THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Forestry

Dear Dr. Hetherington:

Please consider our paper, "Budburst timing within a functional trait framework" for publication as a research article in *New Phytologist*. We combine multiple global databases to show how woody plant budburst timing relates to a number of major functional plant traits, supporting foundational—but generally untested hypotheses—of the role of phenology within plant strategies.

Climate change is impacting species phenologies—timing of life history events—and reshaping ecological communities. Increasing research suggests these changes are linked, as species that shift the most phenologically with warming appear to also perform better. Yet research has failed to test whether species phenologies or their growth strategies drive this relationship. Teasing this apart has been challenging because the variability of plant phenology has led it to be systematically omitted from global trait frameworks that link to plant growth strategies.

What hypotheses or questions does this work address? We test how differences in phenology relate to well-established relationships between plant growth strategies defined by major functional traits. We combine global experimental data on budburst and commonly measured traits with a cutting-edge Bayesian approach to test the relationship between budburst and traits in response to temperature and light cues.

How does this work advance our current understanding of plant science? We found strong evidence that plant phenologies are inextricably linked to their growth strategies, as was proposed in the 1970s but has rarely, if ever, been tested. Merging multiple global datasets, we found earlier species exhibited acquisitive traits—such as shorter maximum heights, and denser, lower nitrogen leaves—while later-active species are taller with low nitrogen leaves.

Why is this work important and timely? These are some of the first findings to fit budburst phenology firmly within major functional trait frameworks. By teasing apart the underlying mechanisms shaping phenology and traits globally, this work can help predict how species and community-level growth strategies may shift alongside changing phenology with climate change.

All authors contributed to this work and approved this version for submission. The manuscript is 3569 words with a 146 word summary, and 4 figures. It is not under consideration elsewhere. We hope you find it suitable for publication in *New Phytologist*, and look forward to hearing from you.

Sincerely,

Deirdre Loughnan

Deirdre Loughnan
Forest & Conservation Sciences
University of British Columbia