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Effective typification of *Avena pubescens* (Poaceae; Pooideae)

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Abstract. *Avena pubescens* Hudson was previously considered to have been "neotypified" by Röser in 1995 from a specimen preserved at WU herbarium (Wien). However, there is an original element that was included and cited in the protologue. Therefore, the typification by Röser is here briefly discussed and superseded because is being contrary to Art. 9.8 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). The name is lectotypified in this paper with an illustration published by Ray in 1724. In addition, for a precise circumscription of the name, an epitype is proposed from a complete and well preserved specimen at WU.

Keywords: *Avenula*, Gramineae, epitype, lectotype, nomenclature.

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Introduction

Avenula (Dumortier) Dumortier (Poaceae; Pooideae) is a monospecific genus (see Romero Zarco, 2011; Soreng *et al*., 2017; Tkach *et al.*, 2020). *Avenula pubescens* (Huds.) Dumortier (1868: 68) (≡ *Avena pubescens* Huds.) is morpho-anatomically quite different from other *Aveninae* J.Presl (in C.B.Presl, 1830: 246) (Romero Zarco, 1984; Röser, 1989, 1995), although its external appearance is that of a "typical" *Aveninae*. The origin of this species as an intergeneric hybrid between *Helictotrichon* Besser (in Schultes & Schultes, 1827: 526) and *Helictochloa* Romero Zarco (2011: 96) as was discussed by Soreng & Davis (2000) seems unlikely, a conclusion supported by morphological characteristics. In this sense, the odd character of glabrous lemma keels and the peculiar shape of the lodicules are not "intermediate" between any of the other genera studied by these authors (Gabriel *et al*., 2020). Recent molecular phylogenetic results also show *A. pubescens* placed separately from its putative parental taxa discussed. This placement is concordantly encountered in plastid and nuclear DNA trees (Grebenstein *et al*., 1998; Quintanar *et al*., 2007; Tkach *et al.*, 2020).

The perennial species *Avenula pubescens* was removed from the genus *Avena* Linnaeus (1753: 79) (e.g., Hudson, 1762: 42) and transferred to *Avenastrum* Jessen (1863: 214) (e.g., Opiz, 1852: 20), *Arrhenatherum* Palisot de Beauvois (1812: 55, 152, 153) (e.g., Sampaio 1931: 45), *Helictotrichon* (e.g., Pilger, 1938: 6; Paunero, 1959, Röser, 1989), *Avenochloa* Holub (1962: 82) (e.g., Holub, 1962: 84; Romero Zarco, 1984), *Homalotrichon* Banfi *et al*. (in Conti *et al*., 2005: 18), or *Neoholubia* Tzvelev (2009: 234). This species is native to Europe and Central Asia, and was introduced in Iceland, New Zealand, Canada and some northern states of the United States (Holub, 1980; Romero Zarco, 2020).

The traditional concept and current use of the name *Avena pubescens* (Hudson, 1762: 42), currently accepted as *Avenula pubescens*, has been applied to a species laxly caespitose, with short extravaginal stolons, stems (30–)40–110 cm, basal leaves 10–30 cm × 2–6 mm, flat or conduplicate, soft, green, subobtuse, usually with long hairs, the margin very narrowly cartilaginous and smooth; sheaths of basal leaves closed nearly to the mouth, usually shortly hairy; ligule 0–5(–1) mm and more or less truncate in basal, 5–8 mm and acute in cauline leaves; panicle (6–)8–15(–25) cm; branches slender, 2–6(–9) at lower nodes, spikelets usually pale green and white, with 2–4 florets; rhachilla-segments 2–5 mm, villous with hairs 3–6 mm; callus-hairs 2–3 mm, lower glume l–3-veined, lemma soft (9.5–16 mm), weakly veined, denticulate at apex (Holub, 1958, 1980; Paunero, 1959; Romero Zarco, 1984, 2015, 2020; Röser, 1989; Tison *et al*., 2014).

