

## DECAISNINA SAMAENSE (LORANTHACEAE): A NEW MISTLETOE SPECIES FROM SIMUNUL ISLAND, PHILIPPINES

ARKADY A. TAHIL<sup>1,2</sup>

**Abstract.** *Decaisnina samaense*, a new species of Loranthaceae from the Island of Simunul, Southern Philippines, is hereby described and illustrated. It is distinguished from all *Decaisnina* species by having narrowly lanceolate and narrowly ovate-lanceolate leaf laminae with a remarkable acuminate apex, flower buds being globularly inflated at the base with corolla color being yellow in the lower half and pastel green in the upper half and often blackish at the tip, and inflorescence consistently produce both triads and peduncles along the axis. It is related to *Decaisnina stenopetala* and *D. zollingeri* by exhibiting globular inflation at the base of the flower buds but differs from the two by having longer bracts, longer anthers, and the free part of the filament shorter. *Decaisnina samaense* is hereby assessed as Critically Endangered (CR B1, B2a&c, D).

**Keywords:** *Decaisnina*, globular inflation, Loranthaceae, Mistletoe, Simunul Island, taxonomy

Commonly known as Mistletoes, species in Loranthaceae are aerial hemiparasitic plants growing on shrubs and trees, often spreading along the host by epicortical roots or runners, and nodes not articulated, glabrous or producing stellate or verticillate indumentum; the petiolate leaves can be opposite or alternate, without stipules, the leaf blade simple, pinnately veined with margin entire. Inflorescence of this family can be axillary or terminal, racemes, spikes or umbels (Huaxing and Gilbert, 2003). In *Decaisnina* Tieghem in particular, the flower buds are born in simple dichasium or triads with a simple bract subtending each flower (Barlow, 1993). This is one of the diagnostic features of the genus *Decaisnina* in which the inflorescence is brush-like in appearance as a result of having aggregated flower buds borne in triads turning upwards on their peduncles. Distributed in the islands of Indonesia, Philippines, Papua New Guinea, Australia, Tahiti and Marquesas islands, the genus has hermaphroditic flowers, usually regularly and basically choripetalous and are commonly 6-merous. Flower buds are sometimes inflated in the basal part and the inflation can be very remarkable or weak to form a distinct nectar chamber (Barlow, 1993). The weak but conspicuous inflation of basal part of the corolla bud has been documented in some species such as *Decaisnina aherniana* (Danser) Barlow (Danser, 1935), *D. cumingii* (Tieghem) Barlow (Barlow, 1993), *D. miniata* (Danser) Barlow (Elmer, 1913) and *D. ovatifolia* (Merrill) Barlow (Merrill, 1909). The inflation is weak to conspicuous which shows the corolla base being inflated below (but not globular) then gradually tapering towards the tip of the bud.

A remarkable form of inflation is documented in *D. stenopetala* (Oliver) Barlow and *D. zollingeri* (Tieghem) Barlow (Danser, 1931). The inflation in these two species

is characterized by a very conspicuous globular swelling in the base of corolla, followed by slight or weak constriction above followed by a slight inflation. Surprisingly, during a taxonomic study of plants in the island of Simunul in Southern Philippines, a species of *Decaisnina* was encountered that showed striking globular inflation similar to that of *D. stenopetala* and *D. zollingeri*. However, aside from having yellow flower buds, it has other characters distinguishable from the two related species and the rest of the species in the genus (see Appendix). Moreover, this is the first account of globular inflation among the Philippine species of *Decaisnina*. Assuming that these morphological differences are an indication of reproductive isolation, the *Decaisnina* species from Simunul Island is described as new species here under a biological species concept (Mayr, 2000), and adds to the growing number of *Decaisnina* species in the Philippines.

