

## The biology of non-weedy parasitic plants: the third symposium

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*Third symposium on the biology of non-weedy parasitic plants: excursion at the Montagne de Sosoye (Namur Province), a protected Site of Biological Importance. This was one of the two sites that were visited on 14 September 2013, both with calcareous grasslands, which are excellent places to observe high biodiversity in Belgium, even in early autumn. Photograph by Agata Klimkowska.*

In September 2013, the third symposium on the biology of non-weedy parasitic plants was held in Belgium. The meeting followed in the footsteps of the two previous editions of the symposium held in 2004 in Wageningen, the Netherlands (Wesselingh & Borg 2005, Wesselingh & van Groenendael 2005) and in 2008 in České Budějovice in the Czech Republic (Štech & Wesselingh 2010). The aim of these symposia is to focus on the ecology, ecophysiology and evolution of non-weedy parasitic plants, thereby consolidating its own niche compared to the larger meetings on parasitic plants that often focus mostly on the parasites that pose problems in agriculture, such as *Orobanche* and *Striga*. Whereas the first two symposia focused on the non-weedy, hemiparasitic genera in the Orobanchaceae family, the scope was now enlarged to all

parasitic plants, hemiparasitic or holoparasitic, that are not considered to be agricultural weeds.

The third symposium on the biology of non-weedy parasitic plants was held in Namur in Belgium on 12–15 September 2013 and attracted 26 participants from eight countries. Two invited talks, ten contributed talks and ten posters were presented. Although the scope of the meeting had been enlarged to other parasitic plant families, many of the participants presented work on the commonly studied Orobanchaceae, ranging from *Rhinanthus*, *Pedicularis* and *Melampyrum* to *Euphrasia* and *Odontites*. However, there were also presentations on mistletoes (*Loranthus*, *Viscus*) and the much less well-known family Apodanthaceae (Cucurbitales), composed of endophytic holoparasites on Fabaceae and Sali-

caecae (Bellot & Renner 2014). The two invited speakers, David Watson (Charles Sturt University, Australia) and Vincent Merckx (Naturalis, the Netherlands), spoke about their work on Australian mistletoes and mycoheterotrophic plants, plants parasitizing fungi, respectively. The talks were divided over two days, with ecology and ecophysiology as the main theme on the first day and evolution on the second day. For a complete list of the titles of all the contributions to the symposium, see Těšitel & Wesselingh (2013).

The first two editions of the symposium were followed by a special issue of a journal with articles contributed by participants of the meeting, and this third symposium continues this tradition. The two previous special issues were published in *Folia Geobotanica*, but given the location of the meeting and the match between the themes of the symposium and the aims of *Plant Ecology and Evolution*, it was decided that the latter would be the ideal venue for the third special issue.

The present issue of *Plant Ecology and Evolution* contains five contributions by participants, which cover the width and breadth of the symposium: mostly Orobanchaceae, but also one paper dealing with all parasitic plants, and the subjects of the papers include ecology, ecophysiology and evolution. The special issue starts with a functional classification of all parasitic plants, a review by Jakub Těšitel (this issue, pages 5–20). He considers photosynthetic ability, the anatomy and the location of the haustoria, which form the connection with the host, and the mode of germination. He proposes to drop the distinction between ‘facultative’ and ‘obligate’ root hemiparasites, since very few of these plants can actually live completely independently from a host without a large fitness loss. Phenology and fitness, in the form of variation in flowering time and the effect of mowing, are the subject of two of the other papers, on *Rhinanthus* (Wesselingh, this issue, pages 21–30) and *Rhinanthus* and *Melampyrum* (Blažek et al., this issue, pages 31–38), respectively. The latter authors warn that very early mowing of a part of a meadow, intended to favour arthropod populations, has detrimental effects on the fitness of *Melampyrum nemorosum* in particular, and they argue that plots with this species present should never be included in rotations of this type of management. Světlíková et al. (this issue, pages 39–44) demonstrate that foliar brushing with <sup>15</sup>N-urea provides a simple and effective technique to trace nitrogen flows between hosts and parasites under field conditions, an important piece of knowledge needed to elu-

cidate the roles that parasitic plants play in terrestrial ecosystems. Finally, the complex taxonomy of the genus *Euphrasia* is tackled by Svobodová et al. (this issue, pages 45–58) using microsatellites to analyse genetic differentiation among four tetraploid *Euphrasia* species in Central Europe and making a comparison with the traditionally used morphological traits. They conclude that two of the species, both late-flowering, are well separated both genetically and morphologically, but most of the early-flowering populations, which had earlier been described as two separate species or belonging to one of the late-flowering species, actually form a single genetic group, although some morphological differences can be found between the geographically separated mountainous areas in which they occur.

This special issue concludes the third symposium. We are looking forward to the continuation of the series, the fourth symposium, which will likely be organised in 2017.

#### ACKNOWLEDGEMENTS

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