

*On the nomenclature and identification of the exotic crass perennial *Crassula lycopodioides* var. *pseudolycopodioides**

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ABSTRACT: We propose the use of the name *Crassula muscosa* var. *muscosa* f. *pseudolycopodioides* Guillot, Laguna & Ferrer comb. nova, to refer the so-called *C. lycopodioides* Lam. var. *pseudolycopodioides* (Dinter & Schinz) Walth. ex Jacobsen. Apparently most citations of this taxon in Eastern Spain matches misidentifications of maybe new, undescribed cultivarities, often escaped and naturalized.

Keywords: *Crassula muscosa*, *Crassula lycopodioides*, *Crassula pseudolycopodioides*, Valencian Community, alien plants

RESUMEN: Se propone el uso del nombre *Crassula muscosa* var. *muscosa* f. *pseudolycopodioides* Guillot, Laguna & Ferrer f. nova, para designar a *C. lycopodioides* Lam. var. *pseudolycopodioides* (Dinter & Schinz) Walth. ex Jacobsen. Aparentemente la mayoría de citas de este taxon para el Este de España corresponden a atribuciones erróneas de posibles nuevas cultivariedades aún no descritas, a menudo escapadas de cultivo y naturalizadas.

Palabras clave: *Crassula muscosa*, *Crassula lycopodioides*, *Crassula pseudolycopodioides*, Comunidad Valenciana, plantas alóctonas

ON THE NAME *CRASSULA LYCOPODIOIDES* Lam.

Crassula lycopodioides Lam. has been referred as exotic, escaped from culture and maybe invasive plant in the Valencian Community, Eastern Spain (Guillot & al., 2008; Sanz & al., 2011). One of its infraspecific taxa also indicated as alien plant for the same territory is *C. lycopodioides* var. *pseudolycopodioides* (Guillot & al., 2008; Guillot, 2010). Apparently this name has been used for for most horticulturists and crass-plant lovers as a variety of the Southern African dwarf shrub *Crassula lycopodioides* Lam., bearing open, obtuse-angled short branches (pers. obs.). Jacobsen (1954: 319) recognised this variety, formally described afterwards as var. *pseudolycopodioides* (Dinter & Schinz) Walth. ex Jacobsen in *Kakteen* 6: 148 (1955), whose basonym was *C. pseudolycopodioides* Dinter & Schinz in Dinter, *Deut. Südw. Afrik.*: 71 (1909), an accepted synonym is *Combesia muscosa* var. *pseudolycopodioides* (Dinter & Schinz) P.V. Heath in *Calyx* 3: 122 (1993). We have not found other valid nomenclatural combinations for this taxon. Amongst other, this variety was illustrated by Graf (1963: 669). Unfortunately most current pictures available at the internet under this name could really match other varieties (pers. obs.).

Although the species is native from Southern Africa, and the name *C. lycopodioides* proposed by Lamarck in 1786 is still largely used by fo-

reign authors and horticulturists worldwide, the South African botanists have rejected its use (Gibbs Rusell & al., 1987; Tölken, 1977, 1985; Germishuizen & Meyer, 2003); both projects 'Tropicos' (MBG, 2012) and 'The Plant List' (TPL, 2012) refuse it in favour to *C. muscosa* L. Following their treatment, the correct name for this perennial, chamaephytic species is:

Crassula muscosa L., *Pl. Rar. Afr.*: 10 (1760);
≡ *Combesia muscosa* (L.) P.V. Heath in *Calyx* 3(4): 121 (1993)
= *Tetraphyle muscosa* (L.) Eckl. & Zeyh, *Enum. Pl. Afr. Austral.* 3: 294 (1837), p.p.
= *Crassula lycopodioides* Lam., *Encycl.* 2(1): 173 (1786)

The use of the name *C. muscosa* has been erroneously forgotten by most botanists and horticulturists worldwide, maybe trying to avoid its confusion with *Tillaea muscosa* L., an annual plant initially described from Europe:

Crassula tillaea Lest.-Garl., *Fl. Jersey*: 87 (1903)
= *Tillaea muscosa* L., *Sp. Pl.*: 129 (1753) [= *Crassula muscosa* (L.) Roth, *Enum. Pl. Phaen. Germ.* 1: 994 (1827), nom illeg., non L.; *C. muscosa* sensu Harv., *Fl. Cap.* 2: 351 (1862)]

Both species, *Crassula muscosa* (perennial, native from Southern Africa) and *Tillaea muscosa* (annual, having a wide range of distribution

but initially indicated for Southern Europe) where clearly described by Linnaeus, placing them in different genera. However, several revisions added a lot of confusion on the use of this two names when the annual plant was preferably accepted as a member of the genus *Crassula* instead of *Tillaea* (see i.e. Harvey, 1862; Bywater & Wickens, 1984). Between others, a main confusion lays on the Cape's prodromus of Harvey (1862: 351), which considered that the Linnaeus' *C. muscosa* and *Tetraphyle muscosa* were proposed to describe the therophytic species -really proposed as *Tillaea muscosa* L. This confusion generated new wrong interpretations; for instance, the Tropicos Database Webpage (MBG, 2012) even shows pictures of *Crassula muscosa* L. to illustrate *C. tillaea* [= *Crassula muscosa* (L.) Roth, based on *Tillaea muscosa* L. instead of *C. muscosa* L.] (<http://www.tropicos.org/Name/8901388>).

