

NOTES ON *THISMIA CLANDESTINA* (THISMIACEAE), A LITTLE-KNOWN MYCOHETEROTROPHIC SPECIES

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Abstract. *Thismia clandestina* (Blume) Miq., a rare mycoheterotrophic species previously known only from Indonesia, was newly discovered in tropical lowland forest in southern Thailand. A description, line drawings and photographs are provided, and its diagnostic characters and geographical distribution are briefly discussed.

Key words: achlorophylly, distribution, Indonesia, mycoheterotrophy, Thailand

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INTRODUCTION

The genus *Thismia* Griff. is the largest genus of Thismiaceae, with about 55 species currently accepted (e.g., Hroneš 2014; Hunt *et al.* 2014; Merckx & Smets 2014; Mar & Saunders 2015; Chantanaorrapint & Sridith 2015). The genus is distributed mainly in tropical regions, with a concentration of species in Southeast Asia (Jonker 1938; Maas *et al.* 1986; Merckx *et al.* 2013). Due to their small size with highly reduced vegetative morphology, most *Thismia* species are easily overlooked in the field and appear to have been collected only once or a few times.

In October 2010 the first author collected a fruiting specimen of an unknown *Thismia* from Sri Phangnga National Park, southern Thailand. Flowering specimens were subsequently re-collected by the staff of herbarium BKF during botanical surveys in the same national park between 2011 and 2012. After making a careful examination, the unknown collections were determined as *T. clandestina* (Blume) Miq., which was previously known only from West Java, Indonesia. The following description and illustration are based on the recent specimens from Thailand.

RESULTS AND DISCUSSION

Thismia clandestina (Blume) Miq. Figs 1 & 2
Fl. Ned. Ind. 3: 616. 1859; Ann. Jard. Bot. Buitenzorg 24: 55, Taf. 8. 1911; Monogr. Burmann.: 252. 1938; Fl. Males. 1(4): 24. 1948.

BASIONYM: *Sarcosiphon clandestinus* Blume, Mus. Bot. 1(5): 65, fig. 18. 1850; Notizbl. Bot. Gart. Berlin-Dahlem 8: 38. 1921. TYPE: INDONESIA. Java, *Blume s.n.* (HOLOTYPE L).

Plants small, terrestrial, achlorophyllous, mycoheterotrophic herbs. *Underground part* short, dichotomously branched, forming coralliform, hairy, brownish white clusters. *Stems* erect, simple, whitish, to 10 cm tall, 2.5–3 mm in diam., glabrous. *Leaves* scale-like, glabrous, appressed, triangular-ovate to lanceolate with acute apex, 3–5 × 2–2.5 mm, increasing in size to apex of plant, where they are equivalent to floral bracts. *Involucral bracts* 3, white, similar to upper leaves. *Flowers* solitary or paired, opening in succession, pale brown to orange-brown. *Perianth* actinomorphic with 6 tepals fused to form perianth tube with dome-shaped mitre. *Perianth tube* urceolate, 9–11 × 5–8 mm, narrowed just above ovary, widest in upper third, with 12 irregularly dentate

