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Nomenclature and Typification of Names in the Ibero–North African *Andryala arenaria* (Asteraceae) and Taxonomic Implications

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Abstract. A taxonomic and nomenclatural revision of the genus *Andryala* L. (Asteraceae) revealed that *A. arenaria* (DC.) Boiss. & Reut. var. *ficalhoana* (Daveau) Cout. had never been typified. Based on an analysis of the protologue and original material, a specimen at LY is designated here as the lectotype. The relevance of this typification resides in the fact that the recently described *A. cintrana* S. Talavera & M. Talavera is here considered a heterotypic synonym of *A. arenaria* var. *ficalhoana*. In addition, *A. cossyrensis* Guss. var. *oligadena* Maire & Weiller from Libya is here synonymized with *A. arenaria* var *pinnatifida* Lange ex Willk., leading to the extension of the known distribution area of *A. arenaria*.

Key words: *Andryala*, Asteraceae, holotype, lectotypification, Mediterranean.

Andryala L. (Asteraceae: Cichorieae) is a small genus that includes ca. 17 species distributed in the Mediterranean region, southwestern Europe, Romania, northwestern Africa, and Macaronesia (Nyárády, 1963, 1965; Sell, 1976; Hansen & Sunding, 1993; Blanca, 2009; Fennane, 2014; Ferreira et al., 2014, 2015a). In particular, *A. arenaria* (DC.) Boiss. & Reut. occurs in the Iberian Peninsula, as well as in North African countries, namely Morocco and Algeria (Murbeck, 1905, 1923; Emberger & Maire, 1941; Tattou, 2001). This species was first described by de Candolle (1838) as *A. tenuifolia* γ *arenaria* DC. based on plant material collected by Boissier, as stated in the protologue. Later, Boissier and Reuter (1852) raised it to specific rank and provided a detailed description. Throughout the years, several infraspecific taxa were recognized, including *A. arenaria* var. *pinnatifida* Lange ex Willk., *A. arenaria* var. *ficalhoana* (Daveau) Cout., and *A. arenaria* subsp. *parvipila* Franco.

Recently, some typifications of accepted *Andryala* taxa have been published (Ferreira et al., 2014, 2015b). Additionally, *A. arenaria* var. *pinnatifida* was typified by Talavera and Talavera (2015). However, a careful study of the literature and the revision of herbarium material showed that *A. ficalhoana* Daveau (in Henriques, 1883, as "Ficalheana"), treated herein as *A. arenaria* var. *ficalhoana* (Daveau) Cout., had never been typified.

Andryala cossyrensis Guss. was described by Gussone (1843) from Pantelleria, an Italian island located in the strait between Sicily and Tunisia. Murbeck (1905) extended the distribution area of *A. cossyrensis* to Morocco, Algeria, and Tunisia. Moreover, Murbeck (1905) established *A. cossyrensis* and *A. arenaria* as two distinct species. Maire and Weiller (1939) treated *A. arenaria* as *A. cossyrensis* var. *arenaria* (DC.) Maire and simultaneously published the similar variety *A. cossyrensis* var. *oligadena* Maire & Weller from Libya. Later, in Emberger and Maire (1941), Maire placed both *A. arenaria* and *A. cossyrensis* within *A. rothia* Pers. at subspecific rank and further recognized *A. rothia* subsp. *arenaria* var. *pinnatifida* (Lange ex Willk.) Maire. However, the specific name *A. rothia* was misapplied in that treatment and others; it actually corresponds to *A. laxiflora* DC. (Blanca, 2009).

Based on the analysis of protologues and original material, we recognize *Andryala arenaria* as a distinct species, including the varieties *A. arenaria* var. *pinnatifida* and *A. arenaria* var. *ficalhoana*. We propose a

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lectotype for *A. arenaria* var. *ficalhoana* and synonymize *A. cossyrensis* var. *oligadena* under *A. arenaria* var. *pinnatifida*.

Materials and Methods

Protologues of the names involved were studied and original material was located at a number of herbaria (BM, COI, LISU, LY, MA, MPU, P, and SEV). Specimens were examined through loans and during visits to the herbaria or by digital images (from online databases and virtual herbaria or provided by the herbarium staff).

