

Female Flowers of *Balanophora kiushiana*

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九州産ミヤマツチトリモチの花部形態

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Morphology of the female flowers of *Balanophora kiushiana* was observed with SEM, leading to the conclusion that *B. kiushiana* is conspecific with *B. nipponica*.

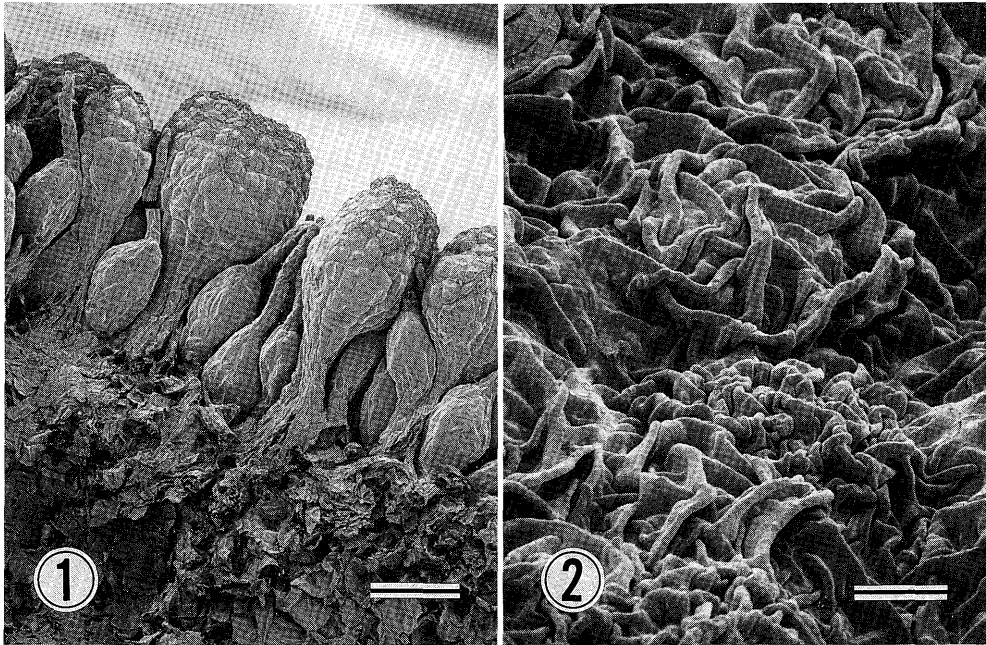
Balanophora kiushiana Ohwi was most recently described as an endemic species of Kyushu Is. (Ohwi 1965). Ohwi distinguished this species by the short and brownish yellow-green spadix. Hatusima (1971) compared this species with *B. nipponica* Makino known from Honshu and Shikoku and noted their similarity. Hansen (1972) included both *B. kiushiana* and *B. nipponica* in *B. japonica* Makino. The systematic position of *B. kiushiana* have never been determined clearly: authors who include Kyushu in the distribution range of *B. nipponica* (Watanabe and Akuzawa 1982) seem to consider *B. kiushiana* and *B. nipponica* to be the same species.

In the previous notes on agamic species of Japanese *Balanophora*, Murata (1990) recognized three species, *B. japonica*, *B. yakushimensis* and *B. nipponica*, on the basis of morphological observation of female flowers with SEM, but *B. kiushiana* was not examined. For this paper, *B. kiushiana* was observed and compared with other

three species.

The arrangement of the female flowers and the surface morphology of the cuticles of *Balanophora kiushiana* from Kyushu (voucher specimen: Oita Pref., Beppu-shi, Higashiyama, west side of Hyuugadake, alt 900 m, Aug. 13, 1991, M. Arakane s.n., TI) was examined with SEM. A small portion of the female inflorescence, about 3×5 mm, was soaked in 20% dilution of commercial bleach (Kao Kitchen-Hiter) for 6 hours to remove mucilage from the surface for observation of the cuticles, then washed in water and passed through an alcohol dehydration series. After dehydration, it was critical-point dried, mounted, sputter coated with gold and observed with a JEOL JSM 820 SEM at 3 kv.

In the specimens of *B. kiushiana* examined during this study, the female flowers were situated solely on the main axis of the inflorescence (Fig. 1) and the spadices had conspicuous labyrinth-like ridges at the apex (Fig. 2). In these characteristics,



Figs. 1–2. 1. Spadices and female flowers of *Balanophora kiushiana*, showing arrangement of female flowers. Scale=200 μm . 2. Surface morphology of the spadices of *Balanophora kiushiana*. Scale=10 μm .

B. kiushiana is perfectly agreeable with *B. nipponica*. Ohwi (1965) distinguished this species from *B. nipponica* by the shape and color of the spadix (orange and shortly cylindric-ovoid in *B. nipponica* vs pale yellowish brown and ovoid in *B. kiushiana*), but, as suggested for these species by Hatusima (1971), color and shape of the spadix are generally variable in *Balanophora*. The distinction between these two species, therefore, are not maintainable and they are recognized as the same species.

Balanophora nipponica Makino, Bot. Mag. Tokyo **23**: 59. t. 3 (1909).

B. japonica sensu Hansen, Dansk Bot. Ark. **28**(1): 160, p.p. (1972).

B. kiushiana Ohwi, Fl. Jap. revised ed. 1437 (1965).

Arakane of Oita Prefecture who provided a liquid preserved specimen of *Balanophora kiushiana* for this study.

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 Hatusima S. 1971. A new noteworthy species of *Balanophora* from Kyushu. J. Geobot. **19**: 60–62 (in Japanese).
 Murata J. 1990. Agamic species of *Balanophora* in Japan. Mem. Natn. Sci. Mus., Tokyo (**23**): 43–50.
 Ohwi J. 1965. *Balanophora*. Flora of Japan, revised edition. 532–533 (in Japanese) and 1437. Shibundo, Tokyo.
 Watanabe K. and Akuzawa E. 1982. *Balanophora*. In Satake Y. et al. (ed.), Wild flowers of Japan, Herbaceous plants **2**: 12–13. Heibonsha, Tokyo (in Japanese).

要旨

Ohwi (1965) によりキュウシュウツチトリモチとして記載された九州産ツチトリモチ属植物につ

I express my sincere thanks to Masanori

いて走査電顕で花部形態を観察した結果、雌花が花序の主軸上だけにつくこと、担棍体上部のクチクラ表面の隆起条が著しい網目状であることが明らかとなった。これらは先に報告した (Murata

1990) 本州産ミヤマツチトリモチの特徴とよく一致しており、キュウシュウツチトリモチとミヤマツチトリモチが同一種であるという見解を支持する。