



The seventh edition of the *Nouvelle Flore de la Belgique*: new nomenclatural combinations

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ABSTRACT. – The following new combinations are proposed and/or validated: *Crataegus rosiformis* Janka var. *lindmanii* (Hrabětová) Verloove & Galasso, *Jacobaea vulgaris* Gaertn. var. *discoidea* (Wimm. & Grab.) Verloove & Galasso, *J. aquatica* (Hill) Gaertn., B. Mey. & Scherb. subsp. *erratica* (Bertol.) Verloove & Galasso, *J. ×albescens* (Burb. & Colgan) Verloove & Lambinon ex Verloove & Galasso, *Kali tragus* (L.) Scop. var. *tenuifolia* (Tausch) Verloove, *Ononis spinosa* L. [subsp. *procurrens* (Wallr.) Briq.] var. *repens* (L.) Verloove and *Schedonorus arundinaceus* (Schreb.) Dumort. var. *asperus* (Mutel) Verloove.

RÉSUMÉ. – La septième édition de la *Nouvelle Flore de la Belgique* : nouvelles combinaisons nomenclaturales. Les combinaisons nouvelles suivantes sont proposées et/ou validées: *Crataegus rosiformis* Janka var. *lindmanii* (Hrabětová) Verloove & Galasso, *Jacobaea vulgaris* Gaertn. var. *discoidea* (Wimm. & Grab.) Verloove & Galasso, *J. aquatica* (Hill) Gaertn., B. Mey. & Scherb. subsp. *erratica* (Bertol.) Verloove & Galasso, *J. ×albescens* (Burb. & Colgan) Verloove & Lambinon ex Verloove & Galasso, *Kali tragus* (L.) Scop. var. *tenuifolia* (Tausch) Verloove, *Ononis spinosa* L. [subsp. *procurrens* (Wallr.) Briq.] var. *repens* (L.) Verloove and *Schedonorus arundinaceus* (Schreb.) Dumort. var. *asperus* (Mutel) Verloove.

SAMENVATTING. – De zevende editie van de *Nouvelle Flore de la Belgique* : nieuwe nomenclatorische combinaties. De volgende nieuwe combinaties worden voorgesteld en/of gevalideerd: *Crataegus rosiformis* Janka var. *lindmanii* (Hrabětová) Verloove & Galasso, *Jacobaea vulgaris* Gaertn. var. *discoidea* (Wimm. & Grab.) Verloove & Galasso, *J. aquatica* (Hill) Gaertn., B. Mey. & Scherb. subsp. *erratica* (Bertol.) Verloove & Galasso, *J. ×albescens* (Burb. & Colgan) Verloove & Lambinon ex Verloove & Galasso, *Kali tragus* (L.) Scop. var. *tenuifolia* (Tausch) Verloove, *Ononis spinosa* L. [subsp. *procurrens* (Wallr.) Briq.] var. *repens* (L.) Verloove and *Schedonorus arundinaceus* (Schreb.) Dumort. var. *asperus* (Mutel) Verloove.

In the course of the preparation of the seventh edition of the *Nouvelle Flore de la Belgique, du Grand-Duché de Luxembourg, du Nord de la France et des Régions voisines* (Verloove & Van Rossum 2023), we encountered several cases in which new nomenclatural combinations were required. In the present paper (and as a sequel to Verloove & Lambinon 2006 and 2011), new combinations are proposed in the genera *Crataegus*, *Jacobaea*, *Kali*, *Ononis* and *Schedonorus*. Many other names that were treated in NF6 (mostly at the rank of *forma* or variety) were not recombined under the genera in which these taxa are now treated because they are probably of very limited taxonomic significance. This applies, for instance, to the several different color forms of *Anagallis arvensis* L. [now *Lysimachia arvensis* (L.) U. Manns et Anderb.] or an unawned variety of *Nardurus maritimus* (L.) Murb. [now *Vulpia unilateralis* (L.) Stace].

