

***Thismia velaris* and *T. dasyantha*, two new species of *Thismia* section *Thismia* subsect. *Odoardoa* (Thismiaceae) from Sarawak, Malaysia**

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
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
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
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
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
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Abstract

Thismia velaris and *T. dasyantha* (Thismiaceae), two new species from Sarawak (Malaysian Borneo), are described. Key distinguishing features, particularly in floral structure, are highlighted through comparative morphological analyses accompanied by illustrations. Additionally, phylogenetic relationships are assessed using molecular data, and both newly described species are placed within the broader evolutionary framework of *Thismia*. Both species, being characterized by vermiform roots and six free tepals of equal shape and size, are classified within *Thismia* sect. *Thismia* subsect. *Odoardoa*. Preliminary conservation assessments, following IUCN Red List criteria, suggest that both species may be at risk due to their restricted distributions and potential habitat threats. Through the discovery of *T. velaris* and *T. dasyantha*, the diversity and biogeographical patterns of *Thismia* in Borneo are further elucidated, emphasizing the need for continued exploration and conservation efforts.

Key words: Borneo, Dioscoreales, mycoheterotrophy, rainforest, taxonomy

Introduction

Thismia Griffith (1845: 221) is a genus of tiny mycoheterotrophic monocot plants primarily found in the understorey of tropical and subtropical forests. The genus comprises 117 species (Nuraliev & Sennikov 2025, Siti-Munirah & Mohamad Alias 2025), with its main distribution in tropical regions of Asia, Australia, and South America, and extending into subtropical and temperate areas of Japan, New Zealand, Australia, and the USA (Merckx *et al.* 2013). Recent phylogenetic studies suggest that *Thismia* is polyphyletic in its current concept, with the neotropical species forming a distinct group alongside *Tiputinia* P.E.Berry & C.L.Woodw. in Woodward *et al.* (2007: 158), likely representing a separate genus (Shepeleva *et al.* 2020). The type species of *Thismia*, *T. brunonis* Griffith (1845: 221), is native to Myanmar (Jonker 1938). Therefore, the Old World clade (which also includes *T. americana* N. Pfeiffer (1914: 123) from North America) should be considered *Thismia* s. str. (Shepeleva *et al.* 2020).

Thismia species were once considered extremely rare and narrowly endemic, but recent discoveries in Borneo suggest that some species are more widely distributed than previously believed, exhibiting distributions similar to some other tropical herbs (Dancák *et al.* 2020a). Borneo, along with the Malay Peninsula, is a centre of *Thismia* diversity in Southeast Asia (Siti-Munirah & Mohamad Alias 2025), hosting 24 known species (Dancák *et al.* 2020b). The number of described species has increased significantly worldwide over the past decade, with most new discoveries coming from Borneo (e.g. Hroneš *et al.* 2018, Sochor *et al.* 2018, Dancák *et al.* 2020a), the Malay Peninsula (e.g. Siti-Munirah

& Dome 2023, Siti-Munirah *et al.* 2024, Besi *et al.* 2024) and also from tropical America (e.g. Aguilar-Cano *et al.* 2023, da Silva *et al.* 2023). Additionally, the genus was recently discovered in the Solomon Islands, where three of its species have been described (Chung *et al.* 2024).

Thismia sect. *Thismia* subsect. *Odoardoa* Schlechter (1921: 35) is one of the most species-rich groups of Old World *Thismia*, comprising 23 described species (Siti-Munirah & Alias 2025). Most of its species are found in Borneo (11 species) and the Malay Peninsula (10 species), with the other occurrences in southern Thailand, southern Vietnam, and almost certainly in Sumatra, as follows from the photographs posted on the iNaturalist website (www.inaturalist.org/observations?taxon_id=1304068).

During our fieldwork in Sarawak (Malaysian Borneo) in 2023 and 2024, we discovered two new species of *Thismia* from *T.* sect. *Thismia* subsect. *Odoardoa*, bringing the total number of the known Bornean *Thismia* species to 26 and the number of *T.* sect. *Thismia* subsect. *Odoardoa* species worldwide to 25. These two new species are described below. Five genetic loci were further sequenced to reveal the phylogenetic position of these two new species in *Thismia* phylogeny.

Material and methods

This study is based on material collected in January and November 2023, and February and December 2024, in Bintulu and Kuching Divisions of Sarawak. Morphological characters were examined using a hand lens (30–60× magnification), stereomicroscope, and macro photography. The collected specimens were compared with original drawings and descriptions provided in the protologues of representatives of *Thismia* sect. *Thismia* subsect. *Odoardoa*. The preliminary conservation assessments are based on the guidelines of the IUCN Standards and Petitions Subcommittee (2025). The extent of occurrence (EOO) and area of occupancy (AOO) were calculated using GeoCAT (<https://geocat.iucnredlist.org/>) as outlined by Bachman *et al.* (2011). Herbarium vouchers for this study are deposited in SAR. Additionally, herbarium material deposited in BM, BRUN, K, KEP, SAN, SAR and SING was examined and compared with the species described here (herbarium acronyms according to Thiers 2025+).

