

Iced over willow buds in spring

Alder leaves and male catkins in spring



Phenology Working Group Update: Scaled (Way, Way) Back Plan

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Prunus padus in fall

Winter-reddening in ericaceous plants



Questions

Herbaceous species leafing out in spring



How is the phenology of different plant functional groups responding to changes in spring, summer, and fall conditions?

- 1. How do functional groups differ in the magnitude of their responses to changes in spring temperature and ground thaw, and fall temperature and freeze-up?
- 2. How much of this is explained by phylogeny?
- 3. How do responses differ between flowers and leaves? (and roots?)
- 4. What cues drive those responses? Will these change in the future?



Winter reddening in fall

Why does it matter?

- Differential responses may result in changes in community composition over the next 50-100 years
- Shifts drive mismatches (or lack thereof) with pollinators, herbivores, pathogens, and belowground symbionts (ties to the trophic interactions group)
- Shifts will alter carbon and nutrient cycling

"Latebloomers" in fall



Green chokecherry in fall



Functional groups (sensu lato)

- The usual: forbs, grasses, deciduous shrubs, evergreen shrubs, wintergreen shrubs, deciduous trees, evergreen trees
- Additional components: mycorrhizal vs. nonmycorrhizal species, species associated with N-fixers vs. others
- Other groups important in the boreal forest but usually ignored:
 - Mosses
 - Seedless vascular species: horsetails and lycopods
 - (Semi)-aquatic species?
- Non-native species

Goal: obtain information for 5 species per group

Equisetum sylvaticum

Where to get the data

- Existing records (e.g., 5-8 years of leaf-out and flowering edit, 1939 data for understory herbs and shrubs, 40 years of leafout of aspen on a single hill)
- Herbarium data
- Remote sensing for trees
- Birch syrup production records
- Initiate new monitoring efforts where major gaps exist
 - Observations of leaf, flower, and spore production
 - Sap flow measurements on a limited number of species
- Citizen science networks that allow data collection over large scales at high frequency (space for time substitution)
- Core datasets???