Author names and abbreviations are according to Rec. 46A Note 1 of the ICN (Turland *et al.* 2018), i.e. to the International Plant Names Index (IPNI: <https://www.ipni.org/>).

• *Crataegus* L.

In the sixth edition of the *Nouvelle Flore* (Lambinon & Verloove 2012), a variety of *C. rhipidophylla* Gand., with usually ellipsoidal-subcylindrical fruits that are crowned with erect or suberect sepals that are 1.5-3.1 times as long as wide and with lower leaf segments with (7-)12-18 teeth on either side, was referred to var. *lindmanii* (Hrabětová) K.I. Chr. Although the taxonomic value of this variety probably needs to be critically re-assessed, it was upheld pending further studies. However, since the binomial *C. rhipidophylla* is no longer applied (Verloove 2023) and a combination under *C. rosiformis* was apparently lacking for this taxon, it is here proposed and validated:

Crataegus rosiformis Janka var. *lindmanii* (Hrabětová) Verloove & Galasso, comb. nov.
Basionym: *Crataegus lindmanii* Hrabětová, Spisy Přír. Fak. Univ. Brně 491: 98. 1969 [1968 publ. 1969].

• *Jacobaea* Mill.

The generic limits of the polyphyletic genus *Senecio* L. have considerably changed as a result of recent molecular phylogenetic studies (Pelser *et al.* 2002). *Jacobaea* Mill. is now segregated and its generic status is furthermore supported by hybridization behavior: there are several hybrids within *Jacobaea* (e.g. Winter *et al.* 2013) while there are none between *Jacobaea* and *Senecio*. However, morphologically both genera are poorly separated. In *Jacobaea* the number of inner involucre bracts usually equals the number of ligules, whereas in *Senecio* s.str. the number of inner involucre bracts is ca. 1.5-2.0 times the number of ligules. Moreover, in *Jacobaea* the surface of the achenes is finely papillose while achenes are usually smooth in *Senecio* s.str. Representatives of the genus *Jacobaea* are mostly biennial or perennial.

This new generic concept is followed in all contemporary western European flora accounts and checklists (e.g. Tison & de Foucault 2014, Bartolucci *et al.* 2018, Stace 2019, Duistermaat 2020) and it was also applied in the new edition of the *Nouvelle Flore*. However, for three taxa no names were available yet in *Jacobaea*; they are here proposed and validated:

Jacobaea vulgaris Gaertn. var. *discoidea* (Wimm. & Grab.) Verloove & Galasso, comb. nov.

Basionym: *Senecio jacobaea* L. var. *discoideus* Wimm. & Grab., Fl. Siles. 2(2): 153. 1829.

Jacobaea aquatica (Hill) Gaertn., B. Mey. & Scherb. subsp. *erratica* (Bertol.) Verloove & Galasso, comb. nov.

Basionym: *Senecio erraticus* Bertol., Rar. Lig. [Ital.] Pl. 3: 62. 1810.

Jacobaea × *albescens* (Burb. & Colgan) Verloove & Lambinon ex Verloove & Galasso

Basionym: *Senecio* × *albescens* Burb. & Colgan, Irish Naturalist 11(12): 315. 1902.

The new combination that was published by Verloove & Lambinon (2011) was invalid as the page number of the basionym was missing (Art. 41.5 of the ICN).

• *Kali* Mill.

Based on molecular phylogenetic analyses of nuclear and chloroplast data sets, the classification of the Old World Salsoleae s.l. was recently revised (Akhani *et al.* 2007). As a result, several new genera were described and some previously described genera, including *Kali*, were resurrected. This viewpoint – although not uncontested (see e.g. Mosyakin *et al.* 2017) – was followed in the new edition of the *Nouvelle Flore*.

In the Flora area, plants of *Kali tragus* (L.) Scop. pre-

dominantly belong to a particular variety for which no name was available yet under this genus. A new combination is here proposed:

Kali tragus (L.) Scop. var. *tenuifolia* (Tausch) Verloove, comb. nov.

