



Dear Dr. Hetherington:

Please consider our manuscript 'Temperature and photoperiod drive spring phenology across all species in a temperate forest community' as a Full Paper for *New Phytologist*. We present new experimental results that show temperate plant spring phenology is affected by three interactive cues, suggesting responses to continued warming will be complex and non-linear.

Plant phenology plays a crucial role in ecosystem processes and is one of the most reported indicators of climate change. Yet as the wealth of observational data highlighting this rapid advance in phenology has increased, research has uncovered variation in these shifts across space, time and species. Understanding this variation has led to a number of studies and debates about how the major cues known to underlie phenology—spring forcing temperatures, winter chilling temperatures, and photoperiod—vary across species, and whether they may interact. Observational studies have highlighted that a simple model of temperature forcing cannot predict the observed variation, but have been hampered from providing further insights because the three major cues generally covary in nature. Advances in our understanding therefore require an experimental approach that manipulates all three cues across a community of species.

*What hypotheses or questions does this work address?* We test the prevalence of the three major cues known to drive temperate spring phenology—forcing temperatures, chilling temperatures, and photoperiod—across 28 species from two North American forest communities at two latitudes. We hypothesized that each species would respond to 1-2 cues (e.g., photoperiod and chilling but not forcing).

*How does this work advance our current understanding of plant science?* Contrary to hypotheses and recent work, we found all species responded to all cues. Responses to photoperiod and forcing temperature were often similar among species and showed no evidence that some species could be categorized as insensitive to any cue.

*Why is this work important and timely?* We present the first multi-species study to assess all cues through direct manipulation and thus provide novel results on how cues vary across species. Our results suggest that predicting the spring phenology of communities will be difficult as all species we studied could have complex, non-linear responses to future warming.

Both authors substantially contributed to this work and approved of this version for submission. The manuscript is approximately 4,500 words with 200 word summary, and three figures. It is not under consideration elsewhere. We hope that you will find it suitable for publication in *New Phytologist*, and look forward to hearing from you.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "E. Galen Walle".