

A SYNOPTIC FLORA OF SOUTH GEORGIAN MOSSES: *CAMPYLIUM*

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ABSTRACT. *Campylium polygamum* (B.S.G.) C. Jens., the only species of the genus known from South Georgia, is described and illustrated. Notes to assist in its identification are provided, as are habitat details and a map of the species' distribution on the island, together with notes on its taxonomy.

Campylium, hitherto undescribed for South Georgia, constitutes a minor but floristically interesting part of the ecologically important pleurocarpous moss flora. It is represented on the island by a single species, which is described in detail in accordance with the aims and format adopted in previous parts of this series (Greene, 1973; Newton, 1979).

AMBLYSTEGIACEAE

Campylium (Sull.) Mitt.

As known on South Georgia, *Campylium* is characterized by its broadly lanceolate leaves with channelled subulae. The alar cells are inflated, sometimes forming distinct auricles. Development of the nerve is variable, being short and double or, when single, reaching at least to mid-leaf.

Campylium polygamum (B.S.G.) C. Jens.

Loosely caespitose, yellowish green to brown or less commonly dark green, glossy. Stems (1.0–) 2.0–7.5 cm, erect or ascending, irregularly branched, without rhizoids. Stem and branch leaves similar, 1.9–3.1 (–4.0) × (0.6–) 0.7–1.0 (–1.4) mm, erecto-patent to more or less squarrose, each broadly lanceolate with channelled subula terminating in very finely acute apex, a single cell wide for some distance below tip. Margin entire. Nerve various, usually short and double, less frequently single and reaching to mid-leaf. Leaf cells 41.0–80.0 (–127.0) × 5.5–7.5 μm above, linear, with oblique or transverse end walls, c. 5–12 (–18) times as long as broad, the walls moderately thickened and slightly porose, or uniformly thin. Basal cells shorter, broader and more porose, the alar group inflated and hyaline, sometimes expanded into small rounded auricle. Autoecious, but individual male and female stems frequent and several specimens exclusively one or the other. Perichaetial leaves triangular, appressed; perigonal leaves acuminate, appressed. Sporophyte unknown on South Georgia (Fig. 1).

Habitat and distribution (Fig. 2)

This species occurs in a variety of wet habitats, associated with running water as well as pools. It is often found on gravel, stones or wet rocks, sometimes submerged