Basionym: *Salsola kali* L. var. *tenuifolia* Tausch in Flora 11: 326. 1828.

• *Ononis* L.

Two species of *Ononis*, often hardly distinguishable, *O. repens* L. and *O. spinosa* L., are now treated as a single variable species (i.e. *O. spinosa*, the binomial that has nomenclatural priority) with two subspecies, respectively subsp. *procurrens* (Wallr.) Briq. and subsp. *spinosa*, following other recent Floras (e.g. Tison & de Foucault 2014, Duistermaat 2020).

In the Flora area, a particular variety from fixed coastal dunes with tiny corollas (ca. 10 mm long), very densely glandular hairy stems and (almost) devoid of spines, has always been referred to as *O. repens* var. *repens* (var. *procurrens* being the more widespread taxon). Although its taxonomic relevance requires confirmation, it is accepted by several contemporary European authors (e.g. Jäger & Werner 2005 who even treated it at subspecies rank). However, this variety has apparently not (yet) been combined under *O. spinosa* [subsp. *procurrens*]:

Ononis spinosa L. [subsp. *procurrens* (Wallr.) Briq.] var. *repens* (L.) Verloove, comb. nov.

Basionym: *Ononis repens* L., Sp. Pl. 2: 717. 1753.

• *Schedonorus* P. Beauv.

The generic circumscription of *Festuca* L. has dramatically changed in recent years (e.g. Soreng & Terrell 2001 and onwards). Among other transfers, three broad-leaved species with auriculate leaf blades were moved (again) to the segregate genus *Schedonorus* P. Beauv. This renewed classification better reflects the natural relationships between the species of these genera and is in accordance with other recent western European Floras (e.g. Tison & de Foucault 2014, Stace 2019, Duistermaat 2020). However, even then further studies are needed. For instance, *Schedonorus* has lately been included in *Lolium* by some authors (see Banfi *et al.* 2017 for an overview) and this point of view is increasingly followed (e.g. Tison *et al.* 2021, Soreng *et al.* 2022).

In the Flora area, a particular variety of ‘*Festuca arundinacea*’, characterized by rough leaf sheaths and a rough stem just below the inflorescence, a narrower and denser inflorescence and lemmas with bidentate apices with protruding veins, was treated as var. *aspera*. However, a name at varietal rank was not available under *Schedonorus*; it is here proposed and validated:

Schedonorus arundinaceus (Schreb.) Dumort. var. *asperus* (Mutel) Verloove, comb. nov.

Basionym: *Festuca elatior* L. var. *aspera* Mutel, Fl. Franç. (Mutel) 4: 110, atlas: pl. 88 fig. 620. 1837.

