

Orthomnion wui (Mniaceae, Musci), a new species from Hubei Province, China

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A new moss species, *Orthomnion wui* T.J. Kop. (Mniaceae) is described. It differs from its morphologically nearest relative *O. yunnanense* T.J. Kop., X.J. Li & M. Zang in being synoicous and lacking decurrent leaf bases, and from most of the other congeners by its stereidal cells in costa and serrate leaf margin. It is known only from the type specimens collected in the Hubei Province of China.

Key words: Mniaceae, mosses, new species, *Orthomnion*, *Plagiomnium*, taxonomy

Koponen (1980) monographed the genus *Orthomnion* and included nine species, four or five of them known from China. Koponen *et al.* (1982) added a further species, *O. yunnanense* T.J. Kop., X.J. Li & M. Zang. They described it as differing from some other species of *Orthomnion* by its toothed leaves. The sporophyte of *O. yunnanense* has remained unknown, but the plant was described as dioicous. Some 20 years ago at the Missouri Botanical Garden I studied some Chinese specimens identified as *Plagiomnium rostratum*. I reidentified them with some hesitation as *P. integrum*. The characters of the leaf border and the shape of leaves pointed to that species. However, several characters such as the non-decurrent leaf bases, smaller leaf cells, and synoicous condition did not fit *P. integrum*. A more thorough study showed that the plants belong to an undescribed species of *Orthomnion*.

Orthomnion wui T.J. Kop., *sp. nova* (Fig. 1)

Differt ab Orthomnio yunnanensi foliis non decurrentibus; synoicum.

Plants green, small to medium-sized for the genus, growing as epiphytes or epilithic. Stems creeping, tomentose, fertile shoots erect. Leaves on stolons ca. 2.2 mm broad and 4.5 mm long, fragile, elliptic, obtuse, with small apiculus. All leaves non-decurrent. Bordered at leaf base by 3–4 and at apex by 1–2 elongated, narrow cells. Leaf margin unistratose, serrate, teeth blunt, or bulging thin-walled cells corresponding to arrested teeth present. Costa strong, ending below apex in small leaves, percurrent in uppermost leaves, 2 or 3 layers of cells with thickened walls on ventral costa and with more or less stereidal cells in dorsal costa. Leaf cells at mid-leaf elongated hexagonal to nearly isodiametric,

