sexual reproduction is unknown and gemmae are absent (Paton, 1999), could only have arrived from caducous stem fragments. The epifungal Metzgeria almost certainly spread there from the adjacent elder branches.

Leaf longevity and durability are key factors predisposing tropical trees to epiphylly. The leaves of Buxus clearly meet these criteria, though Porley (1996) did not determine their actual longevity. Examination of the growth rings on the Hedera on Hampstead Heath revealed that its liverwort-invested leaves were only 2–3 years old. Thus, their colonization by Metzgeria and Lejeunea must have been very recent and rapid, a conclusion closely in line with the very recent dramatic increase in the abundance of these two species on Hampstead Heath. The most likely explanation for both their spread and colonization of unusual habitats is the very wet summer of 2007 followed by the mild wet winter of 2007–8, both allowing almost continuous bryophyte growth. Against climate change predictions of wetter summers and mild winters in southern England, bryophyte monitoring programmes should perhaps embrace recording of usual habitats as well as traditional recording of distribution patterns.

Jeffrey G. Duckett
School of Biological and Chemical Sciences,
Fogg Building, Queen Mary University of London,
Mile End Road, London E1 4NS
(e j.g.duckett@qmul.ac.uk)

Acknowledgements
The author thanks Howard Matcham for identifying Trametes hirsuta and Mark Hill for making available the database of Middlesex bryophytes.

References


In May 1964, the Swiss bryologist M. Zimmermann travelled to Nepal for an expedition to the Mount Everest base camp. About 10 km south of this camp he collected mosses from a moraine of the Khumbu valley near the hamlet of Lobuche (alt. 5,100 m). The material was deposited in the Geneva herbarium (G.). In the same year, the Japanese bryologist A. Noguchi revised the mosses collected during previous Swiss Himalayan expeditions in 1952 and 1954. The curator of G. also sent Noguchi the 1964 material and, based on Zimmermann 301, he described a new species, Grimmia subdonniana (Noguchi, 1964). In 1998, the Spanish bryologist Jesus Muñoz revised the G. subdonniana material and concluded that this was identical to G. fuscolutea Hook. However, intermingled with a paratype of G. subdonniana (Zimmermann 558), Muñoz found a small quantity of sporulating material of an undescribed species that he published as G. ochyriana, named after the Polish bryologist Ryszard Ochyra (Muñoz, 1998).

In continuation of my work on European Grimmias (Greven, 1995), I planned an expedition to the Mexican volcanoes. I asked a member of the Dutch Bryological and Lichenological Society, who once lived in Mexico, to be my travel companion, and in November 1997 we departed for Mexico. We visited Nevado de Toluca, Iztaccíhuatl, Popocatépetl and Pico de Orizaba (Fig. 1). Popocatépetl was only partly accessible because the volcano was very active and several times a day large clouds of smoke arose from the crater. On the slopes of the volcanoes we found G. austrofunalis Müll. Hal., G. bernoullii Müll. Hal., G. donniana Sm., G. torquata Hornsch. and Coscinodon cribrosus (Hedw.) Spruce, all new to the Mexican bryoflora (Sharp et al., 1994). However, of greater significance was the occurrence, between 3,870 and 4,600 m, of an undescribed species, that was subsequently published as G. mexicana (Greven, 1999). However, the editor of The Bryologist initially sent the manuscript to Muñoz as referee, who reported

Grimmia ochyriana was first described in 1998, but controversy has existed surrounding its possible synonymy with G. mexicana and, more recently, G. atrata. Henk Greven recounts its history and his own experience of these species in Nepal and Mexico.
that he had described *G. mexicana* earlier, as *G. ochyriana*, and that he therefore could not support publication. Thereupon, I requested the holotype of *G. ochyriana* from G. and found that although there were similarities, there were also distinct morphological differences, overlooked by Muñoz, presumably because of the small amount of material available mixed with *G. fusco-lutea*. I contacted the editor, presented the results of my study and the manuscript was accepted and published unchanged. Muñoz did not agree with this decision and shortly after this he published a revision of Latin American Grimmias, in which *G. mexicana* was apparently treated as *G. ochyriana* (Muñoz, 1999). Since the characters of *G. mexicana* from the Mexican volcano samples deviated from his protologue of *G. ochyriana*, he adapted the description to include the characters of *G. mexicana* and prepared new drawings from a sample of *G. mexicana* collected by Dale Vitt from a Mexican volcano (Vitt 7488, ALTA). As a result of the above-mentioned amendments, the Mexican bryologist C.M. Delgadillo asked G. for the type material of *G. ochyriana*. After his study and comparison with *G. mexicana*, he came to the same conclusion as myself, and subsequently published his opinion that *G. mexicana* differs in various characters from *G. ochyriana* (Delgadillo, 2000).

