

## *Symphyodon perrottetii* (Symphyodontaceae, Bryophyta) New to Hawaii

**Masanobu Higuchi**

Department of Botany, National Museum of Nature and Science,  
Amakubo 4-1-1, Tsukuba, Ibaraki 305-0005, Japan  
E-mail: higuchi@kahaku.go.jp

(Received 4 December 2013; accepted 18 December 2013)

**Abstract** *Symphyodon perrottetii* Mont. is reported as new to Hawaii. The description and illustration based on Hawaiian plants are given. This species is characterized by its large plants and distinctly serrate leaf margins. It has been known from South and Southeast Asia. The range of the species extends eastward to Hawaii.

**Key words**: bryophytes, Hawaii, *Symphyodon perrottetii*.

The genus *Symphyodon* is a pleurocarpous moss of the family Symphyodontaceae, being mainly distributed in South and Southeast Asia. The genus is characterized by echinate capsules, papillose setae, prorate laminal cells of leaves and more or less differentiated alar cells of leaves. He and Snider (2000) revised the genus and recognized 15 species in the world. *Symphyodon perrottetii* Mont., the type species of the genus, is widely distributed in South and Southeast Asia and north to the southern part of Japan.

In June 1999, the author collected a *Symphyodon* in Hawaii Island, Hawaii. A microscopic examination confirmed that the plants are *Symphyodon perrottetii* Mont., although they were sterile.

*Symphyodon perrottetii* Mont., Ann. Sci. Nat. Bot., ser. 2, 16: 279. 1841. (Figs. 1, 2)

The following description is based on the Hawaiian plants.

Plants large for the genus, yellowish- to brownish-green, yellowish-brown below. Stems prostrate, sometimes pendulous, up to 9 cm long, irregularly or pinnately, rarely bipinnately bran-

ched, elliptical in cross-section; central strand absent; leafy stems complanate to subjulaceous; branched subjulaceous, irregular in length, up to 1 cm long. Pseudoparaphyllia foliose, round-triangular, scale-like. Stem leaves slightly differentiated; dorsal leaves straight, oblong-ovate to oblong-lanceolate, broadly acuminate at apices, subcordate at bases, 1.1–1.3 × 0.4–0.5 mm; margins distinctly serrate above, subentire below, plane, recurved at base; costae double, long, ca. 1/4–1/3 the leaf length, usually united at bases; median laminal cells linear, weakly flexuose, 48–64 × 3–4 μm in lumen, thin-walled, slightly prorate at upper ends; alar cells differentiated, subquadrate to rectangular. Lateral leaves usually slightly falcate, concave. Branch leaves smaller; serration of upper margins and proration of laminal cells more distinct. Perichaetia sparsely present at leaf axils on the basal part of stem. Outer perichaetial leaves ovate, narrowed to reflexed apices. Inner perichaetial leaves ovate; laminal cells thick-walled.

Male sexual organs and sporophytes absent.

Specimens examined. Hawaii. Hawaii Island, South Kohara District, Kohara Mts., Puu O Umi

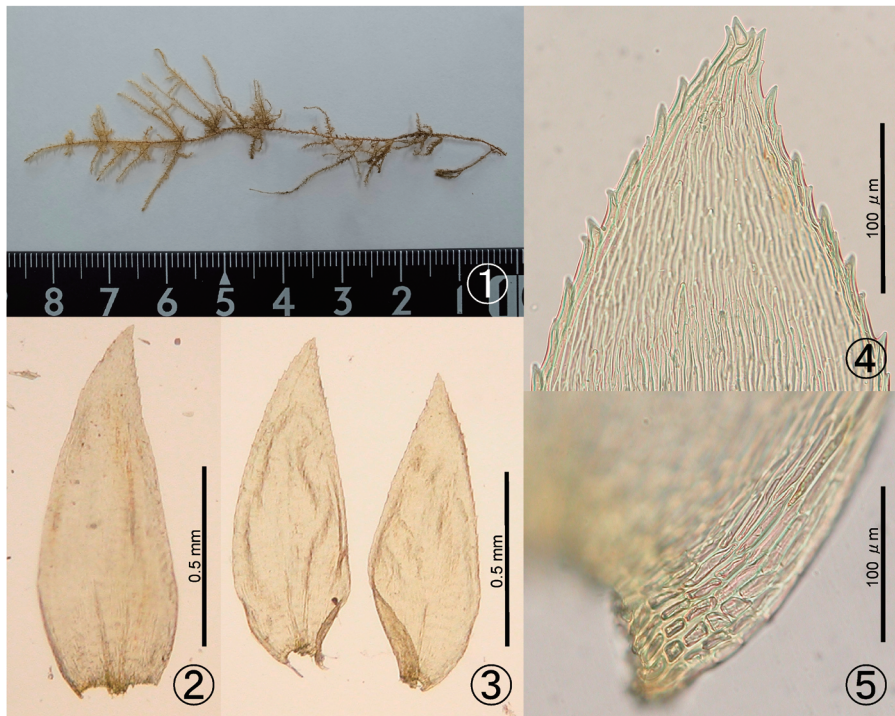


Fig. 1. *Symphyodon perrottetii* Mont. (Higuchi 33963). 1. Plant. Scale = 1 mm. 2. Stem leaf. 3. Branch leaves. 4. Apical part of branch leaf. 5. Alar part of branch leaf.

