

## New records of the lichen genus *Menegazzia* from Africa

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**Abstract** – A study of African material of the lichen genus *Menegazzia* was undertaken. Two species are reported as new to the continent; *M. capitata* from Tanzania, and *M. subsimilis* from La Réunion, Madagascar, Rwanda and Tanzania. A previous report of *M. terebrata* from Madagascar is rejected, whereas a previous report of the same species from Tanzania could not be confirmed, but not all Tanzanian specimens cited in the literature were seen.

**lichenized ascomycetes / Parmeliaceae / Paleotropics / disjunction / new records / montane forests**

**Résumé** – Une étude du matériel africain du lichen *Menegazzia* a été effectuée. Deux espèces sont rapportées comme nouvelles pour le continent, *M. capitata* de Tanzanie, et *M. subsimilis* de La Réunion, Madagascar, Rwanda et Tanzanie. Un rapport antérieur de *M. terebrata* de Madagascar est rejeté. Un rapport antérieur de la même espèce de Tanzanie ne pourrait pas être confirmé, mais pas tous le matériel de Tanzanie cité dans la littérature était disponible pour l'étude.

**ascomycetes lichénisants / Parmeliaceae / Paleotropiques / disjonction / forêt montagnarde**

### INTRODUCTION

The lichen genus *Menegazzia* A. Massal. is a mainly southern temperate genus with a high number of species known from New Zealand, south-eastern Australia, Tasmania, and southern South America (e.g. James, 1985; James & Galloway, 1992; Bjerke, 2005). However, several species are also known from high altitudes close the Equator. For instance, more than 15 species of *Menegazzia* are known from the mountainous islands in South-East Asia and Melanesia (James et al., 2001; Bjerke, 2003; Elix et al., 2005; Bjerke & Sipman, 2007), and three species are known from neotropical parts of South America (Bjerke, 2002).

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Records of *Menegazzia* from other tropical areas of the World are few. From Africa, *Menegazzia terebrata* (Hoffm.) A. Massal. has been reported from two countries, viz. Madagascar (des Abbayes, 1961 – as *Parmelia pertusa*) and Tanzania (Krog, 1991; 2000). These are the only records of *Menegazzia* from the continent. The present account contributes additional information on species of *Menegazzia* in East Africa, including a revision of parts of the material cited by des Abbayes (1961) and Krog (2000).

## MATERIAL AND METHODS

Herbarium specimens held in C, O, REN and UPS, and material collected by the second and third authors were studied in the laboratory. One specimen (*H. Krog* 88208/1) was studied by the first author on two different occasions during visits to BM, while the specimen was on loan to Mr P. W. James. The specimens were compared with types and other specimens of *Menegazzia* cited in previous accounts (see e.g. Bjerke, 2003; 2004; 2005; Bjerke & Obermayer, 2005; Bjerke & Sipman, 2007 for specimens and herbaria). Acetone extracts of the specimens were studied by standardized thin-layer chromatographic methods (Culbertson, 1972; Orange et al., 2001).

## RESULTS AND DISCUSSION

*Menegazzia capitata* Sipman & Bjerke  
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Previously this species was only known from Malaysia where it grows as an epiphyte both at low (1200 m) and high (2900 m) altitudes (Bjerke & Sipman, 2007). Here, it is reported as new to Africa (Tanzania). This specimen was collected by H. Krog, but was not cited in her accounts (Krog, 1991; 2000). The specimen has capitate soralia that are raised on tall, secondary lobes (Fig. 1), which is the diagnostic character that distinguishes *M. capitata* from other similar species (Bjerke & Sipman, 2007). The specimen also has remarkably blackened lobes, a character seen in some Malaysian specimens (Bjerke & Sipman, 2007). *Menegazzia capitata* belongs to the species complex characterized by perforations only on the upper surface, a flat rim around the perforation, relatively narrow lobes, and the stictic acid aggregate in the medulla.

Krog (2000) cited four Tanzanian specimens of *M. terebrata*, but only one of them was studied by us (see under *M. subsimilis*). The other three specimens were not available from O. The Tanzanian specimen of *M. capitata* is from the West Usambara Mts. in Tanga Province, viz. from the same area where H. Krog collected the three cited specimens not seen by us. The specimen was collected from twigs in *Philippia* heath at 1900 m alt. The wide disjunction (Malaysia-Tanzania) shown here for *M. capitata* may indicate that this species actually is more widespread in the Palearctic.

