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The discovery of the South Georgian endemic species
Schistidium urnulaceum (C. Muell.) B. G. Bell
(Musci: Grimmiaceae) in the Antarctic

ABSTRACT: *Schistidium urnulaceum* (C. Muell.) B. G. Bell, a species hitherto known from the sub-Antarctic island of South Georgia, is reported for the first time from King George Island, South Shetland Islands, in the Antarctic botanical zone. A description of the species together with illustrations, notes on habitat and a distribution map are provided. Taxonomic notes to assist in the identification of *S. urnulaceum* are also given.

Key words: South Georgia, Antarctica, bryology, taxonomy, *Schistidium*

Introduction

South Georgia is an isolated island on the Scotia Ridge. It was probably totally covered by Pleistocene glaciers that caused complete obliteration of its terrestrial vegetation (Sugden and Clapperton 1977). It is unlikely that any species could have survived these disastrous events, and the present-day mixed herbaceous cryptogamic flora of South Georgia perforce must have immigrated from elsewhere. Because its flora shows very strong continental affiliation with southern South America, it is apparently predominantly of Patagonian and Fuegian origin.

South Georgia has been biologically explored for about 100 years, and it is today one of the austral areas best known bryologically. Greene (1973) initiated compilation of a critical moss flora of the island, and the efforts of many British and several foreign bryologists have resulted in the preparation of numerous taxonomic accounts of selected families and genera of mosses (Ochyra and Lightowers 1988). These studies have shown wider distribution for a number

of the species described as endemic to South Georgia. Most of the assumed South Georgian endemics proved to be identical with species described and known from elsewhere, mostly from South American mainland and Tierra del Fuego, including, among others, many species of *Polytrichum* (Greene 1973), *Dicranum* (Bell 1973a) and *Tortula* (Lightowlers 1985).

On the other hand, taxonomic and floristic investigations of mosses in adjacent austral regions revealed that some species originally described from South Georgia have been discovered outside the island, for instance *Skottsbergia paradoxa* Card. (Roivainen and Bartram 1937), *Philonotis acicularis* (C. Muell.) Par. and *P. varians* Card. (Matteri 1968), *Ditrichum austro-georgicum* (Card.) Seppelt (Seppelt 1980, 1982), *Bartramia subsymmetricalis* Card. (Matteri 1984), *Tortula filaris* (C. Muell.) Broth. and *T. fontana* (C. Muell.) Broth. (Lightowlers 1985), and many others. Finally, there exists a number of species that should be considered to have evolved on South Georgia. Many of these species have subsequently migrated and been discovered in the maritime Antarctic which is an area of the same climatic conditions during the Pleistocene and Holocene. Species with a South Georgian — Antarctic Peninsula distribution pattern include: *Andreaea depressinervis* Card. (Schultze-Motel 1970; Greene et al. 1970), *Schizymenium austro-georgicum* (C. Muell.) Shaw (Clarke 1973; Clarke and Lightowlers 1983), *Dicranum oleodictyon* Dix. (Bell 1973a, b), and *Pohlia inflexa* (C. Muell.) Wijk & Marg. (Clarke 1973; Ochyra et al. 1986). It is conceivable that, as many examples have shown, the future progress in the floristic exploration and taxonomic study of mosses in the Southern Hemisphere will further extend the known range of these species, and therefore the present designation of their distribution pattern is provisional.

The group of species that were previously known exclusively from South Georgia, but recently have been discovered in the maritime Antarctic, can now be increased for *Schistidium urnulaceum* (C. Muell.) B. G. Bell. The species was discovered by the author on King George Island, South Shetland Islands, during the Fourth Polish Antarctic Expedition of 1979—1980, and this is the first record of this species from within the Antarctic botanical zone as defined by Greene (1964) and Smith (1984).

Schistidium urnulaceum is a distinct and readily identifiable species that is uncommon but widespread on South Georgia where it grows on exposed rocks at high elevations (Bell 1984). It was originally described as *Grimmia urnulacea* by Müller (1890) from material collected from South Georgia by H. Will during the German International Polar-Year Expedition of 1882—1883. Since then, the species has essentially not been subjected to taxonomic study, and it was reported only once from South Georgia by Cardot (1906, 1908). In her monograph of *Schistidium*, Bremer (1980) without comment reduced *G. urnulacea* to synonymy with *Schistidium apocarpum* (Hedw.) B., S. & G. In this way *G. urnulacea* might probably have fallen into oblivion, but fortunately

Bell (1984) reinstated it as a good and well-defined species. Bell further transferred the species to *Schistidium* on the basis of its enlarged perichaetial leaves, lack of annulus and immersed systylious capsules.

