

**SYZYGIELLA SECURIFOLIA
(MARCHANTIOPHYTA, ADELANTHACEAE),
A NEW GENUS AND SPECIES RECORD FOR THAILAND**

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Syzygiella securifolia is newly recorded for Thailand. The species is described and illustrated, together with ecology and geographical distribution.

Key words: Jamesonielloideae, liverwort, morphology, *Pseudoplagiochila*, taxonomy.

INTRODUCTION

In the framework of the project “The genera of liverworts of Thailand”, the specimens kept in the Department of National Parks, Wildlife and Plant Conservation, Thailand (BKF) were identified as *Syzygiella securifolia* (Nees) Inoue, which is a new genus and species record for Thailand.

The genus *Syzygiella* Spruce is a member of the family Adelanthaceae subfamily Jamesonielloideae (Söderström *et al.* 2016). Inoue (1966) studied the genus in the worldwide basis based on morphological characters and classified it into three subgenera: (1) *Protosyzygiella* Inoue, (2) *Pseudoplagiochila* Inoue, and (3) *Syzygiella*. In subsequent years, taxonomic rearrangements have been made (Inoue 1968, 1979, Schuster 1980) and several new species were described (Grolle 1968, Inoue 1974, Pócs 2005, Robinson 1967, So and Grolle 2003). In addition, the members of *Syzygiella* in Africa were revised by Váňa (1985). However, Pócs (2005) pointed out that infrageneric classification of *Syzygiella* are still unclarified and the genus needs to be revised. Feldberg *et al.* (2010b) reconstructed the comprehensive molecular phylogeny of Adelanthaceae and demonstrated the non-monophyly of *Syzygiella*. Based on molecular and morphological data, Feldberg *et al.* (2010a) treated *Cryptochila* R. M. Schust., *Jamesoniella* (Spruce) F. Lees, and *Roivainenia* Perss. as synonyms of *Syzygiella* and divided the genus into five subgenera: *Anomalae* (Inoue) Feldberg, Váňa, Hentschel et Heinrichs, *Cryptochila* (R. M. Schust.) Feldberg, Váňa, Hentschel et Heinrichs, *Pseudoplagiochila* Inoue, *Roivainenia* (Perss.) Feldberg, Váňa, Hentschel et Heinrichs, and *Syzygiella*. Later, the status of several taxa of *Syzygiella* was solved by Váňa *et al.* (2014) and three new species have been added to the genus (Gradstein and Benitez 2014, 2017, Gradstein and Costa

2016). In the world checklist of liverworts and hornworts (Söderström *et al.* 2016) *Syzygiella* consists of 33 accepted species which are classified according to Feldberg *et al.* (2010a, b) and Váňa *et al.* (2014), including updates: subgen. *Anomalae* with eight species, subgen. *Cryptochila* with six species, subgen. *Pseudoplagiochila* with four species, subgen. *Roivainenia* with one species, subgen. *Syzygiella* with 14 species. However, the placement of *S. eatonii* (Austin) Inoue and *S. uleana* Steph. is unclear. With centre of the diversity in the Southern Hemisphere (Feldberg *et al.* 2010b, Gradstein and Costa 2016), the genus characterised by entire to irregularly toothed female bracts and entire to ciliate perianth mouth (Feldberg *et al.* 2010a).

In this paper, the description, illustration, ecology, and geographical distribution of *Syzygiella securifolia*, which is a member of *Syzygiella* subgen. *Pseudoplagiochila* are provided.

MATERIALS AND METHODS

Morphological and anatomical details of the specimens kept in BKF were studied using stereo and compound microscopes. The characters of the species were illustrated with the aid of an Olympus drawing tube.

TAXONOMIC TREATMENT

Syzygiella Spruce – Type species: *Syzygiella perfoliata* (Sw.) Spruce

Syzygiella subgen. *Pseudoplagiochila* Inoue – Type species: *Syzygiella subintegerrima* (Reinw., Blume et Nees) Spruce (= *Jungermannia perfoliata* Sw.)

Syzygiella securifolia (Nees) Inoue (= *Jungermannia subintegerrima* Reinw., Blume et Nees) (Fig. 1) – Basionym: *Plagiochila securifolia* Nees – Type: Sri Lanka, coll.: Wight s.n. (FH) (Inoue 1979)

The description is based on Thai specimens. Plants leafy; ascending; brown in herbarium specimen. Stems with leaves 1.7–2.3 mm wide. Leaves dorsally free, subopposite to alternate, ventrally free or connate imbricate to slightly distant, subopposite to opposite, decurrent, widely spreading, oblong, 0.9–1.2 mm long × 1.1–1.7 mm wide, apex rounded to obtuse, margins entire, marginal cells 30–58 × 30–44 μm, median cells 36–55 × 27–50 μm, basal cells 36–83 × 27–61 μm, walls thick, 5–11 μm wide, trigones triangular; cuticle smooth; ocelli absent; oil bodies not seen. Underleaves lacking. Gynoecia and androecia not seen.

Additional illustrations: Inoue (1966, p. 196, Fig. XI as *Syzygiella variegata* (Lindenb.) Spruce); Váňa and Piippo (1989, p. 273, Fig. 5a–c).

Ecology: *Syzygiella securifolia* in Thailand grew in lower montane rain forest at altitude 1,740 m.

