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BRYOLOGICAL NOTE



Revision of *Bryum glauculum* Müll.Hal. *nom. nud.* reveals the second published record of *B. valparaisense* Thér. from Egypt

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Within a larger study on the identity of the putatively endemic bryophytes of North Africa, including all names published in this area, the original material of *Bryum glauculum* Müll.Hal. *nom. nud.* has been studied. This name was proposed by Sickenberger (1901) in a contribution to the Egyptian flora, but it is a *nomen nudum* as it lacks description or diagnosis, and therefore was not validly published (Turland et al. 2018). Furthermore, its identity seems not to have been further evaluated and remains unknown (Ros et al. 1999, 2013). Sickenberger's material, on which this name is based, was found in Z herbarium (at present joined to ZT), where the herbarium of this German botanist and pharmacist is kept (Stafleu and Cowan 1981). Sickenberger mentioned two collections: 'Siout. 8 mars 1892!' and 'Chellâl près de Philae. 12 févr. 1892!'.

There are three specimens in Z identified as *B. glauculum* and collected by E. Sickenberger. Two fit the data of the first-mentioned collection, and the remaining one fits the second collection, so all three specimens can be considered the material used by Sickenberger. The specimens were probably sent to Carl Müller (1818–1899) for revision, as in Sickenberger's publication, he indicates that Halle's bryologist was the author of the name ('*Bryum* (*Erythrocarpidium*) *glauculum* C. M. ined. n. sp.'). Nomenclature follows Hodgetts et al. (2020).

The two specimens from Siout and some plants of the Chellâl specimen agree with the morphological characteristics of *B. valparaisense* Thér. given in Arts et al. (1995) and subsequent publications such as Preston and Finch (2006), Blockeel et al. (2008), and Guerra et al. (2010). This species belongs to the '*B. erythrocarpum* complex' (Arts et al. 1995), which was formally treated by Nyholm (1993) as *Bryum* Subsection *Apalodictyon* (Müll.Hal.) Podp. Pedersen et al. (2007) and Holyoak and Pedersen (2007) demonstrated that it is a polyphyletic group and that the presence of rhizoidal tubers is a result of convergent evolution.

The most distinctive morphological traits of the Egyptian samples of *B. valparaisense* are as follows: small (3–5 mm high), yellowish plants; erect, lanceolate leaves with plane and unbordered margins, acute apices, and

nerves shortly excurrent or ending below apex; rectangular basal laminal cells; finely papillose rhizoids; rhizoidal tubers very abundant, yellowish, pyriform or spherical, 38–90 µm long and 50–76 µm wide, 2–4 cells wide, which are not protuberant in outline. Since the name *B. glauculum* was never validly published, the nomenclaturally appropriate name for the specimens is *B. valparaisense* (Thériot 1917).

The collection from Chellâl also contains some plants of another species. Although similar in size and colour to *B. valparaisense*, the presence of big, red rhizoidal tubers situated frequently at the base of the stem and even in the leaf axils, shows that it corresponds to *Ptychostomum rubens* (Mitt.) Holyoak & N.Pedersen, another species of *Bryum* Subsection *Apalodictyon*. Crundwell and Nyholm (1964) already mentioned that species of this complex grow in similar habitats and that they can be found together. The morphological traits that most readily allow identification of *P. rubens* are the clearly bordered leaves with elongated cells, and the dark red tubers, mostly spherical, 139–180 µm long and 101–139 µm wide, with strongly protuberant cells, disposed on clearly papillose rhizoids.

In the most recent checklist of Egyptian mosses (El-Saadawi et al. 2015), six species of *Bryum* Subsection *Apalodictyon* (Crundwell and Nyholm 1964; Arts et al. 1995; Smith 2004) were reported for the country: *Bryum radiculosum* Brid., *B. ruderale* Crundw. & Nyholm, *B. sauteri* Bruch & Schimp., *Imbribryum subapiculatum* (Hampe) D.Bell & Holyoak, *Ptychostomum bornholmense* (Wink. & R.Ruthe) Holyoak & N.Pedersen and *P. rubens*. Very recently two more species were reported by Ellis et al. (2019): *B. klinggraeffi* Schimp. and *B. valparaisense* in north-western part of the Nubian Western Desert. Therefore, the specimens cited here represent the second published record of *B. valparaisense* for Egypt, whereas *P. rubens* is also rarely recorded and was known previously only from South Sinai.