Taxonomic Treatment

1. Andryala arenaria (DC.) Boiss. & Reut., Pugill. Pl. Afr. Bor. Hispan. 71. 1852. Basionym: *Andryala tenuifolia* var. *arenaria* DC., Prodr. 7: 245. 1838. *Andryala parviflora* Lam. var. *arenaria* (DC.) Boiss., Voy. Bot. Espagne 2(13): 394. 1841. *Andryala integrifolia* L. var. *arenaria* (DC.) Ball, J. Linn. Soc., Bot. 16(95): 541. 1878. *Andryala dentata* Sibth. & Sm. subsp. *arenaria* (DC.) Nyman, Consp. Fl. Eur. 438. 1879. TYPE: Spain. In arenis maritimis Gibraltario, 1838, *Edm. Boissier s.n.* (lectotype, designated by Ferreira [2015: 837–840], G-DC barcode G00319814).

1a. Andryala arenaria var. **arenaria.**

1b. Andryala arenaria var. **ficalhoana** (Daveau) Cout., Bol. Soc. Brot. 28: 115. 1920 (as "Ficalhiana"). Basionym: *Andryala ficalhoana* Daveau in Henriques, Bol. Soc. Brot. 1: 42, 51–52. 1883 (as "Ficalheana"). *Andryala rothia* Pers. subsp. *ficalhoana* (Daveau) Rouy, Bull. Soc. Bot. France 35(2): 120. 1888. *Andryala tenuifolia* DC. var. *ficalhoana* (Daveau) Mariz, Bol. Soc. Brot. 11: 197. 1893. TYPE: Portugal. Cabo Carvoeiro & Ile Berlenga, Aug. 1879, *J. Daveau 6* (lectotype, designated here, LY0071307, uppermost plant [digital image!]).

Andryala cintrana S. Talavera & M. Talavera, Acta Bot. Malacit. 40: 300–301. 2015. TYPE: Portugal. Estremadura, Playa de Cascais, arenales marítimos, 26 July 2009, *M. Talavera et al. s.n.* (holotype, SEV-248703 [digital image!]; isotype, SEV-248704 [digital image!]).

Notes. *Andryala ficalhoana* was validly published in *Boletim da Sociedade Broteriana* in 1883 as "*Andryala Ficalheana*." This work, authored by the Portuguese botanist Julio Henriques, contains the original description transcribed from a note handwritten by Daveau, as well as the collection date and locality ("Île Berlenga – Juillet Aout. 1879"). Indeed, Daveau (1884: 15) stated that in his first visit to Berlenga Island, in August 1879, he gathered specimens of "*Andryala Ficalheana*." Plant material collected on that date was located at LY under the barcode number LY0071307 (Fig. 1). On this herbarium sheet, there are five plants. Two localities are mentioned together on the label (Cabo Carvoeiro and Berlenga Island) but only one collection number (n° 6). Cabo Carvoeiro is opposite Berlenga Island, separated by a narrow strait, and Daveau could well have considered them as a single area and habitat. Therefore, this material probably corresponds to a single collection. Material under the name "*Andryala Ficalheana Nob. Sp. Nov.*," collected from Berlenga Island in 1882 by Daveau, was located at MPU and P. However, it is not original material, because it was collected after Daveau wrote the original description. Several specimens under "*Andryala Ficalheana*" from BM, COI, LISU, LY, MPU, and P were gathered in 1879, but these are all from Cabo Carvoeiro and have no association with Berlenga Island.

Therefore, the only original material is LY0071307. All individuals on this sheet are morphologically similar and fit the original description. Since they were all collected by Daveau under one number and mounted together, they are certainly all original material for the name regardless of whether they were all collected on Berlenga Island. However, the labeling may lead to suspicion that the sheet, though bearing a single number, contains material from more than one gathering. Normally, the entire specimen would have to be designated as lectotype (see Art. 8.2 of the International Code of Nomenclature [ICN]; Turland et al., 2018). However, if it was later presumed to contain material of more than one gathering, such a typification might be considered invalid (Arts. 8.2 and 9.3 of the ICN). Consequently, the uppermost plant on this herbarium sheet is here designated as the lectotype.