***Decaisnina samaense* Tahil, sp. nov.**

TYPE: PHILIPPINES. Mindanao: Sulu archipelago, Simunul Island, Bakong, 4°53'27"N, 119°47'39"E, secondary forest, 5 m, 18 July 2021, A. Tahil 420 (Holotype: CEBU; Isotypes: CAHUP, CEBU). Fig. 1–2.

*Species nova affinis Decaisnina stenopetala* (Oliver) Barlow et *Decaisnina zollingeri* (Tieghem) Barlow *similis, sed foliis paene lanceolatis et paene ovatis-lanceolatis apud praeclarum acuminatae apex, alabastra quod globosam inflatam apud quod fundamen apud corolla color flavor in minus medium et pastellus viridi in superiores medium, saepe nigricans apud apex et inflorescentiae fructus tum triadorum et pedunculus secus axis constantius, bracteis 3–4.5 mm longis, antheris 5–6.5 mm longis et liberis pars autem filamentorum 2–2.2 mm longis distinguuta.*

This discovery is dedicated to the late Dr. Filemon Romero, a professor Emeritus and former chancellor of the Mindanao State University – Tawi-Tawi and a pioneering scientist and environmentalist of the Tawi-Tawi province whose fruitful life was cut short during the pandemic. The author is greatly indebted to the herbarium staffs of K, B, MO and P for providing useful high quality images of their specimens via their publicly accessible databases, to the Ministry of Environment, Natural Resources and Energy for the issuance of necessary permits for this study, to A. I. Tahiluddin for the assistance during the fieldwork in Simunul Island, to the two anonymous reviewers for their constructive criticisms, and to M. R. T. Samsuya for the support and endless encouragement.

<sup>1</sup> Institute of Oceanography and Environmental Science, Mindanao State University - Tawi-Tawi College of Technology and Oceanography, Tawi-Tawi 7500, Philippines; kadmymcrowell@gmail.com

<sup>2</sup> Philippines Biodiversity Conservation Foundation Inc., c/o Negros Forest Ecological Foundation Compound, South Capitol Road, Bacolod City 6100, Negros Occidental, Philippines