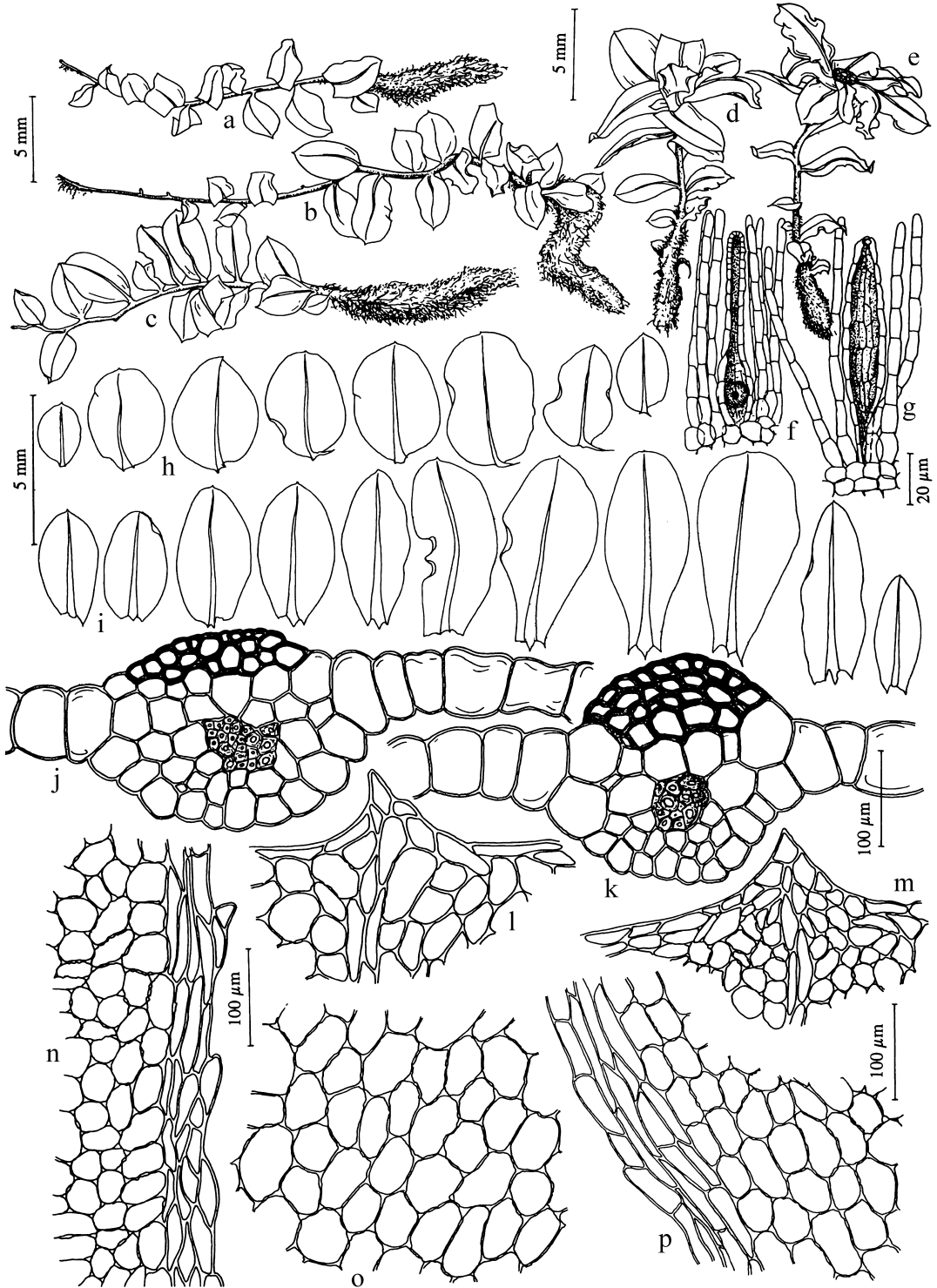


Fig. 1. *Orthomnion wui* (from holotype). — **a–c:** Sterile stolons. — **d and e:** Fertile upright stems. — **f and g:** Archegonium and antheridium with paraphyses. — **h–i:** Leaf sequences of sterile stolon and fertile stem. — **j and k:** Cross section of costa. — **l and m:** Leaf apices. — **n:** Leaf border at mid-leaf. — **o:** Median leaf cells. — **p:** Leaf border near leaf base. 5 mm scale for **a–e**, **h** and **i**; 20 µm scale for **f** and **g**; 100 µm scale for **j–p**.

thin-walled, with perforations and slight corner thickenings, $22\text{--}40 \times 55\text{--}62 \mu\text{m}$, smaller towards the border and apex. Synoicous. Leaves on erect stem below perichaetium longer (-7 mm) than leaves on stolons, innermost perichaetial leaves lanceolate and acute. Archegonia and antheridia mixed with paraphyses. Sporophyte unknown.

HOLOTYPE: China. Hubei Prov., Mt. Shennongjia, Song-Luo-San, Tong-Cha-Gou. Montaine evergreen and deciduous broad-leaf forest, 1000 m. On moist rock under tree in ravine [+ *Cratoneuron filicinum*], VI-VII.1976, P. C. Wu 282 (MO 2846750). — PARATYPES: The same locality as no. 282, on moist rock in forest, P. C. Wu 81 (MO 2846780); Mt. Shennongjia, Song-bo-Ping, at 34 km sign on shady wet cliff. Evergreen broad-leaf forest, 750 m, at base of tree, VI-VII.1976, P. C. Wu 135 (MO 2846669).

ETYMOLOGY: This species is named in honour of the well-known specialist of Chinese bryoflora, professor Peng-Cheng Wu (Pan-Cheng Wu), who collected the type specimens.

In addition to the differences in the sporophyte, some characters of the gametophyte such as the distinctly porose and thin-walled leaf cells separate *Orthomnion* from *Plagiomnium* (see Koponen 1980). Such leaf cells are present in *O. wui*. In most species of *Orthomnion* the leaf sequence on fertile stems begins with elliptic leaves similar to the leaves on sterile stolons. However, the leaves just below the perichaetia tend to be much larger and of a different shape than the leaves on stolons (Koponen 1980: figs. 4, 14, 21, 27, 35, 43, 55 and 63). This character also occurs in *O. wui*. In addition to *O. wui*, only two species of *Orthomnion*, *O. handelii* (Broth.) T.J. Kop., and *O. yunnanense* have serrate leaf margins. Plants of *O. handelii* are larger than those of *O. wui* with a rather weak leaf border throughout and no stereidal cells in the costa. *Orthomnion yunnanense* seems to be the closest relative of *O. wui*. Both species have a rather strong leaf border with a serrate margin and \pm stereidal cells in costa, which are lacking in the other species of *Orthomnion*. The non-decurrent leaf base and synoicous condition separate *O. wui* from *O. yunnanense*.

Synoicous sexual conditions not common in *Orthomnion*. Synoicous populations of *O. dilatatum* (Mitt.) P.C. Chen are known to occur in the eastern part of its distribution from Japan to the Philippines, but its more southern populations from Laos to Java have been shown to be dioicous (Koponen 1980: fig. 3). *Orthomnion wui* may be mixed with the synoicous *Plagiomnium rostratum* and *P. rhynchophorum* in China. *Plagiomnium rostratum* is rare and known only from Gansu, Sichuan and Yunnan provinces (Koponen 1982), and *P. rhynchophorum* occurs in the southern provinces. Both species have smaller leaf cells than *O. wui*, \pm thickened leaf cell walls, and non-fragile leaves. The leaf shape is also different, from narrowly elliptic to oblong, and the leaves have a strong percurrent costa (Koponen 1972). In addition, *P. rhynchophorum* differs from *O. wui* in having decurrent leaf bases, a distinct row of juxtacostal cells along the costa, and undulate leaves.

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