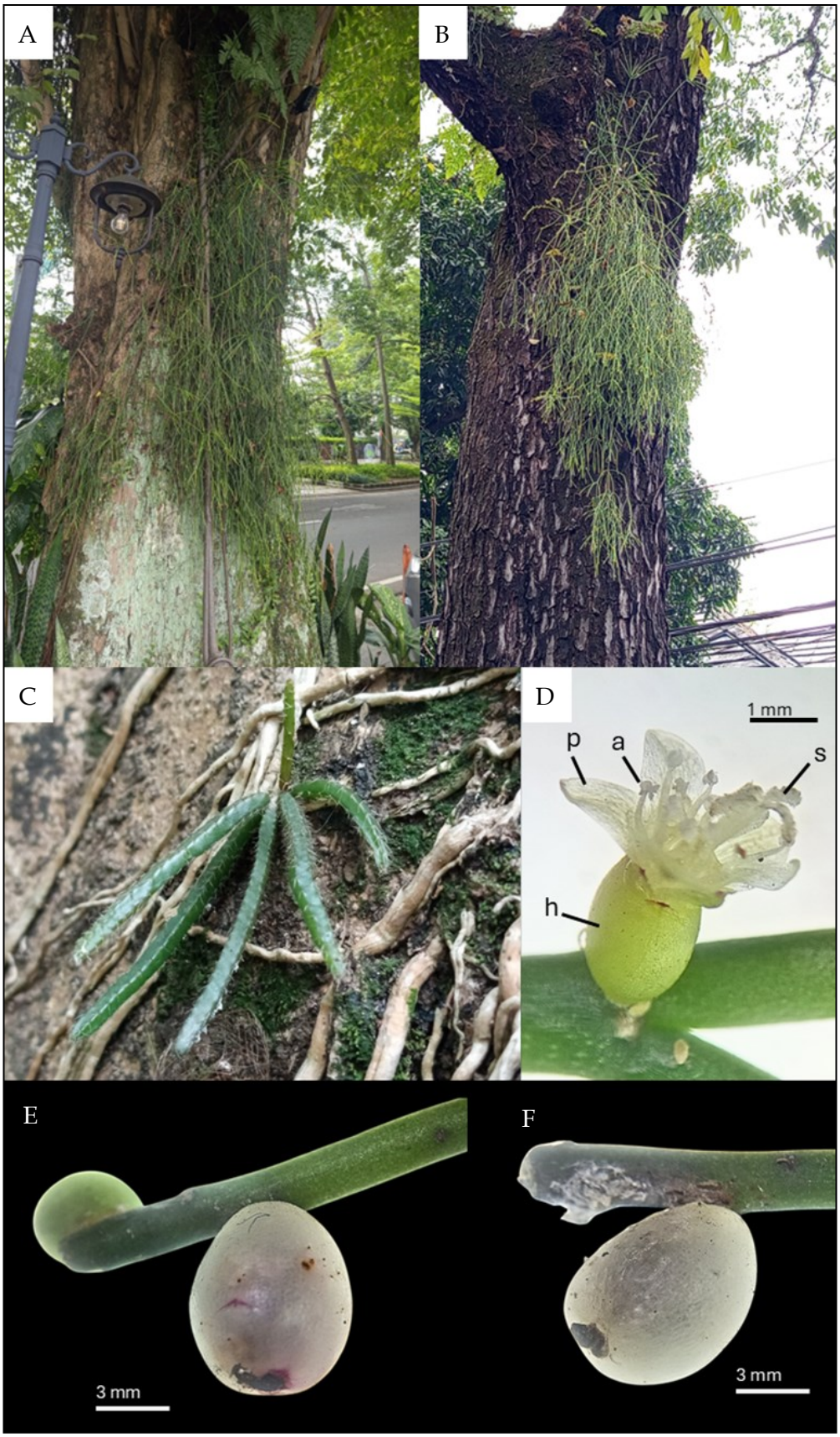

Figure 2. *R. baccifera* subsp. *baccifera*. A. Habit (growing on *P. indicus*), B. Habit (growing on *S. macrophylla*) C. Bristly juvenile plant, D. Floral parts (a= anther; h= hypanthium; p= petaloid; s=stigma), E. Pinkish-colored fruit, F. White fruit.