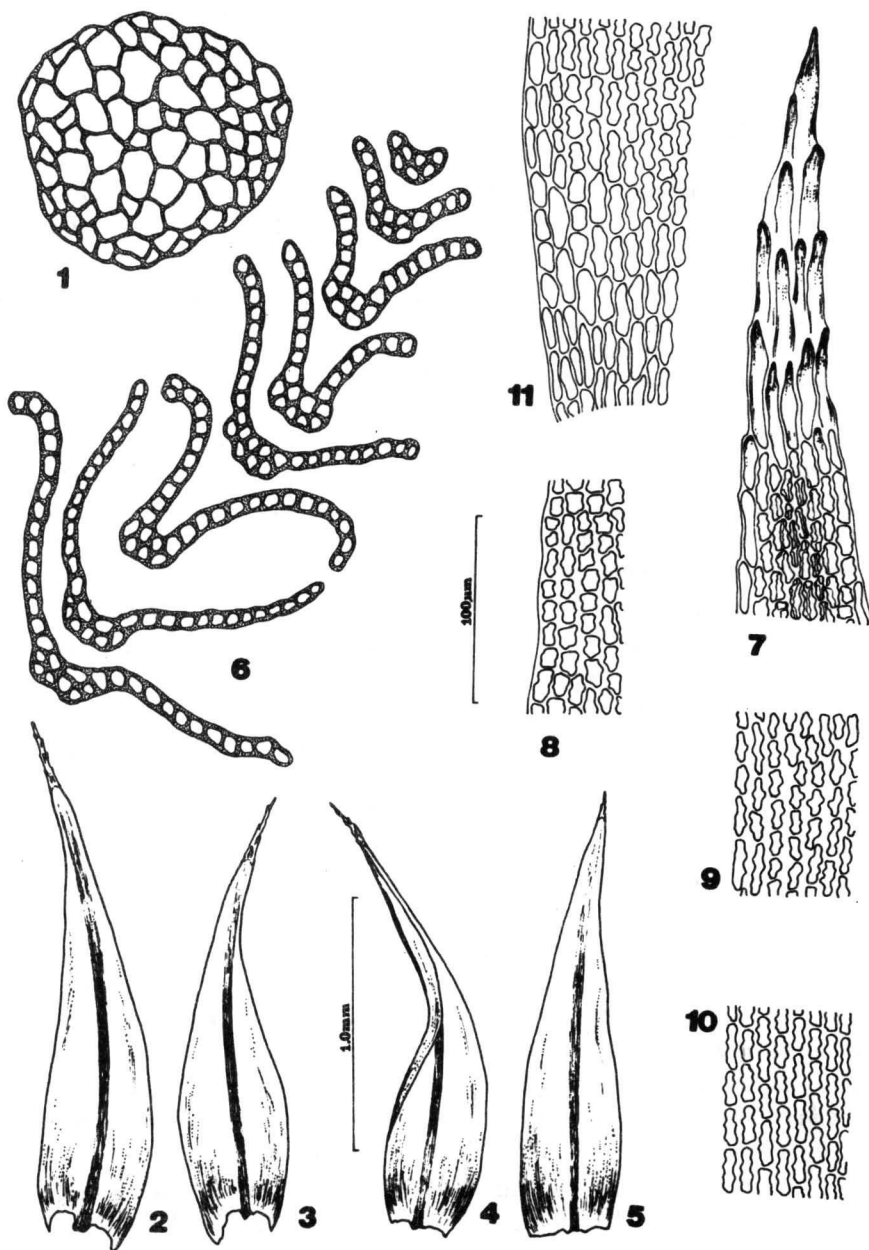
Description

Schistidium urnulaceum (C. Muell.) B. G. Bell, *Br. Antarct. Surv. Bull.* 63: 99, f. 19, 1984. (Figs 1–24)

