



<https://doi.org/10.11646/phytotaxa.575.2.8>

## Typification of the name *Linum setaceum* (Linaceae)

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### Abstract

The typification of *Linum setaceum* (Linaceae), is discussed. The designation of the nomenclatural type is based on an assessment of Brotero's original elements and the literature cited in the protologue. The name is lectotypified using an illustration published in the protologue and an epitype is also selected.

**Keywords:** Brotero, epitype, lectotype, *Linum*, nomenclature, original material

### Introduction

*Linum* Linnaeus (1753: 277) is the most diverse genus in the family *Linaceae* DC. ex Perleb (1818: 107), comprising about 230 species distributed in the temperate regions of the World (Mediterranean region, South Africa, southern North America, Mexico, and South America) (Winkler 1931, Rogers 1982, Diederichsen & Richards 2003, Mabberley 2008).

*Linum setaceum* Brot. is a species distributed in S and W Iberian Peninsula and NW Morocco (Ockendon & Walters 1968, Martínez Labarga & Muñoz Garmendia 2015). This annual plant grows in grasslands and clearings in Mediterranean shrub vegetation. An extensive discussion of the differences between this species and the related *Linum flos-carmini* Ruiz-Martín *et al.* (= *L. setaceum* var. *bicolor* f. *robusta* Maire) was published by Ruiz-Martín *et al.* (2015).

The purpose of this paper is to lectotypify the name *Linum setaceum*. The designation of the type is based on an assessment of Brotero's original material and the literature cited in the protologue. This work is part of the taxonomic and nomenclatural studies of the genus *Linum* for the *Flora iberica* project (see Ferrer-Gallego 2014, Martínez Labarga & Muñoz Garmendia 2015, Martínez Labarga & Ferrer-Gallego 2020; Ferrer-Gallego & Martínez Labarga 2022).

### Typification of the name *Linum setaceum*

Brotero's protologue (1800: 43–44) of *Linum setaceum*, numbered “21” in the *Phytographia Lusitaniae selectior*, consists of a diagnosis in Latin “L. [Linum] Caule dichotomo-paniculato, in anthesi erecto: foliis acuminatis, setaceis, subserrato-scabris, congestis, subverticillatis; calycis foliolis ovato-lanceolatis, infra medium ciliatis” followed by an indication to an illustration “Vide Tab. VI.”, three polynomial synonyms: “L. Lusitanicum capillaceo folio” cited from Tournefort (1719: 300 [recte 340]), “L. sylvestre supinum flore luteo exiguo” cited from Grisley (1749: 891 [recte 57]), and “Linum sylvestre asperum, virgatum, sparsis ramulis, minus” with a question mark, also cited from Grisley (1749: 897 [recte 57]); and a complete morphological description in Latin. Brotero added in the protologue the provenance “Habitat in collibus calcareis prope Coninbricam”.

The references cited in the protologue (Tournefort 1719, Grisley 1749) do not have any illustrations of this species.

Fortunately, an excellent illustration was included in the protologue (Brotero, 1800: Tab. VI) that can be considered as original material used by Brotero to describe *Linum setaceum*. The drawing illustrates a complete plant (figures 1 [caules tres ex eadem radice; intermedio vegetiori (see Brotero, 1800: 76)] and 2 [panicula caulis intermedii]), with leaves, flowers and fruits, and several details of the leaves (figures a [folia caulina] and b [folia ramea]) and flowers (figures c [duo petala corollae], d [germen et stamina quinque], e [pistilli germen et quinque styli cum suis stigmatibus], and f [capsula matura]).



**FIGURE 1.** Lectotype of *Linum setaceum* Brotero, illustration of Brotero (1800: tab. VI) “*Linum setaceum*”.

On the other hand, we have found a specimen in the Candolle herbarum at G-DC (with barcode G00213915) that bears a specimen of *Linum setaceum* collected (apparently) by Brotero (image available at <https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=214562&base=img&lang=en>). The sheet bears four plants, with leaves and flowers, and three labels: “81. / *Linum tenuifolium* Brotero / à Mauritanîâ” [handwritten by Candolle], “*Linum setaceum* [handwritten by Candolle] / Brotero [handwritten by Brotero] / m. Brotero / 1808 [handwritten by Candolle]”, and



“*Linum setaceum*. Bort. [handwritten by Candolle]”. However, this specimen cannot be treated as original material of *Linum setaceum* because it lacks any link to the protologue and is annotated with a date post-protologue. We have been unable to locate any further original material.



