



Do phenological responses to environmental conditions reflect the ecological role of plant species? Effects of light and temperature on budburst

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The process of adaptation is the result of stabilizing selection caused by two opposite forces: the protection against an unfavourable season, and the effective use of growing resources. As plant species have evolved different life strategies based on different trade offs between survival and capacity adaptations, different phenological responses are also expected among species. The aim of this study was to examine the budburst responses of two opportunistic species (*Betula pubescens*, *Salix x smithiana*) and two long lived, late successional species (*Fagus sylvatica* *Tilia cordata*), compare them and consider their ecological significance. Thus, we performed a series of experiments whereby temperature and photoperiod were manipulated during dormancy. Our results suggest that the timing of growth onset in *B. pubescens* and *S. x smithiana* is regulated through a less conservative mechanism than in *T. cordata* and *F. sylvatica*, and that these species trade a higher risk of frost damage for the opportunity of vigorous growth at the beginning of spring, before canopy closure. This information should be considered when assessing the impacts of climate change on vegetation or developing phenological models.