

## Modelling the Evolution of Flowering Time in Perennial Plants

### Description

Title: Modelling the Evolution of Flowering Time in Perennial Plants

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Abstract: The onset of flowering time in a plant is extremely significant when evaluating population success. Floral growth, seed production, and dispersal are all dependent upon flowering time. Flowering early (and hence longer) increases the prospect of pollination but typically reduces vegetative growth and yields fewer/smaller flowers. Flowering late (and hence shorter) guarantees more/bigger flowers but carries the risk of insufficient pollination. This fundamental trade-off between growth and flowering time suggests that there may be an optimal time to initiate flowering. In this thesis, we consider a deterministic hybrid integrodifferential model where we represent the growing season in continuous time and the time between seasons as a discrete map. We track the evolution of flowering time, as a phenotype, by explicitly considering it as a variable in our model. The model is analyzed from two different viewpoints: (1) by mutual invasion analysis in the sense of adaptive dynamics; and (2) by deriving equations for the mean trait value and total population density when flowering time is considered to be Gamma-distributed. In both cases evolution to an intermediary flowering time was observed.

URL: <http://hdl.handle.net/10393/39914>

### Files

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| <a href="#">Morris_P<br/>atricia_2<br/>019_The<br/>sis.pdf</a> | 1.62<br>MB | Adobe<br>PDF | <a href="#">Open</a> |
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## uO Research

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don't have perennials in your garden, you're missing out! Annuals provide quick, season-long color, but perennial flowers and plants should be part of your garden, too! What's the difference between annuals and perennials? 3. Arabis as a model system to study life-history evolution and flowering patterns in perennials. Perennial Arabis alpina growing in a natural population in the French Alps. Perennial Arabis alpina growing in a natural population in the French Alps. Annual and perennial plants show many differences in their patterns of reproduction. Annuals flower once in their life cycle and then transfer all resources into seeds leading to death of the plant. By contrast perennials live for many years, flower each year and intersperse periods of vegetative growth and flowering. Therefore, the balance between