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## Effective typification of the name *Linum austriacum* var. *collinum* (Linaceae), and its synonym *L. immaculatae*

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### Abstract

The typification of the name *Linum austriacum* subsp. *collinum* is revisited. The name was “lectotypified” from a specimen kept at BM. This type designation is briefly discussed and superseded because was being contrary to Art. 9.3 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). In this work, all relevant specimens are carefully evaluated for the purpose to fix the application of the name. We have chosen and designated the best admissible lectotype for this name from the original material. In addition, the lectotype of the name *Linum immaculatae*, currently treated as a synonym of *Linum austriacum* subsp. *collinum*, is designated from a specimen preserved at MA.

**Keywords:** lectotype, *Linum collinum*, nomenclature

### Introduction

*Linaceae* DC. ex Perleb (1818: 107) comprises 22 genera (Vromans 2006) and approximately 300 species (Hickey 1988, Heywood 1993, McDill *et al.* 2009, McDill & Simpson 2011). The most diverse genus in this family is *Linum* Linnaeus (1753: 277), with 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). The Mediterranean area is one of the main centres of diversity for this genus and harbours about 75 species (Greuter *et al.* 1989). The genus has economic importance, especially the common flax, *L. usitatissimum* Linnaeus (1753: 277), which is cultivated for the seed (flax oil) and for fibre production (Baytop 1999, Pengilly 2003).

*Linum austriacum* var. *collinum* was described by Boissier (1869: 864). This taxon is distributed from western to southern Europe, and it is very polymorphous (Ockendon & Walters 1968, Ockendon 1968, 1971). Currently this taxon is treated with subspecific rank, as *L. austriacum* subsp. *collinum* (Gussone ex Boissier) Nyman (1878: 125) (e.g. Martínez Labarga & Muñoz Garmendia 2015, WFO 2021). The “lectotype” of *L. austriacum* subsp. *collinum* was mentioned by Ockendon (1971: 212) from a specimen preserved at BM. However, as was mentioned by Martínez Labarga & Muñoz Garmendia (2015: 195), this specimen at BM (barcoded BM000751441) is not part of the Boissier’s original material of *Linum austriacum* subsp. *collinum*, or at least is not part of the material mentioned in the protologue. In this sense, as there are several original material cited by Boissier in the protologue (syntypes), Ockendon’s (1971: 212) “type designation” should be replaced because it is contrary to Art. 9.3 (and probably also to Art. 9.12) of the International Code of Nomenclature for algae, fungi, and plants (Turland *et al.* 2018).

As part of the taxonomic studies of the genus *Linum* for the *Flora iberica* project (See Ferrer-Gallego 2014, Martínez Labarga & Muñoz Garmendia 2015, Martínez Labarga & Ferrer-Gallego 2020), the nomenclatural types of *Linum austriacum* subsp. *collinum* and its synonym *Linum immaculatae* Sennen (1926: n° 5679) are discussed. The names in current use are set in bold italics typeface. Acronyms of the herbaria consulted are according to Thiers (2022 [continuously updated]).



FIGURE 1. Specimen of *Linum austriacum* var. *collinum* Gussone ex Boissier preserved at BM (barcode BM000751441). Photograph courtesy of the herbarium BM, reproduced with permission.



