

CERAMIUM BOTRYOCARPUM AND C. SECUNDATUM RE-EVALUATED

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In the British Isles the genus *Ceramium* is represented by 15 species, divided into to groups. The two groups without cortical spines are (1) fully corticated species and (2) those with ecorticated internodes. Group 1 species are very difficult to distinguish. In particular the key morphological features that discriminate between *C. botryocarpum* and *C. secundatum* include the number of periaxial cells and presence of adventitious branching (Maggs and Hommersand, 1993). However, these features may be influenced by the environment. By using various molecular markers, growing cultures in different conditions and crossing experiments we aim to clarify the relationship between the species of group 1.

Analysis of the formalin preserved vouchers showed that *C. botryocarpum* and *C. secundatum* are morphologically almost identical. They only differ in the number of periaxial cells (6-7 for *C. botryocarpum* and 7-8 for *C. secundatum*) and by the more robust, larger thallus of *C. secundatum*. Culture studies showed that the morphology of *Ceramium* is highly influenced by the environment. There was crossing with formation of tetrasporophytes between *C. botryocarpum* and *C. secundatum*. The phylogenetic analysis with the chloroplast marker (*tufA/rpl31*) and the mitochondrial marker (*cox2-3* spacer, Gabrielsen 2002) clearly demonstrate that *C. botryocarpum* and *C. secundatum* are not respectively monophyletic. Analysis of multiple samples and with different techniques confirmed that *C. botryocarpum* Griffiths ex Harvey (1848) is a later synonym of *C. secundatum* Lyngbye (1819).

References

- Maggs C.A. and M.H. Hommersand. 1993. Seaweeds of the British Isles. Volume 1. Rhodophyta. Part 3A. Ceramiales. British Museum (Natural History), London
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