

Rinodina australiensis (lichenized Ascomycetes, Physciaceae) recorded from Africa

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Abstract: MAYRHOFER, H. & WIRTH, V. 2011. *Rinodina australiensis* (lichenized Ascomycetes, Physciaceae) recorded from Africa. – *Herzogia* 24: 53–57.

Rinodina australiensis is reported from Namibia. These are the first records outside Australia. The habitats are briefly described and frequently associated species are listed.

Zusammenfassung: MAYRHOFER, H. & WIRTH, V. 2011. *Rinodina australiensis* (lichenized Ascomycetes, Physciaceae) aus Afrika nachgewiesen. – *Herzogia* 24: 53–57.

Rinodina australiensis wird aus Namibia nachgewiesen. Es sind die ersten Funde außerhalb Australiens. Die Standortverhältnisse werden beschrieben und häufige Begleitarten gelistet.

Key words: Biodiversity, lichenized fungi, *Rinodina*, Namib Desert, Namibia.

Introduction

The lichen biota of the Namib Desert has been studied in detail only during the last two decades (e.g., SCHIEFERSTEIN & LORIS 1992, JÜRGENS & NIEBEL-LOHMANN 1995, HERTEL & WIRTH 2006, LANGE et al. 2006, WIRTH & HEKLAU 2006, WIRTH et al. 2007, WIRTH & KONDRATYUK 2010, WIRTH 2010a, WIRTH 2010b). Two decades earlier, a paper by MATTICK (1970) dealt with the lichen biota in the fog desert and with the luxurious growth of the ‘lichen fields’. Other contributions published a few years later treated the taxonomy of single species (e.g., HALE & VOBIS 1978) or genera (e.g., SÉRUSIAUX & WESSELS 1984). The comparative paucity of attention accorded these remarkable habitats in early years is surprising given the long-standing interest on the part of biologists for desert organisms and their diversity and physiology. Fog deserts offer lichens particularly favourable conditions despite the extremely low levels of precipitation. One of the main reasons for the poor knowledge of the lichenized fungi and their ecology has been the lack of adequate information about the taxonomy of the species. In some cases, even frequent species have not been identifiable until recently.

The lichen biota of the Namibian savannas is characterized by species widespread in sub-tropical savannas and dry woodlands, with nearly all species occurring also in other southern African countries, such as Tanzania, Botswana and Zimbabwe (e.g., SWINSCOW & KROG 1988, ZEDDA et al. 2009, observations by V. Wirth). The Namib Desert, by contrast, possesses a unique flora rich in endemics. Even so the biota of the Namib Desert is broadly similar to that of the neighbouring Karoo and those of other dry regions of the world such as parts of Australia and the fog deserts of Baja California and the Atacama. In recent years, at least

six lichen species have been reported as disjunct between the Namib and Australia: *Buellia inturgescens* Müll.Arg. (WIRTH & HEKLAU 2006), *Toninia australis* Timdal (TIMDAL 1991), *Tephromela australitoralis* (Zahlbr.) Kalb & Elix, *Lecanora sphaerospora* Müll.Arg., *Buellia procellarum* A.Massal. (WIRTH 2010a) and *Buellia subalbula* (Nyl.) Müll.Arg. (BUNGARTZ et al. 2011). *Buellia procellarum* was described from South Africa and is widespread in south-eastern Australia (MAYRHOFER 1984, as *Rinodina procellarum*, PUSSWALD 1995, as *Hafellia procellarum*, ELIX 2009). *Buellia subalbula* was described from southern Angola and is known from one locality each in Namibia, Australia and Chile (BUNGARTZ et al. 2011) and from the South Atlantic island St Helena (APTROOT 2008).

Here we report yet another example of this disjunction, *Rinodina australiensis* Müll.Arg. Specimens of this species were collected in 2002 and 2009 on the bark of shrubs in the southern and central Namib. Shrubs are rare in the desert ecosystem owing to low levels of precipitation, but do occur on favourable sites exposed to the fog-bringing winds, especially on S-exposed slopes and in coastal areas. The fog condensates as liquid water on large boulders and accumulates at their bases, supporting the germination of higher plants and even the development and growth of persistent woody plants such as *Lycium* spp. A variety of species from the surrounding rocks occur on these *Lycium* shrubs, including *Santessonia hereroensis* (Vain.) Follmann, *Rocella montagnei* Bél., *Ramalina canariensis* J.Steiner and typical epiphytes like *Caloplaca renatae* V.Wirth & S.Y.Kondr., *Caloplaca albocrenulata* S.Y.Kondr. & V.Wirth, *Lecanographa longicaropa* Egea et al., *Opegrapha culmigena* Lib., *Ramalina melanothrix* Laurer and *Xanthodactylon flammeum* (L.f.) C.W.Dodge. It is in these habitats that *Rinodina australiensis* occurs as a rare species on twigs (fig. 1). In temperate Australia, *Rinodina australiensis* is a rare lowland species, found from mangroves to sclerophyllous woodland and heathland (MAYRHOFER et al. 1999).