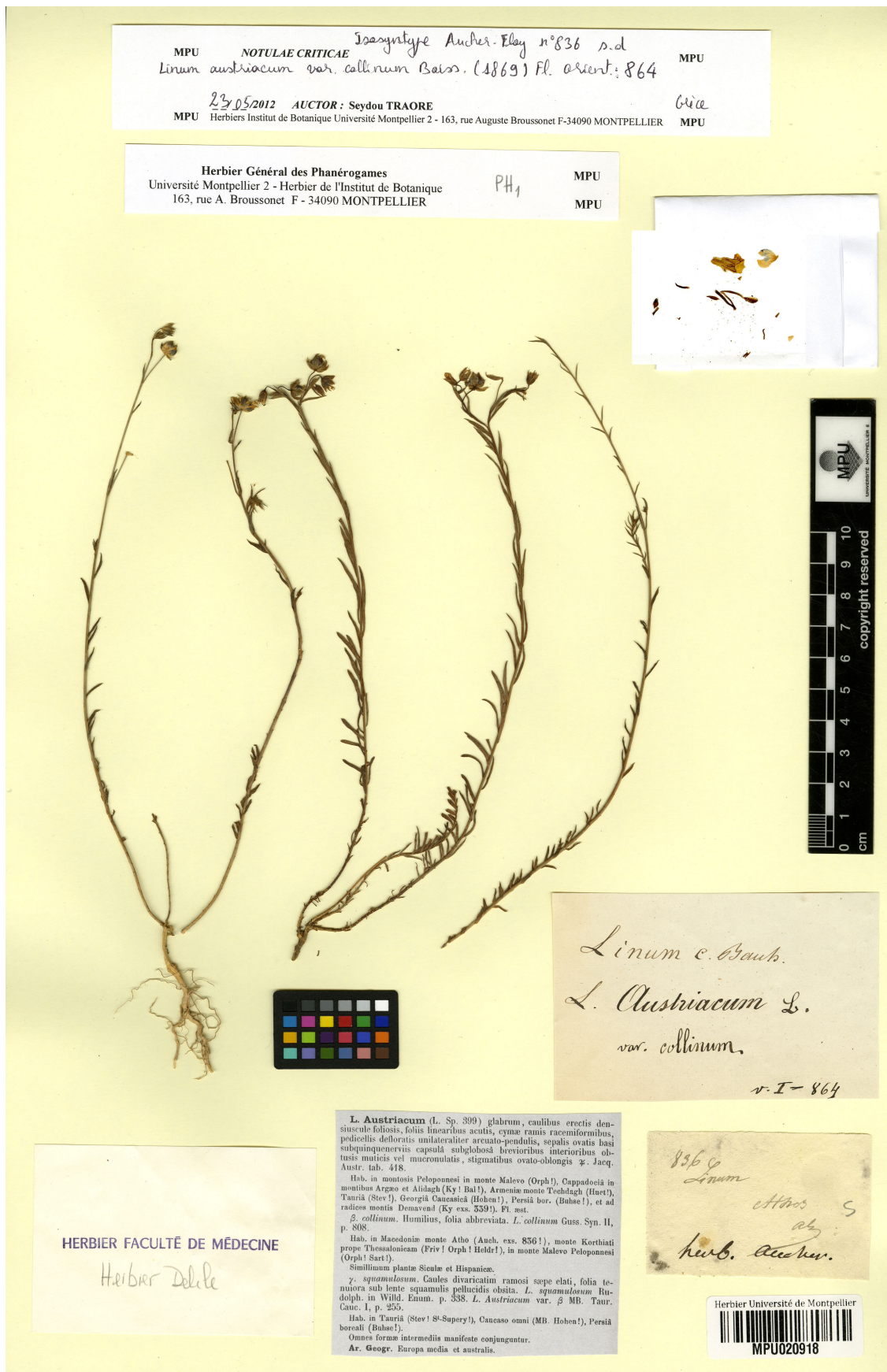


FIGURE 2. Lectotype of *Linum austriacum* var. *collinum* Gussone ex Boissier, MPU (barcode MPU020918), the lectotype is the fragment plant mounted on the middle of the sheet. Photograph courtesy of the herbarium MPU, reproduced with permission.