References

- Akhani H., Edwards G. & Roalson E.H. (2007) – Diversification of the Old World Salsoleae s.l. (Chenopodiaceae): Molecular phylogenetic analysis of nuclear and chloroplast data set and a revised classification. *International Journal of Plant Sciences* 168: 931-956.
- Banfi E., Galasso G., Foggi B., Kopecký D. & Ardenghi N.M.G. (2017) – From Schedonorus and Micropyropsis to Lolium (Poaceae: Loliinae): New combinations and typifications. *Taxon* 66(3): 708-717.
- Bartolucci F., Peruzzi L., Galasso G., Albano A., Alessandrini A., Ardenghi N.M.G., Astuti G., Bacchetta G., Ballelli S., Banfi E., Barberis G., Bernardo L., Bouvet D., Bovio M., Cecchi L., Di Pietro R., Domina G., Fascetti S., Fenu G., Festi F., Foggi B., Gallo L., Gottschlich G., Gubellini L., Iamónico D., Iberite M., Jiménez-Mejías P., Lattanzi E., Marchetti D., Martinetto E., Masin R.R., Medagli P., Passalacqua N.G., Peccenini S., Pennesi R., Pierini B., Poldini L., Prosser F., Raimondo F.M., Roma-Marzio F., Rosati L., Santangelo A., Scoppola A., Scortegagna S., Selvaggi A., Selvi F., Soldano A., Stinca A., Wagensommer R.P., Wilhelm T. & Conti F. (2018) – An updated checklist of the vascular flora native to Italy. *Plant Biosystems* 152(2): 179-303.
- Duistermaat L. (2020) – Heukels' Flora van Nederland (24e druk). Noordhoff Uitgevers, Groningen/Utrecht.
- Jäger E.J. & Werner K. (eds.) (2005) – Rothmaler Band 4. Exkursionsflora von Deutschland. Gefäßpflanzen: Kritischer Band. Springer Verlag, Berlin.
- Lambinon J. & Verloove F. (coll. Delvosalle L., Toussaint B., Geerinck D., Hoste I., Van Rossum F., Cornier B., Schumacker R., Vanderpoorten A. & Vannerom H.) (2012) – Nouvelle Flore de la Belgique, du Grand-Duché de Luxembourg, du Nord de la France et des Régions voisines. Sixième édition. Meise, Jardin botanique national de Belgique.
- Mosyakin S.L., Freitag H. & Rilke S. (2017) – Kali versus Salsola: the instructive story of a questionable nomenclatural resurrection. *Israel Journal of Plant Sciences* 64(1): 18-30.
- Pelser P.B., Gravendeel B. & van der Meijden R. (2002) – Tackling speciose genera: species composition and phylogenetic position of Senecio sect. Jacobaea (Asteraceae) based on plastid and nrDNA sequences. *American Journal of Botany* 89(6): 929-939.
- Soreng R.J., Peterson P.M., Zuloaga F.O., Romaschenko K., Clark L.G., Teisher J.K., Gillespie L.J., Barberá P., Welker C.A.D., Kellogg E.A., Li D.-Z. & Davidse G. (2022) – A worldwide phylogenetic classification of the Poaceae (Gramineae) III: An update. *Journal of Systematics* 60(3): 476-521.
- Soreng R.J. & Terrell E.E. (2001) – Taxonomic notes on Schedonorus, a segregate genus from Festuca or Lolium, with a new nothogenus, xSchedololium, and new combinations. *Phytologia* 83(2): 84-86.
- Stace C. (2019) New Flora of the British Isles, 4th edition. C & M Floristics.
- Tison J.M., Abdulhak S., Bock B., Boudrie M., Fridlender A., Rocchia A., Van Es J. & Véla E. (2021) – Combinaisons nouvelles requises dans la seconde édition de Flora Gallica. *Evaxiana* 8: 220-225.
- Tison J.-M. & de Foucault B. (2014) – Flora Gallica. Flore de France. Mèze, Biotop Editions.
- 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: 1-254.
- Verloove F. (2023) – The seventh edition of the Nouvelle Flore de la Belgique: nomenclatural and taxonomic remarks. *Dumortiera* 122: 99-173.
- Verloove F. & Lambinon J. (2006) – The non-native vascular flora of Belgium: a new nothospecies and three new combinations. *Systematics and Geography of Plants* 76: 217-220.
- Verloove F. & Lambinon J. (2011) – The non-native vascular flora of Belgium: new combinations and a new variety. *New Journal of Botany* 1(1): 38-42.
- Verloove F. & Van Rossum F. (coll. Devriese H., Matysiak J.-P., Ronse A., van de Beek A. & Zwaenepoel A.) (2023) – Nouvelle Flore de la Belgique, du Grand-Duché de Luxembourg, du Nord de la France et des Régions voisines. Septième édition. Jardin botanique de Meise.
- Winter S., Chizzola R., Kriechbaum M. & Kropf M. (2013) – Hybridisation in Jacobaea – characterisation of hybrids between Jacobaea aquatica and J. vulgaris in Austria. *Plant Ecology & Diversity* 6(2): 217-229.