

The Discovery of *Closterium macilentum* var. *substriatum* (Grönblad) Krieger in the British Isles

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Abstract

A rare variety of the desmid *Closterium macilentum* Brébisson 1856 has been found in West Sutherland amongst a rich assortment of other desmids in a pool in an old quarry for the first time in the British Isles.

Introduction

This study has been based on a sample collected by Mr. I. Evans (13. 4. 2015) using a plankton net passed through littoral macrophytes in a permanent pool in an old sand quarry at Clashmore, Assynt, West Sutherland, NC 03673167. Many desmids were present with

*Closterium diana*e and *Closterium attenuatum* Ehrenberg ex Ralfs dominant and present in large numbers.

The pool is approximately 25 x 15 metres and up to 1m deep although mostly shallow at about 30 cms or less, the pH being ca. 6.5. The aquatic vegetation is quite varied. It includes delicate stonewort *Chara virgata*, bogbean *Menyanthes trifoliata*, bog pondweed *Potamogeton polygonifolius*, floating club-rush *Eleogiton (Isolepis) fluitans*, marsh cinquefoil *Potentilla palustris*, lesser spearwort *Ranunculus flammula* and bog mosses *Sphagnum* spp., with other species not yet identified.

The following species are represented in the desmid flora:

Actinotaenium turgidum

Closterium acerosum

aciculare

attenuatum

baillyanum

costatum

*diana*e

didymotocum

ehrenbergii

incurvum

kuetzingii

lineatum

moniliferum

setaceum var. *elongatum*

Cosmarium boeckii

conspersum var. *latum*

depressum

prox. kirchneri

reniforme

tetraophthalmum

Euastrum ansatum

bidentatum

oblongum

pectinatum

verrucosum

Gonatozygon brebissonii

Hyalotheca dissiliens

Micrasterias fimbriata

papillifera var. *pseudomurrayi*

truncata

Netrium digitus

interruptum

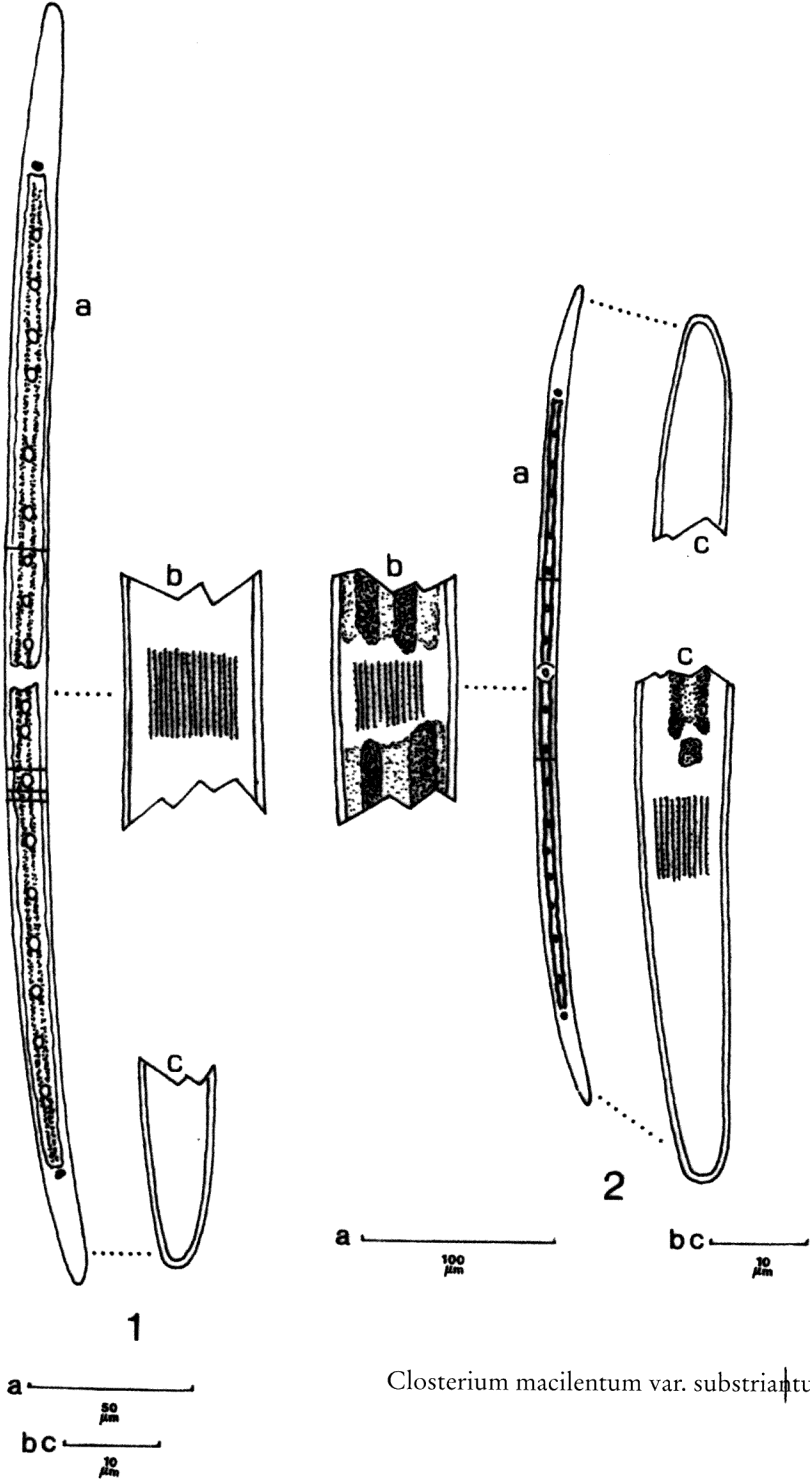
Pleurotaenium ehrenbergii

Spirotaenia condensata

Staurastrum furcigerum

Xanthidium antilopaicum

octocorne



Closterium macilentum var. *substriatum*

Description of the variety

The cells are long and slender with parallel margins and only slightly incurved near the extremities. They fall within the following range of dimensions.

Length 392.0- 493.0 μm , breadth 12.3- 15.4 μm , length/breadth ratio 26.8- 35.7

