## 2007 Project BudBurst Report

Thousands of citizen scientists from across the country participated in the inaugural pilot test of Project BudBurst – a national field campaign designed to engage the public in the collection of important climate change data based on the timing of leafing and flowering of trees and flowers. BudBurst participants took careful observations of the *phenological* events such as the first bud burst, first leafing, first flower, and seed or fruit dispersal of a diversity of tree and flower species, including weeds and ornamentals. The citizen science observations and records were entered into the BudBurst data base. As a result of the pilot field campaign, useful data was collected in a consistent way across the country so that scientists can use it to learn about the responses of individual plant species to climatic variation locally, regionally, and nationally, and to detect longer-term impacts of climate change by comparing with historical data. The enthusiastic response and robust participation in the pilot effort made it clear that there is sufficient interest from the American public to expand Project BudBurst in 2008.

A total of 913 phenological events were reported from participants in 26 states (Figure 1). Ohio and Illinois had the highest rate of participation followed by Utah, Colorado, and Michigan. The start date of the 2007 pilot effort (April 1) was too late to allow full participation from individuals in the southern states. This resulted in most of the participation being from individuals in northern and western states where, typically, spring floral events lag behind the south.

*Figure 1. Map of Total Phenological Events Reported (Native Tree/Shrubs, Native Flowers, Common Weeds/Ornamentals)*
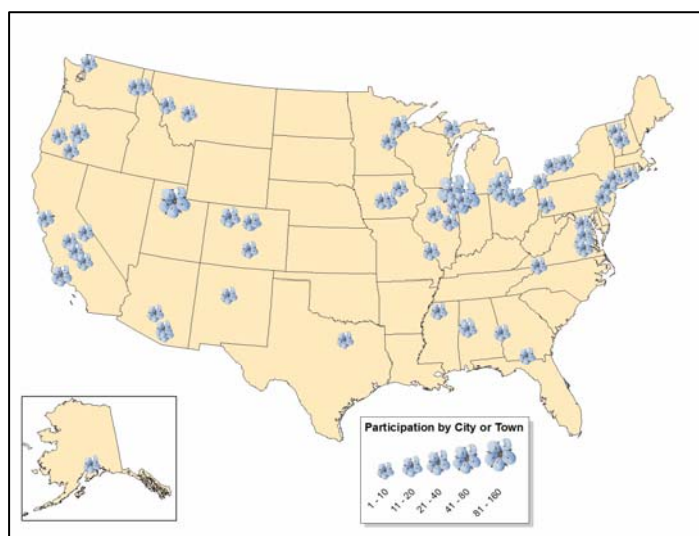


The Project BudBurst Web site provided descriptions and photos of 60 widespread and easily identifiable, broadly distributed wild and cultivated species across the continent. Of the 60 species initially targeted by the BudBurst developers, the common dandelion (a weed) and forsythia (an ornamental shrub) had the most observations reported. Additional targeted species that were well represented included black locust, red maple, lilac, flowering dogwood, and aspen. Recognizing that the targeted species might not be accessible to all individuals wishing to participate in BudBurst, participants were able to select the 'other' category and identify a species of interest to them and enter data. There were almost 500 reports of species in the 'other category.'

The educational goals of Project BudBurst were to 1) increase awareness of climate change, 2) educate about the impacts of climate change on plants and the environment, and 3) increase science literacy by engaging participants in the scientific process. Why was the concept of phenology chosen as the focus of this new citizen science campaign?  First, phenology is a visible and comprehensible way of demonstrating the effects of climate change, because people already notice the timing of events such as when plants bloom and the seasonal onset of allergies.  Second, plants are readily accessible in nearly every neighborhood, park, and wild areas across the continent, so people can make observation whether they live near an inner city park or in the rural countryside.  People that engage in phenology studies also tend to learn more about the kinds of native plants and ecosystems that occur close to where they live. In this way Project BudBurst has helped promote general interest and appreciation of local species and ecosystems.

The spring 2007 pilot program allowed us to gauge the interest of the public in working with scientists to compile valuable environmental information that could be compared to historical records to illustrate the effects of climate change.  Because we carefully selected species that have a broad geographic range, our data can also be used to see how variation in climate this year has affected the timing of individual species across the country.  Biologists can use this information to build and test better phenological models for these species.

By every metric, this pilot program was a resounding success.  We have demonstrated there is a keen interest from adult nature watchers and kids alike.   Plans are underway to expand Project BudBurst in 2008 to allow collection of phonological data all year long.  Updated information will be on the Project BudBurst Web site in fall of 2007.

Project BudBurst was made possible from funding the Bureau of Land Management and a broad consortium of collaborators, representing the Chicago Botanic Garden, University Corporation for Atmospheric Research, University of Montana, University of Arizona, University of California-Santa Barbara, University of Wisconsin-Milwaukee and the University of Wisconsin-Madison, ESRI, and the National Phenology Network.


Join us for the 2008 Project BudBurst Field Campaign!