*Specimen examined:* TANZANIA: Tanga Province, Lushoto District, West Usambara Mts, Sagara Ridge, near summit, October 1988, H. Krog 88208/1 (O).



Fig. 1. Detail of *Menegazzia capitata* from Tanzania showing the raised, secondary, blackened lobes with terminal soralia. Scale = 1 mm.

***Menegazzia subsimilis* (H. Magn.) R. Sant.**

Ark. Bot. 30A, 11: 13 (1942). – *Parmelia subsimilis* H. Magn., Ark. Bot. 30B, 3: 5 (1941). See Bjerke (2003) for additional synonyms.

This widespread species was reported from 13 countries in four continents (Asia, Oceania, Europe, North and South America) by Bjerke (2003). Subsequently, it has been reported from additional countries in the Northern Hemisphere by Clerc (2004), Bjerke & Obermayer (2005) and Bjerke & Sipman (2007). It is here reported as new to Africa. Specimens from four countries were seen: Madagascar, La Réunion, Tanzania and Rwanda. It was collected by the second and the third authors in Rwanda in the Nyungwe forest area on *Erica johnstonii*. The habitat, an ericaceous shrub near Rwasenkoko swamp, is characterized by a remarkable climate. It is an example of a night-cold air lake. Here an inverse profile with *Syzygium-Podocarpus-Ocotea* forest on the summit of the hills exists, whereas the slopes bear *Andropogon shirensis*-grassland with scattered shrubs of *Hagenia abyssinica* and *Erica rugegensis*.

At La Réunion in the Indian Ocean, it occurs in humid forest characterized by mossy trunks and branches. The Madagascan specimens collected by des Abbayes and reported by him as *Parmelia pertusa* (= *M. terebrata*) (des Abbayes, 1961) proved to be *M. subsimilis*. Thus, the report of *M. terebrata* from the island is rejected.

The examined Tanzanian specimen from the Southern Highlands Province (*H. Krog* 3T 24/022) consists of a small thallus with a few, immature, maniciform, and slightly lacerate soralia. Although not fully developed, the shape

of the soralia strongly indicates that this specimen belongs to *M. subsimilis*, and not to *M. terebrata* as suggested by Krog (2000). An additional collection from Tanzania collected by V. Alstrup, and consisting of several thalli, lacks both apothecia and soralia. Thus, it is not possible to state with certainty whether it belongs to *M. subsimilis*, *M. terebrata*, *M. capitata* (see above) or some other taxon. The East-Asian, primary species *M. primaria*, with thallus morphology as in *M. subsimilis* and *M. terebrata*, occasionally does not produce apothecia (Aptroot et al. 2003), and thus resembles the sterile specimen from Tanzania. However, it is more likely that this specimen belongs to one of the sorediate species known to occur in Africa. The reported occurrence of *M. terebrata* in Tanzania could not be confirmed.

The general impression, both from its African and extra-African low-latitude localities (Bjerke, 2003; Bjerke & Obermayer, 2005; Bjerke & Sipman, 2007), is that *M. subsimilis* prefers humid, damp, montane forests. In some humid areas, it also occurs on rocks. The closely related species *M. terebrata* appears to thrive in slightly drier forest types.

*Specimens examined*: MADAGASCAR: Centre moyen, Manjakatempo (Ankaratra), 30 July 1956, H. des Abbayes 2337 (REN); Forêt d'Ambohitantly, 30 km NE d'Ankazobe, 21 August 1956, H. des Abbayes 2687 (REN). LA RÉUNION: Cirque de Salazie, along road to Morne de Fourche, 21°03' S, 55°27' E, 3 October 1996, H. Krog & E. Timdal RE38/07 (O L132029). RWANDA: Near Rwasekoko swamp, Nyungwe Forest, 2°31'33.7" S, 29°20'28.1" E, 6 October 2003, E. Fischer & D. Killmann s.n. (KOBL – several duplicates). TANZANIA: Southern Highlands Province, Rungwe District, Poroto Mts, on the way to Ngozi crater, at the SE edge of Poroto Forest Reserve, W of Idweli village, April 1989, H. Krog 3T 24/022 (O).

*Specimen examined of Menegazzia sp.*: TANZANIA: Morogoro district, Uluquru Mts, Luhangela Plateau above Tschevzewa, 24 September 1999, V. Alstrup TZ 2852 (C).

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