DNA was extracted from silica gel-dried above-ground parts of the plants using the CTAB method (Doyle & Doyle 1987), and three nuclear rDNA loci—LSU (26S rDNA; large subunit), ITS (internal transcribed spacer, including 5.8S rDNA), and SSU (18S rDNA; small subunit), plus two mitochondrial loci (*atpA*, *matR*) were sequenced following Sochor *et al.* (2018). Sequences of *T. alba* Jonker (1948: 23), *T. annamensis* K. Larsen & Averyanov (2007: 13), *T. bryndonei* Tsukaya, Suetsugu & Suleiman (2017: 135), *T. filiformis* Chantanaorrapint (2012: 69), and four outgroup species (not from *T.* sect. *Thismia* subsect. *Odoardoa*) were adopted from Shepeleva *et al.* (2020). All specimens available to us were included in the preliminary phylogeny reconstruction. Subsequently, the sampling was restricted to the clade of *T.* sect. *Thismia* subsect. *Odoardoa*. In the final phylogenetic inference, we used 22 specimens representing 16 *Thismia* sect. *Thismia* subsect. *Odoardoa* species, including the two species described here and two additional undescribed species, three specimens of *T. neptunis* Beccari (1878: 251) traditionally placed in *T.* sect. *Thismia* subsect. *Brunonithismia* Jonker (1938: 242) or in its own section, *T.* sect. *Sarawakia* Schlechter (1921: 35), and six outgroup species. The specimens included in the analysis are listed in Appendix 1. Bayesian phylogenetic inference was computed using MRBAYES (ver. 3.2.4; Ronquist *et al.* 2012) with 20 million generations, sampling every 1000th generation, in two independent runs, each with 4 chains; the first 10 million generations (50 %) were excluded as burn-in.

Taxonomic treatment

Thismia velaris Dančák, Sochor & Hroneš, *sp. nov.* (Fig. 1 & 2)

Diagnosis:—*Thismia velaris* is externally similar to *T. malayana* but differs by floral tube colourless translucent between veins (vs. brown in the upper half), flat annulus (vs. outer margin of annulus prominently raised), having three triangular lobes on supraconnective apex (vs. five appendages of three different shapes and sizes), and the central part of the lateral appendage elongated into membranaceous veil exceeding the apices of the supraconnective lobes (vs. central part of the lateral appendage without the veil, not exceeding the apex of the supraconnective appendages).



FIGURE 1. *Thismia velaris*. **A–D.** Overall appearance showing more (A, C, D) and less (B) common morphotypes. **E.** Top view of flower. **F.** Dissected floral tube with colourless transverse bars and showing the position of stamen tube and style with stigma. **G.** Outer view of stamen with lateral appendage which central part is elongated into membranaceous veil. **H.** Lateral view of stamen (the neighbouring connective cut off). **I.** Top of the supraconnective (viewed from inside) with three distinct lobes. **J.** Style and stigma. Photos by M. Sochor (A, C, E–J) from *Dančák & Sochor BOR30/23* and M. Hroneš (B, D) from uncollected plants recorded at the same locality in 2024.

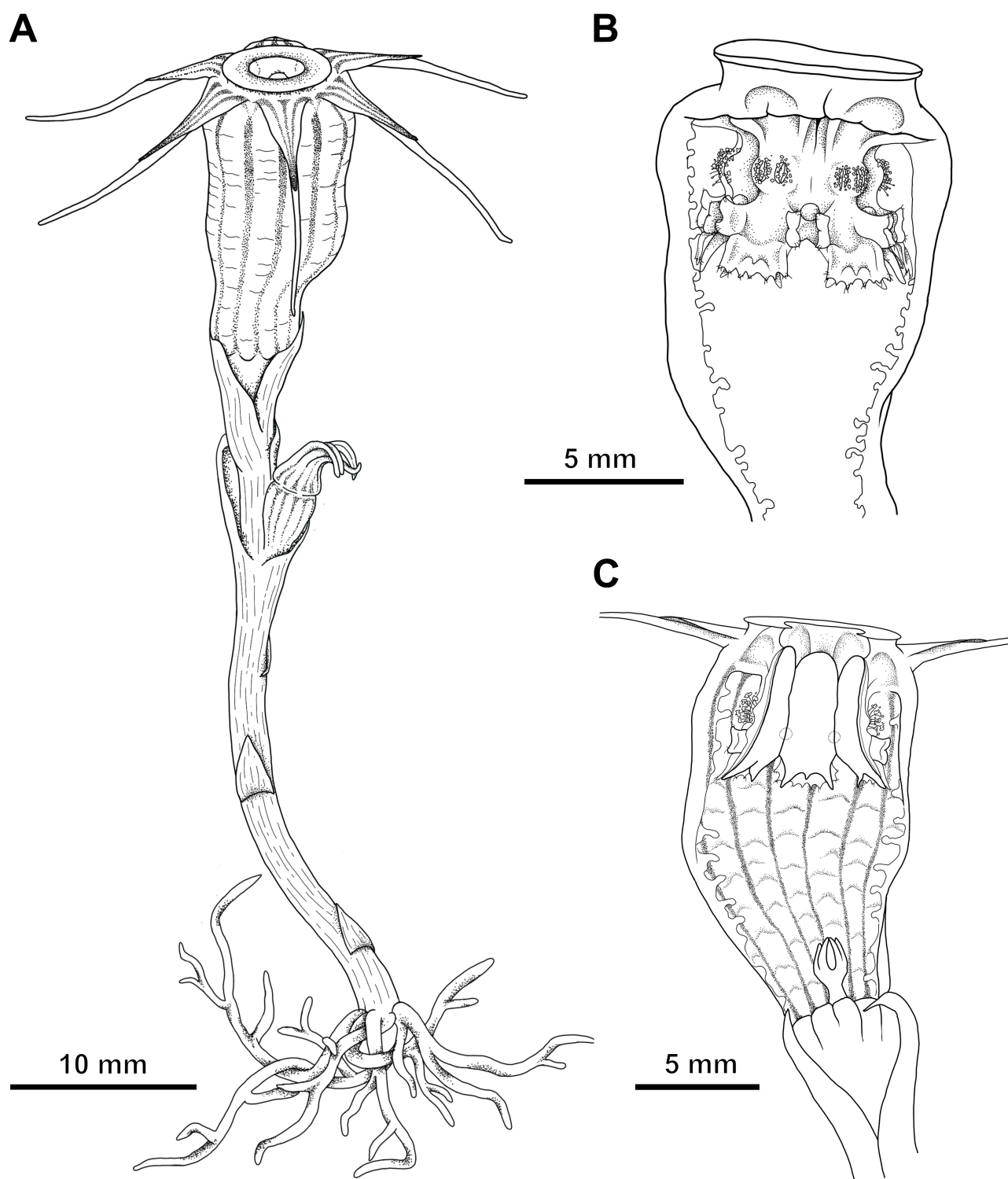


FIGURE 2. *Thismia velaris*. **A.** Habit of flowering plant. **B.** Outer view of stamens inside the dissected floral tube. **C.** Longitudinally dissected floral tube with inner view of stamens, transverse bars and style. Drawn by Nela Malá from Dančák & Sochor BOR30/23.