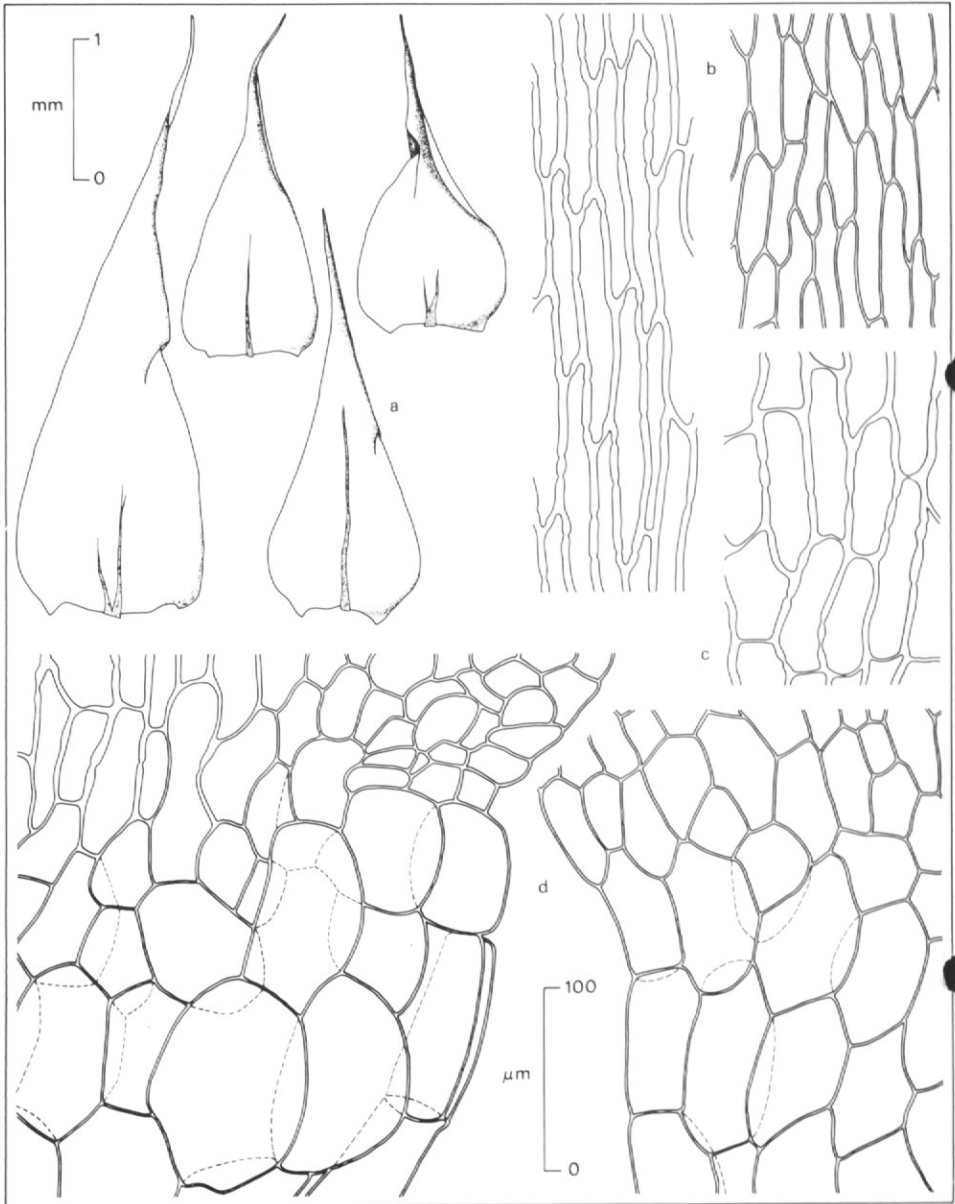


Fig. 1. *Campylium polygamum*. a. Stem leaves; b. upper leaf cells from two different specimens; c. lower leaf cells; d. alar cells. Scales: upper for leaves, lower for cells.

