Polish Botanical Journal 49(2): 117–121, 2004

EAST AFRICAN BRYOPHYTES, XV.* THE OCCURRENCE OF *BRYUM LAEVIGATUM* (BRYACEAE, BRYOPHYTA) IN AFRICA

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Abstract: *Bryum laevigatum* Hook.f. & Wils., an amphipacific south temperate species was previously not known from the African continent. Its occurrence here is restricted to the Afroalpine ericaceous belt between altitudes of 2800 and 3280 m, usually along streamlets or on dripping rocks. Hitherto it was found by the author and by his companions only on the highest mountains of Africa, as on Mt. Kilimanjaro, Mt. Kenya, Mt. Elgon and in the Aberdare Mountains. Interestingly it does not occur in southern Africa. Its general distribution covers SE Australia and New Zealand, other southern temperate and subantarctic islands (Marion, Prince Edward, Falkland, Kerguelen, Macquerie), in South America it occurs from southernmost tip (near to the sea level) to SE Brazil and S Uruguay and extends to the tropical Andes (between alt. 3000–4335 m). It does not occur in Indomalesia and in New Guinea.

Key words: Amphipacific element, *Bryum,* streamlets, Afroalpine zone, south temperate region, Subantarctica

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INTRODUCTION

On the 15th of June 1988, in the company of Ryszard Ochyra and his wife, Halina Bednarek-Ochyra, we started to climb Mt. Kilimanjaro, studying its bryoflora. Arriving well in time to the first hut (Mandara Hut at 2850 m altitude), we collected bryophytes in the surrounding area, in a very mossy *Erica arborea* cloud forest. Just at the upper forest line, in a rocky streambed we found large cushions of a vivid yellowish-brownish green, acrocarpous moss, in which Ochyra recognized *Bryum laevigatum* Hook.f. & Wils. (see Figs 1 & 2), a species well known by him from the subantarctic islands. That time this species was not known from the African continent. Ochi (1970, 1972a, b, 1973) records it in his Australasian and African revisions, but only from the subantarctic Kerguelen and Marion islands, where it occurs near to the sea level. As Ochi (1967), Scott *et al.* (1976), Beever *et al.* (1992), finally Chuah-Petiot (2003) illustrate and describe the species in detail, I do not think that need its description here. Just wish to mention, that in the Afroalpine irrigated streambed rock habitats it is easy to recognise the moss by its shiny, yellowish green cushions with very concave leaves and by its richly developing, very papillose rhizoids.

Although I published the Kilimanjaro record (Pócs 1994), as it was quite hidden in a list of the altitudinal distribution of species, avoided the attention of the author of Subsaharan African moss checklists (O'Shea 1995, 1997, 1999, 2003). I collected the species several times, always in similar habitats, on streambed rocks or on dripping cliffs in the Afroalpine ericaceous belt of most high African mountains. In 2003 we have found it together with Min S. Chuah-Petiot, during the field trip of the 4th Tropical African Bryology Training Course, in the Aberdare Mountains. She included the species, based on this record, in her book (Chuah-Petiot 2003), but without much details. Therefore I consider important to publish all known African records of this antipodal species previously not known from tropical Africa.

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* For different reasons, part XV of the 'East African Bryophytes' series was never published, this is why, after part XIX (Chuah-Petiot & Pócs, 2003) now the part XV follows.

Fig. 1. Typical Afroalpine habitat of *Bryum laevigatum* Hook.f. & Wils.: on irrigated streambed rocks, in the gorge below Nithi Falls, ericaceous belt on the eastern slopes of Mt. Kenya, at 3280 m altitude (phot. by the Author).

