Phytotaxa 630 (2): 149–153
https://www.mapress.com/pt/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

https://doi.org/10.11646/phytotaxa.630.2.6

Lectotypification of the name *Umbilicaria africana* (*Umbilicariaceae*, lichenized *Ascomycota*)

EVGENY A. DAVYDOV[1*] & LIDIA S. YAKOVCHENKO[2]
[1] *Altai State University, Lenin Ave. 61, 656049 Barnaul, Russia.*
eadavydov@yandex.ru; https://orcid.org/0000-0002-2316-8506
[2] *Federal Scientific Center of East Asian Terrestrial Biodiversity of the Far Eastern Branch of the Russian Academy of Sciences, 159 Prospect 100th anniversary of Vladivostok, 690022 Vladivostok, Russia.*
lidiyakovchenko@mail.ru; https://orcid.org/0000-0002-4342-7771
[*] *Author for Correspondence*

Abstract

The name *Umbilicaria africana* (≡*Gyrophora haplocarpa* var. *africana*), a polar-alpine lichen-forming fungus, is reviewed and lectotypified using a specimen from the Jatta collection deposited in the Herbarium Neapolitanum (NAP).

Key words: Africa, Antonio Jatta, nomenclature, Ruwenzori Mts., thalloconidia

Introduction

Umbilicaria africana (Jatta) Krog & Swinscow (1986: 79) [≡*Gyrophora haplocarpa* var. *africana* Jatta (1908: 408)] is a lichen species with a widely disjunct distribution area. The species occurs in tropical high mountains of Africa (Krog & Swinscow 1986), South America (Sipman & Topham 1992, Hestmark 2016) and Asia (Sipman 1993, Wei & Jiang 1993), as well as in the Antarctic (Sancho *et al*. 1992, Krzewicka & Smykla 2004).

This taxon was described by the Italian lichenologist Antonio Jatta, who was the most significant figure of Neapolitan and generally Italian lichenology around the end of the XIX and the beginning of the XX century (Ricciardi 2002, Nimis 2018). He studied the lichens collected during an expedition conducted by Prince Luigi Amedeo of Savoy "to explore the snow range of Ruwenzori, upon the borders of Congo and Uganda, in the centre of Equatorial Africa" from April to September 1906 (De Filippi 1908). In Appendix C of an account of the expedition (De Filippi 1908) Jatta indicates the presence of 83 lichen species and gives a list of five new species and four new varieties of lichens from Ruwenzori Mts., including *Gyrophora haplocarpa* var. *africana*. The new variety was formally described in the same year (Jatta 1908) from the alpine belt of Ruwenzori Mts (elev. 4000–4500 m).

Krog & Swinscow (1986) raised the taxon to species level and revealed that thalloconidia septation is an important diagnostic trait for distinguishing *Umbilicaria africana* from *U. aprina* Nyl. (1869: 12), which has a similar morphology and ecological preferences. The thalloconidia of *Umbilicaria africana* are 4–10 septate, while those of *U. aprina* are aseptate or one-septate. Hestmark (1991), during his extensive study of thalloconidia in *Umbilicariaceae*, proved the reliability of this trait. Another related species, *U. rhizinata* (Frey & Poelt) Krzewicka (2010: 491), is distinguished by its smaller size and its 3- or 4-celled thalloconidia (Krzewicka 2010, Davydov 2022). The species level for these three species was supported in a phylogenetic study by Davydov *et al*. (2017). All species belong to the *U. aprina*-group within *Umbilicaria* subg. *Umbilicaria,* along with such species as *U. antarctica* Frey & Lamb (1939: 270), *U. formosana* Frey (1931: 71), *U. kappeni* Sancho & al. (1998: 281), and *U. krascheninnikovii* (Savicz) Zahlbr. (1939: 405).

Umbilicaria africana is included in the Lichen Flora of Russia (Davydov 2017). During our study we found that the name has not properly been typified yet. Here we review and typify the name *Umbilicaria africana*.

Accepted by Frank Bungartz: 5 Dec. 2023; published: 14 Dec. 2023

Material and methods

The protologue of *Umbilicaria africana* and the relevant historical literature were examined to uncover the history and the original material of the name. Herbarium collections as well as high resolution digital photographs of *Umbilicaria* from FH, MIN, and NAP were studied.

Specimens were examined using a stereomicroscope and a compound microscope. Anatomical details were studied using hand-cut sections mounted in water. Thalloconidia were brushed off from the lower surface of thalli, mounted in water, then examined with a light microscope Zeiss AxioImager A1; measurements were performed on digital images using Zeiss software. Measurements of thalloconidia are presented as (min.–) M–sd–[M]–M+sd (–max.), with arithmetic means rounded to the nearest 0.1 μm, where 'min.' and 'max.' are the extreme values recorded, M is the arithmetic mean and sd is the standard deviation. Only thalloconidia with more than 4 cells were measured.

