

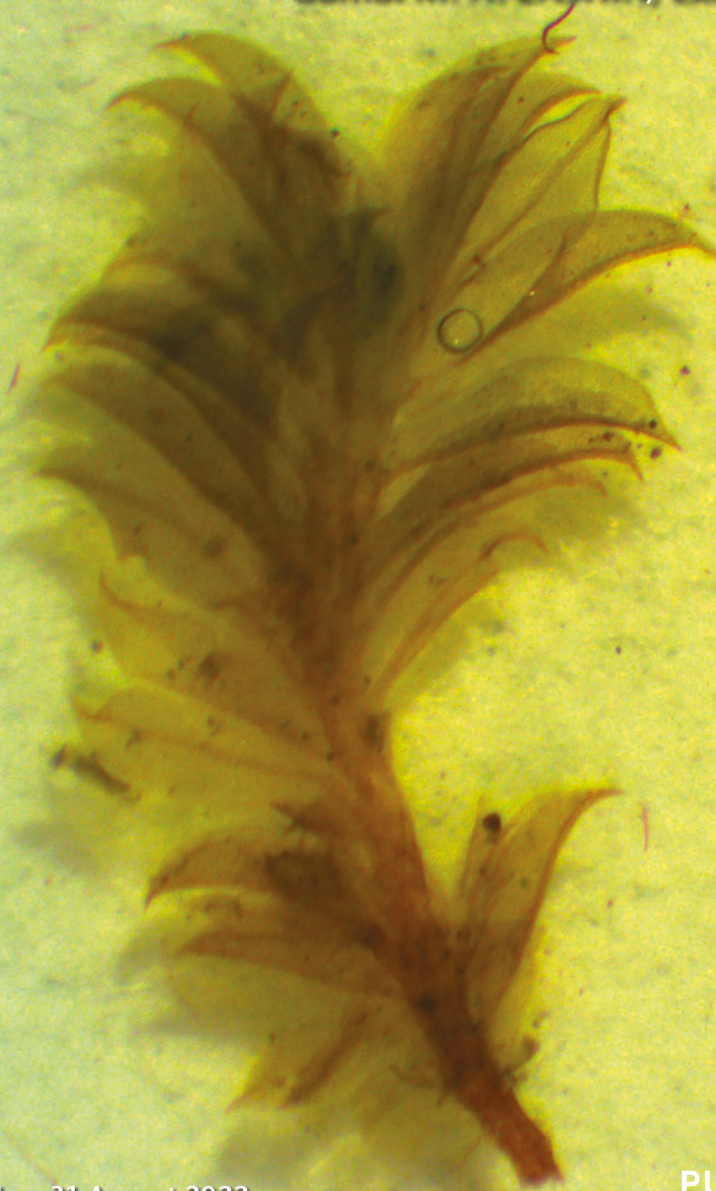
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Leptophascum leptophyllum (Müll.Hal.)
J.Guerra & M.J.Cano (Bryophyta: Pottiaceae),
a genus and species new to Egypt

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***Leptophascum leptophyllum* (Müll.Hal.) J.Guerra & M.J.Cano (Bryophyta: Pottiaceae), a genus and species new to Egypt**

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KEY WORDS

North Africa,
Egypt,
Dakahlia province,
Pottiaceae,
distribution,
floristics,
new record.

ABSTRACT

The genus *Leptophascum* (Müll.Hal.) J.Guerra & M.J.Cano (Pottiaceae) is new to the bryoflora of Egypt and is represented by *Leptophascum leptophyllum* (Müll.Hal.) J.Guerra & M.J.Cano. This raised the number of fully identified moss taxa recorded from Egypt to 189. The location, habitats, herbarium numbers and distribution of the species in Africa and the world are reviewed. A description and photos are provided.

RÉSUMÉ

Leptophascum leptophyllum (Müll.Hal.) J.Guerra & M.J.Cano (Bryophyta: Pottiaceae), un nouveau genre et une nouvelle espèce pour l'Égypte.

Le genre *Leptophascum* (Müll.Hal.) J.Guerra & M.J.Cano (Pottiaceae) est nouveau pour la bryoflore d'Égypte et est représenté par *Leptophascum leptophyllum* (Müll.Hal.) J.Guerra & M.J.Cano. Cela porte à 189 le nombre de taxons de mousses clairement identifiés et enregistrés en Égypte. La localisation, les habitats, les numéros d'herbier et la distribution des espèces en Afrique et dans le monde sont passés en revue. Une description et des photos sont fournies.