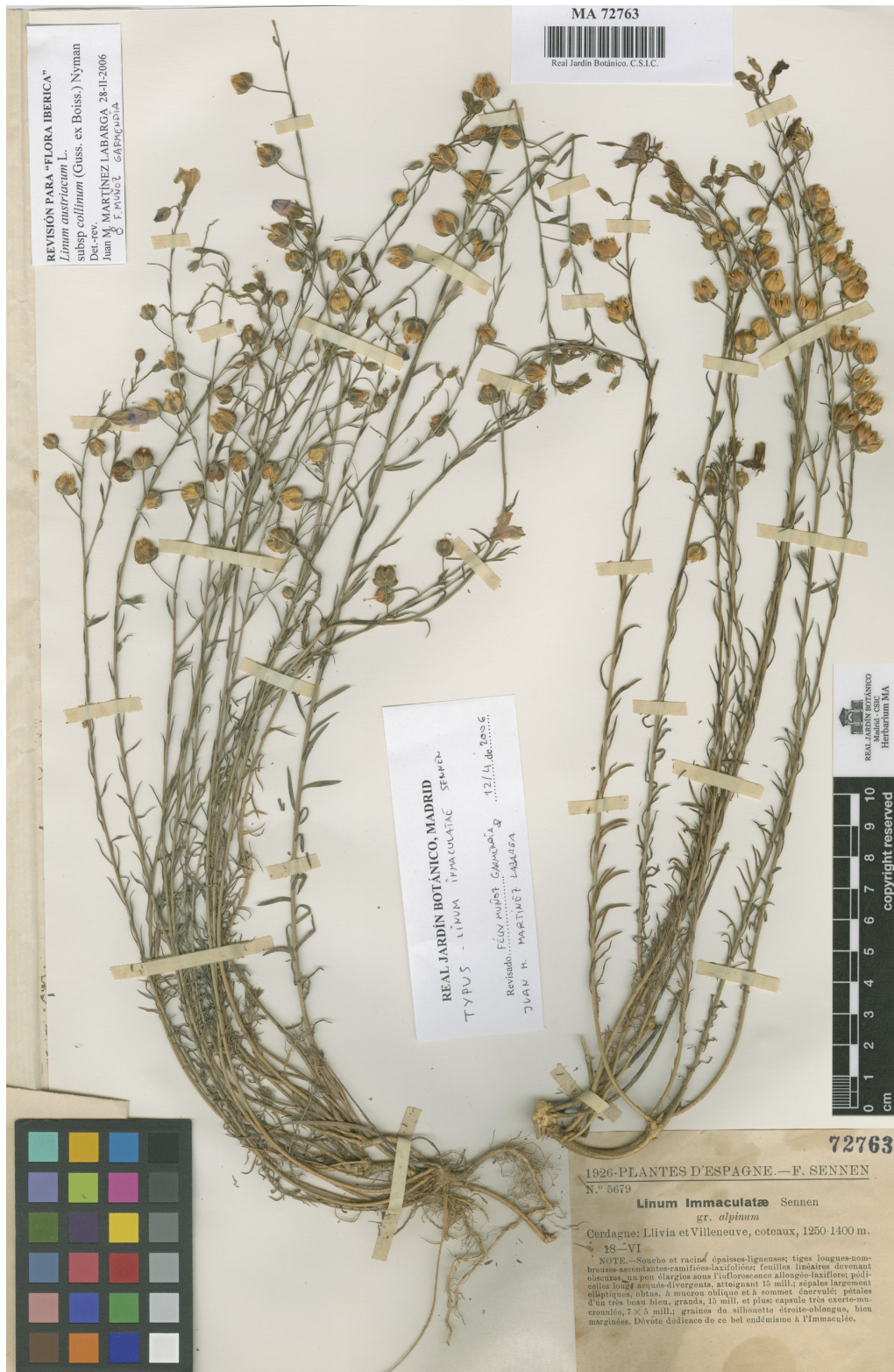


FIGURE 3. Lectotype of *Linum immaculatae* Sennen, MA (barcode MA72763). Photograph courtesy of the herbarium MA, reproduced with permission.

