Leuzea repens, a new combination (Compositae: Cardueae: Centaureinae)

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Summary. The taxonomic concepts and nomenclatural issues surrounding a group of taxa, often placed into ‘*Rhaponticum* Vaill.’ sensu auct. mult., are discussed. Taxonomically, taxa belonging to *Acroptilon*, *Leuzea*, *Stemmacantha* and ‘*Rhaponticum* Vaill.’, are now considered congeneric. ‘*Rhaponticum* Vaill.’ is not considered a validly published generic name and taxa are now recognised under the generic name *Leuzea*, which has priority. The taxonomic position of *Acroptilon repens* (Compositae: Cardueae: Centaureinae), the only representative of the genus in Iraq, has been reviewed and a new combination in *Leuzea* is provided, together with an exhaustive synonymy of the taxon concerned.

Key Words. Asteraceae, Chewing Disease, *Flora of Iraq*.

Introduction

During the initial editing of the draft *Flora of Iraq* Compositae account, written by several authors some 35 or more years ago, the present author was faced with updating much taxonomy and sorting out many nomenclatural issues with the various scripts. One of these concerned Francis Davies’s original draft account of the genus *Acroptilon* Cass. (Compositae: Cardueae: Centaureinae), and the sole species in the *Flora*, *A. repens* (L.) DC.

Acroptilon repens is a widely distributed taxon, and a noxious weed, possibly best known as the Russian knapweed (Maddox *et al.* 1985; Moore 1972; Quattrocchi 2000: 38; USDA 2015; also known as creeping knapweed, hardheads, and Turkestan thistle — Klein 2011). Its toxicity is reported as causing Chewing Disease (nigropallidal encephalomalacia), a neurological disorder in horses, a response also seen to be caused by *Centaurea solstitialis* L. in the same subtribe (Anon 2015; Vetstream 2014).

It became apparent to the present author that the generic placement of *Acroptilon* was questionable, and brought with it nomenclatural implications. Further study indicated that *Acroptilon repens* belonged to what Susanna & Garcia-Jacas (2006) had termed the ‘III.5.B. *Rhaponticum* Group’, that in turn formed part of the subtribe Centaureinae. This group, of perhaps some 40 species, included the genera *Acroptilon*, *Leuzea* DC., ‘*Rhaponticum* Vaill.’ and *Stemmacantha* Cass. (Susanna & Garcia-Jacas 2006: 142 – 144; Hidalgo *et al.* 2006). Earlier, in his treatment of the subtribe Centaureinae, Bremer (1994: 149 – 156) recognised a monospecific *Acroptilon* (*A. repens*) and *Stemmacantha* (containing about 20 species); ‘*Rhaponticum* Hill’ was placed into

the synonymy of the latter; two literature references were provided, the first to Holub (1973) and, the second, to Dittrich (1984).

Holub (1973) had long-recognised that within the Centaureinae there were taxonomic issues with both *Rhaponticum* sensu auct. and *Leuzea*, and that the work of Soskov (1959) and Dittrich (1968a, b) had scarcely resolved them, together with the clear nomenclatural issues that still existed. Holub concluded that *Leuzea* (based on *L. conifera* (L.) DC.) was congeneric with *Cestrinus* Cass., *Stemmacantha*, *Fornicium* Cass. and *Malacophyllum* Tausch along with several species belonging to *Rhaponticum* sensu auct., synonymising all, reducing the genera to subgenera of *Leuzea* and providing many new combinations. In his discussions on the nomenclature, he highlighted and summarised the many issues with the generic name *Rhaponticum*, concluding that it should only be ascribed to Ludwig, and now considered synonymous with *Centaurea* L.; the present author concurs with this view. Holub did not treat *Acroptilon repens* within his ‘Contribution’, mentioning only the common basic chromosome number of x= 13 amongst several genera within the Centaureinae, including *Acroptilon*.