Type:—MALAYSIA. Sarawak: Kuching Division, Kuching District, Semenggoh Nature Reserve, lowland mixed dipterocarp forest 700 m WSW from the main entrance, 73 m a.s.l., 1.3970089° N, 110.3192761° E, 31 January 2023, Dančák & Sochor BOR30/23 (holotype SAR! [in spirit]).

Description:—**Achlorophyllous herb**, ca. 5–6 cm tall. **Roots** creeping, vermiform, \pm horizontal, sparsely branched, ca. 1 mm thick, pale brown. **Stem** 3.5–4.0 cm long, erect or ascending (to creeping), smooth, cream to pale brown, bearing 1 or 2 flowers. **Leaves** 4.5–5 \times ca. 2 mm, spirally arranged, appressed, scale-like, narrowly triangular, acute, entire, of the same colour as stem. **Bracts** subtending each flower 3, similar to leaves, but 7–8 mm long. **Flower** subsessile, generally actinomorphic (except for floral tube), ca. 14–20 mm long. **Floral tube** 10–15 mm long,

8.3–9.0 mm wide, asymmetric; its shape ranging from \pm cylindrical in the basal fifth, then conspicuously protuberant at one side, slightly narrowed at above the half and widest at the upper quarter to sixth, to the wider part of floral tube inclined at an angle to the narrow basal part and the ovary; outer surface \pm smooth, colourless to whitish, sometimes with orange-brownish tinge in upper third, translucent, with 12 orange to brown longitudinal veins slightly protruding above the surface of the tube as low ribs; inner surface with colourless transverse bars. **Annulus** thin, flat, hardly raised above the top of floral tube, outer margin circular to hexagonal, inner margin circular, transparent-yellow in the outer part, inner part brightly yellow to orangish and forming more or less distinct hexagonal figure. **Tepals** 6, equal in shape and size, 4–7 mm long, ca. 3 mm wide at base, narrowly triangular with arcuately widened base, translucent-yellow, pale orange to brown with three basally widened orange to brown stripes, gradually converging towards the apex; filiform appendage arising from the abaxial side of tepal, 6–8 mm long (measured from the tepal tip), tubular, apically unswollen, orange-brown or brown to dark brown, lighter at the apex. **Stamens** 6, pendent from the top of floral tube; filaments arcuately curved in both transversal and longitudinal view, sponge-like, yellow; connectives flattened, laterally connate to form a tube; each connective 5.5×2.0 mm, rounded and yellow at base, colourless and transparent in the middle; supraconnectives free, somewhat tapering, trilobed, blue, translucent; lobes triangular; lateral lobes ca. 0.9–1.0 mm long and 0.5–0.7 mm wide at base; the middle lobe ca. 0.4×0.3 mm; lateral appendage with two shallowly bilobed lateral wings each bearing several hairs, the middle part rather flat and extended downwards in the form of thin bluish-translucent veil rectangular in outline with the apical margin irregularly dentate-hairy, usually exceeding the apex of supraconnective lobes; interstaminal gland inserted on the line of fusion between connectives, globose. **Style** 1.3–1.5 mm long, brown to dark reddish-brown; stigma 3-lobed, lobes 1.3–1.4 mm long, bifid to ca. 1/4 of its length, papillate, very dark brown. **Ovary** inferior, ca. 3.5×3 –4 mm, obconical, slightly verrucose, pale brown, darker on top. **Fruit** an obconical orangish capsule (ripe fruit not seen). **Seeds** not seen.

Additional field records:—MALAYSIA. Sarawak: Kuching Division, Kuching District, Bako National Park [without precise locality], 22 February 2011, *photo Katarina Stenman* (www.inaturalist.org/observations/102264309); Semenggoh Nature Reserve, lowland mixed dipterocarp forest 700 m WSW from the main entrance, 73 m a.s.l., 1.3970089° N, 110.3192761° E, 1 February 2024, *photo M. Hroneš & A. Uvírová*.

Habitat:—The type population was found in a lowland mixed dipterocarp forest on a gentle slope with several shallow longitudinal depressions near a small running stream, indicating moderate humidity and a well-developed humus layer. Habitat at the second locality is not known.

Distribution:—*Thismia velaris* is known from two localities in western Sarawak. In addition to the type locality in Semenggoh Nature Reserve, a single individual was observed in Bako National Park.

Conservation status:—While the extent of occurrence (EOO) of *T. velaris* cannot be calculated from two points, the area of occupancy (AOO) is formally estimated at 8 km². Both known populations occur within protected areas (a nature reserve and a national park), and no population decline can be inferred or projected. However, the number of currently known individuals is markedly less than 50, and *T. velaris* is therefore preliminarily assigned a IUCN Red List status CR (D) according to the guidelines of the IUCN Standards and Petitions Subcommittee (2025).

Etymology:—The specific epithet is derived from the Latin word *velum* (veil, curtain), referring to the unique veil-like structure hanging from the lateral appendage of the stamen.