Rinodina australiensis Müll.Arg. (fig. 2)

First described by MÜLLER (1893), a detailed description of the species is provided by MAYRHOFER et al. (1999) including photographs of its ascospores. The habit of the species is remarkable and characterised by a thick and areolate to subsquamulose, dingy olive-grey to brownish grey thallus at times becoming blastidiate. The apothecia are large, scattered to crowded, lecanorine, adnate or sometimes sessile with a prominent, smooth to crenulate thalline margin. The disc is plane at first, usually becoming markedly convex, reddish brown to dark brown to blackish. Oil paraphyses (POELT & PELLETER 1984) are abundant. The asci are eight-spored at first, but are sometimes reduced to 4–6 spores. The ascospores are large ($18\text{--}33 \times 9\text{--}16 \mu\text{m}$), at first with internal wall thickenings of the *Mischoblastia*-type, but maturing to a form corresponding to the *Pachysporaria*-type. SHEARD & MAYRHOFER (2002) have introduced the term 'Teichophila-type' for such ascospores with unusually variable locule shape and ascospore size during their type A development. All these distinct characters are present in the material of the Namib. The thalli of these specimens are extraordinarily well developed, the areoles are contiguous, warty or even minutely lobulate, brownish grey and larger than in the measurements previously given for Australian material (up to 3.5 mm in diam.). The apothecia remain plane for a long time and are sunken to adnate, possessing a crenulate to sublobate thalline margin and blackish brown disc (fig. 2). No lichen substances were detected by means of TLC.

Specimens examined: Namibia, Karas Region: Diamond Sperrgebiet, road from Oranjemund to Chamais Gate, 200 m, 28°01'S/15°51'E, 5.10.2009, R. & V. Wirth 41580 (KR). Namibia, District Omaruru, Central Namib Desert: Myl 72, Laguneberg, W vom Gipfel, 100 m, 21°50'S/14°05'E, 11.5.2002, V. Wirth 41018 & M. Heklau (KR).



Fig. 1: Coastal shrubland (strandveld) dominated by succulents in the southern Namib north of Oranjemund (Namibia). The dominant epiphytic lichens are mainly *Ramalina* spp., while the small twigs are covered with crustose lichens such as *Caloplaca* spp. and *Rinodina australiensis*.



Fig. 2: Thallus of *Rinodina australiensis* (Wirth 41580).

Comments: The species is morphologically rather similar to *Rinodina dolichospora* Malme and *R. elixii* H. Mayrhofer, Kantvilas & Ropin. Both species also have large ascospores, *R. dolichospora* of the *Pachysporaria*-type, frequently with minute, grain-like or droplet-like inclusions (MAYRHOFER et al. 1999, GIRALT et al. 2009, SHEARD 2010). *R. elixii* possesses ascospores of the *Physcia*-type (MAYRHOFER et al. 1999). *Rinodina australiensis* is closely related to the saxicolous maritime *R. blastidiata* Matzer & H. Mayrhofer with which it shares characters of ascospores and oil paraphyses (MATZER & MAYRHOFER 1994). The latter species is distinguished by the extensive formation of blastidia, the less frequent apothecia, and by its habitat: hard siliceous coastal rocks in south-eastern Australia, New Zealand and southernmost South America (MATZER & MAYRHOFER 1994, KASCHIK 2006). Additional species closely related to *Rinodina australiensis* include the saxicolous *R. teichophila* (Nyl.) Arnold from the Northern Hemisphere, *R. teichophiloides* (Stizenb.) Zahlbr. from South Africa, and *R. reagens* Matzer & H. Mayrhofer from South Africa, Australia and New Zealand (MATZER & MAYRHOFER 1994, MATZER & MAYRHOFER 1996, KASCHIK 2006).

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