

Cryphaea Mohr (Cryphaeaceae), a genus new to moss flora of Taiwan

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(Received October 11, 1995; Accepted December 14, 1995)

Abstract. *Cryphaea obovatocarpa* Okam., a species of Cryphaeaceae, is here reported as a new generic and species record of the moss flora of Taiwan. The Cryphaeaceae consists of twelve genera. Four genera including *Cryphaea* are distributed in Taiwan. This genus is distinguished from the related genus *Forsstroemia* by having immersed capsules, well differentiated endostomes, and exostomes. *Cryphaea obovatocarpa*, which is distributed in Japan and Taiwan, also resembles *Schoenobryum concavifolia* (Griff.) Gangulee, a south-Asiatic taxon, in sharing a tree-like habit, immersed capsule, oblong-ovate leaves, and rectangular leaf cells. The differentiation of endostomes in *C. obovatocarpa* distinguish it from *S. concavifolia*.

Keywords: *Cryphaea obovatocarpa*; Immersed capsules; New record; Taxonomy.

Introduction

Cryphaeaceae consists of twelve genera (Brotherus, 1925; Noguchi, 1941). Three of them, *Pilotrichopsis* (Cardot, 1905), *Forsstroemia* (Noguchi, 1947), and *Sphaerotherciella* (Chiang and Kuo, 1989), were previously known in Taiwan. *Cryphaea*, another member of the Cryphaeaceae, is reported here as the fourth genus of this family in Taiwan. *Cryphaea* is generally distributed in the subtropical and tropical areas. Most species are restricted to the local regions (cf. Manuel, 1973; Noguchi, 1989; Enroth, 1990). This genus is distinguished from its related genus *Forsstroemia* Lindb. by having immersed capsules and well-differentiated peristomes (Manuel, 1973). In my survey of bryoflora of Mt. Yushan (Chiang, 1989), the highest mountain of Taiwan, *Cryphaea*, a new generic record is found.

Taxonomy and Relationship of *Cryphaea*

Key to Genera of Cryphaeaceae in Taiwan

1. Plants pendulous 2
 2. Leaf margin coarsely toothed above, endostomes poorly differentiated..... *Pilotrichopsis*
 2. Leaf margin crenulate, endostomes differentiated ...
..... *Sphaerotherciella*
1. Plants non-pendulous, attaching to substrate with erect secondary stems 3
 3. Laminal cells smooth dorsally, peristomes almost smooth *Forsstroemia*
 3. Laminal cells with a papilla at upper end, peristomes papillose *Cryphaea*

Genus *Cryphaea* Mohr in Web., Tab. Syn. Musc. 1814.

Cryphaea obovatocarpa Okam., Bot. Mag. Tokyo 25: 135. f. 4. 1911. Figure 1

Illustrations: Iwatsuki & Mizutani (1972: Pl. 20); Noguchi (1976: f. 42: b); Noguchi (1989: f. 277: B).

Plants tree-like, ca. 4 cm tall. Main stems filiform and creeping, secondary stems erect with four to eight branches at upper part, central strands not differentiated; branches ca. 1 cm long. Secondary stem-leaves broadly ovate, acuminate at apex, decurrent at basal corners, concave, 2–2.4 × 1–1.3 mm; margins entire; costa single, extending to 2/3 the length of leaf. Median leaf-cells rectangular, 9–18 × 7–11 μm, thick-walled, with one papilla at upper corner; alar cells weakly differentiated from basal cells. Branch leaves similar to the secondary stem leaves.

Autoicous. Capsules aggregated at upper part of secondary stems; inner perichaetial leaves oblong, acuminate at apex, ca. 3.2 mm long, concave, the margins incurved, crenulate above. Capsules immersed, ovoid; annulus present. Operculum conic, obtuse; exostome teeth linear, papillose; endostome segments linear, as long as the exostome, papillose. Spores ca. 40 μm. Perigonal axillary on the secondary stems, paraphyses absent.

Specimen examined. **TAIWAN.** NANTOU HSIEN: Yushan National Park, in broad-leaved forests, epiphytic on tree trunk, along Shalihsienshi Stream, ca. 1,500–2,000 m alt., *T. Y. Chiang 26801* (HAST).