Notes:—Besides its distinctive colouration (Fig. 1), *Thismia velaris* is notable for the protruding to ventricose wall of its floral tube, a feature more closely resembling the unrelated Neotropical *T. panamensis* (Standley 1927: 163) Jonker (1938: 234) than the Old World congeners. Although some of the Old World *Thismia* species can be described as having zygomorphic floral tube, e.g. *T. abei* (Akasawa 1950: 193) Hatusima (1976: 7), *T. cornuta* Hroneš, Sochor & Dančák in Hroneš *et al.* (2018: 111) and *T. pappilata* Nuraliev & Yudina in Nuraliev *et al.* (2024: 262), their tube is either simply bent or bent and displaced from the ovary axis. On the other hand, the floral tube of *T. velaris* is typically cylindrical in its basal fifth, conspicuously protuberant on one side, slightly narrowed above the midpoint, and widest in the upper quarter to sixth.

Among the Old World species of *Thismia*, *T. velaris* shows considerable morphological resemblance to several species found in Borneo and the Malay Peninsula, namely *T. chrysops* Ridley (1895: 323), *T. inconspicua* Sochor & Dančák in Sochor *et al.* (2017: 264), *T. kinabaluensis* T. Nishioka & Suetsugu in Nishioka *et al.* (2018: 174) and *T. malayana* Siti-Munirah, Hardy-Adrian, Mohamad-Shafiq & Irwan-Syah in Siti-Munirah *et al.* (2024: 230). *Thismia inconspicua* from Borneo and *T. malayana* from the Malay Peninsula are also genetically related to *T. velaris*. These three species form a distinct clade among the other *Thismia* sect. *Thismia* subsect. *Odoardoa* species (Fig. 5). Morphologically, all the five above mentioned species share a distorted floral tube that is bent and displaced from the ovary axis. Apart from the more common morphotype of *T. velaris* with ventricose floral tube (Fig. 1A), in some individuals, the floral tube is shifted from the ovary axis, resembling the bent and displaced floral tube seen in the

aforementioned species (Fig. 1B). This variability suggests that floral tube shape alone may not suffice to distinguish *T. velaris* from these species. The structure of the connectives, however, provides a clear distinction. *Thisimia chrysops*, *T. inconspicua*, *T. kinabaluensis* and *T. malayana*, are characterized by a supraconnective with two claviform appendages, which are absent in *T. velaris*. In addition, *T. velaris* features a uniquely shaped lateral stamen appendage, which is elongated in the middle, hanging downward in the form of a translucent rectangular veil. This structure has not been documented in any other *Thisimia* species.

Thisimia dasyantha Dančák, Sochor & Hroneš, *sp. nov.* Fig. 3 & 4

Diagnosis:—*Thisimia dasyantha* is distantly similar to *T. pallida* but differs in annulus indistinct, flat, with opening ca. 1 mm in diameter (vs. annulus distinct, raised, with opening ca. 2 mm), the opening resembling a schematic outline of a hexamerous angiosperm flower (vs. opening circular), tepals basally connate, 2.5–3 mm wide at the base (vs. free, ca. 2 mm wide at the base), tepal appendages 10–14 mm long (vs. ca. 3 mm long), three appendages (vs. five appendages) on supraconnective apex, the middle appendage being the shortest (vs. the longest), and stigma lobes deeply bifid (vs. shallowly notched).

Type:—MALAYSIA. Sarawak: Bintulu Division, Tatau District, Rumah Agau, small patch of primary lowland mixed dipterocarp forest 900 m NW from the longhouse, 50 m a.s.l., 2.6346689N, 112.9343375E, 21 November 2023, Dančák & Hroneš MDMH2023/32 (holotype SAR! [in spirit]).

Description:—**Achlorophyllous herb**, ca. 4–6 cm tall. **Roots** creeping, vermiform, \pm horizontal, sparsely branched, ca. 1 mm thick, pale brown. **Stem** 2.5–4 cm long, erect or ascending, smooth, pale brown, bearing 1 or 2 flowers. **Leaves** 3.0–4.5 \times 1.4–2.1 mm, spirally arranged, appressed, scale-like, narrowly triangular, acute, entire, of the same colour as stem. **Bracts** 3, similar to leaves but 7–12 \times 1.7–3 mm. **Flowers** subsessile, actinomorphic,

ca. 12–16 mm long. **Floral tube** 9–11 mm long, 6–7.5 mm wide at the apex, symmetric, campanulate to funnel-shaped; outer surface pale brown, sometimes tinged with orange or pink, set by few to numerous whitish verrucae up to 1.5 mm long, with 12 red to brown longitudinal veins clearly extending above the surface of the tube as low ribs; inner surface with whitish to cream reticulation, without transvers bars. **Annulus** indistinct, thin, flat, with gradual transition to tepal bases, brown to red-brown; opening very narrow, distinctly raised above the surface; inner margin forming a hexaradial figure resembling a schematic outline of a hexamerous angiosperm flower. **Tepals** 6, equal in shape and size, 4–6 mm long, 2.5–3 mm wide at base, narrowly triangular to broadly lanceolate in outline, fused with each other at the base, either uniformly pale brown to coral pink or bordered by darker shade; abaxial surface verrucose; filiform appendage arising from the abaxial side of tepal, 10–14 mm long (measured from the tepal tip), D-shaped in cross section (flat adaxially), apically unswollen, whitish to pinkish. **Stamens** 6, pendent from the top of floral tube; filaments arcuately curved in both transversal and longitudinal view, red-brown; connectives flattened, laterally connate to form a tube; each connective 3.6–3.9 \times 1.5–1.8 mm, brown to red-brown at base, amber-coloured in the middle and colourless and translucent at the apex; supraconnectives free, apically with 3 appendages, outer appendages longer than the middle one; lateral appendage skirt-like, white translucent, with two bilobed lateral wings, the upper wing bearing several hairs; the middle part with dentate apical margin, not exceeding the apices of the supraconnective appendages; interstaminal gland inserted on the line of fusion between connectives, globose. **Style** ca. 0.8 mm long, dull grey-green to pinkish brown; stigma 3-lobed; lobes ca. 1 mm long, deeply bifid, hairy, concolorous with style or sometimes lighter. **Ovary** inferior, 3–3.7 \times 3–4.5 mm, obconical, verrucose to hairy, cream to pale brown with dark vertical stripes in the upper half. **Fruit** an obconical pale brown capsule. **Seeds** not seen.