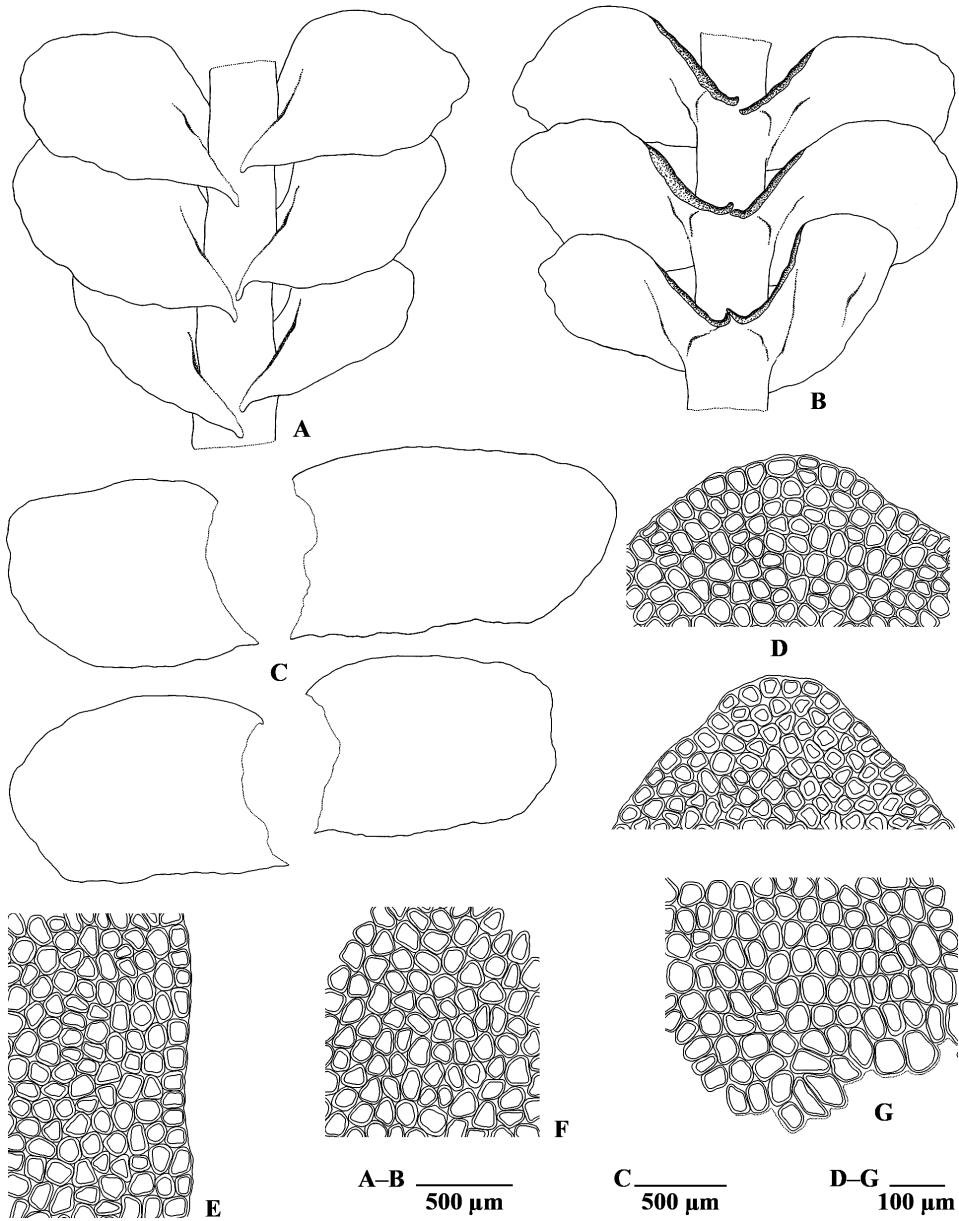


Fig. 1. *Syzygiella securifolia* (Nees) Inoue. A = portion of branch, dorsal view; B = portion of branch, ventral view; C = leaves, dorsal view; D = apical cells; E = marginal cells; F = median cells; G = basal cells (from Touw 11818 (BKF))

Distribution: Indonesia, Malaysia, New Caledonia, Papua New Guinea, Philippines, Solomon Islands, Sri Lanka, Taiwan (Inoue 1966, Thouvenot *et al.* 2011, Váňa 1991, Váňa and Piippo 1989). New to Thailand!

Notes: According to Inoue (1966), *Syzygiella securifolia* is closely related to *S. subintegerrima*, which differs by its (1) dentate leaf and bract margins (entire in *S. securifolia*), (2) oblong bracts (ovate or ovate-oblong bracts in *S. securifolia*), and (3) 1(–2)-celled paraphyses on the male inflorescence axis (absence in *S. securifolia*). *Syzygiella securifolia* is also related to *S. ovalifolia* Inoue, but differs by its (1) oblong leaves (widely ovate in *S. ovalifolia*), (2) entire margins or with 1–2 teeth (3–6 teeth around apex in *S. ovalifolia*), (3) smooth cuticle (verrucose along leaf margins in *S. ovalifolia*) and (4) absence of paraphyses on the male inflorescence axis (presence in *S. ovalifolia*). In addition, *S. securifolia* is distributed in Sri Lanka, Taiwan, and Malesia, whereas *S. ovalifolia* is endemic to New Guinea.

Representative specimens: Nakhon Si Thammarat: Mt Khao Luang, 8° 30' N, 99° 45' E, 1,740 m, coll.: Touw (11818, 11839), 5 February 1966 (BKF).

Key to species of *Syzygiella* subgen. *Pseudoplagiochila* Inoue

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|----|---|--------------------------|
| 1a | Leaf cells along leaf margin with verrucose cuticle | <i>S. ovalifolia</i> |
| 1b | Leaf cells with smooth cuticle throughout | 2 |
| 2a | Leaves ovate to obovate as long as wide | <i>S. tasmanica</i> |
| 2b | Leaves oblong, longer than wide | 3 |
| 3a | Leaf margins entire or with 1–2 teeth | <i>S. securifolia</i> |
| 3b | Leaf margins with 3–6 teeth around apex | <i>S. subintegerrima</i> |

*

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