A RECORD OF *SCHISTIDIUM FALCATUM* (BRYOPHYTA: MUSCI) FROM THE ANTARCTIC

R. Ochyra

Instytut Botaniki PAN, Krakow, ul. Lubicz 46, Poland

and

B. G. Bell

Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian EH26 0QB, Scotland

Abstract. *Schistidium falcatum* (Hook. f. et Wils.) B. Bremer, a species hitherto unrecorded from the Antarctic, is reported from King George Island, South Shetland Islands. A description together with notes on nomenclature, habitat and distribution are provided.

Species of *Schistidium* are important constituents of the impoverished Antarctic moss flora. Some play a central role in certain communities, especially in the maritime Antarctic. However, specimens of *Schistidium* are difficult to identify because the genus has not been carefully and critically revised to provide a sound taxonomic framework for Antarctic material.

S. antarctici (Card.) L. Savicz. et Z. Smirn, (as *Grimmia antarctici*) appears to be the most widespread in both maritime and continental Antarctica (Steere, 1961; Savicz-Ljubitzkaya and Smirnova, 1965; Robinson, 1972; Smith, 1972; Allison and Smith, 1973; Smith and Corner, 1973). *S. apocarpum* (Hedw.) B.S.G. (Bartram, 1957; Robinson, 1972) and *S. rivulare* (Brid.) Podp. (Bartram, 1957) have also been reported from within the Antarctic botanical zone. Although Bremer (1980) reduced *S. antarctici* to synonymy with *S. apocarpum* it is clear that further consideration of the inter-relationships between *S. antarcticum, S. apocarpum* and several similar austral taxa is necessary before resolution of their taxonomy can be completed.

Recent examination of bryophyte collections from King George Island, South Shetland Islands, made by R.O. during the Polish Antarctic Expedition 1979/1980, has revealed the presence of some additional species of *Schistidium* so far considered to be restricted to the sub-Antarctic and cold temperate zone of the Southern Hemisphere. One of these is *S. falcatum* (Hook. f. et Wils.) B. Bremer, a rare species previously known to occur only on some sub-Antarctic islands (van Zanten, 1971; Hooker and Wilson, 1844) and in the Andes (Bremer, 1980). The species was found growing at an altitude of 220 m on an east-facing slope of the Tyrell Ridge (62°04′ S, 58°24′ W) on Keller Peninsula, Admiralty Bay, near the abandoned British scientific station. Hitherto, *S. falcatum* has been reported growing on rock surfaces in or near streams (Dusen, 1907 (as *Grimmia fasciculata*); Herzog, 1916 (as *G. fasciculata*); Hooker and Wilson, 1844 (as *G. falcata*); van Zanten, 1971) but on King George Island the species grows in a quite different habitat. It occurs on fairly dry, gravelly soil on gently sloping ground disturbed by frost action where moist clay/gravel patches are formed. It forms nearly pure stands of about 30 m^2, the only associated species being *Drepanocladus uncinatus, Bartramia patens* and *Leptogium puberulum*. The stand of *S. falcatum* forms the only continuous vegetation on the eastern slope of Tyrell Ridge.

The Antarctic material forms loose to compact rigid cushions (1.5–) 2.0–4.0 cm high coalescing to form large dark green to red-green to rufous mats. The stems are robust, creeping or ascending, usually with many erect branches with the leaves

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crowded. Leaves erect, strongly falcato-secund when wet or dry, spreading a little when moist, 2.0–3.0 mm long, 0.3–0.8 mm wide, lanceolate, acuminate, concave, not keeled, rounded or acute at the apical tip. Margin unistratose, entire, plane or inflexed in the upper part. Nerve smooth, stout, excurrent or percurrent, plane-convex, becoming narrower and weaker towards the base, 85–120 μm in mid-leaf, consisting of nearly homogeneous cells gradually narrowed into the lamina. Cells smooth, rounded or subquadrate, 8–11 μm, incrassate, almost homogeneous throughout the leaf except at base. Some basal cells shortly rectangular. Neither gametangia nor sporophytes have been observed.