Additional field records:—MALAYSIA. Sarawak: Bintulu Division, Tatau District, Rumah Agau, small patch of primary lowland mixed dipterocarp forest 900 m NW from the longhouse, 50 m a.s.l., 2.6346689N, 112.9343375E, 3 December 2024, *photo M. Hroneš*.

Habitat:—The only population was found in lowland mixed dipterocarp forest on a steep slope at the bottom of a shallow valley in a small remnant of primary forest among logged forests and forest clearings.

Distribution:—*Thisimia dasyantha* is only known from the type locality in central Sarawak.

Conservation status:—While the extent of occurrence (EOO) of *T. dasyantha* cannot be calculated from a single point, the area of occupancy (AOO) is formally estimated at 4 km². However, the actual AOO is much smaller, as the only known population is confined to an isolated patch of primary forest not larger than 0.05 km². Moreover, the site lies outside protected areas, and the number of known individuals is far below 50. Consequently, *T. dasyantha* is preliminarily assigned a conservation status of CR (B2ab, D) according to the guidelines of the IUCN Standards and Petitions Subcommittee (2025).

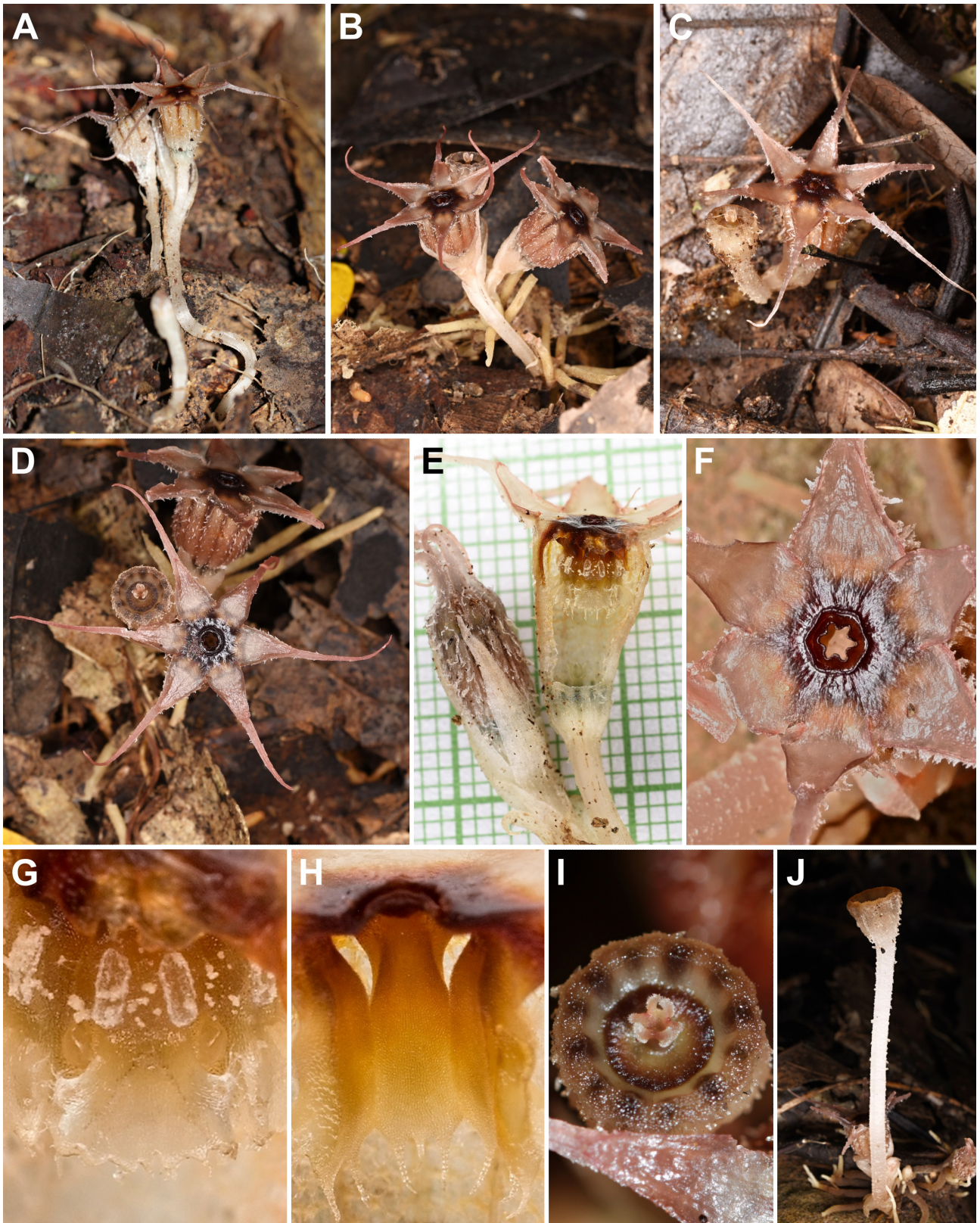


FIGURE 3. *Thismia dasyantha*. **A–C.** Overall appearance. **D.** Top view of flower. **E.** Distinctly verrucose flower bud and dissected floral tube showing position of stamen tube. **F.** Annulus with a hexaradial figure resembling a stylised outline of a flower on its inner margin. **G.** Outer view of stamen. **H.** Inner view of stamens. **I.** Style and stigma viewed from above. **J.** Fruiting plant with elongated pedicel and capsule. Photos by V. T. Blažek (A, I) and M. Hroneš (B, D, E, G, H) from *Dančák & Hroneš MDMH2023/32* and M. Hroneš (C, F, J) from uncollected plants recorded at the same site in 2024.