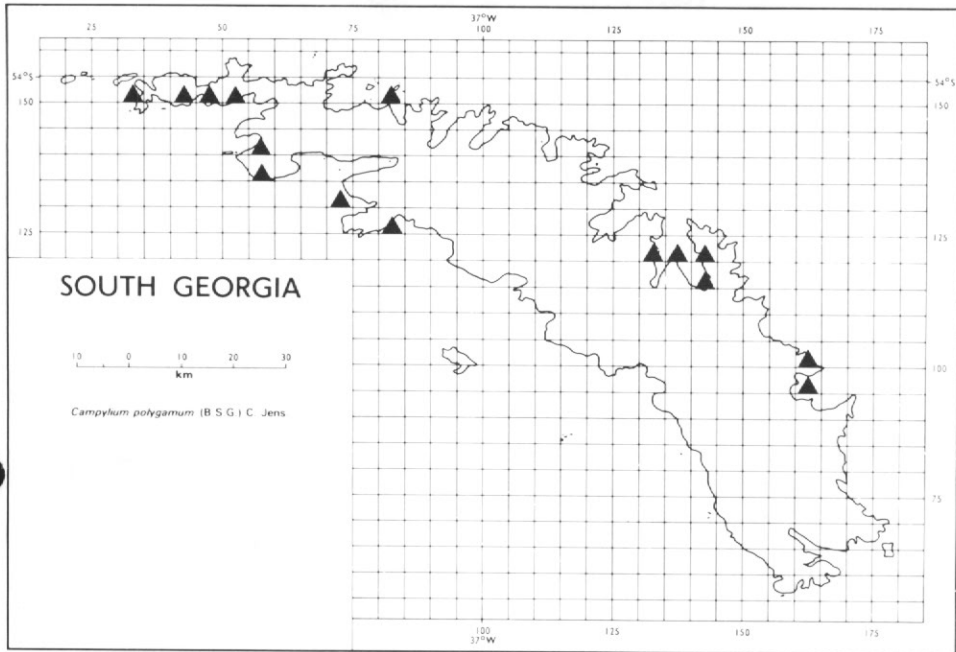


Fig. 2. The known distribution on South Georgia, by 5-km squares, of *Campyllum polygamum*, based on the specimens given in the Appendix.

to a depth of about 60 cm, but is also typical of wet flushes and bogs dominated by species of *Tortula* with associated *Juncus scheuchzerioides* or *Rostkovia magellanica*. Altitude 0–150 (–300) m.

Notes

There is little difficulty in recognizing *C. polygamum* on South Georgia. *Calliergon sarmentosum* (Wahlenb.) Kindb. and *Brachythecium subplicatum* (Hamp.) Jaeg. possess similar auricles of inflated cells but leaf shape, particularly the obtuse apices with short acumina, serves to distinguish them (Newton, 1979). Although forms of *Campyllum polygamum* with erecto-patent leaves bear a superficial resemblance to *Calliergidium* cf. *austro-stramineum* (C. Muell.) Bartr. and to straight-leaved species of *Drepanocladus*, *Campyllum* is readily recognized by the channelled subulae and the presence of a majority of leaves with double nerves.

Taxonomy

C. polygamum was described, as *Amblystegium polygamum* B.S.G., on the basis of German material collected by Th. Gumpel (Bruch and others, 1853) and was transferred to the genus *Campyllum* by Jensen (*In* Lange and Jensen, 1887). There is, however, considerable uncertainty about the present location of type material, referred to as 'In stagno exsiccato Kirkler-Weiher dicto prope Bipontem, ubi Th.

Gümpel anno 1843 detexit'. Searches in the three herbaria (BM, BR, TUB) in which a specimen might be expected to be found have resulted in the discovery of only one specimen of *C. polygamum ex herb.* Gümbel with these details (Gümbel, BM, Rheinpfalz-Kirkeler Weiher, comm. Holzner, *ex herb.* R. G. M. Rhodes, iv. 1843) and doubt is cast on its identity by an erroneous annotation in an unknown hand to the effect that it is from the original locality of the var. *fallaciosum* (Jur.) Roth. *nom. illeg. incl. var. prior.* It is a variety included in the var. *stagnatum* (Wils.) Dix. Wilson (1855) in describing the var. *stagnatum*, moreover, referred only to British specimens. It is therefore reasonable to conclude that the specimen of Gümbel's in the British Museum (Nat. Hist.) is indeed type material of the species. It is, nevertheless, only part of the original specimen, as a note within the packet testifies.

Using arbitrary units of length, South Georgian *Campylium* gives a regression coefficient of leaf width on leaf length of $b=0.2561$, where the mean of length is 61.2127 and that of leaf width is 22.7187. Three out of four stem leaves dissected from the Gümbel specimen of *C. polygamum* were slightly narrower than predicted by the South Georgian regression, but the fourth was slightly broader. It must therefore be concluded that agreement is good when considering leaf proportion. Although leaf shape and areolation are also similar in South Georgian material and the German specimen, it should be noted that the subula is less deeply channelled in the latter, which is also more regularly branched than is usual on South Georgia, the last point being a diagnostic character of the var. *stagnatum* (Wilson, 1855). According to Bruch and others (1853), the branches of *Amblystegium polygamum* were dispersed, more or less elongated and simple or divided. The implied discrepancy between their description and the specimen seen (*ex herb.* R. G. M. Rhodes) is not, however, confirmed by the original drawings. Instead, the description and drawings fail to coincide.