Henriques (1883: 52) stated: "Esta espécie é extremamente próxima da *A. arenaria*, como já observava o Sr. Daveau," meaning that *Andryala ficalhoana* is extremely close to *A. arenaria*, as mentioned by Daveau. In the same publication, Henriques added that only the abundance of a whitish indumentum, covering the entire plant, gives it a different appearance. He also stressed that, as in *A. arenaria*, the long glandular trichomes of the involucre are missing in some specimens, but they are abundant in others. Accordingly, this taxon was later recognized as a variety of *A. arenaria* by several authors (e.g., Coutinho, 1920, 1939; Sampaio, 1949), with whom we agree.

The observation of original material of *Andryala cintrana* and *A. ficalhoana*, as well as analysis of the protologues, showed that these two are morphologically identical, especially regarding plant height, stem ramification and branch position, stellate indument, leaf shape, and synflorescence type. Accordingly, we

Figure 1. Lectotype of *Andryala arenaria* (DC.) Boiss. & Reut. var. *ficalhoana* (Daveau) Cout. (LY0071307, upper plant).

recognize *A. cintrana* as a heterotypic synonym of *A. arenaria* var. *ficalhoana*.

It is noteworthy to mention that the orthography of the adjectival epithet as published in Henriques (1883), "Ficalheana," and later "Ficalhiana" by Coutinho (1920), in honor of Comte Ficalho, can be treated as errors and should be corrected to "*ficalhoana*," according to ICN Article 60.8 (c) (Turland et al., 2018).

1c. Andryala arenaria var. **pinnatifida** Lange ex Willk. in Willkomm & Lange, Prodr. Fl. Hispan. 2(1): 272. 1865. *Andryala rothia* Pers. subsp. *arenaria* DC. var. *pinnatifida* (Lange ex Willk.) Maire in Emberger & Maire, Cat. Pl. Maroc. 4: 1167. 1941. TYPE: Spain. In agro Matritensis ad Casa de Campo, 3 June 1851 (lectotype, designated by Talavera & Talavera [2015: 300], COI-Willk.-41885 [digital image!]).

Andryala cossyrensis Guss. var. *oligadena* Maire & Weiller in Bull. Soc. Hist. Nat. Afrique N. 30(5): 289–290. 1939. [Libya]. Tripolitaine: nach Ganima, sables, 15 Apr. 1938, *Maire & Weiller 1727* (holotype, MPU-004056 [digital image!]).

Notes. Maire and Weiller (1939: 256, 290) referred *Andryala cossyrensis* var. *oligadena* only to Libya ("Tripolitaine: sables de l'Ouadi Ganima") and stated that the type specimen was deposited at the herbarium of University of Algiers (AL) under the collection number 1727. Maire's herbarium and types were transferred from Algiers to Montpellier and are now housed at MPU (Stafleu & Cowan, 1981; Vogt & Oberprieler, 1996). A single specimen corresponding to the stated locality and number was found under the name *A. cossyrensis* Guss. var. *oligadena* Maire & Weiller (MPU-004056). According to Caroline Loup (pers. comm.) only one specimen of the gathering is deposited at MPU. Therefore, in consonance with McNeill (2014), this specimen is the holotype.