MOTS CLÉS
Afrique du Nord,
Égypte,
province de Dakahlia,
Pottiaceae,
distribution,
floristique,
signalement nouveau.

INTRODUCTION

Number of moss taxa known from Egypt has been increased in the last decade to 188 taxa belonging to 59 genera, 17 families and ten orders (El-Saadawi *et al.* 2013a, b; Ibrahim *et al.* 2013; Lashin *et al.* 2014; Hassan *et al.* 2017; El-Sakaty *et al.* 2018; Khalil & Farag 2018; Taha 2020). The largest family in the Egyptian moss flora is Pottiaceae Hampe, being represented by 26 out of 59 genera and 89 out of 188 taxa recorded from this country (El-Saadawi *et al.* 2015; Hassan *et al.* 2017; El-Sakaty *et al.* 2018; Khalil & Farag 2018). Herein, one additional species and genus of this family, *Leptophascum leptophyllum* (Müll. Hal.) J. Guerra & M.J. Cano, which was recorded in Dakahlia province, is added to the moss flora of Egypt.

STUDY AREA AND MATERIAL

Dakahlia province (Fig. 1) is located northeast of the Nile Delta and is bounded by El-Sharkia province on the east, El-Gharbia and Kafr El-Sheikh provinces on the west, Domietta province on the north-east, El-Qalyobia province on the south, and the Mediterranean coast on the north. It is confined between longitudes 30.5°N and 31.5°N, and latitudes 30°E and 32°E. Dakahlia has a mild climate that tends to be warm in winter with some rain that increases in the coast, and is hot in summer; the average annual temperature ranges between 14 and 28°C.

Four samples of *Leptophascum leptophyllum* were gathered from three districts of Dakahlia province in the period from October 2017 to April 2019. Voucher specimens are numbered and stored in CAIA (Ain Shams University Herbarium).

RESULTS

Leptophascum leptophyllum is a genus and species new to the bryoflora of Egypt. Its discovery increases the number of moss species recorded from Egypt to 189 taxa and the number of genera to 60.

Family POTTIACEAE Hampe

Genus *Leptophascum* (Müll.Hal.) J. Guerra & M.J. Cano

Leptophascum leptophyllum (Müll.Hal.) J. Guerra & M.J. Cano (Fig. 2)

Journal of Bryology 22 (2): 92 (Guerra & Cano 2000). — *Chenia leptophylla* (Müll.Hal.) R.H.Zander, *Bulletin of the Buffalo Society of Natural Sciences* 32: 258 (Zander 1993). — Basionym: *Phascum leptophyllum* Müll.Hal., *Flora* 71: 6 (Müller 1888). — Type: Africa.

Tortula rhizophylla (Sakurai) Z.Iwats. & K.Saito, *Miscellanea Bryologica et Lichenologica* 6: 59 (Iwatsuki & Saito 1972). — Basionym: *Physcomitrium rhizophyllum* Sakurai, *The Botanical Magazine* (Tokyo) 52 (615): 469 (Sakurai 1938). — Type: China.

Tortula vectensis E.F.Warburg & Crundwell, *Transactions of the British Bryological Society* 4 (5): 763 (Warburg & Crundwell 1965). — Type: Isle of Wight.