The name *Avena pubescens* includes many accepted synonyms and intraspecific taxa (Boissier, 1884; Holub, 1976; Valdés & Scholz, 2006; POWO, 2022; WFO, 2022), and the morphological variability of this species has long caused taxonomic confusion.

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Röser (1995: 398) designated a neotype for the name *Avena pubescens*, from a specimen collected at Hudson's locality: "England, West Sussex, between Sutton and Reigate, SW above Banstead Downs, *Bromus erectus* grassland at the margin of a golf course, 26 Jun 1994, Roser 10206 (WU)" with several duplicate specimens at B, BC, BM, C, G, GOET, K, M, MA, LZ, P, PR, S, SEV, TUB, W, and the personal collection of the author (Martin Röser).

Hudson's original herbarium was destroyed by fire at his house in Panton Street (London) in 1783, caused "by the villainy of a confidential servant" (Dixon, 1959). Consequently, there are only scattered specimens in existence, mainly those he had given away to other botanists. The LINN herbarium has the relevant collection because Hudson sometimes gave specimens of his new species to Linnaeus (Jarvis, 2007). Also, the BM herbarium contains relevant material because the collections of Sir Hans Sloane were consulted by Hudson in preparing his Flora Anglica, at least while he was assistant librarian at the British Museum (Anonymous, 1805), as Hudson himself indicated in the introduction of his work, mentioning the herbarium of Buddle, Petiver and Plukenet, which are in the Sloane Herbarium (Dandy, 1958).

Unfortunately, there are no original specimens of *Avena pubescens* in any herbaria that contain Hudson's material (e.g., BM, CGE, K, OXF, Thunberg herbarium at UPS) (see Röser, 1995).

However, Hudson included in the protologue an illustration published by Ray (1724), so the Ray's drawing is part of the Hudson's original elements. Therefore, the neotypification of Röser (1995) is ineffective according to Art. 9.8 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code, Turland *et al*., 2018) because the type must be selected from elements of the original material available to Hudson before Flora Anglica was published in 1762.

The purpose of this paper is to contribute to nomenclatural stability by typifying the name *Avena pubescens*. The present work is one more step for our contribution to complete the nomenclatural types for the species described by Hudson (see, e.g., Ferrer-Gallego, 2021; Ferrer-Gallego & Fabado, 2021a,b).

Materials and Methods

The names are arranged in chronological order, the homotypic synonyms are indicated with the symbol ≡. Herbarium acronyms are according to Thiers (2022).

Results and Discussion

Typification of the name *Avena pubescen*s Hudson

Hudson's protologue (1762: 42) for *Avena pubescens* consists of the *nomen specificum legitimum*. "*AVENA calycibus subtrifloris basi pilosis, foliis planis pubescentibus*" followed a synonym: "*Gramen avenaceum hirsutum, s. glabrum panicula purpuro-argentea splendente*" of Ray (1693: 1909, 1724: 406, t. 21, f. 2). The common name and the ecology of this plant were cited as: "*Anglis*, rough Oat-grass" and "Habitat *in pratis et pascuis siccioribus*. *Supra* Banstead Downs *copiose*".

The reference to Ray (1724: 406, t. 21, f. 2) provided an illustration that is original element used by Hudson to describe *Avena pubescens*. This drawing illustrates a complete plant, with leaves and flowers. I designate as the (obligate) lectotype of *Avena pubescens* this illustration (Figure 1).

In addition, for a precise circumscrption of this name, an epitype has been selected according to Art. 9.9 of the Shenzhen Code (Turland *et al*., 2018). The epitype selected (Figure 2) is a complete specimen collected by Röser at Hudson's locality: "England, West Sussex, between Sutton and Reigate, SW above Banstead Downs" and preserved at WU (with code WU 0061947), with several duplicate specimens, and molecular data ($2n = 14$; and the 4C nuclear DNA content of 25.12 ± 0.7 pg) analyzed from plants collected in the epitype population and grown at the Botanic Garden of the University of Vienna (see Röser, 1995). This specimen clearly represents the traditional concept of this species (Hudson, 1762) and reflects current application of the name *Avenula pubescens* (e.g., Holub, 1958, 1980; Paunero, 1959; Romero Zarco, 1984, 2015, 2020; Sauer, 1984; Röser, 1989; Tison *et al*., 2014).