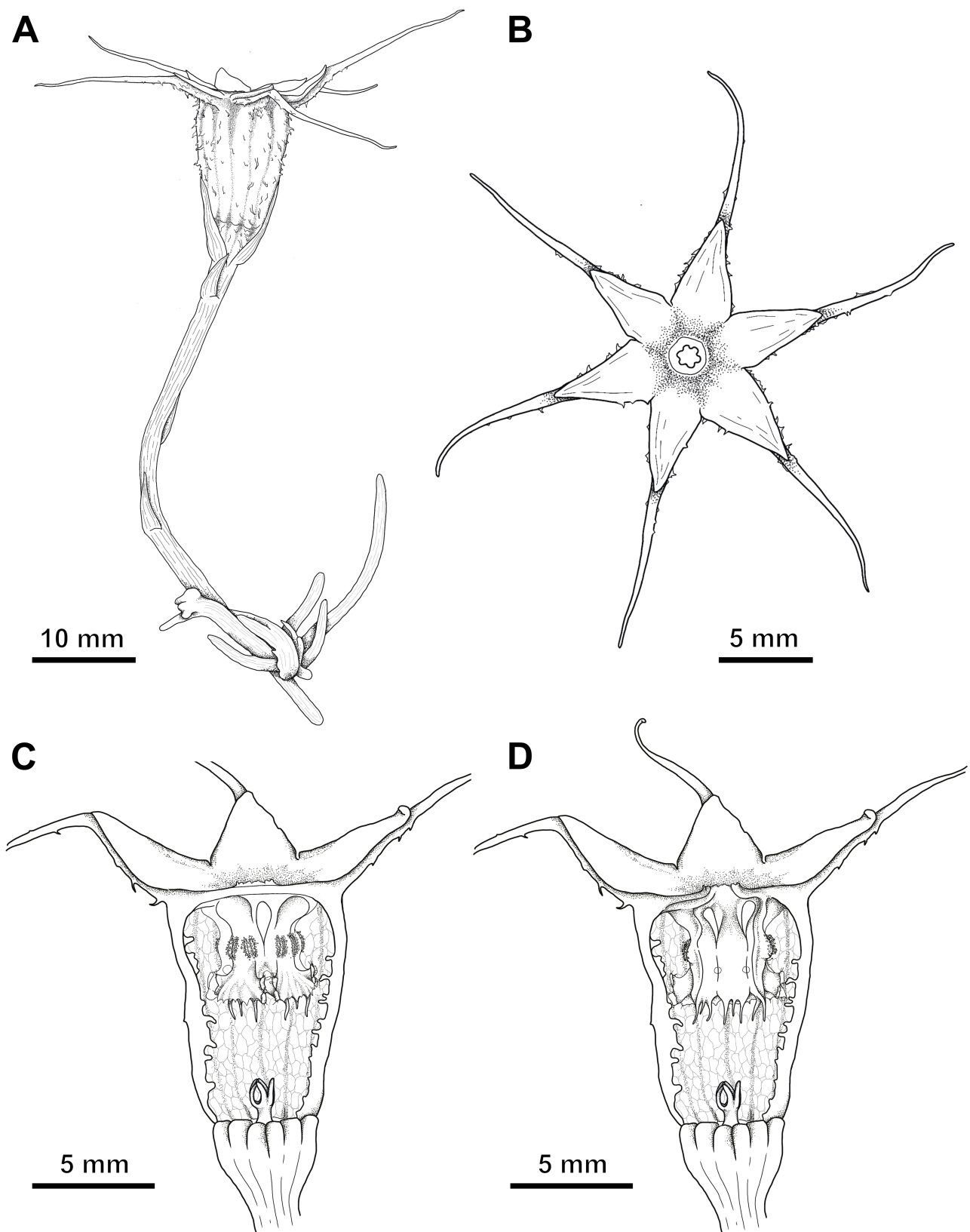


FIGURE 4. *Thismia dasyantha*. **A.** Habit of flowering plant. **B.** View of the flower from the top. **C.** Dissected floral tube showing outer view of stamens, style and reticulate structure on the inner surface of the floral tube. **D.** Dissected floral tube showing inner view of stamens, style and reticulate structure on the inner surface of the floral tube. Drawn by Nela Malá Dančák & Hroneš MDMH2023/32.

Etymology:—The specific epithet is derived from the Greek words *dasy's*, meaning “hairy” and *ánthos*, meaning “flower”, referring to the prominent verrucae present on the outer surface of the floral tube, ovary and the abaxial side of the tepals, which resemble hairs.

Notes:—*Thismia dasyantha* does not show a close morphological similarity with any previously known species of the genus. It is unique within *Thismia* sect. *Thismia* subsect. *Odoardoa* by the combination of basally fused tepals (so far observed within *T.* sect. *Thismia* subsect. *Odoardoa* only in *T. annamensis*) and hexaradial flower opening resembling a schematic outline of a hexamerous angiosperm flower (Fig. 3F). The other conspicuous feature of this species is the presence of verrucae covering the floral tube, ovary, and the outer surface of the tepals, particularly in flower buds and young flowers. The length (0.5–1.5 mm) and density of these verrucae vary among individual plants within the single known population, giving some individuals a “hairy” appearance (Fig. 3E). Although various terms are used to describe verrucae in other *Thismia* species, such as papillae in *T. papillata* Nuraliev & Yudina (Nuraliev *et al.*, 2024: 262) and tubercles in *T. tuberculata* Hatusima (1976: 4), the term “verrucae” is applied here in the same sense as e.g., in *T. nigricoronata* Kumar & S.W. Gale (Kumar *et al.*, 2017: 234) and *T. viridistriata* Sochor, Hroneš & Dančák (Sochor *et al.*, 2018).

