



***Meconopsis autumnalis* and *M. manasluensis* (Papaveraceae), two new species of Himalayan poppy endemic to central Nepal with sympatric congeners**

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Abstract

Two new species from Nepal, *Meconopsis autumnalis* and *M. manasluensis*, are described and illustrated with notes on diagnostic characters used to distinguish them from allied species. Sympatric speciation and the mechanisms to reproductively isolate the new species are discussed. In *M. autumnalis*, reproductive isolation from the widespread *M. paniculata* is the result of a shift in flowering phenology, whereas possible mechanisms preventing cross-fertilisation between *M. manasluensis* and the sympatric species *M. pinnatifolia* remain unclear.

Key words: allochronic speciation, assortative mating, Himalaya, Flora of Nepal

Introduction

Meconopsis Vig. is the second largest genus of the Papaveraceae and contains about 50 monocarpic or polycarpic species (Mabberley 2008), though with new discoveries and reassessments of species concepts having led to the description of additional novel taxa in recent years (An *et al.* 2009, Cui & Lian 2005, Grey Wilson 2006a, 2006b, Lu & Lian 2006, Ohba *et al.* 2009, Toshio *et al.* 2010). The genus as traditionally defined has a disjunct distribution, with all species found in the Sino-Himalayan region apart from *Meconopsis cambrica* (L.) Viguier (1814: 48), which is confined to Ireland, Britain and the Atlantic fringes of continental western Europe (Webb 1983). However, it is now widely accepted that *M. cambrica* is not congeneric and may thus be reclassified under *Papaver* L. or as a unique genus in its own right (Carolan *et al.* 2006, Jork & Kadereit 1995).

In the Sino-Himalayas *Meconopsis* is found in a variety of habitats ranging from temperate forests and pastures below the tree line at around 2500 m, to alpine meadows, screes and nival zones up to 5500 m. The highest records are of dwarf forms of *M. horridula* Hooker f. & Thomson (1855: 252) *s.s.*, which occur from central Nepal eastwards to Bhutan. Within Central Asia as a whole, the genus has a more or less continuous distribution in a narrow band from the northwestern Himalaya of Pakistan, along the Himalayan range and Tibetan plateau to western China. Twenty two species have been reported from Nepal and eleven of these are endemic and mostly local in distribution (Egan & Shrestha in press). Although several species of *Meconopsis* are currently considered threatened (Sulaiman & Hasnain 1996), the conservation status of the majority remains unknown, with a lack of accurate distribution records and baseline ecological data (population dynamics, demography etc.) hampering formal conservation assessment.

Two new species of *Meconopsis* are here described: *M. autumnalis* P.Egan in the series *Robustae* Prain of subgenus *Eumeconopsis* (Prain) Fedde, and *M. manasluensis* P.Egan belonging to subgenus *Discogyne* G.Taylor. The *Robustae* and *Discogyne* were revised by Grey-Wilson (2006a, 2006b), and an updated key to the Nepalese species of *Meconopsis* will be presented in Volume 3 of the Flora of Nepal (Egan & Shrestha in press). The description of these species follows discoveries made during two expeditions to central Nepal in