Avena pubescens Huds., Fl. Angl.: 42. 1762
≡ *Avenula pubescens* (Huds.) Dumort., Bull. Soc. Roy. Bot. Belgique 7: 68. 1868
≡ *Avenastrum pubescens* (Huds.) Opiz, Seznam: 20. 1852
≡ *Arrhenatherum pubescens* (Huds.) Samp. in Anais Fac. Sci. Porto 17: 45. 1931
≡ *Helictotrichon pubescens* (Huds.) Pilg. in Repert. Spec. Nov. Regni Veg. 45: 6. 1938
≡ *Avenochloa pubescens* (Huds.) Holub in Acta Horti Bot. Prag. 1962: 84. 1962
≡ *Homalotrichon pubescens* (Huds.) Banfi, Galasso & Bracchi, Annot. Checkl. Italian Vasc. Fl.: 19. 2005
≡ *Neoholubia pubescens* (Huds.) Tzvelev in Novosti Sist. Vyssh. Rast. 40: 234. 2009

Lectotype (designated here): [illustration] "*Gramen avenaceum hirsutum, s. glabrum panicula purpuro-argentea splendente*" in Ray (1724: 406, Tab. XXI, Fig. 2) (Figure 1). **Epitype** (designated here): [ENGLAND], West Sussex, between Sutton and Reigate, SW above Banstead Downs, 26 Jun 1994, *Röser 10206* (WU code WU 0061947, see Figure 2); **isoepitypes**: B 10 0347037, BC, BM, C10016777, G00165950, GOET006553, K000808478, HAL0111461, M, MA561466, LZ, P, PR, S-G-8905, SEV, TUB008837, W19960005704.