Siout (whose present name is Asyut) is situated in the phytogeographical territory of the Nile Valley (after Tackholm 1974; El-Hadidi and Fayed 1994/1995; El-Hadidi 2000; El-Saadawi et al. 2003). In this territory,

the only species of *Bryum* Subsection *Apalodictyon* already known is *I. subapiculatum* (Imam and Ghabbour 1972, sub *Bryum atrovirens* Brid.). It was collected from a garden and therefore considered an alien species, leading El-Saadawi et al. (1999, 2003) to exclude it from the Egyptian catalogue. It was later reinstated for the country list by Ros et al. (2013) and El-Saadawi et al. (2015).

The locality Chellâl (today known as Shellal) is a small village on the banks of the Nile, near the island of Philae in the Aswan Low Dam, that belongs to the phytogeographical territory of Nile Nubia, and includes areas inundated by Lake Naser since 1965 (El-Saadawi et al. 2015). In this territory no species of *Bryum* Subsection *Apalodictyon* was previously reported.

Unfortunately, Sickenberger (1901) did not provide habitat information for his collections. However, Preston and Finch (2006), Blockeel et al. (2008) and Sérgio et al. (2019) indicate that *B. valparaisense* grows in habitats such as water lines, the vicinity of agricultural (often nitrogen-rich) fields, and grazing areas. All of these seem likely to be present in the Nile Valley and Nile Nubia areas. According to Blockeel et al. (2014), *B. valparaisense* is a hyperoceanic Southern-temperate element. It is known in Africa from Egypt, Libya and Sudan, and in Europe from S Portugal, S Spain, SW France, SW England, Greece, and the Canary Islands, and also in America from the western USA and Chile (Blockeel et al. 2014; Ellis et al. 2019).

Previous workers have suggested that *B. valparaisense* might be an introduced species in Europe (Preston and Finch 2006; Hill et al. 2006), and even in Africa (Pettet 1967) due to its affinity for agricultural and anthropogenic habitats. This assumption has been nevertheless rejected for the Greek occurrence (Blockeel 2010). However, Preston and Finch (2006) note that even if the species is an introduction, it was probably not done deliberately. The question remains open because it is a rather small, inconspicuous and easily overlooked plant and it is likely to be more frequent than the records suggest (Arts et al. 1995). Even considering that the Egyptian records in Nile Valley and Nile Nubia are older (February and March 1892) than the Chilean type of *B. valparaisense* (January 1915, Thériot 1917), the possibility of human transport into the fertile and heavily farmed area of the Nile valley remains. One might, for example, speculate that *B. valparaisense* was accidentally transported to the Nile valley along with *Gossypium barbadense* L., a New World cotton species known for its excellent fibre quality and now grown extensively in Egypt (Todou and Konsala 2011).

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References

- Arts T, Crundwell AC, Whitehouse HLK. 1995. *Bryum valparaisense* Thér. an earlier name for *B. pyriferum* Crundw. & Whiteh. Journal of Bryology. 18:797–801.
- Blockeel TL. 2010. The bryophytes of Greece: new records and observations, 2. Nova Hedwigia, Beiheft. 138:129–146.
- Blockeel TL, Abay G, Bakalin VA, Bednarek-Ochyra H, Ochyra R, Çetin B, Cykowska B, Fuertes E, Hespanhol H, Holyoak DT, et al. 2008. New national and regional bryophyte records, 19. Journal of Bryology. 30:231–237.
- Blockeel TL, Bosanquet SDS, Hill MO, Preston CD. 2014. Atlas of British & Irish Bryophytes. The distribution and habitat of mosses and liverworts in Britain and Ireland. Vol. 2. Berkshire: Pisces Publications.
- Crundwell AC, Nyholm E. 1964. The European species of the *Bryum erythrocarpum* complex. Transactions of the British Bryological Society. 4:597–637.
- Ellis LT, Afonina OM, Czernyadjeva IV, Ivchenko TG, Kholod SS, Kotkova VM, Kuzmina EY, Potemkin AD, Sergeeva YM, Asthana AK, et al. 2019. New national and regional bryophyte records 61. Journal of Bryology. 41:364–384.
- El-Hadidi MN. 2000. Geomorphology, climate and phytogeographic affinities of Egypt. Flora Aegyptiaca. 1:1–25.
- El-Hadidi MN, Fayed AA. 1994/1995. Materials for excursion flora of Egypt (EFE). Taekholmia. 15:1–233.
- El-Saadawi W, Badawi A, Shabbara HM, Abou Salama UY, Refai MSM. 1999. An updated list of Egyptian mosses. Taekholmia. 19:77–96.
- El-Saadawi W, Shabbara HM, Abou-Salama UY, Refai MS. 2003. Mosses of different phytogeographical territories of Egypt. Boccinea. 16:133–146.
- El-Saadawi W, Shabbara HM, Khalil MI, Taha MA. 2015. An annotated checklist of Egyptian mosses. Taekholmia. 35:1–23.
- Guerra M, Brugués M, Cano MJ, Cros RM, editors. 2010. Flora Briofítica Ibérica, Vol. 4, Funariales, Splachnales, Schistostegales, Bryales, Timmiales. Murcia: Universidad de Murcia, Sociedad Española de Briología.
- Hill MO, Bell N, Bruggeman-Nannenga MA, Brugués M, Cano MJ, Enroth J, Flatberg KI, Frahm J-P, Gallego MT, Garilleti R, et al. 2006. An annotated checklist of the mosses of Europe and Macaronesia. Journal of Bryology. 28:198–267.
- Hodgetts NG, Söderström L, Blockeel TL, Caspari S, Ignatov MS, Konstantinova NA, Lockhart N, Papp B, Schröck C, Sim-Sim M, et al. 2020. An annotated checklist of bryophytes of Europe, Macaronesia and Cyprus. Journal of Bryology. 42:1–116.
- Holyoak DT, Pedersen N. 2007. Conflicting molecular and morphological evidence of evolution within the Bryaceae (Bryopsida) and its implications for generic taxonomy. Journal of Bryology. 29:111–124.
- Imam M, Ghabbour SI. 1972. A contribution to the moss flora of Egypt. Botaniska Notiser. 125:518–522.
- Nyholm E. 1993. Illustrated flora of Nordic mosses, Vol. 3. Copenhagen and Lund: Nordic Bryological Society.