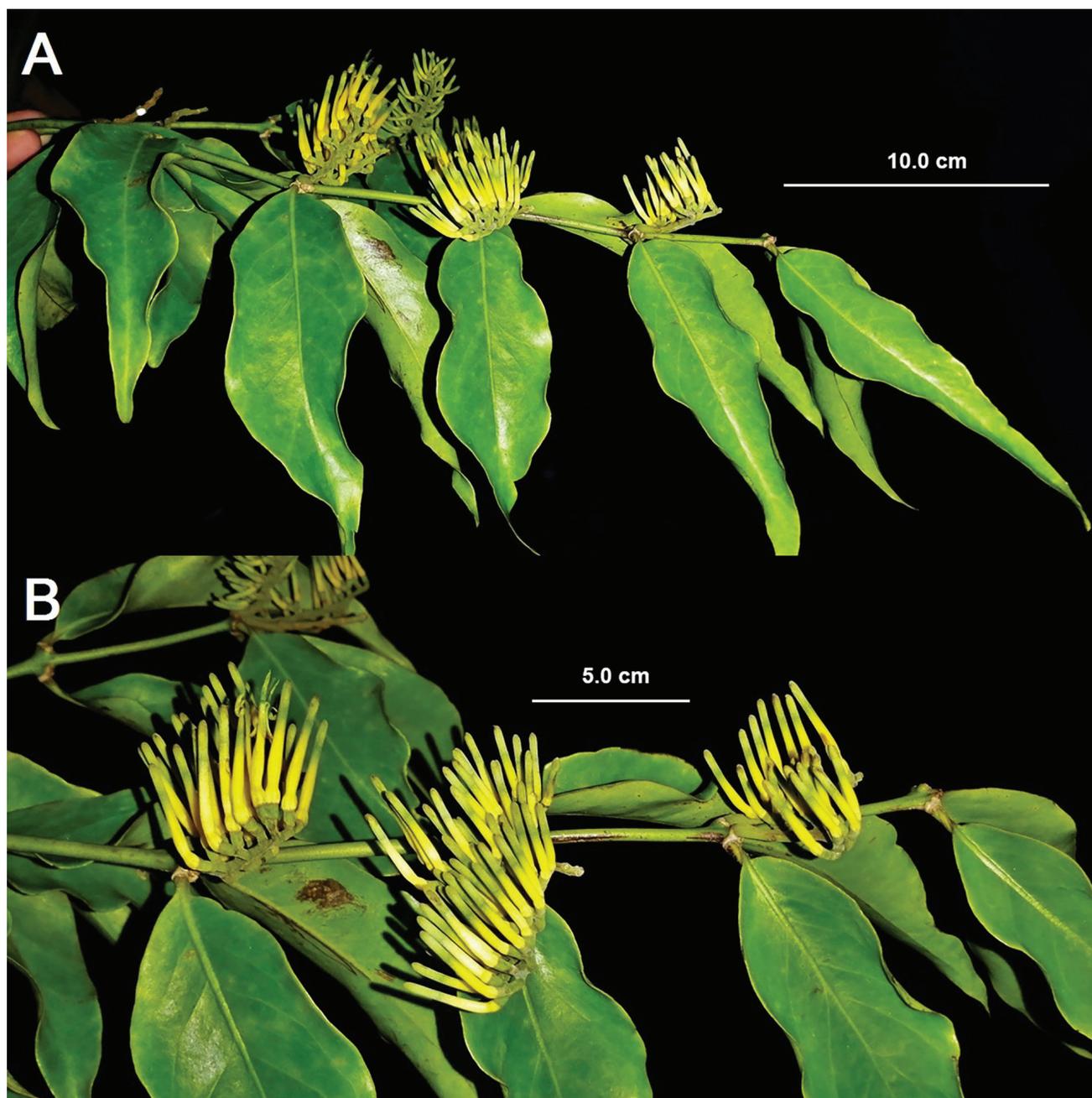


FIGURE 1. *Decaisnina samaense* Tahil. **A**, plant showing a branch with leaves and and inflorescences; **B**, close-up view showing the number of pairs of inflorescences. Based on the holotype.

*Plant* hemiparasitic with no epicortical runners. *Stems* robust, slightly flattened to terete, glabrous, pastel green when young, becoming dark brown upon maturity, 50–70 cm long; internodes slightly flattened, 5–8 cm long. *Leaves* bifacial, decussate, evenly placed; lamina distinctly narrowly lanceolate and narrowly ovate-lanceolate, (11–)12–22(–24) × 5–7.5(–9) cm, subcoriaceous, up to 1 mm thick, apex remarkably acuminate, tapering towards the elongated tip, base rounded or obtuse, adaxial glabrous, green to light green in color, very glossy, abaxial glabrous, pastel green; margin slightly flattened, glabrous; midvein glabrous at both sides, remarkably raised from the leaf lamina especially from the

lower half, secondary veins slightly to remarkably raised from the leaf lamina, tertiary veins inconspicuous; petiole subterete, flattened at the surface, twisted once, glabrous, 4–5 × 2–2.5 mm, 1.8–2 mm thick. *Inflorescence* axillary, racemes of decussate triads and pedicels, four to six per axil, usually in pair per node, flowers pedicellate, bract at the base of inflorescence absent; axis minutely pubescent with very small whitish hairs which are almost inconspicuous, slender, soft, 35–40 × 4.5–5 mm, bearing 4–5 pairs of triads and 1–2 pairs of peduncles after the triads distributed along the entire length; peduncle of triads and peduncle of flower buds not in triads 3–5.5 mm long, highly deciduous upon