Natural Area Reserve, Upper Hamakua Ditch Trail, 1150m alt., on iron water pipe, June 11, 1999, coll. M. Higuchi 33949 (TNS, BISH); on branch of *Cryptomeria japonica*, coll. M. Higuchi 33963 (TNS, BISH); 1160m alt., on shrub, June 9, 1999, coll. M. Higuchi 33868 (TNS, BISH);

Distribution. China, Japan, India, Sri Lanka, Laos, Thailand, Vietnam, Indonesia, Malaysia, Singapore and the Philippines (cf. He and Snider, 2000). New to Hawaii.

*Symphyodon perrottetii* is characterized by (1) large plants (Fig. 1: 1), (2) distinctly serrate leaf margins (Figs. 1: 4, 2: 4) and (3) differentiated alar cells (Figs. 1: 5, 2: 5). A specimen (Higuchi 33868) cited above has stems with a few branches, narrower stem and branch leaves and almost smooth laminal cells of branch leaf (Fig. 2).

*Symphyodon pygmaeus* (Broth.) He & Snider has been disjunctively known from Hawaii, while it is distributed in China, Nepal, India, Thailand, Madagascar, Réunion and Mozambique (He and Snider, 2000; Staples *et al.*, 2004). I examined an isotype of *Glossadelphus abortivapicus*, one of synonyms of *S. pygmaeus*, kept in the herbarium of the National Museum of Nature and Science (TNS) and found that *S. pygmaeus* differs from *S. perrottetii* by its round to truncate leaf apices.

*Symphyodon perrottetii* grows on branches in South and Southeast Asia (He and Snider, 2000) and it also grows on twigs in Japan where is the northern limit of the species (Ando and Seki, 1962; Iwatsuki, 1970; Higuchi and Nishimura, 2001). The species was growing on the branches of *Cryptomeria japonica* and iron water pipe about 1100m above sea level in Hawaii Island where it is much humid.

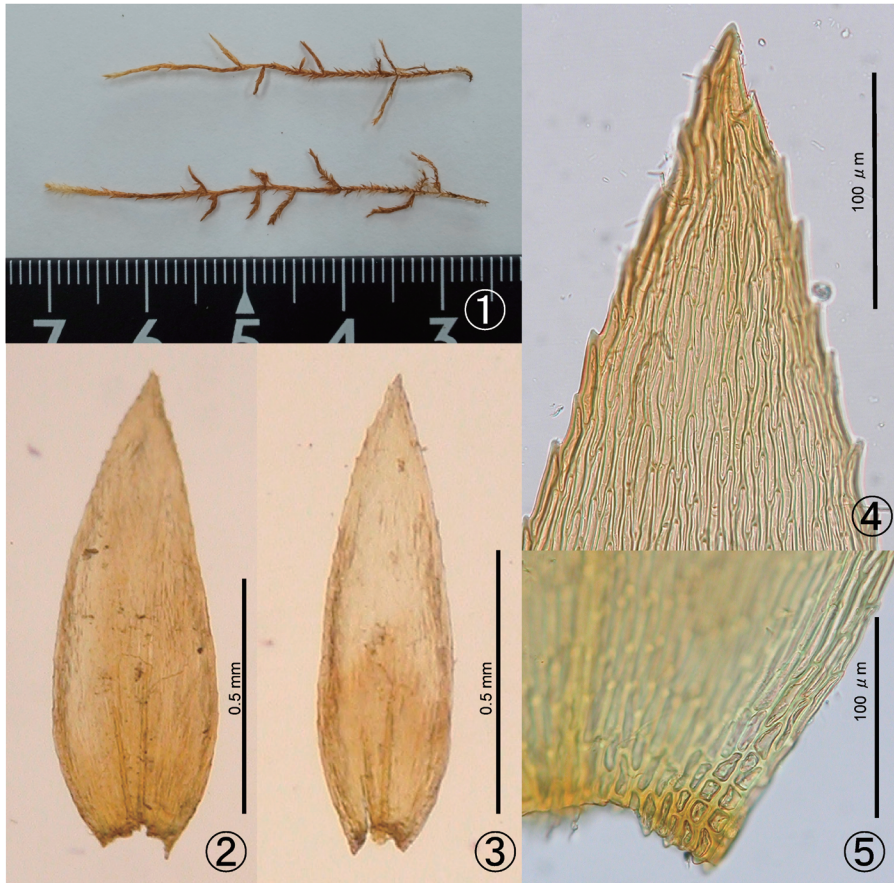


Fig. 2. *Symphyodon perrottetii* Mont. (Higuchi 33868). 1. Plant. Scale = 1 mm. 2. Stem leaf. 3. Branch leaf. 4. Apical part of branch leaf. 5. Alar part of branch leaf.

### Acknowledgments

I wish to express my sincere thanks to Dr. H. Kashiwadani of the National Museum of Nature and Science for giving the opportunity to join the field research and Prof. C. W. Smith of University of Hawaii for his kind help in the field research.

### References

- Ando, H. and Seki, T. 1962. A remarkable range extension of *Symphyodon perrottetii* Mont. *Hikobia* 3: 80–85.
- He, S. and Snider, J. A. 2000. A taxonomic revision of *Symphyodon* (Musci: Symphyodontaceae). *Bryologist* 103: 52–81.
- Higuchi, M. and Nishimura, N. 2001. Mosses of Mikurajima Island, Izu Islands, central Japan. *Memoirs of National Science Museum, Tokyo*, 37: 125–139 (in Japanese).
- Iwatsuki, Z. 1970. Wakayamaken nanbu de saishu shita kyomi aru senrui. *Mie Kokenokai News* 4: 9–11 (in Japanese).
- Staples, G. W., Imada, C. T., Hoe, W. J. and Smith, C. W. 2004. A revised checklist of Hawaiian mosses. *Tropical Bryology* 25: 35–69.