### Typification of the name

Boissier's protologue (1869: 864) of *Linum austriacum* [β] var. *collinum* consists of a very brief morphological description in Latin: "Humilius, folia abbreviata", followed by the name "L. collinum Guss. Syn. II, p. 808", and

the provenance “Hab. in Macedoniae monte Atho (Auch. exc. 836!), monte Korthiati prope Thessalonicam (Friv! Orph! Heldr!), in mont Malevo Peloponnesi (Orph! Sart!), and finally the comment “Simillimum plantae Siculae et Hispanicae”.

The specimen mentioned by Ockendon (1971: 212) as the “lectotype” of *Linum austriacum* subsp. *collinum*, now barcoded BM000751441 (Fig. 1), bears four stems, with leaves and flowers, and a handwritten label “Linum collinum Guss. / – perenne pr. fl. sic. non Lin. / pedunculis fructiferis prope reflexi. / Sicilia / [Gussone!]”, and two printed labels, a revised label “Revised for Flora Europaea vol. 2 / Linum austriacum L. / subsp. collinum Nyman / Det. D.J. Ockendon / 1969”; the other one label is annotated as “Type specimen”. Unfortunately, this designation is ineffective according to Art. 9.3 of *ICN* because it is not part of the original material used by Boissier to describe this plant.

Among the original material of *Linum austriacum* var. *collinum*, in the MPU herbarium there is a relevant sheet, with barcode MPU020918 (Fig. 2). This sheet bears three plant fragments, with leaves, and two of these fragments also with flowers. The sheet bears two handwritten labels; the first label is annotated “Linum c. Bauh. / L. Austriacum L. / var.collinum. / V-I-864”, and the second label is annotated as “836 / Linum / Athos / herb. Aucher”. In addition, the sheet bears a printed label that includes the text published by Boissier with the protologue of *L. austriacum* var. *collinum*. This material was mentioned by Boissier in the protologue as “Hab. in Macedoniae monte Atho (Auch. exc. 836!)”, therefore is part of the original material and can be treated as a syntype.

However, the sheet bears at least two species, the fragment plant mounted on the left of the sheet can be identified as belonging to *Linum bienne* Miller (1768) [= *L. angustifolium* Hudson (1778: 134); *L. usitatissimum* subsp. *angustifolium* (Huds.) Thellung (1912: 361)]. On the other hand, the fragment plant mounted on the right of the sheet is only a stem with leaves but no flowers, and therefore the identification is very difficult. Finally, the fragment plant mounted on the middle of the sheet is identified as belonging to *L. austriacum* subsp. *collinum*.

We have not been able to locate any further original material for the name *Linum austriacum* subsp. *collinum*. We designate as the lectotype of the name *Linum austriacum* subsp. *collinum* the fragment plant mounted on the middle of the sheet preserved at MPU, with barcode MPU020918. This specimen is the most complete and informative original material, it matches the protologue, the traditional concept, and corresponds to the taxon as currently delimited (Ockendon & Walters 1968, Ockendon 1971, Martínez Labarga & Muñoz Garmendia 2015).

*Linum austriacum* [β] var. *collinum* Gussone ex Boissier (1869: 864)

≡ *Linum austriacum* subsp. *collinum* (Gussone ex Boissier) Nyman (1878: 125)

≡ *Linum collinum* Haussknecht (1893: 60)

≡ *Linum perenne* var. *collinum* (Nyman) O.Bolòs & Vigo (1974: 81)

≡ *Linum alpinum* subsp. *collinum* (Guss. ex Boiss.) J.-M.Tison (2010: 124)

**Type (lectotype, designated here):**—[GREECE], Athos, [in protologue: “Hab. in Macedoniae monte Atho”], 1 May [1]864, *P.M.R. Aucher-Eloy 836*, MPU (barcode MPU020918!) [the lectotype is the fragment plant mounted on the middle of the sheet] (image available at <https://herbier.umontpellier.fr/zoomify/zoomify.php?fichier=MPU020918>) (Fig. 2).