In the diagnosis, we stated the newly described species to be most similar to *T. pallida* Hroneš, Dančák & Rejžek in Hroneš *et al.* (2018: 115), but the two species are not closely related phylogenetically (Fig. 5). Instead, in our phylogenetic reconstructions, *T. dasyantha* clusters with the morphologically distinct *T. neptunis* and *T. cornuta*. The former has traditionally been placed in *T.* sect. *Thismia* subsect. *Brunonithismia* Jonker (1938: 242) or in its own section, *T.* sect. *Sarawakia* Schlechter (1921: 35). However, the delimitation between *T.* sect. *Thismia* subsect. *Brunonithismia* and *T.* sect. *Thismia* subsect. *Odoardoa*, as well as the relationships of *T.* sect. *Sarawakia* requires further investigation.

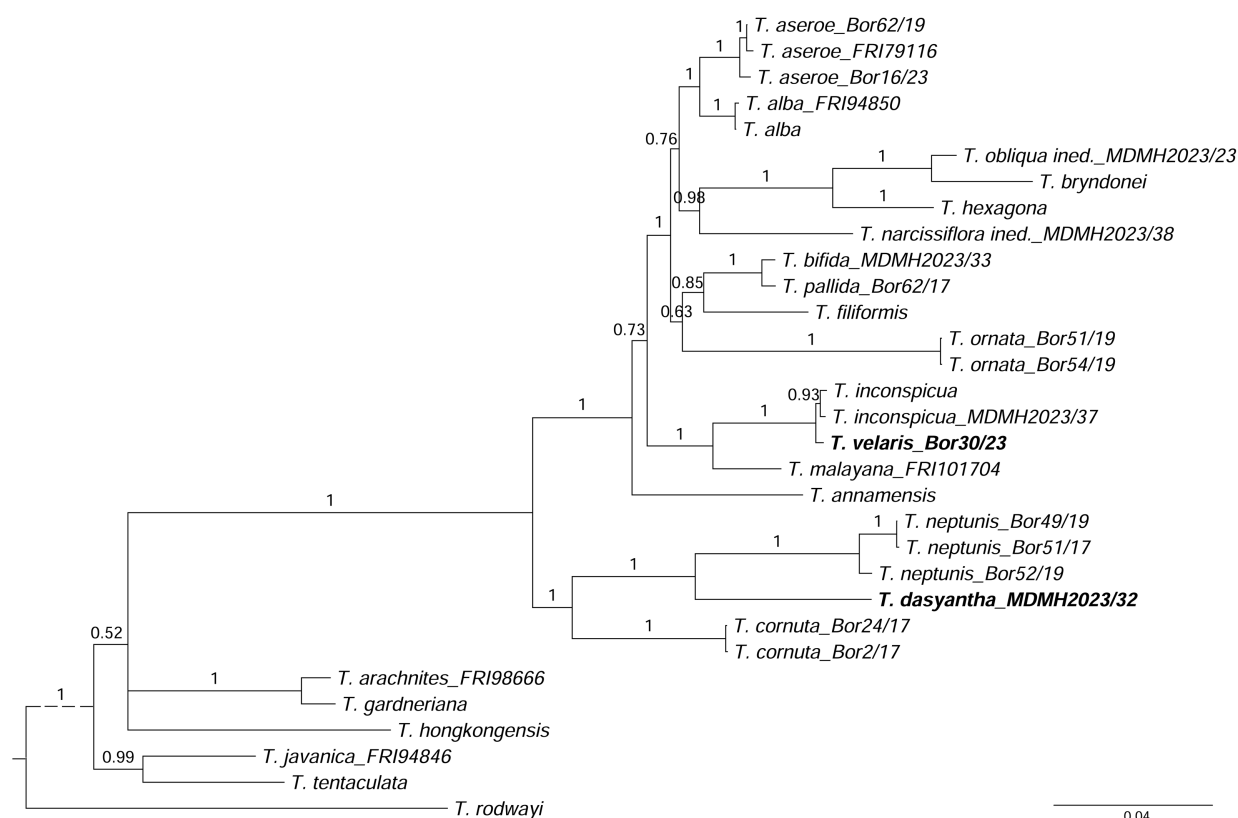


FIGURE 5. Bayesian phylogenetic tree based on five markers (LSU, ITS, SSU, *atpA*, *matR*) focused on the *Thismia* section *Thismia* subsect. *Odoardoa*, showing the phylogenetic positions of *T. velaris* and *T. dasyantha*; posterior probabilities are shown above branches.

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Appendix 1 . Collection data and GenBank accession numbers for the specimens analyzed in this study; sequences newly generated for this study are marked in bold.