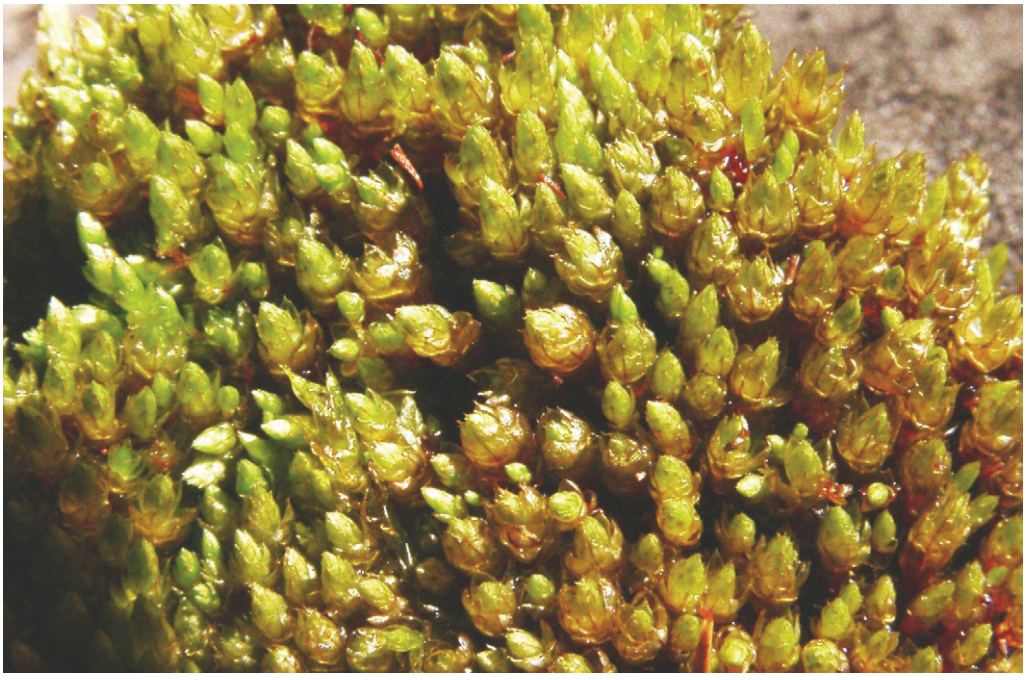

Fig. 2. *Bryum laevigatum* Hook.f. & Wils.: cushion closely, at the above habitat (phot. by the Author).

Specimens examined in the Eger Herbarium (EGR)

TANZANIA. Kilimanjaro Mts: S alope, along Machame Trail, on irrigated rocks in the gorge of Makoa Stream at 2950–3000 m alt., 8 Aug. 1986, *Pócs & Zanten 86131/L*; E slope along Marangu Trail, on streambed rocks above Mandara Hut at 2850 m alt., 15 June 1988, *Pócs, Ochyra & Bednarek-Ochyra 88123/AX*; N slope, along Loitokitok Route, E of the 1st Bivouac cave, on streambed rocks in the gorge of Kimengelia River, at 2800 m alt., 18 Jan. 1990, *Pócs, Katigula & Mjatta 90007/H*. KENYA. Mt. Elgon: ESE slope. Streambed stones and boulders along Kimothon River at 3250–3360 m alt., accompanied by giant *Senecio johnstonii*, 11–27 Jan. 1992), *Pócs, Ádám, Jáger 9211/V, AA, AN, BS, DA*; Aberdare (Nyandarua) Mts: S part of the plateau. Below the Fishing Camp along Magura River, on streambank rocks, surrounded by *Erica arborea* heath, at 2980–3040 m alt. *Pócs & Chuah-Petiot 02031/G*; Mt. Kenya: E slope, SW of Meru town. Along Chogoria Trail. Gorge below Nithi Falls, on streambed rocks, at 3280 m alt. in the ericaceous belt, 21 Feb. 2004, *Pócs & Chuah-Petiot 04005/B*. MARION ISLAND. Tarn valley, mire, slightly sheltered, at 135 m alt., 3 July 1965, *van Zanten 470*. NEW ZEALAND. North Island, Mt. Ruapehu, Track from Whakapapa (Chateau Tongariro) to Silic Spring. On very wet ground at the edge of a swamp. 4500 feet. 23 Feb. 1942, *Sainsbury s.n.*; South Island, Mt. Cook Nat. park, subalpine Vegetation am Beginn des Wakefield-track bei der Brücke zum Tasman Valley, an triefendem Felshang, 700 m NN, 2 Febr. 1991, *Schäfer-Verwimp & Verwimp 14241*.

Discussion and conclusions

As it can be seen from the above records, in Subsaharan Africa *Bryum laevigatum* shows a typical Afroalpine distribution (Fig. 3). As its worldwide distribution is concerned, it occurs primarily in the cool temperate zone. In south-eastern Australia, including Tasmania and Macquarie Island, in New Zealand, including Campbell and Auckland islands, in southern South America from Tierra del Fuego to Valdivia, with isolated occurrences in South Brazil and Uruguay, in the Falkland, Marion, and the subantarctic Kerguelen, Prince Edward and Macquerie islands (Delgadillo *et al.* 1995; Ochi 1967, 1970, 1972a, b, 1981, 1982a, b; Seppelt 2004; Streimann & Klazenga 2002; Vitt 1974, 1979; Zanten 1971). It penetrates deep northwards in the high Andes, where is known from the altitudes between 3000 and 4300 m from Bolivia and Colombia (Churchill *et al.* 2000) and as shown above, in the high mountains of East Africa. The Venezuelan record, published by León *et al.* (1998), at least its duplicate specimen in EGR, proved to be *Bryum billardieri* Schwaegr. (now *Rosulabryum billardieri*, rev. R. Ochyra). It is surprising that does not occur in South Africa, where suitable habitats occur and which area is very well collected and documented (Magill 1987). Finally, it does not occur in Asia either (Ochi 1985). Summarizing, using the classifiction of Ochyra (1998) and Bednarek-Ochyra *et al.* (2000), who adopted and modified the scheme first proposed by Engel (1978, 1990), *Bryum laevigatum* fits in the group of *south-temperate* phytogeographical elements, with penetration into the tropical high mountains (Fig. 4).