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Figure 3. Recently collected specimen of *R. baccifera* subsp. *baccifera* (*ASD Irsyam 1289*).

Specimens examined. INDONESIA. Java: West Java, Bandung, Hortus Botanicus Bandungensis, 700 m asl, 31.X.1951, *S.M. Popta 1606* (FIPIA); Jl. Hasanudin, roadside, on *P. indicus*, 1.XI.2017, *A.S.D. Irsyam s.n.* (FIPIA; UIDEP); Jl. Ganesha, on *P. indicus*, 6°53'37.4"S 107°36'45.2"E, 758 m asl, 07.IV.2026, *A.S.D. Irsyam 1288* (FIPIA; UIDEP); Jl. Hasanudin, on *P. indicus*, 6°53'48.89"S 107°37'01.24"E, 758 m asl, 07.IV.2026, *A.S.D. Irsyam 1289* (FIPIA); Jl. Hasanudin, on *P. indicus*, 6°53'41.6"S 107° 36'51.0"E, 755 m asl, 07.IV.2026, *A.S.D. Irsyam 1290* (FIPIA); Jl. Imam Bonjol, on *P. indicus*, 6° 53'40.4"S 107°36'55.0"E, 756 m asl, 07.IV.2026, *A.S.D. Irsyam 1291* (FIPIA); Jl. Imam Bonjol, on *P. indicus*, 6°53'40.4"S 107°36'55.0"E, 756 m asl, 07.IV.2026, *A.S.D. Irsyam 1292* (FIPIA); Jl. Imam Bonjol, on *S. macrophylla*, 6°53'39.4"S 107°36'55.5"E, 756 m asl, 07.IV.2026, *A.S.D. Irsyam 1293* (FIPIA); Jl. Tengku Angkasa, on *P. indicus*, 6°53'39.3"S 107°36'57.8"E, 755 m asl, 07.IV.2026, *A.S.D. Irsyam 1294* (FIPIA; UIDEP); Jl. Surya Kencana, in front of Kapel Katolik Hati Kudus Yesus, on *S. macrophylla*, 6° 53'39.0"S 107°36'51.3"E, 758 m asl, 07.IV.2026, *A.S.D. Irsyam 1295* (FIPIA; UIDEP).

The present study confirms the occurrence of *R. baccifera* in Bandung, West Java, Indonesia, based on multiple voucher specimens accompanied by complete and verifiable collection data. In contrast to earlier reports by Raihandhany and Wicaksono (2022), which were based primarily on field observations, the absence of voucher specimens and complete metadata in those studies limits their reproducibility and independent verification, and increases the risk of misidentification in a morphologically variable genus such as *Rhipsalis*. Although previous studies provided useful ecological observations, their taxonomic reliability remains uncertain. The availability of well-documented voucher specimens in the present study enables independent validation and demonstrates the long-term persistence of the species in the region.

The species is taxonomically divided into five infraspecific taxa: *R. baccifera* subsp. *baccifera*, *R. baccifera* subsp. *cleistogama*, *R. baccifera* subsp. *erythrocarpa*, *R. baccifera* subsp. *horrida*, and *R. baccifera* subsp. *mauritiana*. The Bandung population is best assigned to *R. baccifera* subsp. *baccifera*, based on its elongate, cylindrical, and pendent stems, as well as its white flowers and white to pink fruits, consistent with the description provided by Sinkovic (2019). This subspecific identification represents an advance over previous reports, in which the material was not resolved to the infraspecific level.

Herbarium evidence further indicates that the species has been present in Bandung for several decades. A historical specimen collected by S.M. Popta on 31 October 1951 represents the earliest confirmed record from the region, suggesting that the species is not a recent introduction but has persisted locally over an extended period. Subsequent collections in 2017 and 2026 corroborate its continued presence, indicating that the species is likely naturalized rather than a recent introduction.

In conclusion, the confirmed presence of *R. baccifera* subsp. *baccifera* in Bandung contributes to a more robust understanding of its distribution in Malesia. The establishment of a verifiable, vouchered record provides a critical reference point for future research. This includes molecular analyses to assess genetic affinities and dispersal history, population ecological studies to evaluate establishment and spread, and expanded field surveys to determine the species' distribution in other regions of Indonesia.

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