**FIGURE 2.** Epitype of *Linum setaceum* Brotero, COI (barcode COI00097174). Photograph courtesy of the herbarium COI, reproduced with permission.

In conclusion, the illustration published by Brotero (1800: Tab. VI) is the (obligate) lectotype of *Linum setaceum* (Fig. 1), and therefore we designate it as such. However, unfortunately the lectotype does not show the most relevant diagnostic characters to distinguish *L. setaceum* from other related species, e.g., *L. flos-carmini* or *L. setaceum* var. *bicolor*. *Linum setaceum* has sepals with the margin fimbriate in the lower half, yellow petals which are weakly nerved, and homostylous flowers (anthers and stigmas positioned at the same height) and *L. flos-carmini* has sepals with the margin fimbriate to glandulose-ciliate in the lower half, yellowish-whitish petals with purple nerves towards the base, and heterostylous flowers with two morphs, long-styled or pin flowers with stigmas above the anthers, and short-styled or thrum flowers with stigmas below the anthers (Ruiz-Martín *et al.* 2015). On the other hand, the North African forms called *L. setaceum* var. *bicolor* (Schoubs. ex DC.) Maire ( $\equiv$  *L. bicolor* Schoubs. ex DC.; lectotype preserved at GOET) show yellow petals turning purplish-bluish toward the base. Unfortunately, these characters are not present in the illustration published by Brotero (1800: tab. VI), and the illustration cannot be unambiguously interpreted to differentiate the name *L. setaceum* from *L. flos-carmini* or *L. setaceum* var. *bicolor*.

Consequently, for a precise identification of the name *Linum setaceum*, an epitype has been selected according to Art. 9.9 of the *ICN* (Turland *et al.* 2018). The epitype selected is a complete and well-preserved specimen collected in Coimbra (monte do Brasfemes) and is preserved at COI (with barcode COI00097174; see Fig. 2). This specimen shows the relevant diagnostic features, and it clearly represents the traditional concept of this name (Brotero 1800) and reflects current application of *Linum setaceum* (see e.g., Ockendon & Walters 1968, Martínez Labarga & Muñoz Garmendia 2015, Ruiz-Martín *et al.* 2015).

*Linum setaceum* Brotero (1800: 43)

**Lectotype (designated here):**—[illustration] “*Linum setaceum*” in Brotero (1800: tab. VI), see Fig. 1.

**Epitype (designated here):**—[PORTUGAL], Beira Litoral, Coimbra, monte do Brasfemes, 16 May 2011, *T. Antunes s.n.*, COI (barcode COI00097174), see Fig. 2.

## Acknowledgements

Thanks to Félix Muñoz Garmendia, Filipe Covelo (COI) and Joaquim Santos (COI) for assistance in the study of the herbarium sheets.

