

Uncovering a trend toward earlier springs

For climatologists like Mark D. Schwartz, there can never be too much data.

An expert in the field of phenology, the study of how plants and animals respond to changes in seasons and climate, Schwartz has developed models based on the first-leafing and blooming of lilacs and honeysuckles.

Using 40 years of weather observations and studies of lilacs, the UWM Distinguished Professor of Geography not only showed a correlation between temperature and the onset of spring, but also created models that predict when first-leafing will happen under differing environmental conditions.

Specifically, he determined that spring is now arriving five to six days earlier in the U.S. than before 1960 – with the most dramatic change beginning in the mid-1980s.

His phenology models were included in a report issued last year by the U.S. Environmental Protection Agency as one of 24 climate-change indicators in the country.

To pump up the volume of data, Schwartz and his collaborators decided to ask interested citizens to record simple observations from their own backyards.

So in spring 2007 he co-founded and now leads the National Phenology Network (USA-NPN) in partnership with the U.S. Geological Survey. Funded in part by the National Science Foundation, the project gives ordinary people the chance to participate in climate-change research. There are now more than 3,000 members.



Mark Schwartz has created models that predict when spring will arrive.

“To find trends, we need large numbers of simple measurements, and that is really the goal of the network,” he says. “We want to track change in the biological community using this dynamic information.”

Schwartz had an existing pool of data to begin his bud-burst models. Now he is establishing a similar database for native trees, charting both spring bud-burst and when autumn leaves turn color and drop.

His lab has been monitoring spring and autumn phenology of trees in UWM’s Downer Woods since 2008 and just began a similar autumn study in northern Wisconsin near Park Falls.

One goal is to separate the genetic and environmental factors that cause phenological variability among the tree species.