



## 22. FLOWERING DATES OF GUERNSEY WILD PLANTS

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Figure 22.1 Early spring flowering daffodils in a Guernsey farmhouse garden.

The dates on which plants come into flower are determined by a number of factors. With one or two exceptions, plant species flower in specific seasons, for example daffodils in spring and ivy in autumn. This suggests that temperature and day-length are key to inducing flowering. In some desert systems, rainfall is the main driver, but this is unlikely to be an issue on Guernsey. Day-length does not vary from year to year so variation in plant flowering time (within seasonal limits) can be largely and directly attributed to temperature. In fact, plants in Europe are very responsive to temperature, which induces earlier leafing, flowering and

fruiting, and can allow later leaf fall. In a warming climate we would expect to see gradually earlier flowering. This is, in fact, what has been observed across Europe and elsewhere in the Northern Hemisphere where records exist. But what has been happening on Guernsey?

Nigel Jee has been recording the first flowering dates of 46 plant species in his Castel garden since 1985. In addition, Peter Danks has recorded the flowering date of his apple trees in St Martins over the same period. We have examined these 47 events to see if there is any evidence of a response to temperature, and indeed if they have been getting earlier in recent years.

Analysis shows that, on average, a 1°C increase in temperature in the three months leading up to flowering causes these flowers to appear ten days earlier. This figure is much higher than some colder parts of Europe. The average masks a range of values from plants showing little influence of temperature, such as sycamore trees, to those with a much greater response, such as lesser celandine. This suggests that any preconceptions we may have about there being a normal order of plants coming into flower may be overturned in the future (under increasing temperatures). The repercussions for insects and other animals feeding on these plants are not yet known.

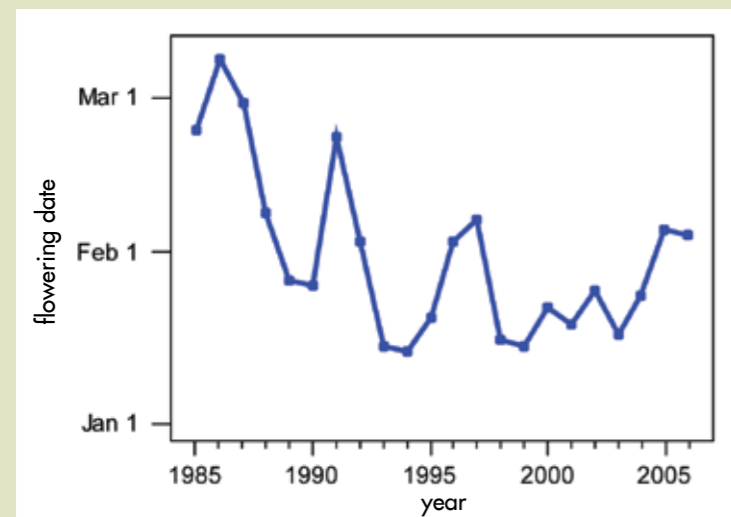


Figure 22.2 Changes in first flowering of snowdrop: note the lateness in 2005/2006.

On average these plants have advanced flowering by 13 days since 1985. This figure would have been considerably higher had not flowering been much later in 2006 as a consequence of that year's unimpressively cold spring weather. Nine species, including snowdrop and clematis, have seen substantial advances in flowering, for instance see Figures 22.2, 22.5 and 22.6.

Quite clearly, flowering plants on Guernsey are strongly influenced by temperature and several have already become substantially earlier. In general terms the early spring flowers show this temperature response most and will be the species that will become even earlier as Guernsey's winter temperatures become even milder. As plants exist as part of a food chain, for example, supplying nectar to insects and being pollinated by them, then there is a need to maintain synchrony with those insects. The fact that plant flowering dates are changing at different rates will present a challenge to wildlife in the future.

The timing of biological events, known as phenology, has been widely used to demonstrate changes in wildlife (see page 38). Some historical data exist for Guernsey, but records like Nigel Jee's are invaluable in demonstrating change under the warming that Guernsey has started to experience.

Late flowering is associated with cooler spring temperatures, and warmer winter temperatures cause earlier flowering. This clearly shows how the spring flowering of plants is made much earlier by climate warming.



Figure 22.3 The common snowdrop (*Galanthus nivalis*), among the first bulbs to bloom in spring.



Figure 22.4 The vigorous climber *Clematis montana*, a species with advanced flowering dates since 1985.

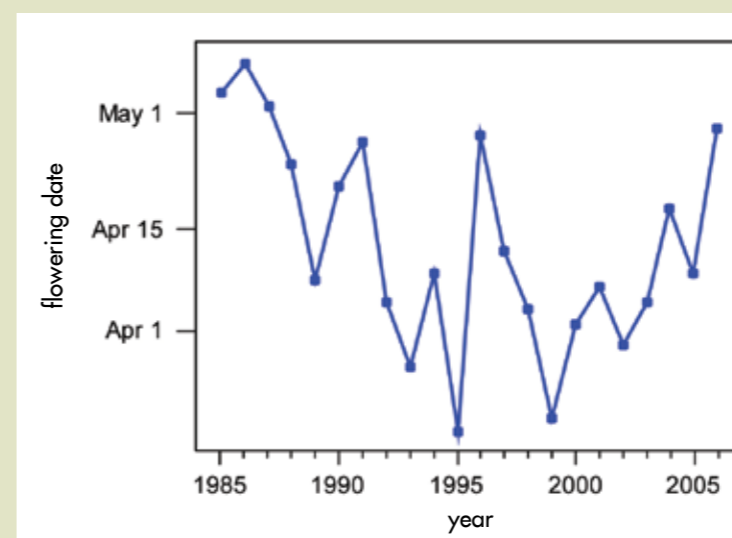


Figure 22.5 Changes in first flowering of *Clematis montana*: note the lateness of 2006.

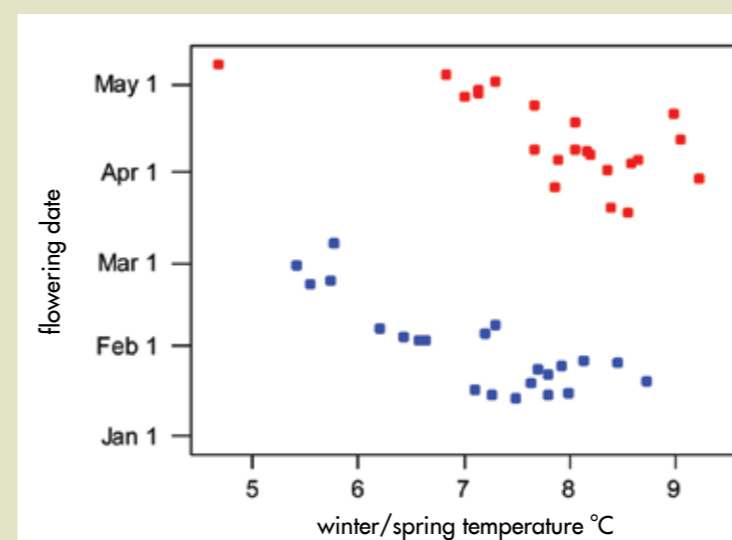


Figure 22.6 Changes in average temperature of the three months preceding the first flowering dates of Snowdrop (blue) and *Clematis montana* (red). Note how lateness of flowering is associated with cooler spring temperatures.