



CHOSEN ASPECTS OF FLOWERING OF RANUNCULACEAE REPRESENTATIVES IN POLAND

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Key words: Ranunculaceae, flowering phenology, floral sexual phases, flower abundance

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The family Ranunculaceae consists of numerous widespread species occurring from lowlands to subalpine or alpine zones. In Poland, the species grow in different types of habitats, including xerothermic swards (*Adonido-Brachypodietum*, *Brachypodio-Teucrietum*, *Thalictro-Salvietum*, *Seslerio-Scorzoneretum*) and deciduous forests (*Tilio-Carpinetum*). Many species are popular ornamentals cultivated for their esthetic value. Ranunculaceans vary remarkably in the phenology of blooming. Among them, there are early spring blooming species like *Eranthis hyemalis*, *Ficaria verna*, *Isopyrum thalictroides*, *Anemone nemorosa*, *A. ranunculoides*, and those that start to bloom in autumn, e.g. *Aconitum carmichaelii*. The overall flowering duration may differ significantly between years – for example, in *Anemone sylvestris* the disparities reached more than three weeks. The occurrence and the length of each blooming phase may vary considerably between sites, e.g. in *Adonis vernalis* 10-15-day dissimilarities in the occurrence of blooming stages were recorded. Additionally, the duration of the full blooming stage varied from 10 to 30 days.

The diurnal pattern of blooming among Ranunculaceae members was proved to be highly species-specific. Flowers of *Aquilegia vulgaris* started opening at approx. 5.00 (GMT+2), which was 2-3 hours earlier than those of *Adonis vernalis*. Significant differences in the diurnal flowering dynamics can be found

even in the same genus: flowers of *Aconitum lycoctonum* began opening at 5.00 (with the peak between 6.00-9.00), while flowers of *Aconitum carmichaelii* started opening at 8.00 and peaked between 11.00-13.00.

The flowering abundance may differ among populations of the same species. The management type was found to have an impact on the individuals' density of *Adonis vernalis* occurring in xerothermic grasslands. The control of shrub encasement has already been designated as the factor determining the flowering abundance of *Adonis vernalis* in Lublin Upland.

Some Ranunculaceae representatives are dichogamous. This feature is commonly thought as the factor preventing self-pollination and inbreeding depression. For example, *Helleborus foetidus* and *Anemone sylvestris* are known to be protogynous, while many of the *Aconitum* representatives are protandrous. There may be evident difference in duration of each floral sexual phases, like in protandrous *Aconitum carmichaelii* (the length of male phase vs. female phase = 7.6 vs. 1.9 days, on average) or the time spent in stigma and pollen presentation can be similar, like in protogynous *Adonis vernalis* (7.5 and 8.4 days on average, respectively).

Disparities in flowering period, diurnal dynamics of blooming and sexual phases were found to be the adaptations to different insect foraging patterns.