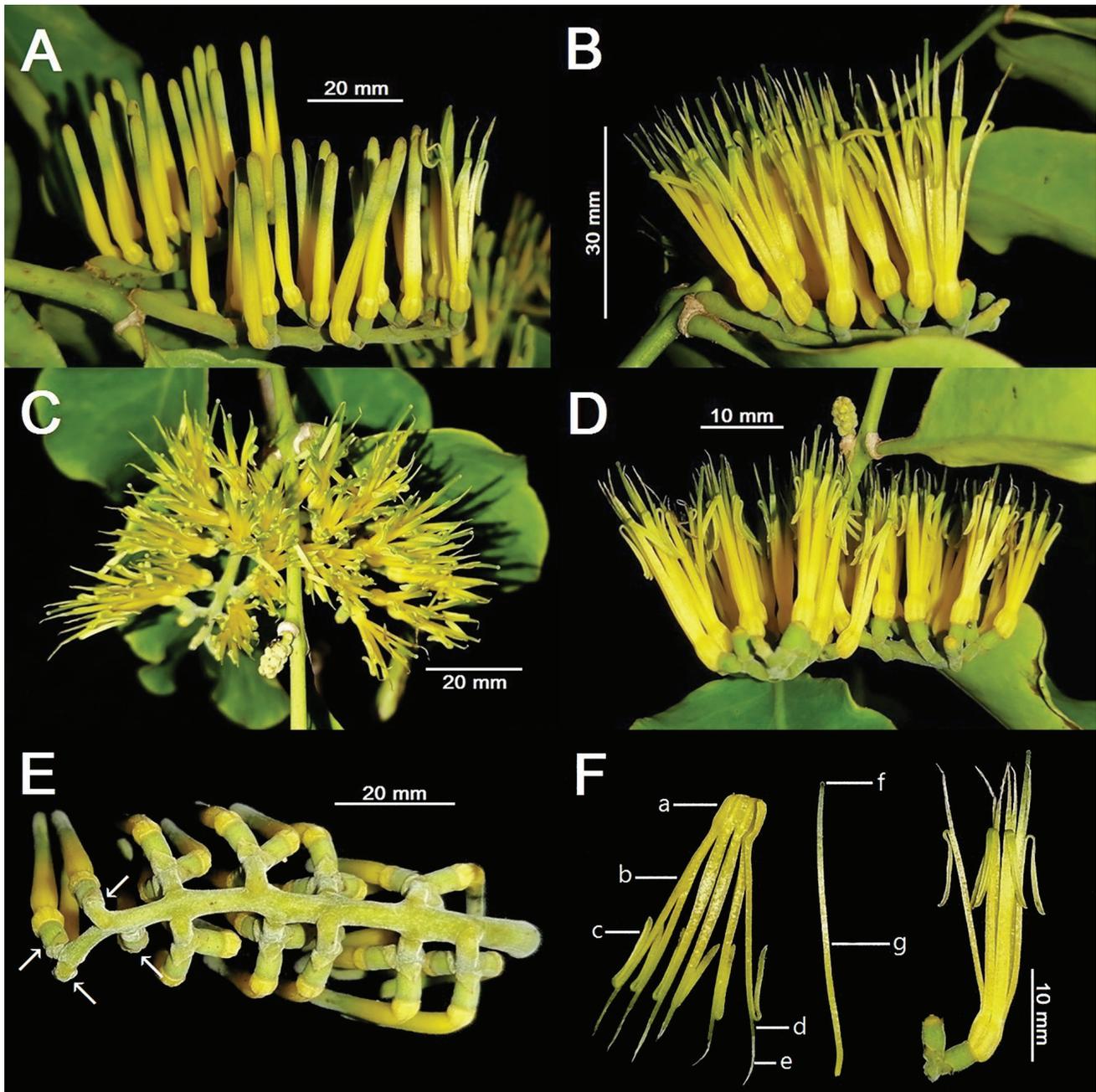


FIGURE 2. *Decaisnina samaense* Tahil. **A**, young flower buds showing globular inflation at the base; **B**, flower buds at anthesis; **C**, adaxial view of reflexed flower buds; **D**, a pair of inflorescences; **E**, abaxial view of the inflorescence showing five pairs of triads and two pairs of peduncles (arrows) along the axis; **F**, dissected flower bud (**a**, Globular inflated base; **b**, Corolla; **c**, Corolla lobes; **d**, Free part of the filament; **e**, Anther; **f**, Stigma; **g**, Style). Based on the holotype.