The taxonomy of Holub’s and Dittrich’s (Dittrich 1968a, 1975, 1984) concepts of this group of species was subjected to analysis (of one plastid and two nuclear marker/s) in an attempt to resolve the delimitation of the ‘*Rhaponticum* group’ (Hidalgo *et al.* 2006). Hidalgo *et al.* provided a ‘DNA phylogeny of *Rhaponticum* and related genera’ from which a quite reasonable taxonomic resolution was presented. The ‘*Rhaponticum* group’ was clearly comprised of the concepts of *Acroptilon*, *Leuzea* and ‘*Rhaponticum* Vaill.’

($\equiv$ *Stemmacantha*) and usefully divided into two clades that Hidalgo *et al.* informally recognised as the ‘Oriental clade’ and the ‘Occidental clade’; it was in the former that *A. repens* (and *A. australe* Ijin) was placed. Furthermore, since the authors could not entirely resolve the relationship between *A. repens* and *A. australe* they merely provided a new combination of the former under *Rhaponticum*. The implications surrounding *A. australe* are discussed below.

Ascription of the authorship of *Rhaponticum* to Vaillant (e.g. Greuter 2003; Greuter *et al.* 2005; Zhu & Martins 2011) fails to recognise the issue with Vaillant’s many names (see Brummitt 2008; Greuter 2008; Greuter & McNeill 2008; Hind *et al.* 2007; Susanna 2009). This can be summarised by essentially discounting a post-Linnaean translation (i.e. post-1753 — ‘Vaillant’ 1754) (of a pre-Linnaean work of Vaillant, dating from 1719) that many authors considered provided validation of Vaillant’s names. Holub (1973) had correctly recognised that *Leuzea* had priority and made many of the required combinations — apart from considering *A. repens*. Since Hidalgo *et al.* (2006: 709, 711) clearly placed *Acroptilon* within the concept of *Rhaponticum*, here recognised as *Leuzea*, a new combination is required. This is provided below.

New combination

Following the new combination, a fairly exhaustive synonymy of the taxon is provided. After the citation of each name and its place of publication, the ‘type citation’ in a traditional sense is provided (as a direct quote from the protologue, regardless of whether a specimen was cited). The location of type material is cited, where known and, when available, the barcode numbers present with the material given. Many of the digital images of the ‘types’ can be seen through JStor Global Plants (JSTOR-GP [continuously updated](#)), institutional subscriptions permitting.

***Leuzea repens* (L.) D.J.N.Hind, comb. nov.**

<http://www.ipni.org/urn:lsid:ipni.org:names:60478474-2>

Centaurea repens L., *Sp. Pl.*, ed. 2. 2: 1293 (Linnaeus 1763). Type: ‘Habitat in oriente.’, LINN-LH 1030.34.

Centaurea picris Pall. ex Willd. (Willdenow 1803: 2302). Type: ‘Habitat ad mare Caspium. (v. s.)’. Type material: B-W(16601-01 0, 16601-02 0, 16601-03 0), BM(000996201). Note: Of the material in B-W none indicate the locality — B-W(16601-01 0) is marked ‘*C. Picris* 1.’ on the top right hand corner of the sheet, and was most probably determined by Marschall von Bieberstein as ‘*Serratula picris* MB’ on a label to the lower left of the specimen, and

subsequently redetermined as *Rhaponticum repens* (L.) Hidalgo by Martins (Mai 2009); B-W(16601-02 0) is marked ‘*C. Picris* 2’ on the top right hand corner of the sheet, and has a small label at the bottom of the sheet — ‘*Cent. Picris* Pall./ (W.)’. The sheet bears an annotation label by Cronquist (1989) suggesting this is ‘presumably the type of *Centaurea picris* Pallas ex Will. = *C. repens* L.’. On neither the first or second sheets are there any lower leaves with anything but entire basal margins. The third sheet, B-W(16601-03 0), is annotated ‘*C. Picris* 3’ on the top right hand corner of the sheet. It is labelled as ‘*Centaurea pycris* Pall./ (Adams)’. This sheet bears some lower leaves that are ‘subdentatis’, as indicated in the protologue, but the leaves in general are much narrower than on the other two sheets. The material from BM is clearly ex Herb. Pallas, with the top left hand label indicating the locality as ‘Caspica’, and it is quite clear that the basal margins of many leaves are ‘subdentatis’, although more frequently conspicuously toothed to lobed. Since the Pallas herbarium was sold in 1808, and part purchased by Lambert and deposited in BM (Miller 1970 — Pallas material was discussed at length and was sold in the auction of Lambert’s herbarium in three lots, #94, #96 and #285.), it is highly probable that Willdenow had seen the material in Pallas’s herbarium in preparing his *Species Plantarum* (Willdenow 1803); the BM material should therefore not be discounted if lectotypification of the name is considered necessary.