Species	Locality	Date	Collectors	Collection No.	Genbank Acc. No.-SSU	Genbank Acc. No.-ITS	Genbank Acc. No.-LSU	Genbank Acc. No.-AtpA	Genbank Acc. No.-MatR
<i>T. alba</i>	Malaysia, Kelantan, Kuala Koh	1-Feb-20	Siti-Mumirah & Dome	FRI94850	PV221314	PV230804	PV221326	PV236197	
<i>T. alba</i>	Thailand, Songkhla prov., Ton Nga Chang waterfall	4-Oct-13	Chantanaorapint	2801	MK356101	MK356123		MN072704	
<i>T. annamensis</i>	Vietnam, Dak Lak prov., Lak distr., Bong Krang munic., Chu Yang Sin national park, 12 km S of Krong Kmar village	28-May-14	Nuraliev	999	MK356102	MK356125		MN072705	
<i>T. arachnites</i>	Malaysia, Terengganu, Hulu Terengganu Distr., Taman Negeri Kenyir	15-Jun-22	Siti-Mumirah	FRI98666	PV221324	PV230805	PV221336	PV236203	PV236208
<i>T. aseroe</i>	Malaysia, Sarawak, Kuching Division, Gunung Gading	15-Feb-19	Sochor	Bor62/19	MN067331	MN067275	MN067293	MN067231	MN067313
<i>T. aseroe</i>	Malaysia, Sarawak, Kuching Division, Gunung Gading	28-Jan-23	Dančák & Sochor	Bor16/23	PV221315	PV230806	PV221327		
<i>T. aseroe</i>	Malaysia, Terengganu, Hulu Terengganu District, Hutian Simpan Pasir Raja, Chemerong Forest Eco Park, Gunung Chemerong	26-Jul-23	Siti-Mumirah	FRI79116	PV221322	PV230807	PV221334	PV236201	
<i>T. bifida</i>	Malaysia, Sarawak, Bukit Kana	21-Nov-23	Dančák & Hroneš	MDMH2023/33	PV221320	PV230808	PV221333	PV236202	PV236209
<i>T. bryndonei</i>	Sabah, Maliau Basin Conservation Area, along the Belian Trail	30-Sep-16	Tsukaya, Suetsugu & Suleiman	TSS-14	MK356143				
<i>T. cornuta</i>	Malaysia, Sarawak, Kelabit Highlands, Pa'Umor village	13-Jan-17	Sochor, Hroneš, Dančák, Egertová & Pasan	BOR2/17	MG008353	MG008341	MG008370	MG008367	MG008384
<i>T. cornuta</i>	Malaysia, Sarawak, Kelabit Highlands, Pa'Lungan village	15-Jan-17	Sochor, Hroneš, Dančák, Egertová & Pasan	BOR24/17	MG008352	MG008340			
<i>T. dasyantha</i>	Malaysia, Sarawak, Bukit Kana	21-Nov-23	Dančák & Hroneš	MDMH2023/32	PV221323	PV230811	PV221335	PV236206	PV236211
<i>T. filiformis</i>	Thailand, Prachinburi prov., Khao Yai National Park, Pha Tabak waterfall	19-Aug-14	Chantanaorapint & Promma	3928	MK356103	MK356126		MN072706	
<i>T. gardneriana</i>	Thailand, Phangnga prov., Khao Lak National Park, Hin Lad waterfall	4-Aug-14	Chantanaorapint & Promma	3903	MK356104	MK356127		MN072712	
<i>T. hexagona</i>	Brunei Darussalam, Temburong Distr., Kuala Belalong	27-Jan-16	Sochor	s.n.	KU948543	MG008342	MG008372	KU948541	MG008386
<i>T. hongkongensis</i>	China, Hong Kong, Tai Po Kau Nature Reserve	16-Nov-15	Mar	3	MK356105	MK356128		MN072713	
<i>T. inconspicua</i>	Malaysia, Sarawak, Gunung Mulu	27-Nov-23	Dančák & Hroneš	MDMH2023/37	PV221316	PV230809	PV221328	PV236199	PV236212
<i>T. inconspicua</i>	Brunei Darussalam, Temburong Distr., Kuala Belalong	27-Jan-16	Sochor	MS1/16	KU948544	KU948545	MG008374	KU948542	MG008382
<i>T. javanica</i>	Malaysia, Terengganu, Kuala Berang District, Hulu Telemong Forest Reserve	7-Feb-20	Siti-Mumirah	FRI94846	PV221325	PV230810	PV221337	PV236204	
<i>T. malayana</i>	Malaysia, Negeri Sembilan, Kuala Pilah Distr., Gunung Angsi FR, Ulu Bendul RP	9-Feb-23	Siti-Mumirah	FRI101704	PV221318	PV230815	PV221330	PV236198	PV236210
<i>T. narcessiflora ined.</i>	Malaysia, Sarawak, Gunung Mulu	27-Nov-23	Dančák & Hroneš	MDMH2023/38	PV221319	PV230812	PV221331	PV236207	PV236214
<i>T. neptunis</i>	Malaysia, Sarawak, NP Kubah	26-Jan-17	Sochor & Egertová	BOR51/17	MG008357	MG008345	MG008371	MG008368	MG008383
<i>T. neptunis</i>	Malaysia, Sarawak, Kuching Division, Gunung Singai	6-Feb-19	Dančák, Hroneš & Sochor	Bor49/19	MN067332	MN067271	MN067294	MN067243	MN067312
<i>T. neptunis</i>	Malaysia, Sarawak, Kuching Division, Santubong	8-Feb-19	Dančák, Hroneš & Sochor	Bor52/19		MN067273	MN067295	MN067244	
<i>T. obliqua ined.</i>	Brunei Darussalam, Belait, Telingan	16-Nov-23	Dančák & Hroneš	MDMH2023/23	PV221321	PV230814	PV221332	PV236205	PV236215
<i>T. ornata</i>	Malaysia Sarawak, Kuching Division, NP Kubah	7-Feb-19	Dančák, Hroneš & Sochor	Bor51/19	MN067318	MN067255	MN067282	MN067232	MN067302
<i>T. ornata</i>	Malaysia, Sarawak, Kuching Division, Santubong	8-Feb-19	Dančák, Hroneš & Sochor	Bor54/19	MN067319	MN067251	MN067283	MN067233	MN067303
<i>T. pallida</i>	Malaysia, Sabah, Kalabakan, SAFE project	3-Feb-17	Nilus & Svátek	BOR62/17	MG008359	MG008347	MG008373	MG008369	MG008385
<i>T. roadwayi</i>	Australia, Tasmania, Meander	21-Nov-12	Merekx <i>et al.</i>	TAS9_TR5	KY554864	KX790860		KY554874	
<i>T. tentaculata</i>	China, Hong Kong	1-Jul-12	Lim	31	MK356122	MK356145		MN072722	
<i>T. velaris</i>	Malaysia, Sarawak, Kuching Division, Semenggoh	31-Jan-23	Dančák & Sochor	Bor30/23	PV221317	PV230813	PV221329	PV236200	PV236213