maturity; pedicels of all lateral flower buds 4–4.5 mm long; bracts spreading, acute, 3–4.5 mm wide and long. *Ovary* subspherical, 1–2 mm long, glabrous, green; calyx limb erect, dull in color, glabrous, 0.4–0.5 × 1.5–2 mm. *Corolla* in the mature bud robust, cylindrical, with globular inflation at the base (2–2.5 mm), slightly constricted above the globular inflation, slightly inflated after the slight constriction, minutely pubescent with very small whitish hair, 28–30 mm long, apex blunt; petals bright yellow, glossy, up to 22 mm from the base, pastel green above and often blackish at

the tip (0.4–0.6 mm), minutely pubescent with very small whitish hairs outside, glabrous inside, reflexed at anthesis 8–9 mm from the tip, corolla lobes 8.5–9.2 mm long, bright yellow, coherent as a tube 4–5 mm after the globular inflated base. Corolla splits deep up to 25 mm from the tip to the lower part of the bud. *Anthers* basifixed, immobile, 5–6.5 mm long, apex acute, free part of the filaments 2–2.2 mm long, glabrous. *Style* slender, cylindrical, consistent in diameter all throughout except the upper 4–5 mm from the stigma which slightly reduces in diameter, light yellow in

the lower half and pastel green above; *stigma* spherical, slightly smaller in diameter than most part of the style, dark green, glabrous. *Fruits* and *seeds* not observed.

**Additional specimens examined:** PHILIPPINES. Mindanao: Sulu archipelago, Simunul Island, Bakong, 4°53'27"N, 119°47'39"E, 5 m, 18 July 2021, *A. Tahil 421* (CEBU). Tubig Indangan, 4°89'66"N, 119°84'10"E, 4 m, 19 July 2021, *A. Tahil 422* (CAHUP).

**Habitat and distribution:** *Decaisnina samaense* is known only from the small Island of Simunul. All the collections were found in the secondary forest of the island at 0–5 m above sea level. The area is dominated by *Psychotria* sp. (Rubiaceae) and *Melicope* sp. (Rutaceae). The species was found infecting and growing only on *Melicope* sp.

**Conservation status:** *Decaisnina samaense* has been collected few times, all in distributed secondary forests of the Simunul island which occupies a total area of only less than 5 km<sup>2</sup>. Most parts of the forest are already converted for agriculture and none of these have any protected status. There is also an apparently increasing density of local settlers in the island. Since only few populations were documented from its type locality and the species is restricted only in the Simunul Island, following the Red List Criteria of the International Union for the Conservation of Nature, the species is hereby considered as Critically Endangered (CR B1, B2a&c, D; IUCN 2017).