Typification

Llano (1950: 100) mentioned "The specimen from the Farlow Herb. (ex Herb. C. Sbarbaro) labeled *Gyrophora haplocarpa* Nyl. var. *africana* Jatta. 'Versante ovest Duroni 4000–4500 m.s.m. Ruwenzori' is probably a cotype specimen" and provided a photo of the specimen (Llano 1950: 253). Wei & Jiang (1993: 67) stated for *Umbilicaria africana* "Type: Africa, Ruwenzori, veyante ovest, Duboin 4–4500 m. ex Herb. C. Sbarbaro, FH, Syntype (MIN!)". Although Wei & Jiang clearly indicate the status of the specimen as a syntype, Hestmark (2016) cited the this collection as 'type' designated by Wei & Jiang (1993), which does not fit to the original text.

Original material for *Umbilicaria africana*

The sampling locality according to the protologue (Jatta 1908) reads: "sulle rupi al Duroni nel versante ovest della Valle dei Laghi, (m. 4000–4500)". We were able to locate three specimens which correspond to the protologue and can be considered as syntypes.

1. NAP (Jatta collection). The envelope is made from a notebook sheet and fixed with a needle to a herbarium sheet. The envelope is labelled in pencil in Jatta's handwriting, the epithet "*africana* Jatta" was apparently added later in ink. The label reads:"*Gyrophora haplocarpa* Nyl. var. *africana* Jatta, versante ovest Duroni, 4000–4500 m, det. Jatta." Hestmark tested this specimen in 2011 and labelled it as "lectotype of *U. africana*". Nevertheless Hestmark (2016) later accepted the 'typification' by Wei & Jiang (1993).

2. FH barcode 00940412. The envelope is made from grey-blue herbarium paper and has handwritten note in ink reads "*Gyrophora haplocarpa* Nyl. var. *africana* Jatta", "Davoin" is added in a different handwriting. The envelope has two stamps "Herb. C. Sbarbaro" and "Farlow Herbarium, Harvard University", and an identification label by G. A. Llano from 1948, is glued onto the envelope. A handwritten label sheet of paper with "versante ovest Duroni, 4000/4500" and "Ruwenzori" is placed in the envelope along with the specimen. The specimen corresponds to that on the photo in Llano (1950).

3. MIN 663399. The envelope is made from white paper and glued to a herbarium sheet carrying a stamp "University Minnesota Herbarium 663399". Printed labels "from the herbarium of George A. Llano", "*Omphalodiscus africanus* (Jatta) Llano ex herb. C. Sbarbaro, FH. Africa, Ruwenzori, veyante orest Duvoin 4–4500 m" are glued onto the herbarium sheet. The identification label by J.C. Wei, 1990, is enclosed in the envelope and mentions that the specimen "may probably be a syntype of "*Gyrophora haplocarpa* Nyl. var. *africana* Jatta. The specimen hence corresponds to that mentioned as a cotype by Wei & Jiang (1993).

All three specimens correspond to the original description and the modern concept of *U. africana*. No other specimens having any original data or collector name are known. Since the spelling of the locality is different in all three specimens, we do not have convincing evidence that the specimens are a part of a single gathering, and consider them as syntypes. Among these, we designate the specimen present in the Jatta collection (NAP) having an envelope labeled by Jatta's handwriting "*Gyrophora haplocarpa* Nyl. var." as the lectotype of *Gyrophora haplocarpa* var. *africana* Jatta.

Taxonomy

Umbilicaria africana (Jatta) Krog & Swinscow (1986: 79). Mycobank no. 103878.

Gyrophora haplocarpa var. *africana* Jatta (1908: 408). Mycobank no. 372933.

Omphalodiscus africanus (Jatta) Llano (1950: 99). Mycobank no. 368341.

Type (lectotype, designated here):—UGANDA, Ruwenzori Mts.: "versante ovest Duroni, 4000–4500 m, det. Jatta" sine collector, sine numero (NAP, Jatta collection [high resolution digital photographs!, Fig. 1].

Thalloconidia

The size of thalloconidia of two syntypes from Ruwenzori Mts. (FH 00940412): (17.5–)18.6–22.2–23.7(–27.5) × (13.8–)15.6–17.6–19.7(–22.5) µm [N=20], (MIN 663399): (17.5–)19.2–20.7–22.2(–27.5) × (15.0–)16.7–18.3–20.0(–22.5) µm [N=20].

