particular quickly got his eye in during the quest for *A. radicale* in 2002; access permission was readily given to CCW by the local farmers. Mrs Jean Paton MBE kindly made unpublished information available on records of *A. radicale* at its Cornish locality.

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Notes on British and Irish *Grimmia* species

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Introduction

Recent publications (Muñoz, 1998, 1999; Muñoz & Pando, 2000) indicate changes in the status and nomenclature of certain British and Irish *Grimmia* species. Details are given below.

Grimmia sessitana, *G. alpestris* and *G. ungeri*

In 1870, the Rev. John Fergusson collected a plant near Ballater that he identified as *G. ungeri* Jur., new to Scotland. Braithwaite (1888-1895) says about this plant 'Chalubinski's acute observations on this species are quite sufficient to satisfy us that *G. Ungeri* is not specifically distinct from *G. alpestris*.' Thereafter British bryologists referred to the species as *G. alpestris* (F. Weber & D. Mohr) Schleich.

British material of *G. alpestris* was renamed *G. sessitana* De Not. by Greven (1995a). It was later shown by Muñoz (1999) that the correct name of *G. sessitana* was *G. reflexidens* Müll. Hal. However, in the meantime, Munoz (1998) reported that the Scottish material was *G. ungeri*, thus confirming Fergusson's original identification. So, *G. sessitana* must be replaced by *G. ungeri* in the list of British mosses.

Muñoz (1998) reported *G. alpestris* from Wales on the basis of a specimen in the Farlow Library and Herbarium of Cryptogamic Botany, Harvard University, Cambridge, Massachusetts (FH). Details are: Marros, Carmarthenshire, 29 March 1907, H.H. Knight. The altitude of the Marros locality is approximately 150 m. A recent search of the site failed to locate *G. alpestris* although *Coscinodon cribrosus* was found (Sam Bosanquet, *in litt.*). According to an unpublished manuscript bryophyte flora of Carmarthenshire by H.H. Knight in the National Museum of Wales, Knight collected what he first determined as *G. montana* Bruch & Schimp. from Marros but the specimen was later renamed *C. cribrosus*.

Table 1. Comparison of *G. alpestris*, *G. reflexidens* (*G. sessitana*), *G. ungeri* and *G. montana*.

	G. alpestris	*G. reflexidens*	*G. ungeri*	*G. montana*
Sex	Dioicous	Autoicous	Autoicous	Dioicous
Length of axillary hairs	3-6 cells	3-4(-5) cells	5-8 cells	5-8 cells
Length:width ratio of basal leaf cells next to costa and at basal margins	1.0-3.5	2.0-6.0	1.0-2.0	2.0-4.5
Leaf cells in transverse section	Bulging	Plane	± Plane	Plane
Mid-leaf cell width	8-13 μm	8-12 μm	5-7 μm	4-8 μm
Seta length	2-4 mm	1.6-3.0 mm	*ca* 2 mm	2-4 mm
Capsule shape	Fusiform	Ovoid to ellipsoid	Ovoid to ellipsoid	Ovoid to ellipsoid
Exothecial cell shape	Isodiametric	Irregularly rectangular	Mixture of isodiametric and rectangular	Rectangular
Exothecial cell walls	Thick	Thin	Thin	Thin
Stomata on capsules	Absent	Present	Absent	Absent
Capsule/peristome teeth colour	Concolourous	Brown/orange	Concolourous	Concolourous
Lid	Conical or mamillate	Conical or mamillate	Mamillate	Rostrate

In 2000, *G. montana* was recorded as a new vice-county record for Pembrokeshire (v.-c. 45): in slate crevices, 100 m alt., Dinas Head, 1999, J.D. Sleath (Rothero, 2000). In September 2001, this specimen was redetermined as *G. alpestris* by J. Muñoz. I have examined the gathering and it is *C. cribrosus*, which may resemble *G. alpestris* and *G. montana* macroscopically. *C. cribrosus* is widespread in west Wales, occurring almost down to sea level, whereas *G. alpestris* is a high-altitude plant. Although I have not seen the 1907 specimen of *G. alpestris* from Marros in FH there is no doubt in my mind that it is misnamed *C. cribrosus*. There is therefore no confirmed record of *G. alpestris* from Britain.

The differences between *G. alpestris*, *G. reflexidens*, *G. ungeri* and *G. montana* are shown in Table 1.

Grimmia trichophylla var. *subsquarrosa*, *G. retracta* and *G. lisae*

Smith (1978) listed five varieties of *G. trichophylla*, including *G. trichophylla* var. *subsquarrosa* (Wilson) A.J.E. Sm. A related species, *G. retracta* Stirt., is also described. Because of the range of apparent intermediates I later reduced var. *subsquarrosa* to synonymy with *G. trichophylla* (Smith, 1992). However, Greven (1995b) treated the taxon as a distinct species, the correct name of which is *G. lisae* De Not. He also treated *G. retracta* as a synonym of *G. lisae*. The characters given for separating *G. lisae* from *G. trichophylla* were not satisfactory, and I was still unable to separate the two taxa. Muñoz (2000) also recognised *G. lisae*, with *G. retracta* as a synonym. However, he provided good characters for distinguishing *G. lisae* from *G. trichophylla*, and I am happy to accept *G. lisae* as a distinct species. Using the characters given by Muñoz, I have examined a limited number of British and Irish specimens named *G. subsquarrosa* or *G. retracta*, and have found that they are a random assortment of *G. trichophylla* and *G. lisae*. Clearly, *G. lisae* and *G. trichophylla* have been misunderstood by British bryologists, and the distribution of *G. lisae* needs to be completely revised.

The characters distinguishing the two species are given in Table 2. The most useful character is the number of cells on the adaxial side of the costa in transverse section.

Table 2. Comparison of *G. trichophylla* and *G. lisae.*

	G. trichophylla	*G. lisae*
Posture of leaves when dry	Appressed-flexuose to slightly twisted, folded longitudinally above	Loosely appressed to imbricate, straight, ± flat above (shoots somewhat resembling dry shoots of *Schistidium apocarpum*)
Posture of leaves when moist	Erect to spreading, rarely squarrose	Spreading to squarrose
Width of costa in section on adaxial side	2 cells	4 cells

Grimmia austrofunalis and *G. britannica*

In 1992, I raised *G. trichophylla* var. *robusta* (Fergusson) A.J.E. Sm. to specific status, naming it *G. britannica* A.J.E. Sm. (Smith, 1992). Greven (1997) considered that it was synonymous with the southern hemisphere *G. austrofunalis* Müll. Hal. However, Muñoz & Pando (2000) only record *G. austrofunalis* from the Southern Hemisphere and say 'All European specimens identified as *G. austrofunalis* belong to other species.' These other species are *G. longirostris* or *G. trichophylla* (Muñoz, *in litt.*). There are a number of striking differences between *G. trichophylla* and *G. austrofunalis* (see Muñoz, 1999), and clearly *G. britannica* is not synonymous with *G. austrofunalis*. Muñoz & Pando (2000) cite *G. britannica* as a synonym of *G. trichophylla* and this appears to be correct. The distinction between the two taxa was based upon leaf areolation. According to Muñoz (pers. comm.) the form of the leaf cells in *G. trichophylla* is very susceptible to environmental variation and any taxa based on this character cannot be maintained. *G. austrofunalis* should therefore be removed from the British and Irish moss lists, and *G. britannica* should be treated as a synonym of *G. trichophylla.*

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