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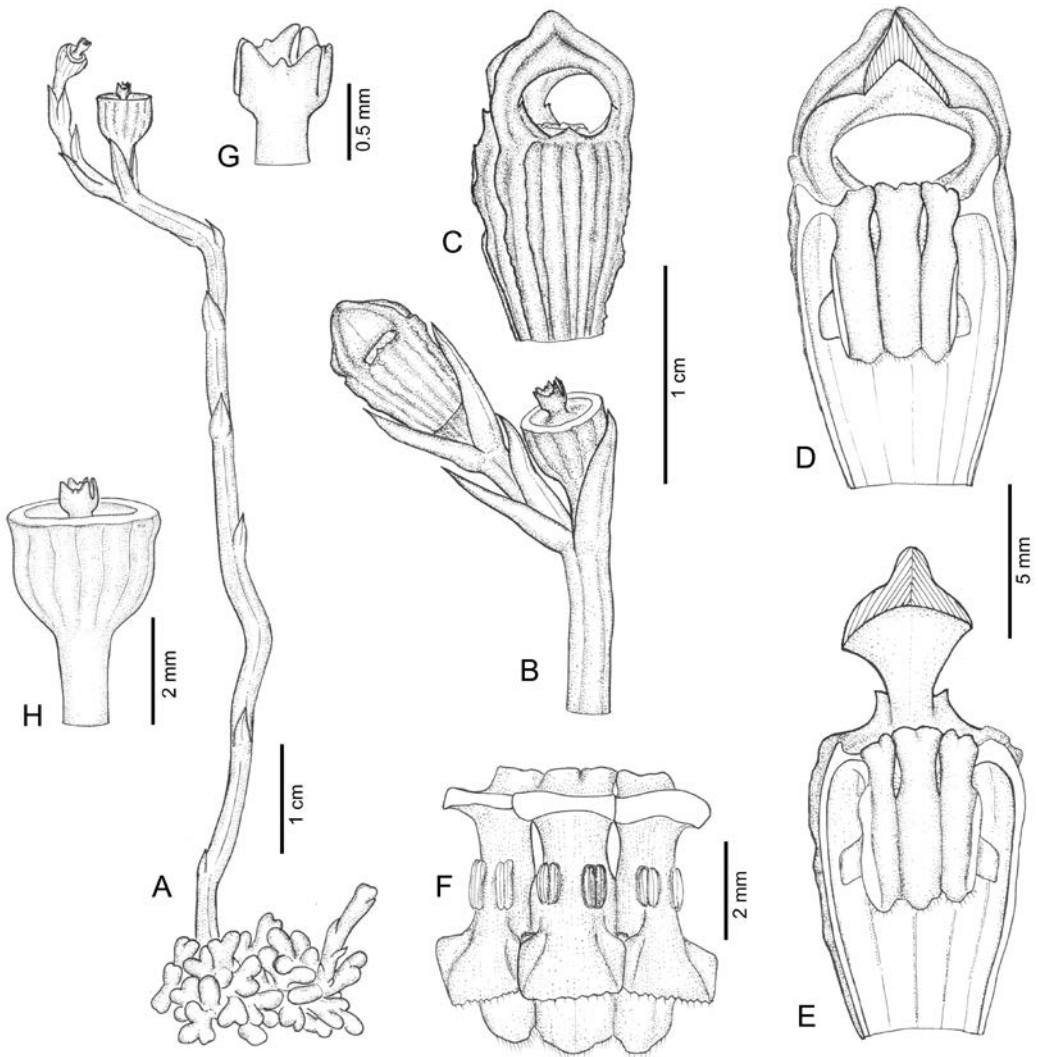


Fig. 1. *Thismia clandestina* (Blume) Miq. A – habit with immature fruits, B – inflorescence, C – side view of flower, D & E – longitudinal section of flowers, F – adaxial view of three pendulous stamens, G – stigma, H – fruit, immature. Drawn by S. Chantanaorrapint: A & H from *S. Chantanaorrapint* 2310 (PSU); B–G from *N. Tetsana* 401 (BKF).

longitudinal ribs, lacking transverse bars inside. *Outer tepals* 3, minute or indistinct, broadly triangular. *Inner tepals* 3, connate to form dome-shaped mitre with 3 lateral apertures 3.5–4.5 mm in diam. *Annulus* prominent, divided into 6 bilobed flanges 0.50–0.65 mm high. *Stamens* 6, pendulous from inner margin of perianth annulus; filaments short, free, ribbon-shaped, hairy at margin; stamens apically connate, forming anther tube around

style, ca 5 mm long; anthers with 4 thecae (abaxial, dehiscing toward inner surface of perianth tube), ca 0.8–1.0 mm long; nectariferous gland present towards apex on the line of fusion between each connective; connective of stamens broad, forming skirt-like appendage; apex of stamens shallowly trilobed to obtuse, hairy. *Ovary* inferior, cup-shaped, ca 2.0 × 2.5 mm, with papillose longitudinal ridges, unilocular; placentas 3; styles short,

ca 0.3 mm, with 3 trilobed stigmas ca 0.5 mm long (middle lobe smallest). *Fruit* cup-shaped, ca 3 mm long, fruit stalk thickened and lengthened after flowering. *Seed* not seen.

DISTRIBUTION. Indonesia (Java), new to Thailand.

HABITAT AND ECOLOGY. In Thailand, *Thismia clandestina* was found growing with other mycotrophic plants such as *Epirixanthes* sp., *Gastrodia phangngaensis* Suddee et al., *Thismia javanica* J. J. Sm. and *T. nigricans* Chantanaorr. & Sridith, amongst leaf litter, under shade in lowland evergreen forest, ca 50 m above sea level. Flowering and fruiting during the rainy season from August to November.

CONSERVATION STATUS. The IUCN (Anonymous 2001) category for *T. clandestina* should be treated at the moment as data deficient (DD). Because of its small size and ephemeral character, it could eas-

ily be overlooked in general botanical explorations. It is difficult to further clarify its IUCN status until further surveys of suitable habitat are undertaken.

SPECIMENS EXAMINED: THAILAND. Phang Nga, Kura Buri, Bang Wan, Sri Phangnga National Park, 7 Oct. 2010, *S. Chantanaorrapint 2310* (PSU), 13 Aug. 2011, *N. Tetsana 401* (BKF); ca 200 m to Ton Deng Waterfall, 54 m, 14 Nov. 2012, *V. Chamchumroon et al. 5602B* (BKF).