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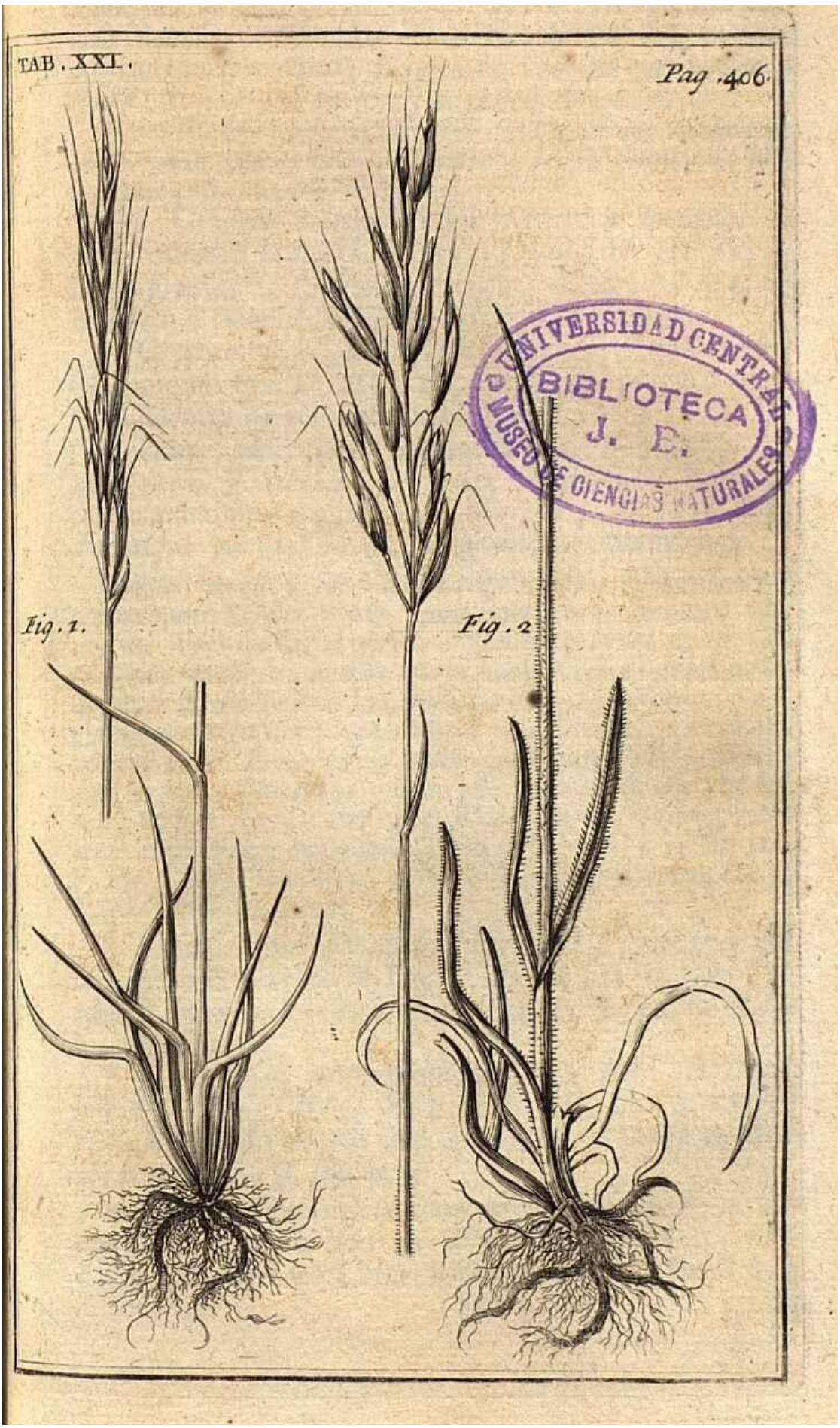

Figure 1. Lectotype of *Avena pubescens* Huds., illustration of Ray (1724: 406, Tab. XXI, Fig. 2) "*Gramen avenaceum hirsutum, s. glabrum panicula purpuro-argentea splendente*".

Figure 2. Epitype of *Avena pubescens* Huds., WU (code WU 0061947).
Image courtesy of the herbarium WU, reproduced with permission.

References

Anonymous. 1805. Acts and votes of Parliament relating to the British Museum with the Statutes and rules thereof, and the succession of trustees and officers. W. Bulmer & Co., London.

Boissier, E. 1884. Flora Orientalis, vol. 5. H. Georg, Geneva and Basel.

Conti, F., Abbate, G., Alessandrini, A. & Blasi, C. (Eds.). 2005. An annotated checklist of the Italian vascular flora. Palombi Editori, Roma.

Dandy, J.E. (Ed.). 1958. The Sloane herbarium: an annotated list of the horti sicci composing it; with biographical accounts of the principal contributors. Trustees of the British Museum, London.

Dixon, P.S. 1959. Notes on two important algal herbaria. Br. Phycol. Bull. 7: 35–42.

Dumortier, B. 1868. Étude agrostographique sur le genre Michelaria et la classification des Graminées. Bull. Soc. R. Bot. Belge 7: 42–70.

Ferrer-Gallego, P.P. 2021. Effective typification of Ophrys apifera (Orchidaceae; Orchidoideae). Phytotaxa 521(1): 57–62. doi: 10.11646/phytotaxa.521.1.6

Ferrer-Gallego, P.P. & Fabado, J. 2021a. Typification of four species names published by William Hudson. Kew Bulletin 76: 263–268. doi: 10.1007/s12225-021-09932-9

Ferrer-Gallego, P.P. & Fabado, J. 2021b. Typification of the name of the Scotch elm Ulmus glabra (Ulmaceae). Phytotaxa 528(3): 224–228. doi: 10.11646/phytotaxa.528.3.7