= *Linum immaculatae* Sennen (1926: n° 5679) [in sched]

**Type (lectotype, designated here):**—[SPAIN], “Cerdagne: Llivia et Villeneuve, coteaux, 1250-1400 m.”, 18 Jun. 1926, F. Sennen n° 5679 [Exsiccata “Plantes d’Espagne”], MA barcode (MA72763!) (Fig. 3); isolectotypes: BC barcodes (BC983360! and BC983361!), BCN (barcodes BCN 25145! (ex BCF) and BCN 25146! (ex BCC)), MA (barcode MA471208!), MAF (barcode MAF59987!), PH (barcode PH00015290!).

–*L. collinum* Gussone (1844: 808), nom. inval., nom. prov. (*ICN* Art. 36.1)

**Note:**—Gussone (1844: 808) included in “*Linum austriacum*” this comment: “Ic. Adenolinum austriacum. *Reich. cent. 46 f. 5456*. In descriptione lege: *filamenta* divergentia, *stylis* erectis albidis duplo breviora!, calycem aequantia, basi coerulescentia; *antheris* viridulis. In planta sicula folia omnia pellucido-punctata et tuberculata, multo angustiora ac tenuiora (nam fere filiformia), quam in planta austriaca; sepalcrum nervus medius non usque ad apicem productus ut in icone citata, sed usque ad medium ut in icone *L. squamulosi Reich. l. c. f. 5456 b*; ita ut inter utrasque species media, ac forsitan nova, et tunc *L. collinum* appellanda”. Therefore, according to Art. 36.1 of the *ICN* (Turland *et al.* 2018) the name “*Linum collinum*” indicated by Gussone (1844: 808) is not validly published because it is merely proposed as a provisional name.

**Type designation of *Linum immaculatae*:**—The name *Linum immaculatae* Sennen (1926: exsiccatum n° 5679) was mentioned by Sennen (1927: 636) and described in the Sennen’s exsiccata “Plantes d’Espagne” with the number 5679 in a printed label. There are several specimens belonging to this exsiccatum n° 5679 (e.g., barcodes PH00015290, MA471208, MA72763, MAF59987, BCN 25145 (ex BCF), BCN 25146 (ex BCC), BC983360, BC983361). In



these herbarium sheets, the original printed label includes the name “*Linum Immaculatae* Sennen / *gr. alpinum*”, the provenance “Cerdagne: Llivia et Villeneuve, coteaux, 1250-1400 m.”, the date “18-VI [1926]”, a complete description of this species “NOTE.- Souche et racine épaisses-ligneuses; tiges longues-nombreuses-ascendantes-ramifiées-laxifoliées; feuilles linéaires devenant obscures, un peu élargies sous l’inflorescence allongée-laxiflore; pédicelles longs arqués-divergents, atteignant 15 mill.; sepals largement elliptiques, obtus, à mucron oblique et à sommet énevulé; petals d’un très beau bleu, grands, 15 mill. et plus; capsule très exerte-mucronulée, 7 × 5 mill.; grains de silhouette étroite-oblongue, bien marginées”, and the comment “Dévôte dédicace de ce bel endémisme à l’Immaculée”.

All the sheets bears complete and well-developed material. We designate the specimen at MA (with barcode MA72763) as the lectotype of *Linum immaculatae* (Fig. 3).