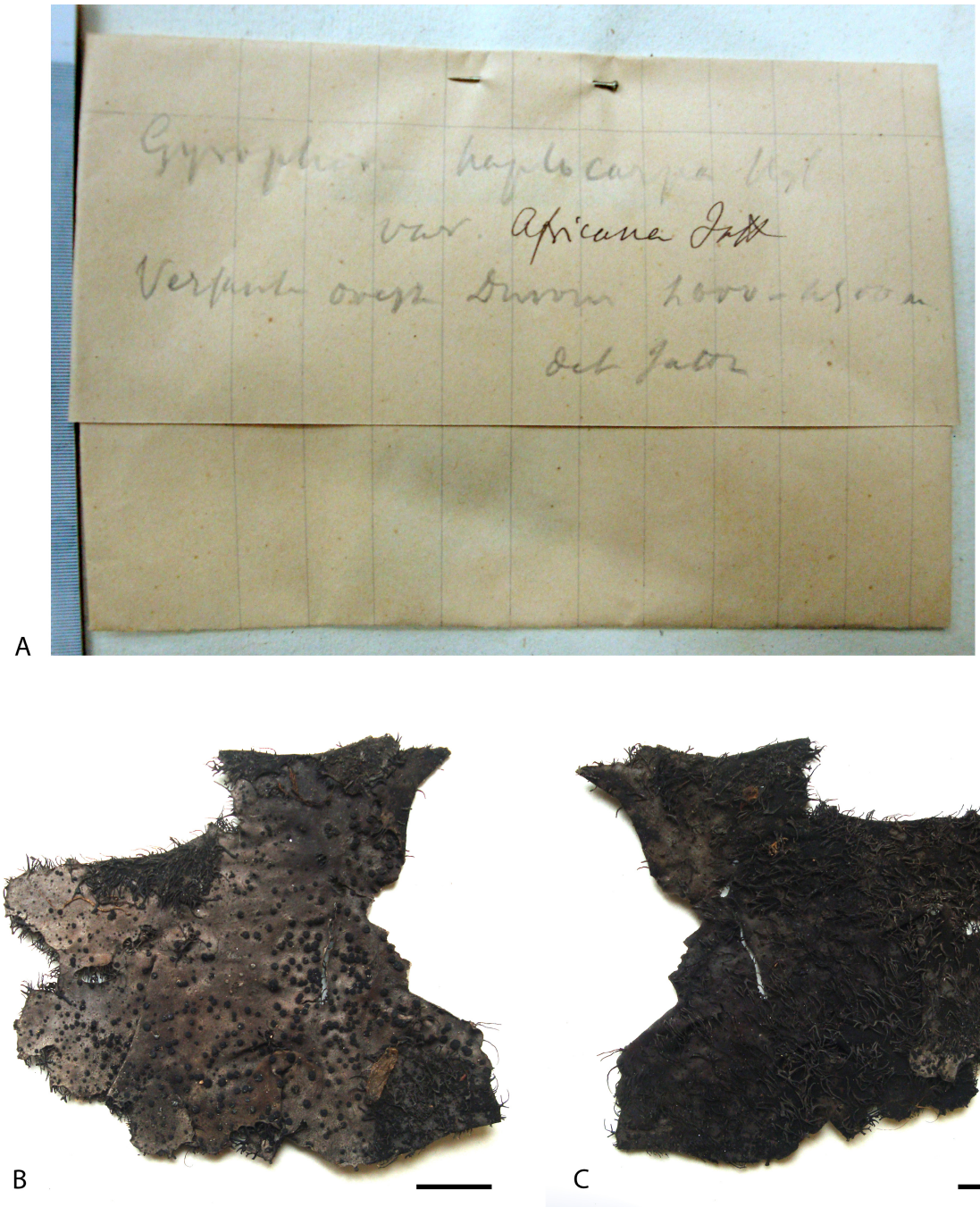

FIGURE 1. *Gyrophora haplocarpa* var. *africana* Jatta (Lectotype, NAP, Jatta collection, s.n.). A. Original envelope. B. Upper surface. C. Lower surface. Scales: B & C=1 cm. Photos by Roberta Vallariello.

Acknowledgements

We thank Dr A. Sennikov (S.-Petersburg and Helsinki) for his valuable comments. We are indebted to Prof. P. L. Nimis (Trieste) and R. Vallariello (Napoli) for their assistance to provide a photo of the type material of *Umbilicaria africana*. The curators of the herbaria FH and MIN are thanked for the loan of herbarium specimens, and Dr Christian Printzen and Viola Ziller (Frankfurt am Main) for organizing the loan to herbarium FR. This study was funded by the Russian Science Foundation as research project № 22-24-00283.

References

Davydov, E.A. (2017) Family *Umbilicariaceae*. *In*: Andreev, M.P. & Himelbrant, D.E. (Ed.) *Lichen Flora of Russia: genus Protoparmelia, families Coenogoniaceae, Gyalectaceae, and Umbilicariaceae*. KMK, Moscow—St. Petersburg, pp. 66–136.