Additional wrong uses such as the illegitimate names *C. muscosa* auct., non L. or *T. muscosa* auct., non L, have added much more confusion on this topic, i.e. *Tillaea muscosa* Gay, *Fl. Chil.* 2: 529 (1847), nom illeg. [= *Crassula connata* (Ruiz & Pav.) A. Berger & al., *Nat. Pflanzfam.* (ed. 2) 18a: 389 (1930) var. *muscooides* M. Bywater & Wickens in *Kew Bull.* 39(4): 726 (1984)]. In other cases, proposals for the name *T. muscosa* have been wrongly attributed to authors which really did not propose them, but only cited the Linnaean *Tillaea muscosa*. In this way, some databases include amongst their homonyms *Tillaea muscosa* Forster, *Fl. Ins. Austr.*: 11 (1786), but this author only referred the name appearing in the 14th edition of the Linnaeus' *Systema Vegetabilium* (Murray, 1784: 170), which in fact matches *Tillaea muscosa* L.

We must remark that the current taxonomic lists for the Valencian Community propose *Crassula muscosa* L. as a priority name for this cultivated and often wilded shrub (Mateo & Crespo, 2009; Mateo & al., in press.) instead of the traditional use of its synonym *C. lycopodioides* Lam. (i.e. Castroviejo, 1997). In the same way, the main Spanish compilation of cultivated plants (Sánchez de Lorenzo, 2003) also gives priority to the correct name *C. muscosa*.

THE IDENTITY OF CRASSULA PSEUDOLYCOPODIOIDES

For the main current taxonomic databases as Missouri Botanical Gardens' Tropicos and The Plant List, *C. pseudolycopodioides* should be considered as a synonym of *C. muscosa* L. var. *muscosa*, showing not enough differences to be recognised as a good taxon at varietal or supra-varietal level. This opinion follows the revision

made by Tölken (1985). This author did not find enough differences to add value to the taxon initially proposed by Dinter and Schinz.

If major differences –morphological traits, ecology, separated areas- could be found in a future after a fine study made *in situ* on the native areas of *C. muscosa* var. *muscosa* and the formerly named *C. pseudolycopodioides*, the proposal of a new combination *C. muscosa* var. *pseudolycopodioides* should be encouraged. In our opinion, that proposal should be made of course by the local botanists in southern Africa.

The description of *C. pseudolycopodioides* made by K. Dinter and H.R. Schinz (Dinter, 1909: 71), translated from German into English says: '*mainly differs from the above [referred to *C. lycopodioides* Lam.] by the presence of many secondary branches*'. Afterwards the authors completed the description with a second note published by Dinter (1919: 243), enclosing the clear reference to a new species therein described: '*Differs from *Cr. lycopodioides* by burly stature and very numerous buds in the leaf axils*'. The type locality is the Tsirub Pass placed at SW Namibia, matching the NW border of the distribution area for *C. muscosa* var. *muscosa*.

The correct characters for the typical *C. pseudolycopodioides* plants have been recorded by Guillot & al. (2008: 35) following the descriptions made by Dinter (1909, 1919) and Jacobsen (1954): plants like typical *C. muscosa* var. *muscosa* but being more robust, thicker stems, obtuse and greyish green leaves, abundant short stems or buds on the leaf axils. Some of these characters have been indicated by Tölken (1985) as common traits for the NW populations of *C. muscosa* var. *muscosa*. Apparently the formerly called *C. pseudolycopodioides* must be interpreted as an extreme form of *C. muscosa* var. *muscosa* living on its Northernmost border.

Guillot & al. (op. cit.) propose that those cultivated plants usually grown and escaped in Eastern Spain named '*pseudolycopodioides*', could be enclosed into f. *pseudolycopodioides* Hort. (Guillot & al., op. cit.); however, this 'form' has not been formally described -both considering the International Codes for Botanical Nomenclature ICBN and for Cultivated Plants ICNCP-, and its use is apparently incompatible with the ICBN, adding much more mess to this topic. In a more correct way, if those cultivated or wilded forms in Eastern Spain are not correctly matching the above indicated characters, they should be described as new forms, both obtained in culture and generated in wild out of the original area of *C. muscosa*.