Gabriel, J., Tkach, N. & Röser, M. 2020. Recovery of the type specimen of Avena breviaristata, an endemic Algerian grass species collected only once (1882): Morphology, taxonomy and botanical history. Taxon 69(1): 142–152. doi:10.1002/tax.12187

Grebenstein, B., Röser, M., Sauer, W. & Hemleben, V. 1998. Molecular phylogenetic relationships in Aveneae (Poaceae) species and other grasses as inferred from ITS1 and ITS2 rDNA sequences. Pl. Syst. Evol. 213: 233–250. doi:10.1007/BF00985203

Holub, J. 1958. Bemerkungen zur Taxonomieder Gattung Helictotrichon Bess. In: Klaštersky, I. (Ed.). Philipp Maxmilian Opiz und seine Bedeutung für die Pflanzentaxonomie. Pp. 101–133. Tschechoslowakische Akademie der Wissenschaften, Praha.

Holub, J. 1962. Ein Beitrag zur Abgrenzung der Gattungen in der Tribus Aveneae: Die Gattung Avenochloa Holub. Acta Horti.Bot. Prag. 1962: 75–86.

Holub, J. 1976. A newly adopted restriction of illegitimity in generic names and its consequence for Avenochloa Holub 1962. Folia Geob. Phytotax. 11: 281–300.

Holub, J. 1980. Avenula (Dumort.) Dumort. In: Tutin, T.G., Heywood, V.H., Burges, N.A., Moore, D.M., Valentine, D.H., Walters, S.M. & Webb, D.A. (Eds.). Flora Europaea, vol. 5. Pp. 210–216. Cambridge Univ. Press, Cambridge.

Hudson, W. 1762. Flora Anglica, exhibens plantas per regnum angliae sponte crescentes, distributas secundum systema sexuale. Nourse & Moran, London.

Jarvis, C. 2007. Order out of chaos: Linnaean plant names and their types. Linnean Society of London and the Natural History Museum, London.

Jessen, K.F.W 1863. Deutschlands Graser und Getreidearten. T.O. Weigel, Leipzig.

Linnaeus, C. 1753. Species Plantarum. Laurentius Salvius, Stockholm.

Opiz, F.M. 1852. Seznam rostlin květeny české. Řivnáč, Praha.

Palisot de Beauvois, A.-M.F.-J. 1812. Essai d'une nouvelle agrostographie; ou nouveaux genres des graminées; avec figures représentant les caractères de tous les genres. Chez l'auteur, rue de Turenne, nº 58, Paris.

Paunero, E. 1959. Las Aveneas españolas. IV. An. Inst. Bot. Cavanilles 17(1): 257–376.

Pilger, R.K.F. 1938. Über die systematische Stellung und Nomenklatur einiger Gramineen - Gattungen. Repert. Spec. Nov. Regni Veg. 45: 1–8.

Presl, J.S. 1830. Gramineae In: Presl, C.B. (Ed.). Reliquiae Haenkeanae, seu, Descriptiones et icones plantarum: quas in America meridionali et boreali, in insulis Philippinis et Marianis collegit Thaddaeus Haenke 1(4–5): 207–349.

Quintanar, A., Castroviejo, S. & Catalán, P. 2007. Phylogeny of the tribe Aveneae (Pooideae, Poaceae) inferred from plastid trnT-F and nuclear ITS sequences. Am. J. Bot. 94(9): 1554–1569.

Ray J. 1693. Historia plantarum; tomus secundus. Cum duplici indice, generali altero nominum & synonymorum praecipuorum; altero affectuum & remediorum: accessit nomenclator botanicus anglo-latinus. Samuelis Smith & Benjamini Walford, London.

Ray J. 1724. Synopsis methodica stirpium Britannicarum, ed. 3. Gulielmi & Joannis Innys, London.

Röser, M. 1989. Karyologische, systematische und chorologische Untersuchungen an der Gattung Helictotrichon Besser ex Schultes & Schultes im westlichen Mittelmeergebiet. J. Cramer, Berlin.