S. falcatum can be recognized readily from all other species of *Schistidium* by its strongly falcato-secund leaves with plane or involute margins, stout and often excurrent nerve and characteristic aerolation of rounded, thick-walled cells.

Unlike the Antarctic material, specimens of *S. falcatum* from sub-Antarctic islands are invariably found with sporophytes. The sub-Antarctic material also possesses oblong-lanceolate leaves with wider, often diffuse nerves, ending percurrently, as frequently as the lanceolate to ovate-lanceolate leaves with narrower excurrent nerves characteristic of the Antarctic specimen.

Taxonomy

Schistidium falcatum (Hook. f. et Wils.) B. Bremer, *Lindbergia*, **6,** 110, 1980.

Syn. *Grimmia falcata* Hook. f. et Wils., *London J. Bot.*, **3,** 539, 1844. Lectotype: BM!; isotype: E!, Kerguelen's Land, Antarctic Exp. 1839–1843. J. D. Hooker 738 (W. 245).

Grimmia fasciculata Dus., *Bot. Not.* 1905: 302. (Hom. illeg. non *Grimmia fasciculata* Brid. 1819.) Type: Patagonia septentrionalis in saxis. Lectotype nova: Patagonia septentrionalis, Lago Nahuelhuapi, in saxis, Julio 1897, P. Dusen s.n. S!; isotype: UPS!

Schistidium fontanum Herz., *Biblioth. Bot.*, **87,** 54, 1916. *Grimmia fontana* (Herz.) Broth. *in* Engl. et Prantl, *Nat. Pflanzenfam.* ed. 2, **10,** 311, 1924. Type: Bolivia, an Steinen im Bach bei des Mine Viloco, *c.* 4350 m, Th. Herzog No. 3127 (Lectotype nova: M!; isotypes: JE!, S!).

!: indicates specimen examined during the present study.

Schistidium falcatum was first described as *Grimmia falcata* from Îles Kerguelen (Hooker and Wilson, 1844). Van Zanten (1971) recognized the species from Marion Island as a *Schistidium* but failed to cite the basionym, thereby invalidly publishing the new combination. Bremer (1980) corrected this error and also reduced two South American species, *Grimmia fasciculata* Dus. and *Schistidium fontanum* Herz., to synonymy with the present species. Some uncertainty remained about the status of the former as Bremer was unable to trace the type specimen. This Argentinian material has been found in Stockholm (here considered the lectotype), and Uppsala (*Grimmia fasciculata* Dus., S, UPS, Patagonia Septentrionalis, Lago Nahuelhuapi in saxis, julio 1897, P. Dusen s.n.). Type material of *Schistidium fontanum* from Munich, Jena and Stockholm has also been examined and both taxa agree with *S. falcatum* but possess a majority of lanceolate to ovate-lanceolate vegetative leaves with excurrent hairpoints characteristic of the Antarctic specimen. Chilean material collected and determined by Dusen (*Grimmia fasciculata* Dus. BM. Chile australis ad lac. Llanguihue in saxis. Junio 24 a 1897, P. Dusen 755) is identical to the Argentinian specimen.

In addition to the records from Îles Kerguelen, Marion Island, Bolivia, Chile, Argentina and King George Island, recent collections made on Île de la Possession

(Îles Crozet) by B.G.B. have further extended the known range of the species which is now known to occur on South Georgia (Bell, 1984).

Details of the Antarctic specimen and the distribution of replicate specimens is as follows (references to herbaria follow those recommended by Holmgren, Keuken and Schofield, 1981):

R. Ochyra 437/80, Tyrell ridge, Keller Peninsula, Admiralty Bay, King George Island, South Shetland Islands, Antarctica: AAS, ALTA, B, BA, BM, C, CANM, CHR, FH, G, F, GL, H, Herb. Hoe, Herb. Horton, KRAM, NY, PC, S, U.

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