Notes. The evident characteristics of this genus are the tree-like habit, also found in *Forsstroemia*, and immersed capsules, which are shared by *Pilotrichopsis*, *Sphaerotherciella* and a species of *Forsstroemia*, *F. neckeroides* Broth. The well differentiated endostomes and

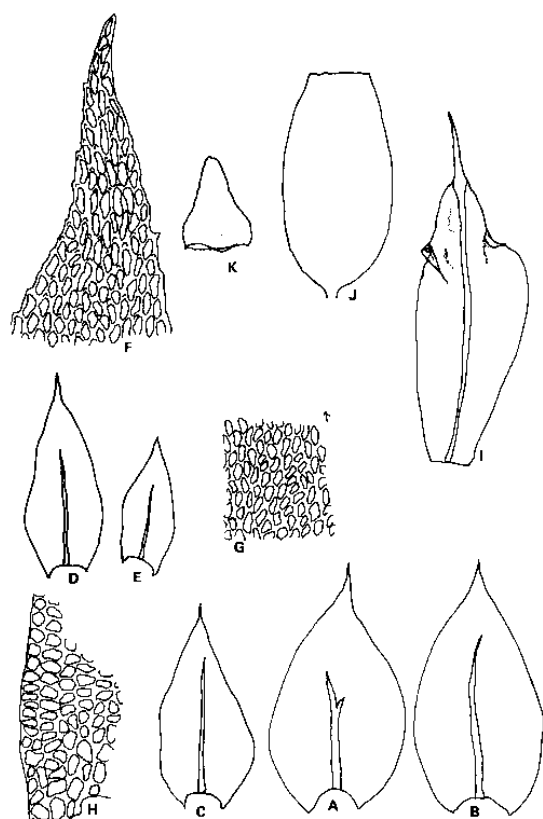


Figure 1. *Cryphaea obovatocarpa* Okam. A–B, Stem-leaves ($\times 33$); C–E, Branch-leaves ($\times 33$); F, Apical cells ($\times 330$); G, Laminal cells ($\times 330$); H, Alar cells ($\times 330$); I, Perichaetial leaf ($\times 33$); J, Capsule ($\times 33$); K, Operculum ($\times 33$). Drawn from Chiang 26801.

exostomes with papillose surfaces can distinguish *Cryphaea* from other genera in this family, such as *Cyrtodontopsis* Nog., in which the endostomes are wanting; *Pilotrichopsis*, in which the exostomes are coarsely papillose and the endostomes are poorly differentiated (Brotherus, 1925); *Sphaerotherciella*, in which the peristomes are coarsely papillose and the endostomes are shorter than exostomes; and *Forsstroemia*, in which the exostome teeth are almost smooth.

Only a few taxa of *Cryphaea* have ever been reported from East Asia. Two species, *C. leveillei* Ther., and *C. sinensis* Bartr. (Hu, 1987), were recorded in China, and one species, *C. obovatocarpa*, in Japan and Taiwan.

Cryphaea obovatocarpa can be distinguished from the Chinese species by broadly ovate stem-leaves. This species resembles *Schoenobryum concavifolia* (Griff.) Mitt., another genus of Cryphaeaceae distributed in tropical Asia (Enroth, 1990), in sharing a tree-like habit, immersed capsules, oblong-ovate leaves, and rectangular leaf cells. But the differentiation of endostomes in *C. obovatocarpa* can distinguish it from *S. concavifolia*.

Acknowledgments. I thank Drs. Zen. Iwatsuki, S. H. Lin, Benito Tan, and Ching-I Peng for their valuable comments.

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圓蒴隱蒴蘚 (*Cryphaea obovatocarpa* Okam.) 為台灣產新紀錄屬及種；隱蒴蘚科 (Cryphaeaceae) 植物由十二個屬組成，其中四屬分布於台灣。本屬與其近緣屬殘齒蘚 (*Forsstroemia*) 最大的差異在於具有樹狀生活型，隱沒的孢蒴及分化的內外齒層。此一分布於台灣及日本的圓蒴隱蒴蘚與另一南亞的種類拱葉隱蒴蘚 (*Schoenobryum concavifolia* Griff.) 極其近似，皆具有樹狀生活型、隱沒型孢蒴、長卵形葉身及方形葉細胞，前者具有分化完全的內蒴齒足以區分二者。

關鍵詞：圓蒴隱蒴蘚；隱沒型孢蒴；苔蘚；新紀錄屬；台灣；分類學。