Serratula picris (Pall. ex Willd.) M.Bieb. (Marschall von Bieberstein Dec. 1819 or early 1820: 546).

Acroptilon obtusifolium Cass. (Cassini 1827: 465). Type: ‘Nous avons fait cette description sur un échantillon sec de l’herbier de M. Desfontaines, étiqueté *Centaurea picris*, ...’ Holotype: ?P or FI.

Acroptilon subdentatum Cass. (Cassini 1827: 465). Type: see citation for *A. serratum*. Holotype: ?P.

Acroptilon serratum Cass. (Cassini 1827: 466). Type: ‘Nous avons décrit cette espèce et la précédente [= *Acroptilon subdentatum*] sur des échantillons secs, innommés, dont nous ignorons l’origine.’ Holotype: ?P.

Acroptilon angustifolium Cass. (Cassini 1827: 466). Type: ‘Nous avons faite cette description sur un échantillon sec qui appartient probablement à la *Centaurea repens* de Linné.’ Holotype: ?P.

Carduus picris (Pall. ex Willd.) Sweet (1830: 281).

Acroptilon picris (Pall. ex Willd.) C.A.Mey. (Meyer 1831: 67).

Acroptilon picris (Pall. ex Willd.) DC. (de Candolle 1838: 662), comb. superfl.

Acroptilon picris (Pall. ex Willd.) C.A.Mey. var. α *obtusifolia* (Cass.) DC. (de Candolle 1838: 662).

Acroptilon picris (Pall. ex Willd.) C.A.Mey. var. β *angustifolia* (Cass.) DC. (de Candolle 1838: 662).

Acroptilon picris (Pall. ex Willd.) C.A.Mey. var. γ *subdentata* (Cass.) DC. (de Candolle 1838: 662).

Acroptilon picris (Pall. ex Willd.) C.A.Mey. var. δ *oxylepis* DC. (de Candolle 1838: 662). Type: [Iran:] 'ad agrorum margines circa Seidchadschi prov. Aderbeischan Persiae legit cl. Szowitz. Acr. Picris var. Fisch. et Mey.! pl. Szow. ined. (v. s.)' Holotype: G-DC(G-00486874).

Acroptilon picris (Pall. ex Willd.) C.A.Mey. var. ϵ *serrata* (Cass.) DC. (de Candolle 1838: 663).

Acroptilon repens (L.) DC. (de Candolle 1838: 663).

Acroptilon australe Iljin (1937: 59). Type: 'Turcomania, Kihil-Imam ad fl. Czan-dar, 12 VI 1912 n. 3919, leg. V. Lipsky et A. Michelson (Herb. Inst. Bot. Ac. Sc. URSS).' Holotype: LE.

Acroptilon repens (L.) DC. f. *sphaerica* Bornm. (Bornmüller 1940: 209), nom. inval. — see Discussion. [Based on: 'Iter Persico-turcicum 1892-93. No 4069. Persiae austro-orient. prov. Kerman: Kerman, in cultis. 1900 m. s. m. 1892. V. 13. legit et determ.: J. Bornmüller.' Original material: JE(00015673).]