Maire and Weiller (1939: 290) compared *Andryala cossyrensis* var. *oligadena* to *A. cossyrensis* var. *arenaria* (that is, *A. arenaria* s. str.) from which it differs, according to the authors, by the indument almost completely devoid of glandular trichomes. Indeed, on the handwritten label of the holotype can be read: "Plante très rameuse comme *A. cossyrensis* mais tomentum abondant des capitules et ligules grandes jaunes orange comme dans *A. arenaria*. Diffère des deux par le tomentum blanc des capitules dépourvus de poils glanduleux." Actually, this description fits *A. arenaria* as its involucre is covered with a whitish, dense stellate indumentum, contrary to the involucre of *A. cossyrensis*, which is sparsely stellate-hairy. Regarding the glandular trichomes of the involucre, in *A. arenaria* these are frequent among the stellate trichomes, but they are not always present. Likewise, in *A. arenaria* the cauline leaves are ovate-oblong to ovate-lanceolate, cordate at the base, and more or less amplexicaul, just as Maire and Weiller (1939: 289) described *A. cossyrensis* var. *oligadena* ("folia caulina … basi dilatata, cordata, plus minusve amplexicaulia"). In *A. cossyrensis* the cauline leaves are narrowly ovate-lanceolate to linear-lanceolate, rounded but hardly dilated at the base, and semiamplexicaul. Furthermore, in *A. arenaria* the capitula are short-pedunculate, 9–19(–22) mm, whereas in *A. cossyrensis* they are long-pedunculate, 18–36(–44) mm. Willkomm and Lange (1865: 272) distinguished *A. arenaria* var. *pinnatifida* from the typical variety by the more divided leaves ("foliis pinnatifidis v. pinnatipartitis"), a morphologic character also observable on the type specimen of *A. cossyrensis* var. *oligadena*. Hence, *A. cossyrensis* var. *oligadena* and *A. arenaria* var. *pinnatifida* correspond to the same taxon. In fact, the study of plant material deposited at P revealed that *A. cossyrensis* was repeatedly confounded with *A. arenaria* var. *pinnatifida*. Moreover, judging by the study of herbarium specimens deposited in MA and MPU, both *A. arenaria* var. *pinnatifida* and the typical variety can be found in Tunisia. These findings support our taxonomic point of view and also corroborate the occurrence of *A. arenaria* in Libya.

Key to the Varieties of *Andryala arenaria*

1. Annual to perennial plants; lower leaves not membranaceous, densely covered with stellate trichomes; sinuate-dentate; dense racemiform synflorescence . . . . . 1b. *A. arenaria* (DC.) Boiss. & Reut. var. *ficalhoana* (Daveau) Cout.
1′. Annual plants; lower leaves more or less membranaceous, mildly covered with stellate trichomes, subentire to pinnatipartite; corymbiform synflorescence.
   2. Lower leaves pinnatifid to pinnatisect . . . . . 1c. *A. arenaria* var. *pinnatifida* Lange ex Willk.
   2′. Lower leaves subentire to sinuate-dentate . . . . . 1a. *A. arenaria* var. *arenaria*

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Literature Cited

Blanca, G. 2009. *Andryala* L. Pp. 290–291 *in* G. Blanca, B. Cabezudo, M. Cueto, C. Fernández López & C. Morales Torres (editors), Flora Vascular de Andalucía Oriental. Consejería de Medio Ambiente, Junta de Andalucía, Seville.

Boissier, P. E. & G. F. Reuter. 1852. Pugillus plantarum novarum Africae borealis Hispaniaeque australis. Ex typographia Ferd. Ramboz et socii, Geneva.

de Candolle, A. P. 1838. Prodromus Systematis Naturalis Regni Vegetabilis, sive enumeratio contracta ordinum, generum, specierumque plantarum hucusque cognitarum, juxta methodi naturalis normas digestiva, Vol. 7. Treuttel et Würtz, Paris.

Coutinho, A. X. P. 1920. Breves considerações estatísticas sobre a flora Portuguesa. Bol. Soc. Brot. 28: 95–121.

Coutinho, A. X. P. 1939. Flora de Portugal (Plantas Vasculares) Disposta em Chaves Dichotomicas. 2nd ed. Bertrand (Irmãos), Ltd., Lisbon.