The apices are narrowly rounded, occasionally slightly truncate, the inner side less curved, without thickening or end-pores and usually with one crystal or several small ones fused together. The cell wall is finely striated (ca. 15/10 μ) with puncta on (?) or between the striae difficult to discern. True girdlebands are present and the wall is occasionally slightly brown.

Both Krieger (1935) and Prescott *et al* (1975) who reported the variety from five US states, comment that good optical conditions are needed to discern the striae and puncta, and this was certainly the author's experience. Förster (1964) found the variety in Brazil but with larger dimensions, and commented on the single apical crystal.

Taxonomical discussion

Closterium macilentum is a rare species which in the past has been confused with others of similar linear shape. It is usually described as having a smooth cell wall although two varieties *Closterium macilentum* var. *japonicum* from Japan and the var. *substriatum* from Finland are recognised and have striated walls.

This second-named variety, var. *substriatum* (Grönblad) Krieger has now been discovered in the British Isles, although sparsely in the above sample from Assynt.

This striated variety was first described under the earlier name of *Closterium brebissonii* Delp. var. *substriatum* nova. var. in Grönblad 1920 although he had earlier described a delicately striated *Closterium pseudopenium* as a new species but later (Grönblad 1926) after giving more attention to the cell wall, decided that it was *Cl. macilentum*.

Interestingly Grönblad draws a distinction between the younger parts of his cells and the older parts, saying that the former are entirely

smooth and colourless whereas the latter older segments are yellow-brown with dense but delicate striae only visible with the o.i. objective.

The var. *substriatum* was considered valid by Krieger (1935 : 314) but Růžicka (1975 : 300) thought it was not out of the question that the nominal form could be striated. In Růžicka (1977) *Closterium macilentum* is regarded as an "Unklare Art" with no positive view expressed as to whether it is striated or has true girdlebands although these are clearly illustrated on Taf. 31 :10 -12.

Closterium macilentum remains something of an enigma as the taxonomy is somewhat tortuous and leading authorities have in the past expressed varying views about the cell wall. Until the matter is finally settled the var. *substriatum* should be regarded as valid.

Acknowledgments

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