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## References

- Baytop, T. (1999) *Therapy with medicinal plants in Turkey (past and present)*. 2nd edn. Nobel Týp Kitabevi, Istanbul, 163 pp.
- Boissier, E. (1869) *Flora Orientalis: sive, Enumeratio plantarum in Oriente a Graecia et Aegypto ad Indiae fines hucusque observatarum*, vol. 1. H.Georg, Genève, Basel & Lyon, 1017 pp. <https://www.biodiversitylibrary.org/item/60254#page/7/mode/1up>
- Bolòs, O. & Vigo, J. (1974) Notes sobre taxonomia i nomenclatura de plantes, I. *Bulletí de la Institutió Catalana d’Historia Natural* 38 (Secc. Bot., 1): 61–89.
- Diederichsen, A. & Richards, K. (2003) Cultivated flax and the genus *Linum* L. Taxonomy and germoplasm conservation. In: A. Muir & N. Westcott (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.
- Greuter, W., Burdet, H.M. & Long, G. (Eds.) (1989) *Med-Checklist. A critical inventory of vascular plants of the Circum-Mediterranean countries. Vol. 4. Dicotyledones (Lauraceae-Rhamnaceae)*. Conservatoire et Jardin Botanique Ville de Genève, Med-Checklist Trust of OPTIMA, Geneva & Berlin, 458 pp.
- Gussone, G. (1844) *Linum austriacum*. In: *Florae siculae synopsis*, vol. 2. Ex Typis Tramater, Napoli, pp. 808.
- Hausknecht, H.C. (1893) Symbolae ad floram graecam. Aufzählung der im Sommer 1885 in Griechenland gesammelten Pflanzen. *Mitteilungen des Thüringischen Botanischen Vereins*, ser. 2, 5: 41–126.
- Heywood, V.H. (1993) *Flowering Plants of the World*. Oxford University Press, Oxford, 335 pp.
- Hickey, M. (1988) *100 families of Flowering Plants*. Cambridge University Press, Cambridge, 624 pp.
- Linnaeus, C. (1753) *Species Plantarum I*. Laurentius Salvius, Stockholm, 1200 pp.
- Mabberley, D.J. (2008) *Mabberley’s Plant-book. A portable dictionary of plants, their classification and uses*. 3rd edn. 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: 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. 174–266.
- McDill, J.R., Repplinger, M., Simpson, B.B & Kadereit, J.W. (2009) The phylogeny of *Linum* and Linaceae subfamily Linoideae, with implications for their systematics, biogeography, and evolution of heterostyly. *Systematic Botany* 34: 386–405. <https://doi.org/10.1600/036364409788606244>
- McDill, J.R. & Simpson, B.B. (2011) Molecular phylogenetics of Linaceae with complete generic sampling and data from two plastid genes. *Botanical Journal of the Linnean Society* 165: 64–83. <https://doi.org/10.1111/j.1095-8339.2010.01096.x>
- Nyman, C.F. (1878–1882) *Conspectus Florae Europaeae*. Typis Officinae Bohlinianae, Örebro (Sueciae), 858 pp.
- Ockendon, D.J (1968) Biosystematic studies in the *Linum perenne* group. *New Phytologist* 67: 787–813.

- Ockendon, D.J. (1971) Taxonomy of *Linum perenne* group in Europe. *Watsonia* 8: 205–235.
- 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.
- Pengilly, N.L. (2003) Traditional food and medicinal uses of flaxseed. In: Muir, A.D. & Westcott, N.D. (Eds.) *Flax: the genus Linum*. Taylor and Francis, London, pp. 252–267.
- 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>
- Sennen, F. (1926) Plantes d'Espagne 1926. *Linum immaculatae* Sennen. N° 5679.
- Sennen, F. (1927) Nombreuses localités de plantes nouvelles pour la Cerdagne, observées durant les vacances des années 1915 à 1926 (1). *Bulletin de la Société botanique de France* 74: 355–410.  
<https://doi.org/10.1080/00378941.1927.10831477>
- Thiers, B. (2022) *Index Herbariorum: A global directory of public herbaria and associated Staff*. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/ih/> (accessed 11 February 2022).
- Tison, J.-M., Jauzein, P., Girod, C. & Espeut, M. (2010) Combinaisons et statuts nouveaux proposes dans la Flore de la France Méditerranéenne continentale. *Biocosme mésogéen* 27 (4): 109–133.
- 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>
- Vromans, J. (2006) *Molecular genetic studies in flax (Linum usitatissimum L.)*. Ph.D. thesis, Wageningen University, Wageningen.
- Winkler, H. (1931) Linaceae. In: Engler, H.G.A. & Prantl, K.A.E. (Eds.) *Die Natürlichen Pflanzenfamilien* 19a. Engelmann, Leipzig, pp. 82–130.