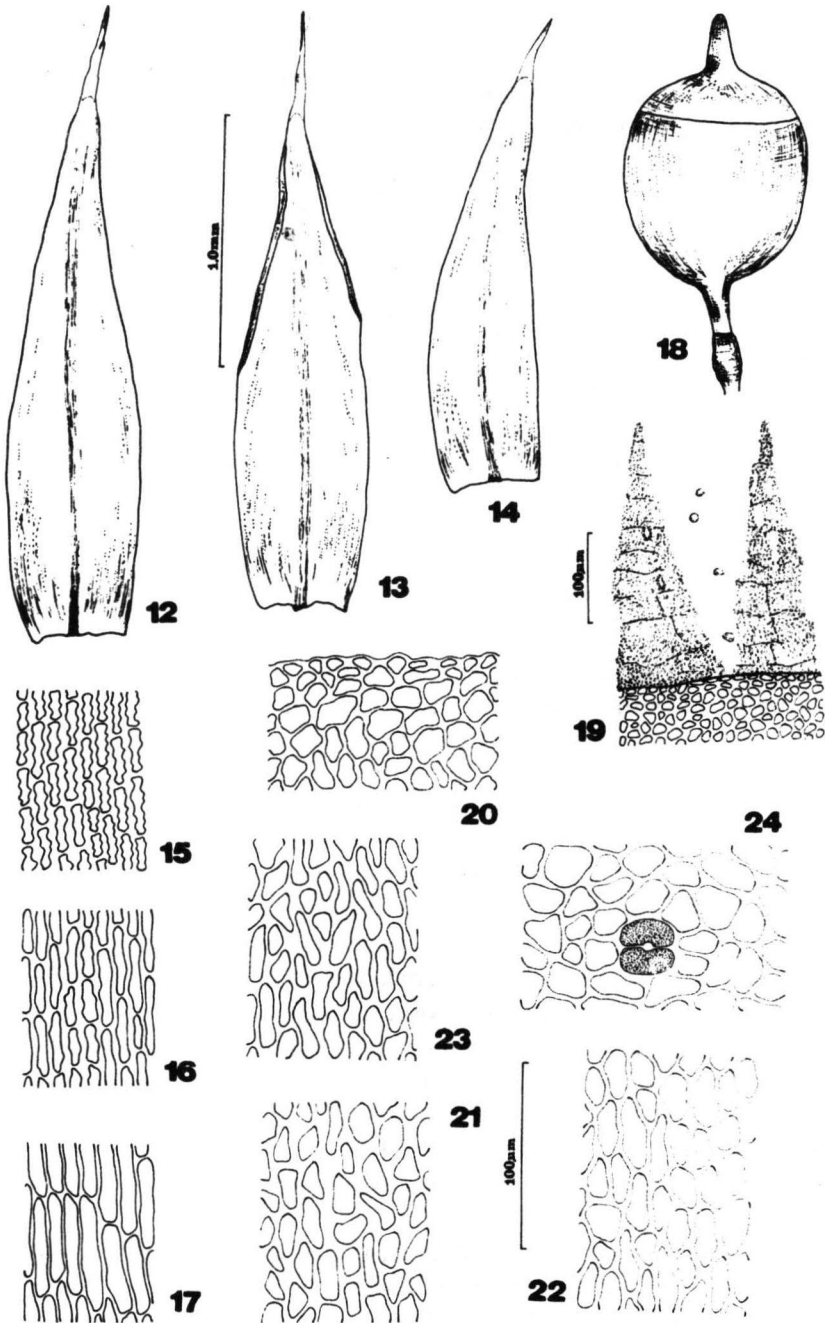
Syn.: *Grimmia urnulacea* C. Muell. in Neum., *Int. Polarforsch. 1882–83 Deutsch. Exp. Ergebn.* 2: 313. 1890. Type: *Austro-Georgia, ad rupes am Ausgange des Brockenthales, cum Gumbelia immerso-leucophaea consociata*, 23. Januario 1883. [Lectotype (selected here): „*Grimmia urnulacea* C. Müll. n. sp. *Austro-Georgia, ad rupes am Ausgange des Brockenthales. Südpolarexpedition*” – HBG!; isotype: S!].

Plants in small, dense, yellow-green, somewhat lustrous cushions, weakly hoary above, brown to blackish-brown below. Stems 0.5–2.0 cm long, erect, regularly repeatedly branched, with scattered clusters of smooth, brown rhizoids, in transverse section without central strand and composed of nearly uniform cells, or with the outer row consisting of slightly smaller, weakly thickened and brownish cells surrounding 4–5 rows of large, thin-walled medullary cells. Leaves densely set, straight to somewhat curved, keeled, closely imbricate, erect to erecto-patent when dry, erect-spreading when moist, (1.0–)1.2–1.6(–2.0) mm long, 0.2–0.4 mm wide, narrow and lanceolate, gradually acuminate, acute, ending in a rather short, about 0.5 mm long, hyaline, denticulate to nearly smooth hairpoint; margins entire, plane or recurved on one or both sides for varying distances, unistratose below, in upper part with infrequent bistratose spots; costa convex at the dorsal side, channelled above, smooth at back, 35–45 μ m wide above, becoming thinner towards the base, ending near but usually not in the hyaline point, in transverse section bistratose throughout; upper and median lamina cells quadrate to short rectangular, 8–20 μ m long, (3–)5–9(–11) μ m wide with sinuose and strongly incrassate walls; basal lamina cells short to long rectangular, not lax, straight-walled, 20–60 μ m long, 5–12 μ m wide; alar cells pellucid, quadrate to long rectangular, not differentiated from adjacent lamina cells; adaxial cells over the costa elongate and straight-walled in the lower half of the leaf, becoming quadrate to short rectangular, sinuose in the upper half.

