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Androsace halleri subsp. *nuria* Schönsw. & Schneew. (Primulaceae), a new taxon from the eastern Pyrenees (Spain, France)

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Abstract

In the course of molecular phylogeographical investigations in the *Aretia* group of *Androsace* (Primulaceae), a previously unrecognised entity from the eastern Pyrenees (Spain/France) was identified as genetically distinct lineage. The entity is here morphologically characterised and described as new subspecies, *Androsace halleri* subsp. *nuria* Schönsw. & Schneew.

Key words: *Androsace*, France, Pyrenees, Spain, subspecies nova

Introduction

The genus *Androsace* Linnaeus (1753a: 141) comprises 155 species (Mabberley, 2008) mainly distributed in extra-tropical mountain ranges of the northern hemisphere. A phylogeny based on nuclear ribosomal ITS and chloroplast *trnL*F data (Schneeweiss & al. 2004) strongly suggested the monophyly of the *Aretia* group, comprising *A. sect. Aretia* (Linnaeus) W.D.J. Koch (1837: 583) (endemic to Europe), a single species of *A. sect. Chamaejasme* (Linnaeus) W.D.J. Koch (1837: 584) from northern Siberia and the often segregated genera *Vitaliana* Sesler in Donati (1758: 69) (southern European mountains) and *Douglasia* Lindley (1827: 385) (northeastern Siberia, Beringia, North American Cordilleras). In Europe, the *Aretia* group is most diverse in the Alps (13–15 species) and the northern Iberian mountain ranges including the Pyrenees (nine species); considerably fewer species are found in the Balkan Peninsula (three species), the Carpathians, the Apennines and the central and southern Spanish mountains (two species each) and the French Massif Central (one species). As European members of the *Aretia* group show a number of different distribution patterns in the central and southern European mountain ranges (narrow or wide distribution areas without or with disjunctions within or among major mountain ranges), they have become subject of several molecular phylogeographic studies (Schönswetter & al. 2003ab; Dixon & al. 2007, 2008, 2009ab; Schönswetter & Schneeweiss 2010).

Although the taxonomy of the European members of the *Aretia* group is well established (Lüdi 1927; Ferguson 1972; Kress, 1991, 1997), the broad sampling in the course of these phylogeographical investigations allowed previously unrecognised genetically differentiated entities to be discovered. For instance, a population from the Dinaric Mountains was found to be phylogenetically and morphologically distinct and was consequently described as *A. komovensis* Schönswetter & Schneeweiss (2009: 547). Strong intraspecific divergence was also encountered in the highly disjunctly distributed *A. halleri* Linnaeus (1753a: 142). Based on Amplified Fragment Length Polymorphism (AFLP) data, populations of *A. halleri* from the eastern Pyrenees (France, Spain) were clearly distinct from accessions from the rest of the distribution area, i.e. Sierra Cantabrica (Spain), Massif Central and Vosges (France; Dixon & al. 2007, 2008; Fig. 1). The populations of *A. halleri* in the eastern Pyrenees have previously been recognised as morphologically different from *A. halleri* found elsewhere in having shorter (but relatively broader) leaves with no or only weakly developed hooks at their tips (Kress, 1991, 1997). Most of the eastern Pyrenean populations of *A. halleri* are growing in snow-bed communities in the upper alpine or subnival vegetation belt, suggesting ecological divergence from the populations elsewhere that dwell in subalpine and lower alpine dwarf shrub communities dominated by *Juniperus communis* Linnaeus (1753b: 1040) and *Vaccinium* Linnaeus (1753a: 349) species. Since ecology and morphology of

Etymology:—Named after the Valle de Nuria in the Spanish province of Girona/Gerona.

Distribution, ecology and conservation:—*Androsace halleri* subsp. *nuria* is distributed in the eastern Pyrenees, in the Spanish province of Girona/Gerona (for a comprehensive list of localities see Benito Garzón & al. 2001) and the French department Pyrénées-Orientales. The altitudinal distribution ranges from (1900) 2200 to 2850 m on Mt. Puigmal. Preferred habitats are open alpine meadows, more rarely dwarf shrub communities with relatively long snow cover or subnival scree communities. *Androsace halleri* subsp. *nuria* is restricted to a relatively small area with 40 km southwest-northeast extension, where it is growing up to the highest summits (e.g., Mt. Puigmal). It adds to the list of (sub)endemics of the eastern Pyrenees, which includes *Delphinium montanum* De Candolle ex De Candolle & Lamarck (1805: 641), *Salix ceretana* (P. Montserrat) J. Chmelař (1982: 111), *Senecio leucophyllus* De Candolle (1813: 144) and *Xatardia scabra* Meisner (1838: 145; Gómez & al. 2003). We suggest classifying the taxon as Near Threatened because of its small distribution area (extent of occurrence c. 500 km²) and the anticipated range loss triggered by global warming (IUCN, 2012).

Additional specimens examined:—FRANCE. Pyrénées Orientales: basis of a rock face facing towards Porteil d'Orlu, 1900–2000 m, 9 June 1983, P. Montserrat & L. Villar F-66 (JACA-138283!); *ibid.*, massif of Puigmale d'Err (above the skiing resort Las Planes, close to the Spanish border), 2400 m, 10 July 1991, J. Lambinon 91/F/200 (MSB-002534!)*; *ibid.*, crest on the border between France and Spain, west of Mt. Puigmale, 2450–2600 m, 25 July 1971, H. Merxmüller & B. Zollitsch 26932 (M-0127564!)*; *ibid.*, crest on the border between France and Spain, Pla de Salinas south of Osseja, 2200–2300 m, 23 July 1971, H. Merxmüller & B. Zollitsch 26817 (M-0127568!)*; *ibid.*, crest on the border between France and Spain, between Pla de Salinas and Col de Caralps, southwest of Mt. Puigmale, 2400–2560 m, 23 July 1971, H. Merxmüller & B. Zollitsch 26852 (M-0127569!)*; *ibid.*, Puigmal, 2200–2350 m, 5 July 1986, P. Montserrat, L. Villar, G. Montserrat (JACA-443386!); *ibid.*, Puigmal, 2400–2500 m, 5 July 1986, P. Montserrat, L. Villar, G. Montserrat (JACA-446086!); *ibid.*, Canigou massif, Plas de Cady—Pic du Canigou, 2300–2784 m, 2°26'E, 42°30'30"N, 14 July 2001, G. Schneeweiss, P. Schönswetter & A. Tribsch 6416 (WU!)*.

SPAIN. Girona: Queralps, close to the tunnel of the cog railway, in a valley below the Santuario de Nuria, 10 June 1955, P. Montserrat, O. de Bolos & J. Braun-Blanquet (JACA-13055!); *ibid.*, Ribas de Ferrer [Ribes del Freser?], above the treeline in the Valle de Nuria, 2200–2800 m, 3 August 1974, L. Villar (JACA-5324!); *ibid.*, Nuria, Collet Verd, 2100 m, L. Vigo, 2 July 1977 (BCN-46700!); *ibid.*, Nuria, Cossa de l'Embut, 2250 m, A. Farràs, 2 July 1977 (BCN-46702!); *ibid.*, La Molina, M.T. Losa (BCN-16973!); *ibid.*, Nuria, in the alpine zone, 2000–3000 m, July 1879. Herbarium Dris Frio Tremols (WU!)*; *ibid.*, eastern Pyrenees, southern ridge of Puigmal d'Err, from the Baga de les Clotes to the summit, 2500–2910 m, 2°7'35"E, 42°22'30"N, 22 July 2003, G. M. Schneeweiss & P. Schönswetter 8836 (WU!).

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