TAXONOMIC NOTES. This species was originally described from Java as *Sarcosiphon clandestinus* Blume (Blume 1850) based on a fruiting specimen, and subsequently transferred to *Thismia* by Miquel (1859). Later, Smith (1911) described and illustrated details of flower morphology based on Bernard's collections. The species is characterized by its coralliform underground part, pale brown to orange-brown flowers, mitriform inner tepals with an acute apex, the filament of stamens being hairy at the margin and the apex of the stamens

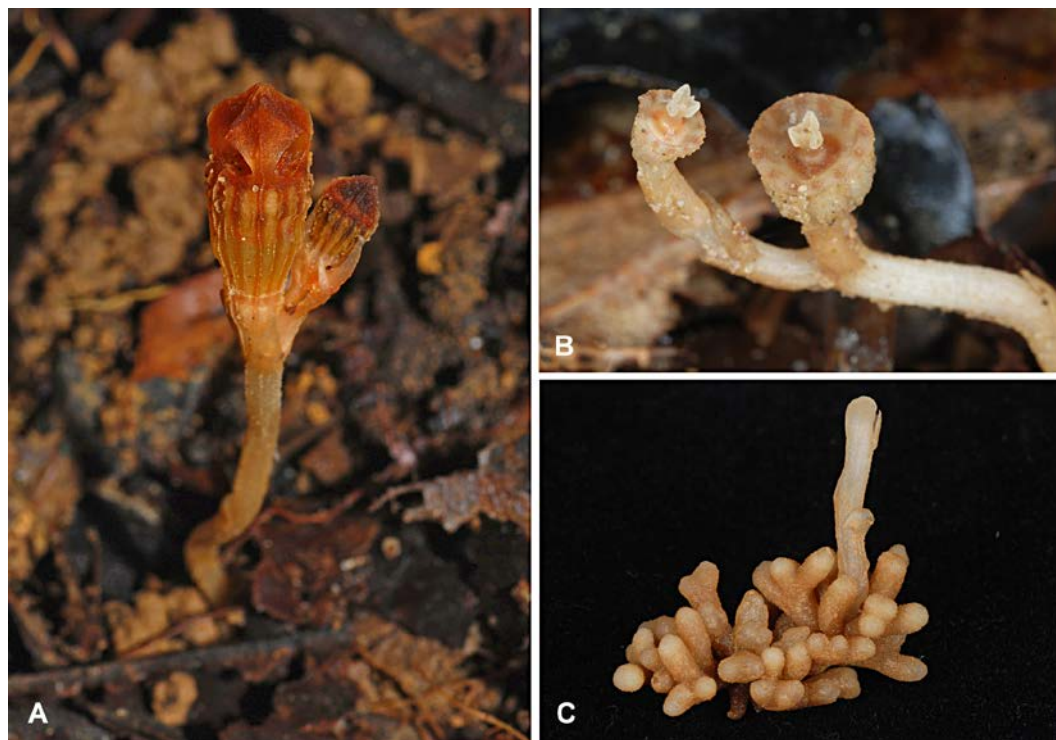


Fig. 2. *Thismia clandestina* (Blume) Miq. A – habit, B – fruits, C – underground part. Photo N. Tetsana (A) and S. Chantanaorrapint (B–C).

trilobed (the middle lobe longest). Interestingly, the stigmas of Bernard's collections as illustrated by Smith (1911) seem to be 3-bilobed, while they are 3-trilobed with the mid-lobe smallest in the material from Thailand. This minor difference may be due to the resolution of Smith's microscope. Jonker (1948) noted that *T. clandestina* had greenish gray flowers, but the Thai plants are similar to Smith's description in having pale brown to orange-brown flowers. *Thismia clandestina* closely resembles *T. episcopalis* (Becc.) F. Muell., an endemic species from Borneo (Jonker, 1938, 1948), in having coralliform roots and mitriform inner tepals with an acute apex. The latter differs from *T. clandestina*, however, by the staminal filaments lacking marginal hairs and the equally 3-lobed stamen apices.

Thismia clandestina was previously known from a few localities in Java, Indonesia (Blume 1850; Smith 1911; Jonker 1938, 1948). The new record in Thailand represents its northernmost locality, and an addition to the knowledge of the distribution range of this species. It may also occur in other areas in the Malaysia Peninsular and southern Thailand with similar environments. The recent discovery of new species and new distributions of *Thismia* from Thailand (Chantanaorrapint & Sridith 2007, 2015; Chantanaorrapint 2008, 2012; Chantanaorrapint & Chantanaorrapint 2009) suggest that Thailand is one of the richest areas for *Thismia*. More new records of species are expected in unexplored areas, especially in the lower peninsular part of the country.

ACKNOWLEDGMENTS. We thank the Curators and staff of BKF for kindly allowing us to study specimens, and Kevin R. Thiele (Perth) and the anonymous reviewer for their valuable comments on the manuscript. This work was supported by the Thailand Research Fund (no. TRG5780133) and Prince of Songkla University.

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