Sex parocious. Both gynoecea and androecea terminal; perichaetial leaves yellowish-green, somewhat larger than vegetative leaves, lanceolate or ovate-lanceolate to oblong-lanceolate, 0.55–0.65 mm wide, 1.9–2.1 mm long (without hairpoint), terminated with hyaline, 0.3–0.5 mm long, denticulate to almost smooth awn, weakly concave, straight, erect; margins plane below, recurved in the upper half; upper lamina cells similar to those in vegetative leaves, subquadrate to short rectangular, sinuose and thick-walled, becoming in mid-leaf short to long rectangular, not lax, straight-walled; costa 35–45 μ m wide above, channelled,



Figs 1—11. *Schistidium urnulaceum* (C. Muell.) B. G. Bell. 1: stem cross-section; 2—5: leaves; 6: cross-sections of leaves; 7: leaf apex; 8: upper marginal cells; 9: mid-leaf cells; 10: lamina cells immediately above leaf base; 11: basal leaf cells at margin (all drawn from Ochrya 2183/80 — KRAM-B).



Figs 12—24. *Schistidium urnulaceum* (C. Muell.) B. G. Bell. 12—14: perichaetial leaves; 15—17: upper, median and basal cells of perichaetial leaves respectively; 18: capsule; 19: portion of peristome; 20: exothecial cells at the orifice; 21—22: exothecial cells in median part of the urn; 23: lower exothecial cells; 24: stoma (all drawn from Ochyra 2183/80 — KRAM-B).

becoming thinner, 22–25 μm wide, at the base. Setae short, 0.2–0.3 mm long, straight, centrally attached; vaginula very short, with thin and smooth epidermal cells; capsules deeply immersed in perichaetial leaves, light brown or yellowish-brown, 0.6–0.8 mm long, globose or cyathiform to obloid, with wide mouth when dry and empty; operculum conic, rostellate, with attached columella after dehiscence; exothecial cells irregular, isodiametric to short rectangular, 10–30 μm long, with strongly incrassate, 4–8 μm thick, straight walls, those at the mouth somewhat smaller, isodiametric to transversely rectangular, deep brown, in 2–4 tiers, directly juxtaposed with the marginal cells of the operculum; annulus absent; stomata few at the extreme base of the urn, bicellular; peristome teeth lanceolate, 250–300 μm long, yellow- to reddish-brown, irregularly perforate or cracked above, roughly papillose on both surfaces throughout. Spores spherical, smooth, 7–9 μm wide. Calyptra conical, smooth, mitriform, lobed at base, not extending the urn.

Taxonomy

Schistidium urnulaceum is a very distinct species characterized by the following set of both gametophyte and sporophyte characters: (1) lamina cells are sinuose or nodulose throughout, except the extreme base, and have strongly incrassate walls; (2) the costa in transverse section is bistratose throughout; (3) exothecial cells are strongly incrassate; and (4) capsules are small, globose or cyathiform.

The plants produce sporophytes in abundance and therefore *S. urnulaceum* may be readily identified by its oddly shaped exothecial cells, small capsules, and straight, piliferous, oblong-lanceolate perichaetial leaves that do not differ materially in shape from the vegetative leaves, except in being somewhat larger. Strongly incrassate walls of the exothecial cells are very rarely found in the genus *Schistidium*, and *S. urnulaceum* is presumably the only species within the group of microsporous species of the genus that exhibits such a condition of exothecial cells. Thick-walled exothecial cells are found only in *S. rivulare* (Brid.) Podp. and *S. maritimum* (Turn.) B., S. & G., but these species belong to the group of macrosporous species of *Schistidium* — species whose spores reach more than 15 μm in diameter.

The only species in the Grimmiaceae in the Southern Hemisphere with thickened exothecial cells is *Grimmia tortuosa* Hook. f. & Wils. This species was described by Hooker and Wilson (1844) and Wilson and Hooker (1847) from material collected by J. D. Hooker from the Falkland Islands during the „Terror” and „Erebus” voyage in 1839–1843. Since then, *G. tortuosa* has remained a totally neglected and forgotten species. However, its recollection here seems to be pertinent, since Bremer (1981) in her world monograph of *Schistidium* commented on this species as follows: „The material is poor and

from only one locality but it seems to belong in *Schistidium*". The type material at the British Museum (Natural History) in London (BM) is in excellent fruiting condition, like its duplicates in several other herbaria, and it is a true *Grimmia*, not *Schistidium*. The species is characterized by having sessile capsules that are immersed in the enlarged perichaetial leaves but the columella remains in the urn after dehiscence and the annulus is present. The piliferous leaves with a very long, denticulate, hyaline awn and lax basal lamina cells provide a quick means for the separation of *G. tortuosa*.