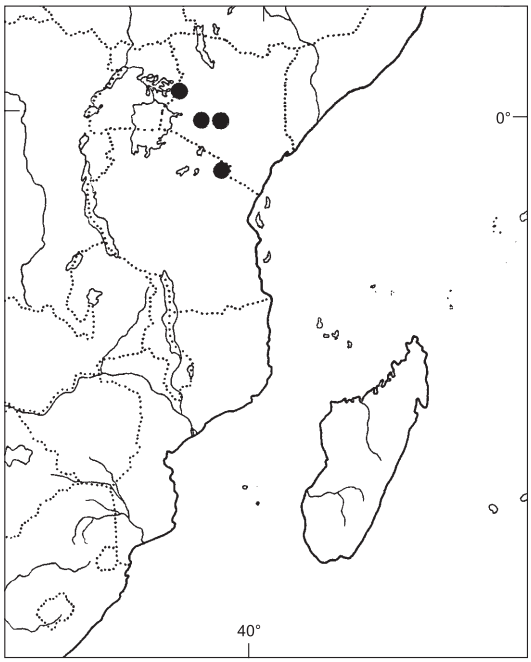

Fig. 3. The distribution of *Bryum laevigatum* Hook.f. & Wils. in Africa.

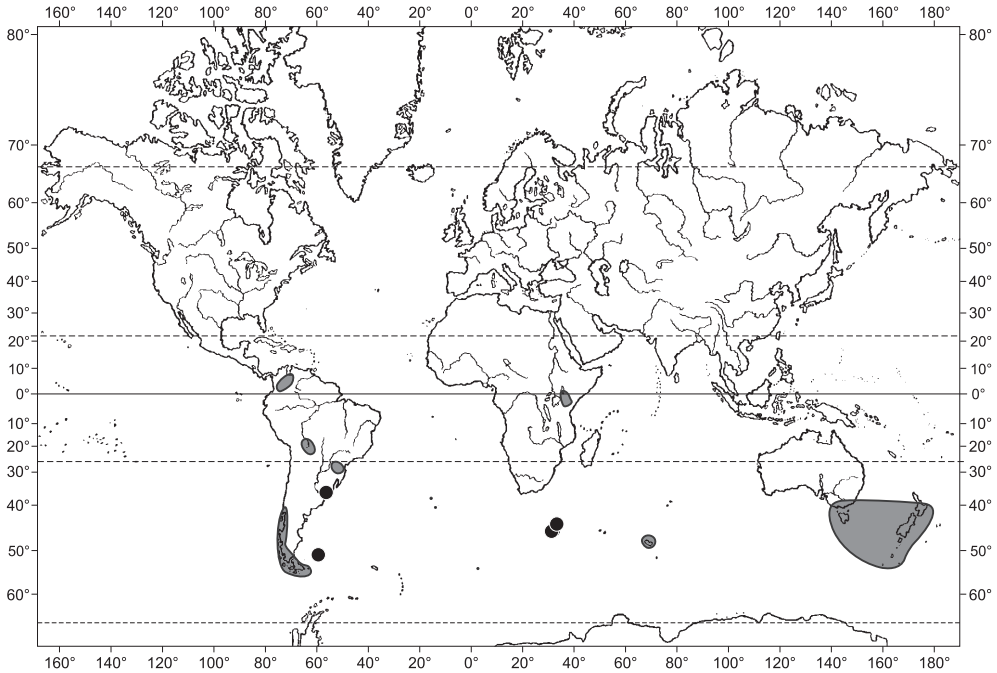

Fig. 4. The global distribution of *Bryum laevigatum* Hook.f. & Wils. (by the courtesy of R. Ochyra).

ACKNOWLEDGEMENTS. The Author is grateful to Prof. Ryszard Ochyra for identifying some of the above specimens, completing the distributional data and valuable remarks on the manuscript, and to Dr. Min Chuah Petiot for organizing part of the collecting trips.

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Received 5 July 2004