Röser, M. 1995. Typification of the names of two widespread Eurasian grass species: Avena pratensis L. and A. pubescens Huds. (Poaceae: Helictotrichon). Taxon 44: 395–399.

Romero Zarco, C. 1984. Revision taxonomica del genero Avenula (Dumort.) Dumort. en la Peninsula Iberica e Islas Baleares. Lagascalia 13: 39–146.

Romero Zarco, C. 2011. Helictochloa Romero Zarco (Poaceae), a new genus of oat grass. Candollea 66: 87–103.

Romero Zarco, C. 2015. Las gramíneas de la Península Ibérica e Islas Baleares: Claves ilustradas para la determinación de los géneros y catálogo preliminar de las especies. Monografías de Botánica Ibérica, nº 15. Jolube, Jaca.

Romero Zarco, C. 2020. Avenula (Dumort.) Dumort. In: Devesa, J.A. et al. (Eds.). Flora iberica 19(1). Pp. 624–627. Real Jardín Botánico, CSIC, Madrid.

Sampaio, G. 1931. Apontamentos sôbre alguns géneros de plantas. Anais Fac. Sci. Porto 27: 43–51.

Sauer, W. 1984. Die Gattung Avenula (Dumort) Dumort., Poaceae, auf der Balkanhalbinsel. Acta Bot. Croat. 43: 315–328.

Schultes, J.H. & Schultes, J.A. 1827. Mantissa in volumen primum [secundum, tertium]. Systematis Vegetabilium Caroli a Linné ex editione Joan. Jac. Roemer et Jos. Aug. Schultes. Sumtibus J.G. Cottae, Stuttgart.

Soreng, R.J. & Davis, J.I. 2000. Phylogenetic structure in Poaceae subfamily Pooideae as inferred from molecular and morphological characters: Misclassification vs. reticulation. In: Jacobs, S.W.L. & Everett, J.E. (Eds.). Grasses: Systematics and evolution. Pp. 61–74. CSIRO Publishing, Collingwood.

Soreng, R.J., Peterson, P.M., Romaschenko, K., Davidse, G., Teisher, J.K., Clark, L.G., Barbera, P., Gillespie, L.J. & Zuloaga, F.O. 2017. A worldwide phylogenetic classification of the Poaceae (Gramineae) II: An update and a comparison of two 2015 classifications. J. Syst. Evol. 55(4): 259–290. doi:10.1111/jse.12262

Tison, J.M., Jauzein, P. & Michaud, H. 2014. Flore de la France méditerranéenne continentale. Conservatoire Botanique National Méditerranéen de Porquerolles et Naturalia, Turriers.

Tkach, N., Schneider, J., Döring, E., Wölk, A., Hochbach, A., Nissen, J., Winterfeld, G., Meyer, S., Gabriel, J., Hoffmann, M.H. & Röser, M. 2020. Phylogenetic lineages and the role of hybridization as driving force of evolution in grass supertribe Poodae. Taxon 69(2): 234–277. doi:10.1002/tax.12204

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). Koeltz, Königstein. doi: 10.12705/Code.2018

Tzvelev, N.N. 2009. Critical notes on some species in the northwest Russia. Novosti Sist. Vyssh. Rast. 40: 234–244.

Valdés, B. & Scholz, H. 2006. The Euro+Med treatment of Gramineae - a generic synopsis and some new names. Willdenowia 36: 657–669.

Websites

POWO. Plants of the World Online. 2022. Avena pubescens. https://powo.science.kew.org/results?q=Avena%20pubescens [Accessed 2 January 2022].

Thiers, B. 2022 (continuously updated). Index Herbariorum: a global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/science/ih [Accessed 2 January 2022].

WFO. World Flora Online. 2022. Avena pubescens. http://worldfloraonline.org/search?query=Avena+pubescens [Accessed 2 January 2022].