Acroptilon repens (L.) DC. f. *cylindrica* Bornm. (Bornmüller 1940: 209), nom. inval. — see Discussion. [Based on: 'Iter Persico-turcicum 1892-93. No. 4067. Persiae austro-orient. prov. Kerman: Kerman, m. Kuh-tagh-Ali. 2100 m. s. m. 1892. V. 10. legit et determ.: J. Bornmüller.' Original material: JE(00015672).]

Acroptilon repens (L.) DC. f. *macrocephala* Bornm. (Bornmüller 1940: 209), nom. inval. — see Discussion. [Based on: '[Iran:] Iter Persico-turcicum 1892-93. No. 4066. Persiae austro-orient. prov. Kerman: Kerman, ad Dschupar. 2000 m. s. m. 1892. VI. 8. legit et determ. J. Bornmüller.' Original material: JE(00015678).]

Acroptilon repens (L.) DC. f. *macrolepis* Bornm. (Bornmüller 1940: 209), nom. inval. — see Discussion. [Based on: Iter Persico-turcicum 1892-93. No. 4064. Persiae austro-orient. prov. Kerman: Kerman, in incultis. 1900 m. s. m. 1892. 19. V. legit et determ.: J. Bornmüller — Original material: JE(00015677); 'Iter Persico-turcicum 1892-93. No. 4065. Persiae austro-orient. prov. Kerman: in incultis. 2000 m. s. m. 1892. V. 19. legit et determ.: J. Bornmüller. — Original material: JE(00015686).]

Acroptilon repens (L.) DC. f. *tincta* Bornm. (Bornmüller 1940: 209), nom. inval. — see Discussion. [Probably based on: 'am Lalesar, 300 m (11.VII.1892; [Bornmüller] no. 4071'. No original material found.)]

Acroptilon repens (L.) DC. subsp. *australe* (Iljin) Rech.f. (Rechinger 1980: 309).

Acroptilon repens (L.) DC. subsp. *australe* (Iljin) Gubanov (1996), isonym.

Rhaponticum repens (L.) Hidalgo (in Hidalgo *et al.* 2006: 714).

DISTRIBUTION. S Russia, Turkey, Iran, N Iraq, Afghanistan, Pakistan, Kashmir, C Asia (Turkmenia to Uzbek-

istan), W Mongolia, China (Sinkiang), W Siberia. Introduced and widespread as a noxious weed in the USA (introduced late 19th century as an alfalfa contaminant) and Canada (Moore 1972), and now recognised as a weed in Argentina (Zuloaga & Morrone 1999).

DISCUSSION. Bornmüller (1940: 209), as part of his considerable output on his *Iter Persico-turcicum 1892–1893*, provided a short commentary on the variation he had observed in *Acroptilon repens*. He mentioned several forms in this discussion, and this appears to be the earliest record of these names, even following exhaustive searches of the works by Bornmüller mentioned by Rechinger (1955). As all the diagnostic prose is in German these are not considered to be validly published as they appeared at least five years after the relevant date for the requirement of Latin diagnoses in the Code; they are thus contrary to Art. 39.1 (Turland *et al.* 2018). If separately published labels of Bornmüller's *Iter Persico-turcicum* were made available these would constitute valid publication of Bornmüller's taxa as there is invariably a short Latin phrase under Bornmüller's trinomial, the infraspecific epithet often with a penna rank added between 'Pall.' and the infraspecific name. Duplicates of the relevant Bornmüller material are widely distributed (e.g., K, P, etc.).

Although Iljin (1937) considered *Acroptilon australe* distinct from *A. repens*, as did Soskov (1959), later authors (e.g. Rechinger 1980; Gubanov 1996) considered it a variant of *A. repens*, as subspecies *australe* (Iljin) Rech.f. Hidalgo *et al.*'s (2006) commentary on 'The *Rhaponticum* oriental clade' indicated that their results precluded coming to a 'verdict' over whether the two taxa were distinct. If, however, research supports the continued recognition of a separate *A. australe*, a new name will have to be provided within *Leuzea*; *Leuzea australis* Gaudich., an Australian endemic, already exists.

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