- Pedersen N, Holyoak DT, Newton AE. 2007. Systematics and morphological evolution within the moss family Bryaceae: A comparison between parsimony and Bayesian methods for reconstruction of ancestral character states. *Molecular Phylogenetics and Evolution*. 43:891–907.
- Pettet A. 1967. Bryophytes of the Sudan I. Khartoum Province. *Transactions of the British Bryological Society*. 5:316–331.
- Preston CD, Finch RA. 2006. *Bryum valparaisense* Thér. in the Isles of Scilly. *Journal of Bryology*. 28:118–122.
- Ros RM, Cano MJ, Guerra J. 1999. Bryophyte checklist of northern Africa. *Journal of Bryology*. 21:207–244.
- Ros RM, Mazimpaka V, Abou-Salama U, Aleffi M, Blockeel TL, Brugués M, Cros RM, Dia MG, Dirkse GM, Draper I, et al. 2013. Mosses of the Mediterranean, an annotated checklist. *Cryptogamie, Bryologie*. 34(2):99–283.
- Sérgio C, Bergamini A, Garcia C, Garilleti R, Infante M, Porley RD. 2019. *Bryum valparaisense*. The IUCN Red List of Threatened Species 2019: e.T83663347A87724775. Downloaded: 2020 February 27.
- Sickenberger E. 1901. Contributions a la Flore d’Égypte. *Memoires de l’Institut Égyptien*. 4:168–335.
- Smith AJE. 2004. *The Moss Flora of Britain and Ireland*. 2nd ed. Cambridge (UK): Cambridge University Press; p. 576–583.
- Stafleu FA, Cowan RS. 1981. Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types. Vol. 3: Lh-O, 2nd ed. The Hague: Bohn, Scheltema & Holkema and dr. W. Junk b.v. (Regnum Vegetabile; vol. 105).
- Tackholm V. 1974. *Student’s Flora of Egypt*. Beirut: Cairo University.
- Thériot I. 1917. Contribution à la flore bryologique du Chili. *Revista Chilena de Historia Natural*. 21:6–37.
- Todou G, Konsala S. 2011. *Gossypium barbadense* L. (record from PROTA4U). In: Brink M, Achigan-Dako EG, editors. PROTA (Plant Resources of Tropical Africa / Ressources végétales de l’Afrique tropicale). Wageningen, Netherlands. [accessed 2020 July 20]. <https://www.prota4u.org/database/protav8.asp?g=pe&p=Gossypium+barbadense+L>
- Turland NJ, Wiersema JH, Barrie FR, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Kusber W-H, Li D-Z, Marhold K, et al., editors. 2018. International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Glashütten: Koeltz Botanical Books. (Regnum Vegetabile; vol. 159).