Annotations to a collection of liverworts (Hepaticae, Marchantiales) from Omaruru District, Namibia, during summer 1995

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Abstract

A list of Marchantiales, collected in the Omaruru District during summer 1995 is presented. They are an important part of the vegetation accompanying resurrection plants. Riccia albornata and Riccia bicolorata are new records for Namibia.

Keywords: Riccia, Hepaticae, Marchantiales, resurrection plants, Namibia

Introduction

“Resurrection plants” are among the most remarkable peculiarities of the flora of southern Africa. These plants dry out quickly, along with their habitat, as soon as the water supply ceases, but upon remoistening, they become green again within a few days or even a few hours. Chamaegigas intrepidus Dinter (Scrophulariaceae) colonises rock pools on granite inselbergs or outcrops (Figure 1). According to Fischer (1992) the original name by Dinter is valid; the synonym Lindernia intrepidus is no longer used. Craterostigma plantagineum Hochst. (Scrophulariaceae) and Xerophyta humilis (Baker) T. Durand & Schinz (Velloziaceae) are found around these granite boulders on a ring of fine soil, 1-10 m wide, with little grass cover. These and other phanerogamic plants found here, form only 40 – 50 % of the ground cover (Figure 2). The remaining area, provided there is enough fine soil, is covered by liverworts, mostly of the genus Riccia, but also Exormotheca, Mannia and others (Hepaticae, Marchantiales). These liverworts are also poikilohydric. Upon remoistening after short dry periods they turn green completely; after prolonged desiccation (observed for up to 8 years) growth is resumed at the vegetative points. Within the scope of an ecological study on the resurrection plants (Heilmeier & Hartung 2001) the accompanying liverwort flora has also been investigated.

The study sites were a granite inselberg at the farm Otjua, about 30 km north of Omaruru, Namibia, along the main road to Otjiwarongo, and a plain at the farm Erindi-Onganga, about 20 km to the west. The Riccia species were identified by the
keys of Perold (1991, 1996) and the underlying original papers. The liverworts were collected in March 1995, a week after sufficient rainfall.

Figure 1: Rock pools with *Chamaegigas intrepidus* on a granite outcrop (farm Otjua).

Figure 2: *Craterostigma plantagineum* (broad-leaved plants) and *Xerophyta humilis* (narrow-leaved plants) at the base of a granite outcrop. The fine soil between the plants is covered by *Riccia* (arrows).
Results

The granite inselberg on Otjua, which has an especially diverse vegetation of liverworts, was studied first. The following species were identified: *Riccia angolensis*, *R. atropurpurea*, *R. crinita* (Jovet-Ast 2000), *R. nigrella*, *R. okahandjana*, *R. rosea* and *R. runssorensis* which grew on dry sites fully exposed to the sun, whereas *R. albolimbata*, *R. argenteolimbata* and *R. congoana* occurred on more shaded sites with short grass. In shallow depressions of the granite outcrop, which were only filled for a short period with standing water, *R. runssorensis* was present. The same species occurred on other granite outcrops nearby. On level places with a short grass cover between the granite boulders *R. argenteolimbata*, together with *R. crinita* and *R. rosea*, occurred. On shades river banks *R. cavernosa* was frequently present and at one place also *R. albornata* and *R. bicolorata*.

In Table 1 the *Riccia* species are listed according to their habitats. At the base of one granite outcrop *Exormotheca* (Hepaticae, Marchantiales) was found; this plant, however, is not identical with *E. holstii*, which occurs mostly in eastern South Africa. This new species has been described as *E. bulbigena* (Bornefeld *et al.*1996).

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<tr>
<th>Sites fully exposed to the sun</th>
<th>shaded sites</th>
<th>River banks</th>
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<tr>
<td><em>R. angolensis</em></td>
<td><em>R. albolimbata</em></td>
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<td><em>R. argenteolimbata</em></td>
<td><em>R. bicolorata</em></td>
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<td><em>R. runssorensis</em></td>
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At the second study site, on the farm Erindi-Onganga, which is characterised by vast, sun exposed plains of very shallow soil over granite, the are no shade trees. Here only *R. crinita*, *R. okahandjana*, *R. rosea*, and *R. runssorensis* were found, in association with *Craterostigma* and *Xerophyta*.

Discussion

In Arnell’s (1963) key to the southern African *Ricciae* 34 species are listed, whereas Perold’s (1996) key for sub-Saharan Africa lists 68 species of which 31 occur in tropical Africa (Perold 1995) and 52 in southern Africa (Perold 1999), to which another new species, *Riccia sibayenii* (Perold 2001), has to be added. 8 Species (if *R. curtisi* is included) are cosmopolitan or sub-cosmopolitan. 12 Species that occur in southern Africa also occur further in northern Africa, some extending to Arabia.
Species occur in the former Cape Region, 3 in the Lesotho mountains, 3 in the former Transvaal, and 1 in the Free State & East Cape. In the southern African region *R. perssonii* is restricted to Namibia. Thus southern Africa has the richest flora regarding *Riccia* species in the world, with a portion of more than 50% of endemisms.

In Namibia, collections of liverworts on granite inselbergs were mostly done by Volk. These collections are cited in works by Perold, whilst Volk himself published some of his findings in 1979, 1981 and 1984. In the course of his work he found a new species, *Riccia gemmifera*, and described this in 1984. This species was, however, never found again and is thus to be regarded as a rare endemic.

This present study shows that almost half of the non-endemic *Riccia* species can occur in a very restricted area. *Riccia albornata*, which up to now was considered endemic to the Cape region, has proven to occur further north as well. *R. bicolorata* has not formerly been reported for Namibia. *R. runssorensis* seems to have the most extensive ecological amplitude, from growing in transiently submerged rock pools to very dry sites. More intensive systematic and ecological studies on *Riccia* in Namibia will certainly yield new and surprising results.

**Acknowledgements**

We wish to express our warmest thanks to Mrs. E. Arnold for her overwhelming hospitality at Otjua.

**References**


Liverworts near Omaruru