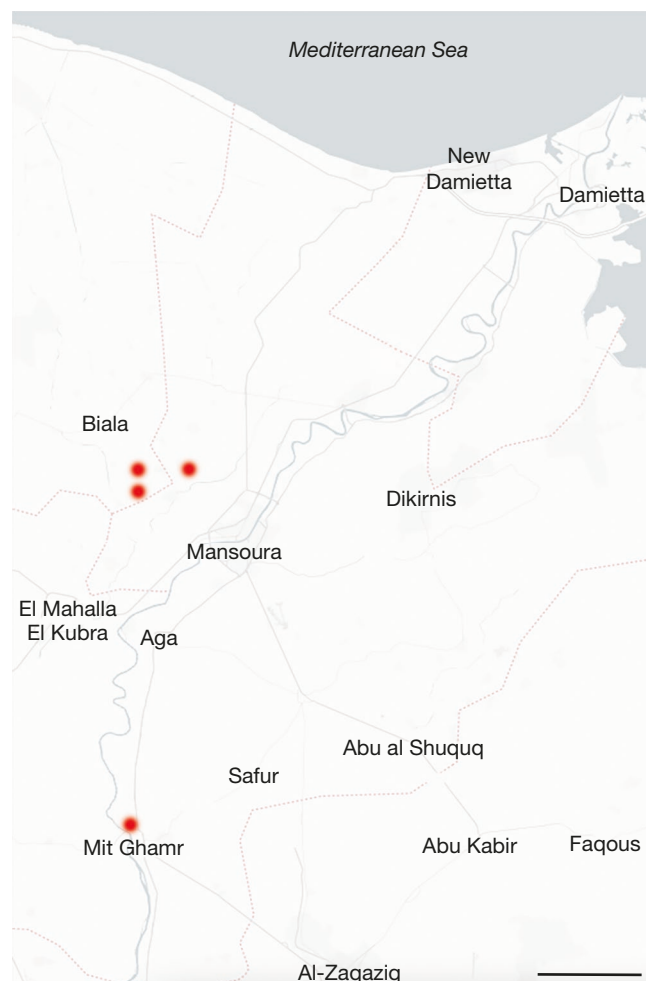


Fig. 1. — A map showing Dakahlia province districts, Egypt. Red points show the location of specimens examined in this study. Scale bar: 10 km. ©OpenStreetMap.

SPECIMENS EXAMINED. — **Egypt.** Mit-Ghamr, Dondait village, clay on cement wall of water basin in semi shade, 7.X.2017, Gehad Hamouda, 170GH (CAIA[17170GHDaq]); Shirbin, Dangway village, red break wall of water canal in semi shade, 31°12'20"N, 31°32'36"E, 14 m a.s.l., 28.IV.2019, Gehad Hamouda, 307GH (CAIA[19307GHDaq]); Talkha, Al Adham village, red break wall of water canal in semi shade, 31°10'47"N, 31°27'07"E, 12 m a.s.l., 28.IV.2019, Gehad Hamouda, 333GH (CAIA[19333GHDaq]); Al Bosaat village, red break wall of water well in semi shade, 31°09'45"N, 31°26'21"E, 10 m a.s.l., 28.IV.2019, Gehad Hamouda, 334GH (CAIA[19334GHDaq]).

DISTRIBUTION. — **Africa.** Botswana, Canary Islands, Cape Verde, Kenya, Lesotho, Malawi, Mauritania, Reunion, South Africa, Tanzania, Zimbabwe.

Asia. China (Yunnan), India, Japan, Saudi Arabia.

Australasia. New Zealand.

Europe. Austria, Cyprus, France, Germany, Hungary, Italy, Poland, Portugal, Spain, United Kingdom.

Macaronesia. Azores, Madeira.

North America. Mexico, United States (Alabama, Louisiana, New Mexico).

Oceania. Hawaiian Islands.

South America. Bolivia, Brazil, Chile, Ecuador, Paraguay (Magill 1981 as *Phascum leptophyllum*; Arts & Sollman 1991 as *Phascum leptophyllum*; Mishler 1994 as *Tortula rhizophylla*; Lüth 2006; O'Shea