Daveau, J. 1884. Excursion botanique aux îles Berlengas et Farilhões. Bol. Soc. Brot. 2: 13–31.
Emberger, L. & R. Maire. 1941. Catalogue des Plantes du Maroc (Spermatophytes et Ptéridophytes), Vol. 4. Imprimerie Minerva, Algiers.
Fennane, M. 2014. *Andryala* L. Pp. 314–318 *in* M. Fennane, M. Ibn Tattou & J. El Oualidi (editors), Flore Pratique du Maroc - Manuel de Détermination des Plantes Vasculaires. Travaux de l'Institut Scientifique, Série Botanique, Vol. 40. Institut Scientifique de Rabat, Rabat.
Ferreira, M. Z., I. Á. Fernández, J. Chrtek & M. Menezes de Sequeira. 2014. Notes on North African *Andryala* L. (Asteraceae): A new combination and typifications. Acta Bot. Malac. 39: 283–293.
Ferreira, M. Z., J. Zahradníček, J. Kadlecová, M. Menezes de Sequeira, J. Chrtek, Jr. & J. Fehrer. 2015a. Tracing the evolutionary history of a little-known Mediterranean-Macaronesian genus *Andryala* (Asteraceae) by multigene sequencing. Taxon 64: 535–551.
Ferreira, M. Z., I. Á. Fernández & M. Menezes de Sequeira. 2015b. Lectotypification of ten *taxa* in *Andryala* L. (Asteraceae). Taxon 64: 837–840.
Gussone, G. 1843. Florae siculae synopsis, exhibens plantas vasculares in Sicilia insulisque adjacentibus huc usque detectas secundum systema Linneanum dispositas, Vol. II(1). Ex Typis Tramater, Naples.
Hansen, A. & P. Sunding. 1993. Flora of Macaronesia. Checklist of Vascular Plants. 4th Revised Edition. Sommerfeltia 17: 1–295.
Henriques, J. A. 1883. Notas. Bol. Soc. Brot. 1: 48–52.
Maire, R. & M. Weiller. 1939. Contributions à l'étude de la Flore de la Libye. Bull. Soc. Hist. Nat. Afrique N. 30: 255–314.
McNeill, J. 2014. Holotype specimens and type citations: General issues. Taxon 63: 1112–1113.
Murbeck, S. S. 1905. Contributions à la connaissance de la flore du nord-ouest de l'Afrique et plus spécialement de la Tunisie. Deuxième série. Impr. Håkan Ohlsson, Lund.
Murbeck, S. S. 1923. Contributions à la connaissance de la flore du Maroc. II. Géraniacées-Composées. C. W. K. Gleerup, Lund. Otto Harrassowitz, Leipzig.
Nyárády, E. I. 1963. Bereicherung der Wissenschaft mit einer für die Flora der RVR endemischen neuen Gattung und drei neuen endemischen Arten. Rev. Biol. (Bucharest) 8: 247–260.
Nyárády, E. I. 1965. Pietrósia Nyár. Pp. 210–214 *in* E. I. Nyárády (editor), Flora Republicii Populare Romîne. Editura Academiei Republicii Populare Romine, Bucharest.
Sampaio, G. 1949. Flora Portuguesa. 4ª ed. Facsimile de 1990. Instituto Nacional de Investigação Científica, Lisbon.
Sell, P. D. 1976. *Andryala* L. P. 358 *in* T. G. Tutin, V. H. Heywood, N. A. Burgess, D. M. Moore, D. H. Valentine, S. M. Walters & D. A. Webb (editors), Flora Europaea, Vol. 4. Cambridge University Press, Cambridge.
Stafleu, F. A. & R. S. Cowan. 1981. Taxonomic Literature: A Selective Guide to Botanical Publications and Collections with Dates, Commentaries and Types, Vol. 3. ed. 2. Bohn, Scheltema & Holkema, Utrecht.
Talavera, S. & M. Talavera. 2015. The genus *Andryala* L. (Compositae, Cichorieae) in the Iberian Peninsula and Balearic Islands: A new species and interspecific hybrids. Acta Bot. Malac. 40: 296–310.
Tattou, M. I. 2001. Nouveaux matériaux pour la flore du Maroc. (fascicule 6). Acta Bot. Malac. 26: 287–303.
Turland, N. J., J. H. Wiersema, F. R. Barrie, W. Greuter, D. L. Hawksworth, P. S. Herendeen, S. Knapp, et al. (editors). 2018. International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). Regnum Veg. 159.
Vogt, R. & C. Oberprieler. 1996. The genus *Nivellea* B.H. Wilcox, K. Bremer & Humphries (Compositae, Anthemideae). Bot. J. Linn. Soc. 122: 123–135.
Willkomm, H. M. & J. M. C. Lange. 1865. Prodromus Florae Hispanicae, Vol. II. Sumtibus E. Schweizerbart (E. Koch), Stuttgart.

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