## References

- Brotero, F. de A. (1800) *Phytographia Lusitaniae selectior, seu novarum et aliarum minus cognitarum stirpium, quae in Lusitania sponte veniunt, descriptiones*. Typographia domus chalcographicae, typoplasticae, ac litterariae ad Arcum Caeci, Olissipone, [i–viii], 1–73 p., [75–76, “Explicatio tabularum...”, 77–79, “Index plantarum...”], 8 h. de lám. calc. [Tab. I–VIII].
- Diederichsen, A. & Richards, K. (2003) Cultivated flax and the genus *Linum* L. Taxonomy and germoplasm conservation. In: Muir, A. & Westcott, N. (Eds.) *Flax: the genus Linum*. Taylor & Francis Ltd. London, pp. 22–54.
- Ferrer-Gallego, P.P. (2014) Tipificación de dos nombres linneanos del género *Linum* L.: *L. maritimum* y *L. narbonense* (Linaceae). *Boletín de la Real Sociedad Española de Historia Natural. Sección Biológica* 108: 103–106.
- Ferrer-Gallego, P.P. & Martínez Labarga, J.M. (2022) Effective typification of the name *Linum austriacum* var. *collinum* (Linaceae), and its synonym *L. immaculatae*. *Phytotaxa* 536 (3): 287–293.  
<https://doi.org/10.11646/phytotaxa.536.3.9>
- Grisley, G. (1749) *Viridarium Lusitanum in quo Arborum, fruticum, & herbarum differentiae onomasti insertae, quas ager Ulyssiponensis ultra citraque Tagum ad trigesimum usque lapidem profert*. Ex praelo Antonii Craesbeeck, Veronae, 110 pp. [<https://bibdigital.rjb.csic.es/records/item/13578-viridarium-lusitanum>]
- Linnaeus, C. (1753) *Species Plantarum* 1. Laurentius Salvius, Stockholm, 1200 pp.
- Mabberley, D.J. (2008) *Mabberley's Plant-book. A portable dictionary of plants, their classification and uses*. 3rd ed. Cambridge University Press, Cambridge, 1019 pp.
- Martínez Labarga, J.M. & Ferrer-Gallego, P.P. (2020) Taxonomic and nomenclatural notes on African *Linum squarrosum* sensu lato (Linaceae). *Phytotaxa* 439 (2): 127–135.  
<https://doi.org/10.11646/phytotaxa.439.2.3>
- Martínez Labarga, J.M. & Muñoz Garmendia, F. (2015) *Linum* L. In: Muñoz Garmendia, F., Navarro, C., Quintanar, A. & Buira, A. (Eds.)

- Flora iberica*, vol 9. Real Jardín Botánico, CSIC, Madrid, pp. 173–266.
- Ockendon, D.J. & Walters, S.M. (1968) Linaceae. In: Tutin, T.G., Heywood, V.H., Burges, N.A., Valentine, D.H., Walters, S.M. & Webb, D.A. (Eds) *Flora Europaea*, vol. 2. Cambridge University Press, Cambridge, pp. 589–603.
- Perleb, K.J. (1818) *Versuch über die Arzneikräfte der Pflanzen, verglichen mit den äußeren Formen und der natürlichen Classeneintheilung derselben [a German translation of Augustin Pyramus de Candolle's Essai sur les Propriétés médicales des Plantes comparées avec leur classification naturelle]*. Aarau, Sauerländer, 397 pp.
- Rogers, C.M. (1982) The systematics of *Linum* sect. *Linopsis* (Linaceae). *Plant Systematics & Evolution* 140: 225–234.  
<https://doi.org/10.1007/BF02407299>
- Ruiz-Martín, J., Jiménez-Mejías, P., Martínez Labarga, J.M. & Pérez-Barrales, R. (2015). *Linum flos-carmini* (Linaceae) a new species from northern Morocco. *Annales Botanici Fennici* 52 (3–4): 383–395.  
<https://doi.org/10.5735/085.052.0521>
- Tournefort, J.P. (1719) *Institutiones Rei herbariae, Tomus I*. Typographia regia, Paris, [i–vi], [i]–xxxii, [i–xvi], [1]–695, [i–viii], [1]–58 p.  
<https://doi.org/10.5962/bhl.title.153849>
- Turland, N.J., Wiersema, J.H., Barrie, F.R., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Kusber, W.-H., Li, D.-Z., Marhold, K., May, T.W., McNeill, J., Monro, A.M., Prado, J., Price, M.J. & Smith, G.F. (Eds.) (2018) *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile 159. Glashütten: Koeltz Botanical Books.  
<https://doi.org/10.12705/Code.2018>
- Winkler, H. (1931) *Linaceae*. In: Engler, H.G.A. & Prantl, K.A.E. (Eds.) *Die Natürlichen Pflanzenfamilien* 19a. Engelmann, Leipzig, pp. 82–130.