Davydov, E.A. (2022) On the status of *Umbilicaria aprina* var. *halei* and *U. canescens* (*Umbilicariaceae*, lichenized Ascomycota). *Phytotaxa* 533: 91–97.
https://doi.org/10.11646/phytotaxa.533.1.6

Davydov, E.A., Peršoh, D. & Rambold, G. (2017) *Umbilicariaceae* (lichenized Ascomycota)—trait evolution and a new generic concept. *Taxon* 66: 1282–1303.
https://doi.org/10.12705/666.2

De Filippi, F. (1908) *Ruwenzori; an account of the expedition of H.R.H. Prince Luigi Amedeo of Savoy, duke of the Abruzzi, by Filippo de Filippi, F.R.G.S. With a preface by H.R.H. the Duke of the Abruzzi*. E.P. Dutton, New York, 408 pp.
https://doi.org/10.5962/bhl.title.141034

Frey, E. (1931) Weitere Beiträge zur Kenntnis der Umbilicariaceen. *Hedwigia* 71: 94–119.

Frey, E. & Lamb, I.M. (1939) A new species of *Umbilicaria* from the Antarctic. *Transactions of the British Mycological Society* 22: 270–273.
https://doi.org/10.1016/S0007-1536(39)80051-1

Hestmark, G. (1991) Teleomorph-Anamorph relationships in *Umbilicaria* I. Making the connections. *Lichenologist* 23: 343–359.
https://doi.org/10.1017/S0024282991000506

Hestmark, G. (2016) The lichen genus *Umbilicaria* in Ecuador. *Nordic Journal of Botany* 34: 257–268.
https://doi.org/10.1111/njb.00952

Jatta, A. (1908) Species nova in excelsis Ruwenzori in expeditione Ducis Aprutii lectae IV. Lichenes. *Annali di Botanica* 6: 407–409.

Krog, H. & Swinscow, T.D.V. (1986) The lichen genera *Lasallia* and *Umbilicaria* in East Africa. *Nordic Journal of Botany* 6: 75–85.
https://doi.org/10.1111/j.1756-1051.1986.tb00861.x

Krzewicka, B. (2010) *Umbilicaria rhizinata* comb. nov. (lichenized Ascomycota). *Lichenologist* 42: 491–493.
https://doi.org/10.1017/S0024282910000010

Krzewicka, B. & Smykla, J. (2004) The lichen genus *Umbilicaria* from the neighbourhood of Admiralty Bay (King George Island, maritime Antarctic), with a proposed new key to all Antarctic taxa. *Polar Biology* 28: 15–25.
https://doi.org/10.1007/s00300-004-0638-9

Llano, G.A. (1950) *A Monograph of the Lichen family Umbilicariaceae in the Western Hemisphare*. Office of Naval Research, Washington D. C., 281 pp.

Nimis, P.L. (2018) The "Golden Period" of Italian lichenology and its importance in modern times *In*: Blanz, P. (Ed.) *Biodiversity and Ecology of Fungi, Lichens, and Mosses*. Kerner von Marilaun Workshop 2015 in memory of Josef Poelt, pp. 659–672.

Nylander, W. (1869) *Synopsis methodica lichenum omnium hucusque cognitorum praemissa introductione lingua gallica tractate* 2. Ex typis L. Martinet, Paris, 64 pp.

Ricciardi, M. (2002) Il contributo dei Botanici della Scuola napoletana agli studi lichenologici. *Delpinoa* 44: 27–38.

Sancho, L.G., Kappen, L. & Schroeter, B. (1992) The lichen genus *Umbilicaria* on Livingston Island, south Shetland Islands, Antarctica. *Antarctic Science* 4: 189–196.
https://doi.org/10.1017/S0954102092000294

Sancho, L.G., Schroeter, B., Valladares, F. (1998) *Umbilicaria kappeni* (*Umbilicariaceae*) a new lichen species from Antarctica with multiple mechanisms for the simultaneous dispersal of both symbionts. *Nova Hedwigia* 67: 279–288.
https://doi.org/10.1127/nova.hedwigia/67/1998/279

Sipman, H.J.M. (1993) Lichens from Mount Kinabalu. *Tropical Bryology* 8: 281–314.

https://doi.org/10.11646/bde.8.1.29
Sipman, H.J.M. & Topham, P. (1992) The genus *Umbilicaria* (lichenized Ascomycetes) in Colombia. *Nova Hedwigia* 54: 63–75.
Wei, J.C. & Jiang, Y.M. (1993) *The Asian Umbilicariaceae (Ascomycota). Mycosystema Monographicum Ser. No. 1.* International Academic Publishers, Beijing, 217 pp.
Zahlbruckner, A. (1939) *Catalogus Lichenum Universalis, vol. 10.* Leipzig, Bornträger, 360 pp.