Leaf areolation of strongly sinuose cells with very incrassate walls in *S. urnulaceum* is also an unusual feature of this species that aids in the identification of sterile material. The leaf cell pattern similar to that of *S. urnulaceum* is known to occur in few species of *Schistidium*, including *S. andreaeopsis* (C. Muell.) Lazar. and *S. strictum* (Turn.) Loeske ex Mårt. and allied species in the Northern Hemisphere (Ochyra and Afonina 1986); and *S. angustifolium* (Mitt.) Herz. and *S. celatum* (Card.) B. G. Bell in the Southern Hemisphere.

It is unlikely that *S. urnulaceum* could be mistaken for any of the foregoing Holarctic species, whose gametophytes are very different from those in austral species. *S. andreaeopsis* is an impressive, large moss that is immediately distinguished by the almost constant inky black coloration of its plants, strongly and asymmetrically keeled leaves that are squarrose when wet, only occasionally having very short hyaline hairpoint, and the costa that is at least tristratose in transverse section. In addition, the ecology of *S. andreaeopsis* is also unlike any species of *Schistidium*, it being associated with wet fen vegetation of arctic tundra. Sporophytically, *S. andreaeopsis* differs at once from *S. urnulaceum* by its thin-walled exothecial cells and larger spores that are 11–16 μm in diameter.

Leaf areolation of species in the *S. strictum* complex including *S. strictum* (Turn.) Loeske ex Mårt., *S. boreale* Poelt and *S. trichodon* (Brid.) Poelt is variable, but in many populations of these species lamina cells are distinctly sinuose and thick-walled, though generally they do not exceed 15 μm in length in mid-leaf. The first two species can be distinguished from *S. urnulaceum* by having the costa and often upper lamina cells distinctly papillose with tall conical papillae at back and sharply or bluntly toothed leaf margins at the apex. The third of the foregoing species, *S. trichodon*, is different from *S. urnulaceum* by its typically mucous leaves and the costa often scabrous at back with low papillae. All these species differ from *S. urnulaceum* in the structure of the costa which is convex dorsally and consists of at least three layers of cells in transverse section. Obviously, examination of mature plants obviates any doubts regarding the identity of the Holarctic species, all having thin-walled exothecial cells as well as larger capsules and spores.

Several species of *Schistidium* with sinuose-walled cells have been described from the Southern Hemisphere, including the sub-Antarctic, South America

and the East African mountains. As suggested by Bremer (1980), most of them appear to represent one, extremely variable species for which the oldest available name seems to be *S. angustifolium* (Mitt.) Herz. (proposed by Mitten (1869) for material from Ecuador). Bell (1984) described in detail the range of variability of South Georgian material which he named *S. hyalino-cuspidatum* (C. Muell.) B. G. Bell and which is evidently identical to what is called *S. angustifolium* (Ochyra, unpublished). The latter species can unambiguously be distinguished from *S. urnulaceum* if mature capsules are present. The thin-walled exothecial cells as well as the larger capsules of the former species are stable and invariable features that enable correct identification. Also, perichaetial bracts of *S. angustifolium* are widely ovate-lanceolate or ovate to elliptical and sharply differ from vegetative leaves which are oblong-lanceolate to more broadly ovate-lanceolate. Separation of sterile material of both species is more difficult, since sinuosity of the lamina cells is almost identical. Costa structure almost faultlessly permits distinction of sterile material of *S. urnulaceum* from *S. angustifolium*. The costa is always bistratose in transverse section in the first species, while in the second species it is composed of at least three, but frequently four, layers of cells in cross section, of which the two or three ventral cells are much larger than dorsal cells. In addition, *S. urnulaceum* is as a rule a hoary plant due to the common occurrence of hyaline hairpoints on the upper vegetative and perichaetial leaves, whereas those in *S. angustifolium* are frequently hairless or the hyaline awn is very short and therefore plants are not hoary in appearance.