PROPOSALS FOR CORRECTION OF MISINTERPRETATIONS

Waiting for a fine revision of the species variability to be made *in situ* by the local specialists in Southern Africa, we propose to recombine the taxonomic level for this taxon as:

Crassula muscosa* var. *muscosa* f. *pseudolycopodioides (Dinter & Schinz) Laguna, Ferrer & Guillot *comb. nova*
≡ *Crassula pseudolycopodioides* Dinter & Schinz in Dinter, *Deut. Südw. Afrik.*: 71 (1909) [basyonym]

For the so-called ‘*pseudolycopodioides* Hort.’ plants, not exactly matching the characteristics of this described by Dinter and Schinz, we propose to rename as new cultivarities them after an accurated future study, following the International Code of Nomenclature for Cultivated Plants. Due to the plant facilities for propagation after buds or cuttings, which maintain the external characters of each cultivar, they could be fully described following the ICNCP rules, retaining samples of the initial clones in nurseries of horticultural enterprises.

BIBLIOGRAFÍA

- BYWATERS, M. & G.E. WICKENS. (1984). New world species of the genus *Crassula*. *Kew Bull.* 39(4): 699-728.
- CASTROVIEJO, S. (coord.). (1997). *Flora Iberica*. vol. V. Real Jardín Botánico-CSIC. Madrid.
- DINTER, K. (1909). *Deutsch-SüdWest-Afrika Flora, Forst und land-wirtschaftliche Fragmente*. T.O. Weigel. Leipzig.
- DINTER, K. (1919). Index, der aus Deutsch-Südwestafrika bis zum 1917 bekaant gewordenen Pflanzenarten, V. *Repert. Spec. Nov. Regni Veget.* 16: 239-244.
- FORSTER, J.G.A. (1786). *Florae Insularum Australium Prodromus*. J.Ch. Dieterich. Gottingen.
- GERMISHUIZEN, G. & N.L. MEYER. (2003). *Plants of southern Africa: An annotated checklist*. National Botanical Institute. Pretoria.
- GIBBS RUSELL, G.E., W.G. WELMAN, E. REITIEF, K.L. IMMELMAN, G. GERMISHUIZEN, B.J. PIENAAR, M. VAN WYK & A. NICHOLAS. (1987). List of species of Southern African plants. *Mem. Bot. Surv. S. Africa* 2(1-2): 1-152 (pt. 1) & 1-270(pt. 2).
- GRAF, A. B. (1963) *Exotica. Pictorial Cyclopaedia of Exotic Plants*. Library of Congress, USA. Washington.
- GUILLOT, D. (2010) The first cultivar database in Spain. *Journ. Horticul. Forestry* 2: 196-213.
- GUILLOT, D., E. LAGUNA & J.A. ROSELLÓ. (2008) *La familia Crassulaceae en la flora alóctona valenciana*. Monografías Bouteloua vol. 4. Valencia.
- HARVEY, W.H. (1862). *Crassula*. In HARVEY, W.H. & O.W. SONDER (eds.): *Flora Capensis*, vol. 2.: 352-368. Hodges, Smith & Co (Dublin) and A.S. Robertson (Cape Town).
- JACOBSEN, H. (1954) *Handbuch der sukkulenten Pflanzen*. Veb Gustav Fischer Verlag. Jena.
- MATEO, G. & M.B. CRESPO. (2009). *Manual para la determinación de la flora valenciana*. 506 pp. 4ª ed. Librería Compas. Alicante.
- MATEO, G., M.B. CRESPO & E. LAGUNA (eds.). (en prensa). *Flora Valentina*, vol. 2. Fundación de la Comunidad Valenciana para el Medio Ambiente. Valencia.
- MBG (2012) TROPICOS Database. Missouri Botanical Garden (MBG). Accessed at the internet May, 12th, 2012. <http://www.tropicos.org/>
- MURRAY, J.A. (ed.). (1784). *Caroli a Linné equitis Systema Vegetabilium secundum classes, ordines, genera, species cum characteribus et differentiis. Editio decima quarta*. J.Ch. Dieterich. Gottingen.
- SÁNCHEZ DE LORENZO, J.M. (2003). *Flora Ornamental Española* vol. III. Mundi-Prensa. Madrid.
- SANZ, M., D. GUILLOT & V. DELTORO. (2011). La flora alóctona de la Comunidad Valenciana. *Botanica Complutensis* 35: 97-130.
- TÖLKEN, H.R. (1977). A revision of the genus *Crassula* in Southern Africa. *Contrib. Bolus Herb.* 8: 1-560.
- TÖLKEN, H.R. (1985) *Crassulaceae. Flora of Southern Africa, vol. 14*. Accessed at the internet September, 16th, 2012. <http://posa.sanbi.org/flora/browse.php?src=FloraSA>
- TPL (2012) ‘*The Plant List*’. The Plant List (TPL) project. Accessed at the internet May, 12th, 2012 <http://www.theplantlist.org/tpl/search?q=crassula+lycopodioides>

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