

Making good use of your data

The UK Phenology Network (Nature's Calendar) database now contains more than 3 million observations. These include records from the Royal Meteorological Society who ran a national scheme from 1875 to 1947 and a substantial number of longer-term datasets, including records dating back to the eighteenth century.

It is self-evident that your mass observations have occurred over too short a period to be used in isolation to identify long-term trends. Nevertheless, they have extraordinary potential to aid a very wide range of analyses, often in combination with our longer-term records. As we continue to collect data year on year it will become ever more valuable.

Now that some of you have been recording for more than ten years, it really feels like the project has come of age and a number of researchers are already putting your data to good use.

Shifting Phenology: Attributing Change across Ecosystems (SPACE)

The Centre for Ecology and Hydrology's SPACE project is comparing changes to nature's calendar across land, freshwater and marine environments. It is exploring potential differences between species in the rates of response to temperature, which may lead to food chains breaking down. Changes in spring and summer events are being assessed over consecutive 10-year periods between 1976 and 2005, and for the whole 30 year period. The data that CEH has collated, which includes a substantial amount from the UK Phenology Network, comprises 25,532 individual datasets for 726 species. These include plants, freshwater and marine plankton, insects, amphibians, birds, fish and mammals.

Total spring index

A couple of years ago, Tim Sparks developed a simple UK Spring Index using your data, which has been adopted by the Government. It is based on the annual average observation dates of just four biological events: first flowering of hawthorn, first flowering of horse chestnut, first recorded flight of orange-tip butterfly and first arrival of swallow.

Tatsuya Amano and Bill Sutherland at Cambridge University are now developing a 250-year index of the timing of first flower of the 408 plant species held on our database, including your records. It will use an incredible 395,564 observations at sites throughout the country. If they are successful, the index may offer many advantages over the existing UK Spring Index.

Local adaptation and climate change

Albert Phillimore, at Imperial College London, is analysing all of our frogspawn data with colleagues at

other academic institutions. He is hoping to determine whether frogs are likely to be able to alter the timing of spawning sufficiently to cope with climate change. The implications are that if their life cycle is too adapted to their local environment, then they will either need to evolve or move. Both strategies may present a considerable challenge, given how fast scientists think the climate may now change. The Woodland Trust believes that there is an urgent need to double native tree cover and thereby restore landscapes across which many species can move.

Supplementing knowledge of species distributions

John Baker is working with the Suffolk Biological Records Centre and the Suffolk Amphibian and Reptile Group on an atlas of amphibians and reptiles in Suffolk. Perhaps surprisingly, there are some areas of the county with few recent common frog records. Your observations have usefully updated what is known of their current distribution. There may be scope for your frog records to be used in this same way by the Herpetological Conservation Trust, which coordinates a national recording and reporting scheme on the status of amphibians and reptiles. Believe it or not, there is a requirement under the EU Habitats Directive for member states to report on the status of the common frog. This may be because frogs are harvested for human consumption on the continent.

Detecting nature's calendar from space

Astrid Verhegghen is a PhD student at the Université Catholique de Louvain in Belgium. She is hoping to characterise the phenology of the natural environment using satellite imagery from space. We have provided her with all your data on the timing of first leaf of trees and shrubs.

Identifying locations for monitoring

Another PhD student, Anna Muir who is based at the University of Glasgow, is looking at the effects of changing environments on the common frog and toad in Scotland. She is particularly interested in impacts on their distributions, genetic composition and adaptation. Part of her work will involve monitoring frogspawn and tadpoles over the breeding season and seeing how clutches vary at different elevations. We have given Anna your data on frogspawn in Scotland, as it will provide an indication of distribution and allow her to plan effectively where she needs to begin looking at the start of the season.

The wide range of ways in which the UK Phenology Network database is already being used suggests that we are likely to receive many more enquiries from researchers keen to make the most of your data, especially with climate change high on the scientific and policy agenda.