

**Ecological Society of America
2008 Annual Meeting in Milwaukee, WI
Phenology-Related Events and Sessions**

Wednesday, August 6, 2008: 1:30 PM-5:00 PM

104 B, Midwest Airlines Center

SYMP 15 - Enhancing Ecological Thought Through Phenological Observation, Research, and Education

The passing of seasons, as gauged by annual events or phenophases in organisms' life cycles, is arguably one of the most pervasive environmental variations on Earth. Seasonal timing, or phenology, are observed in flowering and other stages of plant development, animal migration and reproduction, hibernation, and the seasonal activity of cold-blooded animals. Moreover, the timing of these events are changing due to recent climate change. The impacts of these shifts can be seen at many scales, from the physiology of individuals to community-level interactions to ecosystem functioning. Also, as an important aspect of life history, phenology is an object of natural selection; depending on the organism and timescale, phenology can be shaped by evolution. In addition to its direct ecological significance, phenological observations, research, and education are attractive entry points for enhancing ecological insight and understanding in other sciences and in the public. Nearly everyone can relate to phenological events, so that the passing of seasons as expressed in the blooming, leafing out, and senescence of plants and the arrivals and departures of recognizable species play a temporal role not unlike the place of charismatic megafauna in habitat management. Thus phenological observations (by citizens and scientists alike) and research (even when it comes from the most academic sources) routinely attract public attention in ways that motivate broad ecological understanding. This session contains an integrated set of talks that describe research, applications, and outreach efforts that use phenological measures to enhance public and scientific ecological understanding and thought. A large number of citizen-science phenological observing groups, like Monarch Watch, Nature's Calendar, and the USA-National Phenological Network's Project Budburst, have developed from grassroots interest in the natural world. Representatives from some of these programs will share experiences and lessons from citizen-scientist observations. Research into drivers and consequences of phenological variations has provided results that make existence and implications of biodiversity, ecosystem services, and climate change more visible and understandable to citizens and non-ecological scientists alike. In particular, this session will describe the emerging role of phenological understanding in several major fields, such as conservation biology, invasive species management, and human allergies. Key and highly visible research efforts will be presented with discussion of how they have influenced public discourse and understanding of climate change in particular and ecological science in general.

Wednesday, August 6, 2008: 8:00 PM-10:00 PM

203 C, Midwest Airlines Center

SS 20 - Phenology as a Tool to Enhance Ecological Understanding through Integration of Research and Education

The goal of this special session is to introduce participants to programs and products that can be employed to enhance ecological understanding through the integration of research and education related to phenology - the study of the cause and the consequence of the timing of recurring biological phases of plant and animal individuals and populations. The USA National Phenology Network (NPN; www.usanpn.org) is an emerging collaboration among federal agencies, the academic community, and the general public to establish a nationwide network of phenological observers for scientific and practical applications essential to ecological forecasting. NPN citizen science, education, and outreach programs are designed to: (1) engage the public in long-term phenological data collection and analysis through formal and informal science education programs; (2) engender self-directed, voluntary learning using inquiry-based approaches; (3) provide training in the tools and applications of phenological studies to citizens and scientists; and (4) enhance opportunities for the public to interact with professional scientists. We will describe and demonstrate several of these programs, including: (1) Project Budburst (www.budburst.org), an online educational and program targeting students and nature enthusiasts; (2) Students Observing Seasons, a suite of GK-12 education modules; (3) Phenology 101 and the Phenological Stewardship Program, programs to facilitate integration of phenology studies into undergraduate curricula; (4) Masters of Monitoring, targeted to public and private institutions with docent programs; and (5) a prototype laboratory exercise for Teaching Issues and Experiments in Ecology (TIEE) focused on phenology of flowering in Colorado.

Thursday, August 7, 2008: 11:30 AM-1:15 PM

Usinger, Hilton

Phenology Brown Bag Lunch

Thursday, August 7, 2008: 1:30 PM-5:00 PM

202 A, Midwest Airlines Center

OOS 20 - Shake-up in Timing in Ecological Communities: Understanding the Complexity and the Role of Citizen Science

Phenology is one of the most basic traits affecting organisms and ecosystems. Nearly all ecological relationships and processes have a significant timing-based component. Plant-pollinator relationships, predator-prey interactions, and the distribution of species are just some of the aspects of ecosystems affected by phenology. And of critical importance today, human-induced climate change is altering phenology worldwide. In turn, many relationships and ecosystem functions will be impacted. In addition, phenological studies provide an excellent opportunity to bring ecology and education together. The collection of phenological data is labor intensive, and benefits greatly from the participation of volunteers. And nearly everyone can observe and appreciate phenology - people can see it in their own backyards, gardens, birdfeeders, and parks. Project Budburst, a new citizen-science program in the US, highlights the benefits that citizen scientists and ecologists can provide one another. It follows the example of hugely popular citizen-scientist phenological monitoring programs in other parts of the world. This session features several case studies that show the vital role that citizen science can play in characterizing patterns of phenological change, and ways that phenological studies can contribute to the public's understanding of climate change, ecology, and seasonal processes. It will also show some of the leading work to characterize the full complexity of phenological variability and change, particularly at the community level. The speakers will address phenology at several trophic levels and in a variety of ecosystems.

Friday, August 8, 2008: 8:00 AM-11:30 AM

202 C, Midwest Airlines Center

OOS 25 - Changing Times: The Impact of Variability in Plant Phenology at Multiple Scales

The timing of plant life-history traits provides the background on which a huge number of ecological relationships and processes depend. Competitive relationships among plants, intertrophic relationships, carbon and water cycles, and other ecosystem functions are all affected by when plants germinate, leaf out, flower, fruit, and senesce. In addition, it is critical to individual plants that they reach particular life history stages at the appropriate time, when the environmental circumstances are right. Moreover, plant phenology is among the most sensitive biological responses to recent climate change. Many spring phenomena across the world are occurring earlier as the climate warms.

However, there is incredible variation within this general shift toward earlier leaf out and flowering. For example, some plants are flowering much earlier, other less so, and yet others are flowering at about the same time as they did in the past. The complexity of the changes in plant phenology are impacting ecological and evolutionary processes in equally complex ways. Many ecosystem functions may be disrupted. Thus, it is critical that we understand the phenological changes taking place. This session will feature new research characterizing the variation in plant phenology and phenological responses to climate change. It will highlight evolutionary responses to environmental variation and the impacts that phenological variation has on ecosystems. Speakers will examine plant phenology from ecological and evolutionary perspectives at several scales - from individuals to populations and communities to large regions. This session will provide a good overview of the state of plant phenology studies.