Another austral species of *Schistidium* that exhibits weak or strong sinuosity of the lamina cells is *S. celatum* (Card.) B. G. Bell. This species was originally described from South Georgian material by Cardot (1906, 1908), but later it was collected also in Tierra del Fuego (Cardot and Brotherus 1923) and recently on Bouvetøya in the Antarctic botanical zone (Bell and Blom 1986). This species and several other austral species, including *S. antarctici* (Card.) Savicz-Lyub. & Smirn. from the Antarctic botanical zone, are very closely related to the mostly Holarctic *S. apocarpum* and the interrelationships of these taxa are badly in need of a careful assessment. Sterile plants of *S. celatum* and its relatives are readily distinguished because have a costa almost identical in section to that in *S. angustifolium*. Also, leaf areolation in these species is somewhat different from that in *S. urnulaceum* and includes short, quadrate to short rectangular cells in the upper part grading into long rectangular, straight-walled cells in mid-leaf and becoming strongly to weakly sinuose or nodulose immediately above leaf base, and their walls are only moderately thick. In addition, leaf margins in *S. celatum* are very often bistratose in the upper part and the hyaline awn is usually wanting or very short. *S. celatum* has relatively small capsules, approximately 1 mm long, that are obloid or ovoid and in shape approach those in *S. urnulaceum*. However, thin-walled exothecial cells preclude possibility of confusion. Additionally, perichaetial bracts in this

species are very large, up to twice size of vegetative leaves and are totally unlike those in *S. urnulaceum*.

Antarctic populations of *S. urnulaceum* match excellently both the South Georgian type as well as specimens subsequently collected from the island. Generally, *S. urnulaceum* is a stenoplastic species and its populations are remarkably uniform in character states of the capsule, peristome, spores and leaves, as described above. There is only a certain amount of variation in form of the hyaline hairpoint. In most populations, at least the upper leaves are hairpointed, giving the plants a hoary appearance. However, the hairpoints vary in length from 0.1 to 0.5 millimeters both within and between populations. Additionally, lower leaves are muticous in most populations and hairpointed in other. These differences seem to represent a spectrum of variability inherent in populations of most species of *Grimmia* and *Schistidium* and are influenced by such ecological factors as the humidity and insolation of its substratum and exposition to sunlight.

Ecology and distribution

In the Antarctic *S. urnulaceum* grows on acidic substrata, on weathered andesite and basalt rocks, on rubble as well as in the crevices of rock outcrops. It is mostly associated with exposed rock ledges covered with thin soil and scarcely vegetated, usually at altitudes above 80 m. Although the populations of *S. urnulaceum* are mostly pure, the species occurs sometimes with *Schistidium chryoneurum* (C. Muell.) Ochyra, but the somewhat hoary appearance of *S. urnulaceum* enables its quick and correct separation. Other species that are associated with *S. urnulaceum* include *Andreaea acutifolia* Hook. f. & Wils., *A. gainii* Card., *Tortula saxicola* Card., *Dicranoweisia antarctica* (C. Muell.) Broth. and *Schistidium steerei* Ochyra. In general, *S. urnulaceum* occupies in Antarctica the same habitats as does on South Georgia.

Schistidium urnulaceum is endemic to the Scotia Ridge area and is presently known only from South Georgia in the sub-Antarctic and King George Island in the Antarctic (Fig. 25). On the other hand, its occurrence in other parts of the austral regions is very probable, and the most promising area where further records of the species might be expected is southern South America. The specimens cited below represent new records of *S. urnulaceum* from within the Antarctic botanical zone and were collected in the Admiralty Bay region on King George Island, South Shetland Islands. The data of the records are as follows:

- (1) Admiralty Bay, Ezcurra Inlet, Golden Cove, Scalpel Point, 62°10'15"S, 58°37'20"W, elev. 160 m, on scree amongst andesite boulders, 11 February 1980, Ochyra 1816/80 (H, KRAM-B);
- (2) Admiralty Bay, Mt. Wawel above Point Hennequin, 62°07'S, 58°24'W, elev. 80 m, on dry

exposed rock faces on southwestern slope, 18 February 1980, Ochyra 2127/80 (KRAM-B); (3) same locality, elev. 130 m, on dry weathered basalt rocks on southwestern slope associated with *Schistidium steerei*, 18 February 1980, Ochyra 2180/80 (KRAM-B); (4) same locality, elev. 150 m, in the crevices of weathered volcanic rocks on western slope, 18 February 1980, Ochyra 2185/80 (H, KRAM-B).

Although species of *Schistidium* are very important constituents of the impoverished moss flora of Antarctica, they are still poorly known taxonomically throughout the austral region. Consequently the total number of species of this genus cannot precisely be established for the Antarctic botanical zone. Steere (1961) reported only three species of *Schistidium* from this area. These are in current taxonomic concept *S. apocarpum* (Hedw.) B., S. & G., *S. rivulare* (Brid.) Podp. and *S. chrysoneurum* (C. Muell.) Ochyra. Intense exploration of the Antarctic botanical zone by professional bryologists in the last two decades has resulted in the discovery of further previously unknown species of *Schistidium*. Bell and Blom (1986) reported *S. syntrichiaceum* (C. Muell.) B. G. Bell and *S. celatum* (Card.) B. G. Bell from the solitary island of Bouvetøya which is included in the Antarctic botanical zone (Greene 1964; Smith 1984). These species, together with *S. chrysoneurum*, belong to the *S. apocarpum* complex that is badly in need of critical revision in the Southern Hemisphere.