To collect information on the occurrence and ecology of *G. ochyriana*, I decided to visit the locality where *G. ochyriana* was collected and in February 2000 I travelled, accompanied by my son, to Nepal for a journey through the Khumbu valley from Lukla up to the Mount Everest base camp. After a rough hike, following
our Nepalese guide over frequently frozen and snow-covered tracks, we reached Namche Bazar, the capital of the Sherpas, from where we saw Mount Everest for the first time. After 4 days we reached Pheriche (alt. 4,270 m), the beginning of the moraine that stretches up to Mount Everest base camp. Here, we found richly sporulating mats of *G. ochryiana* on top of boulders. It appeared that *G. ochryiana* was a rather commonly occurring species in the moraine between Pheriche and Lobuche (Fig. 2). Since I had studied the occurrence and ecology of *G. mexicana* previously in Mexico, and now that of *G. ochryiana* in the Himalayas, it was clear to me that these two plants were indeed different species. The results of the journey through the Khumbu valley were published (Greven, 2002).

However, the remarkable story of *G. ochryiana* does not end here. In 2001, the Swiss bryologist Eva Maier began a revision of the genus *Grimmia* in the Himalayas, principally based upon 360 samples collected by the Scottish bryologist David Long during nine expeditions between 1979 and 1997 in Bhutan, Nepal, Sikkim and adjacent China (Maier, 2002). In her paper, Maier considered *G. ochryiana* to be synonymous with *G. atrata* Miel. ex Hornsch., based on similarity of leaf shape, costal architecture, uniseriate prolongation of a paradental cell row at the peristome insertion, and in particular the shape of the annulus cells. The last two characters were based on the work of Lantzius-Beninga (1844, 1850), who published ideas on the taxonomic value of the peristome and annulus. However, the leaf shape of these two species is
clearly dissimilar, and in spite of the similarities noted above, there are distinct ecological and other morphological differences (Table 1, Fig. 3) that lead me to the conclusion that these two taxa are not synonymous.

![Fig. 3. Top row: G. atrata Miel. ex Hornsch. (India, east Sikkim, Tsongo Lake, alt. 3780 m, leg. H.C. Greven, 11 March 2002). Bottom row: G. ochyriana Muñoz (Nepal, Khumbu valley, Pheriche, alt. 4270 m, leg. H.C. Greven, 11 February 2000). Henk Greven.]

In her study, Maier combined European material with Himalayan material. For the description of *G. atrata*, she used plants from Austria, France and Norway in addition to Himalayan specimens. Although Long had collected *G. ochyriana*, Maier regarded it as synonymous with *G. atrata* and as a result of this, her drawings are a mixture of *G. atrata* from Europe (her habit drawing was reproduced from Maier & Geissler 1995), Hochstettler,
A.E. Sauter and samples of *G. ochyriana* from the Himalayas (Long 20936, 22611 and 16861).

**Acknowledgements**

I am most grateful to David Long and Ron Porley for their very useful comments on earlier drafts of the manuscript, and to the curator of G. for the loan of the type specimen of *G. ochyriana* Muñoz.

**References**


---

**Table 1. Differences between *G. atrata* and *G. ochyriana***

<table>
<thead>
<tr>
<th>Character</th>
<th><em>G. atrata</em></th>
<th><em>G. ochyriana</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat</td>
<td>Heavy-metal-bearing rock</td>
<td>Non-heavy-metal-bearing rock</td>
</tr>
<tr>
<td>Stem</td>
<td>Central strand absent</td>
<td>Central strand present</td>
</tr>
<tr>
<td>Leaves</td>
<td>Erect when moist</td>
<td>Spreading when moist</td>
</tr>
<tr>
<td>Leaf apex</td>
<td>Obtuse</td>
<td>Acuminate</td>
</tr>
<tr>
<td>Basal marginal cells</td>
<td>Rectangular, hyaline</td>
<td>Quadrate, brownish</td>
</tr>
<tr>
<td>Perichaetial leaves</td>
<td>Similar to upper leaves</td>
<td>Enlarged</td>
</tr>
<tr>
<td>Seta</td>
<td>4–6 mm</td>
<td>2–3 mm</td>
</tr>
<tr>
<td>Capsule</td>
<td>Exserted, cylindrical, dark brown</td>
<td>Immersed, ovate-ellipsoid, yellowish</td>
</tr>
</tbody>
</table>