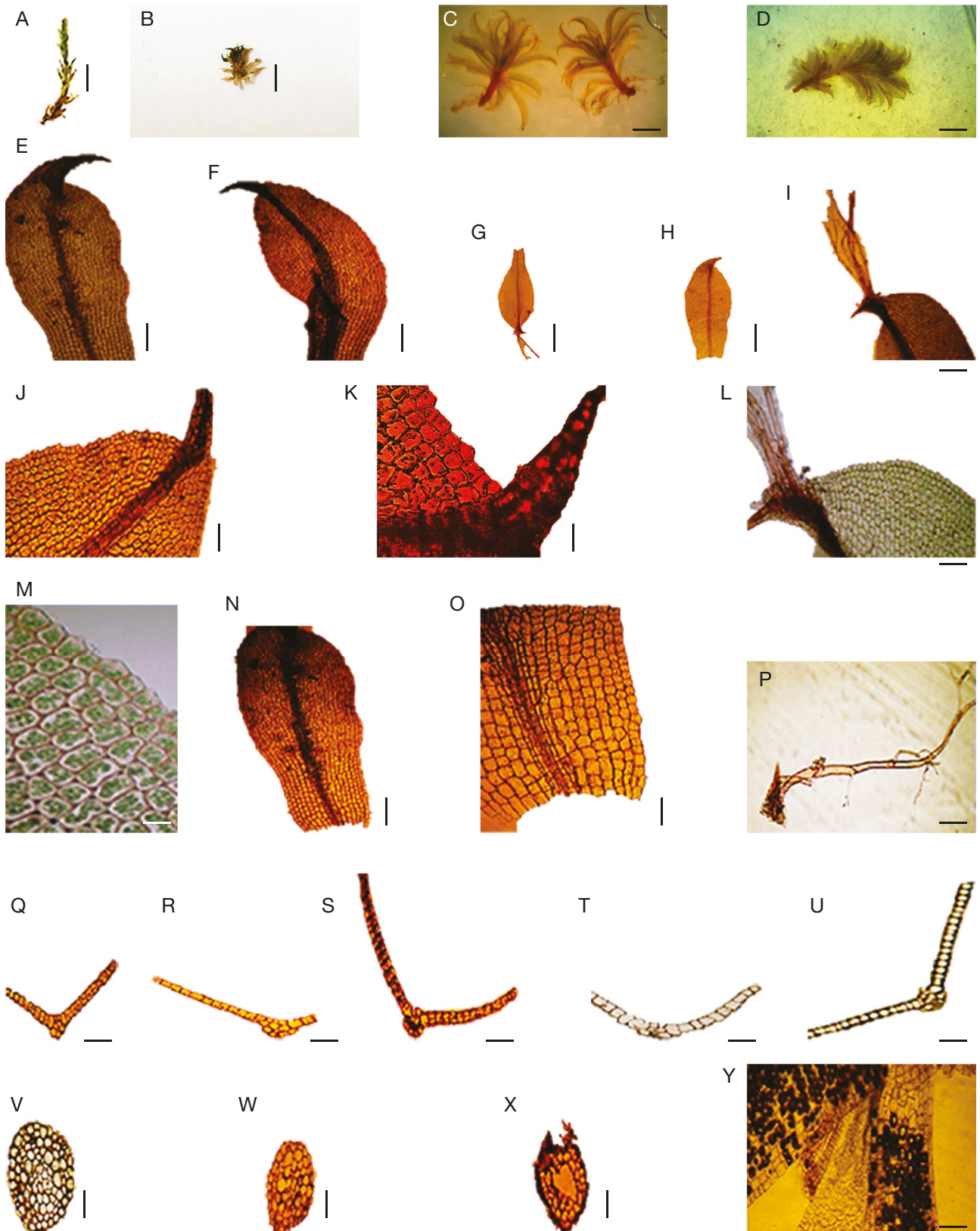


FIG. 2. — *Leptophascum leptophyllum* (Müll.Hal.) J.Guerra & M.J.Cano: **A, B**, dry plant; **C, D**, moist plant; **E-H**, leaves; **I, J**, leaf apices; **K-M**, upper leaf cells; **N, O**, basal leaf cells; **P**, rhizoids at leaf tip; **Q-U**, leaf cross-sections; **V-X**, stem cross-sections; **Y**, archegonium. Scale bars: A, B, 2 mm; C, 1 mm; D, 1.7 mm; E, F, N, 0.3 mm; G, H, 0.6 mm; I, Y, 0.2 mm; J, L, O, Q-U, 0.1 mm; K, P, 0.5 μ m; M, 0.2 μ m; V-X, 0.8 μ m.

2006 as *Chenia leptophylla*; Ros et al. 2013; Hodgetts & Lockhart 2020 as *Chenia leptophylla*; Taha et al. 2020).

DESCRIPTION

Plants yellowish green to olive green, small or medium up to 3.5-7.0 mm high. Stem unbranched, semi-rounded in cross-section, central strand absent, sclerodermis not differentiated. Leaves appressed when dry, squarrose-recurved to spreading when moist, concave, falcate, obovate to spatulate, 1.8-2.4 mm long, 0.6-0.9 mm wide; apex obtuse and apiculate, asymmetrical; margins plane, irregularly notched above, entire below; costa excurrent in short reflexed apiculus, superficial cells oblong, circular in cross section, costa without stereid band, guide cells are two in one layer; upper lamina cells irregular, quadrate and slightly papillose, basal lamina cells quadrate to oblong, rounded. Perichaetia terminal or lateral on main axis, perichaetial leaves smaller than stem leaves, 1.2 mm long, and 0.6 mm wide. Rhizoids attached to the back of the costa at leaf tips.

DISCUSSION

Leptophascum leptophyllum is a distinctive species that is recognized by its fragile leaves breaking along their insertion, which may be a method of reproduction by fragmentation, rhizoids appearing attached to the tip of leaves, laminal margin irregularly denticulate. In addition, the elongate thick-walled, reflexed cell forming the leaf apiculus is unique and immediately diagnostic (Zander 1993). The studied samples have the same leaf parameters of those recorded previously in various floras (Crum & Anderson 1981 as *Tortula rhizophylla*; Magill 1981 as *Phascum leptophyllum*; Mishler 1994 as *Tortula rhizophylla*; Casas et al. 2006; Guerra 2006; Taha et al. 2020) but the studied samples are taller. This may be due to high mineralization of the soil.

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