During the Fourth Polish Antarctic Expedition of 1979–1980 to South Shetland Islands I collected rich material of *Schistidium* on King George

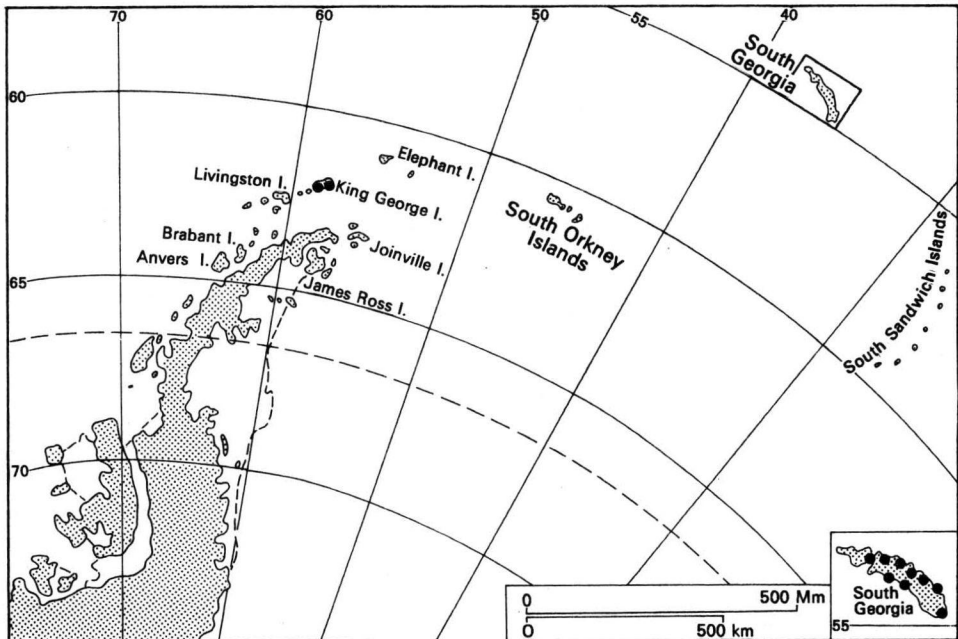


Fig. 25. Distribution map for *Schistidium urnulaceum* (C. Muell.) B. G. Bell.

Island, the largest island of this archipelago. Apart from *S. urnulaceum*, it included, among others, *S. falcatum* (Hook. f. & Wils.) Bremer, a species scattered in the sub-Antarctic and in the Andes (Ochyra and Bell 1986), and *S. steerei* Ochyra, an impressive species that was described as new to science from Antarctic material (Ochyra 1987). In addition, Ochyra and Afonina (1986) reported *S. angustifolium* (Mitt.) Herz. new to King George Island. This is indeed a very distinct species, though its taxonomic status requires further study in order to elucidate its relationships to those austral species which possess sinuose lamina cells.

To sum up, the moss flora of Antarctica increased by one distinct species that is strictly confined to the western sector of the austral region, along with such species as *Andreaea depressinervis* Card., *Chorisodontium aciphyllum* (Hook. f. & Wils.) Broth., *Dicranum oleodictyon* Dixon, *Sarconeurum glaciale* (C. Muell.) Card. & Bryhn, *Tortula saxicola* Card., *T. filaris* (C. Muell.) Broth., *Schizymerium austro-georgicum* (C. Muell.) Shaw, *Bryum orbiculatifolium* Card. & Broth., and *Conostomum magellanicum* Sull.

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Streszczenie

Schistidium urnulaceum (C. Muell.) B. G. Bell jest mało znanym gatunkiem, który został opisany po raz pierwszy jako *Grimmia urnulacea* C. Muell in Neum. ze subantarktycznej wyspy Georgia Południowa przez Müllera (1889) na podstawie materiałów zebranych przez H. Willa podczas niemieckiej wyprawy badawczej w Międzynarodowym Roku Polarnym na przełomie 1882—1883 roku. Przez długie lata gatunek ten uważany był za endemita Georgii Południowej, gdzie rośnie stosunkowo rzadko i w rozproszeniu na całej wyspie w wyższych położeniach (Bell 1984). W trakcie IV Wyprawy Antarktycznej PAN na przełomie 1979—1980 roku autor niniejszego artykułu odkrył dwie populacje *S. urnulaceum* w rejonie Zatoki Admiralicji na Wyspie Króla Jerzego w archipelagu Szetlandów Południowych. Jest to pierwsze stwierdzenie tego gatunku w antarktycznej strefie botanicznej, obejmującej obszary położone na południe od 60° szerokości geograficznej południowej.