These uncertainties concerning the type material make it difficult to define the taxonomic limits of *C. polygamum* as recognized by Bruch and others (1853). The autoecious species with well-defined nerve was distinguished from dioecious, enervate *C. stellatum* (Hedw.) J. Lange and *C. Jens.* by its less squarrose, narrower and more longly acuminate leaves composed of looser tissue. Cell dimensions were not given but the last point would imply that the cells were considered to be wider and perhaps less thickened than those of *C. stellatum*. Of these characters, the inflorescence and the presence or absence of a nerve offer ready means of discrimination, on which grounds the South Georgian material coincides with *C. polygamum*. The nerve, however, is frequently short and double in South Georgian material and thus unlike the longer single nerve typical of the species in Europe and North America. Moreover, neither leaf form nor areolation sheds further light on the problem because the ranges of variation attributed to these species are both included within the South Georgian taxon. In identifying this austral material as *C. polygamum*, greater emphasis is therefore placed on the nature of the inflorescence and on the presence of a nerve. It is pertinent to recognize, however, that South Georgian material emphasizes the need for monographic revision of *C. polygamum* in the context of *C. stellatum*. Type material of the latter is to be found in the Fielding-Druce Herbarium (Dill, OXF, *Hypnum coma lutescente, extremitatibus stellatis* Hist. Musc. p. 302. n. 35) and consists of two specimens labelled A and B, the second of which is from Charton Bog. One South Georgian specimen (R. Smith 1409) with rather longer and broader leaves than the rest could readily be referred to *C. stellatum* were it not for the fact that it possesses a well-developed nerve and has so far proved impossible to distinguish morphologically from others that are autoecious.

ACKNOWLEDGEMENTS

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APPENDIX

DETAILS OF THE SPECIMENS FROM WHICH THE
DISTRIBUTION FIGURE WAS COMPILED

The references to the herbaria cited after each specimen follow those recommended by Holmgren and Keuken (1974). It should be noted that the British Antarctic Survey bryophyte herbarium is now housed at the Institute of Terrestrial Ecology's Bush Research Station, Penicuik, Midlothian, Scotland EH26 0QB. A print-out from the data bank of the collecting details for the specimens cited in the Appendix is available on request from B. G. Bell at this address. The six figures before the specimens refer to the 5-km squares of the distribution map, eastings being cited before northings.

Campyllum polygamum (B.S.G.) C. Jens.

- 030 150 Greene 383 (AAS, BA, CHR, LE, MEL, NY, PC). 040 150 Greene 746 (AAS, NY, PC, PRE, SGO). 045 150 BAS Misc 144 (AAS), BAS Misc 145 (AAS).
- 050 150 BAS Misc 146 (AAS). 055 135 R. Smith 4400 (AAS), R. Smith 4401 (ASS, PRE). 055 140 R. SMITH 4403 (AAS). 070 130 R. Smith 4405 (AAS), R. Smith 4406 (BM, SGO).
- 080 125 Greene 2629b (AAS, PC, PRE, SGO), Greene 2651 (BM, BA, S, TNS). 080 150 R. Smith 4402 (AAS).

- 130 120 Clarke and Greene 359 (AAS, CHR, LE, MEL, NY, PC), Greene 784 (BM, BA, PRE, SGO, S, TNS), Greene 3539 (AAS), R. Smith 1189 (AAS, S), R. Smith 1243d (BM, TNS), R. Smith 1251 (AAS), R. Smith 1408 (AAS), R. Smith 1409 (AAS), R. Smith 4404 (AAS). 135 120 Bell 3438 (AAS). 140 115 Longton 365 (AAS, BA, CHR, LE, MEL). 140 120 Greene 1006 (AAS), Greene 1015 (AAS).
- 160 095 Greene 2260b (AAS). 160 100 Greene 2431 (BM, CHR, LE, MEL, NY).