**Etymology:** The epithet of this taxonomic novelty honors the indigenous Sama people of the Simunul Island.

*Decaisnina samaense* is closely related to *D. stenopetala* and *D. zollingeri* due to the globular inflation in the base of its flower buds. These three species also produce numerous pairs of triads in their inflorescences. However, the combination of characters present in *D. samaense* clearly demonstrates its distinctiveness from these two species and the rest of the species in the genus. *Decaisnina samaense* is readily distinguishable from all *Decaisnina* species by having narrowly lanceolate and narrowly ovate-lanceolate leaf lamina with remarkable acuminate apex, flower buds being globularly inflated at the base with corolla color being yellow in the lower half and pastel green in the upper half and often blackish at the tip and inflorescence produce both triads and peduncles along the axis. Moreover, the consistent production of both triads and peduncles in the axis of the inflorescence of *D. samaense* is unique among the species of *Decaisnina*. The axis produces 4–5 pairs of triads and followed by the production of 1–2 pairs of peduncles each bearing a single flower bud that is highly deciduous upon maturity. *D. samaense* further differs from its related species *D. stenopetala* and *D. zollingeri* by having the longest bract (3–4.5 mm vs. 1–1.5 mm vs. 1 mm), longest anther (5–6.5 mm vs. 3–4 mm vs. 3 mm) and shortest free part of the filament (2–2.2 mm vs. 4–5 mm vs. 3.5 mm).

#### LITERATURE CITED

- BARLOW, B. A. 1993. Conspectus of the genera *Amylothea*, *Cyne*, *Decaisnina*, *Lampas*, *Lepeostegeres*, and *Loxanthera*. *Blumea* 38: 70–101.
- DANSER, B. H. 1931. The Loranthaceae of the Netherlands Indies. *Bull. Jard. Bot. Buitenzorg* III, 11: 233–519.
- . 1935. A revision of the Philippine Loranthaceae. *The Philippine Journal of Science* 58, No. 1: [page range].
- ELMER, A. W. 1913. *Loranthus* from Mt. Urdaneta. *Leaflets of Philippine Botany* 6: 1959–1971.
- HUAXING, Q. AND M. G. GILBERT. 2003. *Flora of China* 5: 220–239.
- IUCN. 2017. Guidelines for using the IUCN red list categories and criteria. Version 13. Prepared by the Standards and Petitions Subcommittee. Available from: <http://www.redlist.org/documents/RedListGuidelines.pdf> (accessed July 23, 2021)
- MAYR, E. 2000. The biological species concept. In Q. D. WHEELER AND E. MEIER, EDs., *Species concepts and phylogenetic theory: a debate*. Columbia University Press, New York.
- MERRILL, E. D. 1909. A revision of Philippine Loranthaceae. *Philippine Journal of Science* 4: 129–153.

#### APPENDIX

##### DECAISNINA SPECIMENS EXAMINED FOR MORPHOLOGICAL COMPARISON

- Decaisnina aherniana* Merr. (Barlow). PHILIPPINES. Mt. Apo, Todaya, District of Davao, Mindanao Island, September 1909, *A. D. E. Elmer 11747* (B100295029, K000848325).
- Decaisnina amplexicaulis* (Danser) Barlow. PHILIPPINES. Mt. Candoon, Bukidnon, Mindanao Island, June–July 1920, *M. Ramos & G. Edaño 38740* (B100295040, K000848332).
- Decaisnina confertiflora* (Merr.) Barlow. PHILIPPINES. Leyte, Visayas, 30 May 1915, *C. A. Wenzel 1249* (MO799668).
- Decaisnina congesta* Barlow. AUSTRALIA. State forest Reserve, Bridle L.A., 12 January 1978, *B. Gray 1168* (MO3816959).
- Decaisnina crassilimba* (Merr.) Barlow. PHILIPPINES. Mt. Umingan, Nueva Ecija province, Luzon Island, August–September 1910, *M. Ramos & G. Edaño 26409* (K000848329).
- Decaisnina cumingii* (Tiegh.) Barlow. PHILIPPINES. Locality not specified, “Manille”, date not specified, 1894, *Cuming 1969* (P00756232); Mt. Apo, Todaya, District of Davao, Mindanao Island, May 1909, *A. D. E. Elmer 10617* (K000848334).
- Decaisnina djamuensis* (Krause) Barlow. PAPUA NEW GUINEA. Locality not specified, 21 February 1908, *R. Schlechter 17319* (B100295059); West Irian, Baliem valley path, Wamena-Wellesey, 26 August 1966, *A. J. G. H. Kostermans & W. Soegeting 569* (P06619651).