Rośliny antarktyczne *S. urnulaceum* zostały szczegółowo opisane w niniejszej pracy, a najważniejsze szczególnie ich budowy morfologicznej i anatomicznej, mające znaczenie diagnostyczne zostały zilustrowane (Ryc. 1—24). Materiał z Antarktydy zgadza się we wszystkich szczegółach zarówno z typem jak też innymi okazami z Georgii Południowej.

Schistidium urnulaceum jest wybitnym gatunkiem, który różni się od wszystkich pozostałych gatunków rodzaju *Schistidium* dzięki następującej kombinacji cech gametofitu i sporofitu: (1) komórki całej blaszki liściowej, z wyjątkiem kilku rzędów w nasadzie liścia, mają błony silnie zatokowato zgrubiałe; (2) żebro w przekroju poprzecznym jest zawsze dwuwarstwowe; (3) puszki są małe, kuliste, osiągające długość 0.6—0.8 mm; oraz (4) błony komórek egzotecjum są bardzo silnie zgrubiałe i osiągają z reguły 4—8 μm . Powyższa kombinacja cech jest nieznana u żadnego z gatunków rodzaju *Schistidium* i dlatego propozycja zsynonimizowania *S. urnulaceum* z pospolitym na Półkuli Północnej *S. apocarpum* (Hedw.) B., S. & G. (Bremer 1980) nie znajduje absolutnie żadnego uzasadnienia.

Schistidium urnulaceum jest jedynym gatunkiem w rodzaju *Schistidium* w grupie gatunków o drobnych zarodnikach, który odznacza się silnie zgrubiałymi błonami komórek egzotecjum. Dlatego też płodne rośliny tego gatunku są nie do pomylenia z żadnym gatunkiem tego rodzaju. Jedynym gatunkiem na Półkuli Południowej z rodziny Grimmiaceae, posiadającym podobny kształt komórek egzotecjum, jest *Grimmia tortuosa* Hook. f. & Wils. z Falklandów. Podobnie jak *S. urnulaceum*, gatunek ten posiada puszki na bardzo krótkich szczecinach przez co pogrążone są one w liściach perycheczalnych, ale różni się od omawianego tu gatunku obecnością pierścienia oraz kolumellą pozostającą w puszcze po odpadnięciu wieczka.

Kształt komórek blaszki liściowej *S. urnulaceum* jest również unikalny w całym rodzaju. Podobne komórki liści mają tylko cztery gatunki z grupy *S. strictum* na Półkuli Północnej, a mianowicie *S. andreaeopsis* (C. Muell.) Lazar., *S. strictum* (Turn.) Loeske ex Mart., *S. trichodon* (Brid.) Poelt i *S. boreale* Poelt. Płone rośliny tych gatunków można łatwo i najpewniej odróżnić budową anatomiczną żebra, które w przekroju poprzecznym jest zawsze trój- a bardzo często czterowarstwowe, podczas gdy żebro u *S. urnulaceum* jest zawsze dwuwarstwowe w przekroju poprzecznym. Ta cecha odróżnia również bezbłędnie *S. urnulaceum* od *S. angustifolium* (Mitt.) Herz.

i *S. celatum* (Card.) B. G. Bell, gatunków szeroko rozpowszechnionych w zachodniej części Półkuli Południowej, a rosnących również w Antarktyce.

Schistidium urnulaceum rośnie w Antarktyce na podłożu kwaśnym, na zwietrzałych skałach andezytowych i bazaltowych, na rumoszu skalnym oraz w szczelinach wychodni skalnych. Z reguły tworzy czyste, jednogatunkowe darenki, a tylko sporadycznie występuje razem ze *Schistidium chrysoneurum* (C. Muell.) Ochyra, *S. steerei* Ochyra, *Andreaea acutifolia* Hook. f. & Wils., *A. gainii* Card., *Tortula saxicola* Card., *Dicranoweisia antarctica* (C. Muell.) Broth.

W chwili obecnej *S. urnulaceum* jest jednym z niewielu gatunków endemicznych dla obszaru Łuku Scotia, gdzie rośnie tylko na Georgii Południowej oraz na Wyspie Króla Jerzego (Ryc. 25). Niewykluczone jest wszakże, że gatunek ten znajdzie się również w Patagonii czy na Ziemi Ognistej, a podobny typ zasięgu wykazują takie gatunki jak *Sarconeurum glaciale* (C. Muell.) Card. & Bryhn, *Chorisodontium aciphyllum* (Hook. f. & Wils.) Broth., *Tortula saxicola* Card., *Bryum orbiculatifolium* Card. & Broth. i *Conostomum magellanicum* Sull.