

1 Supplementary Material: Differences in traits predict
2 phenological responses to daylength more than temperature

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4 **Figures**

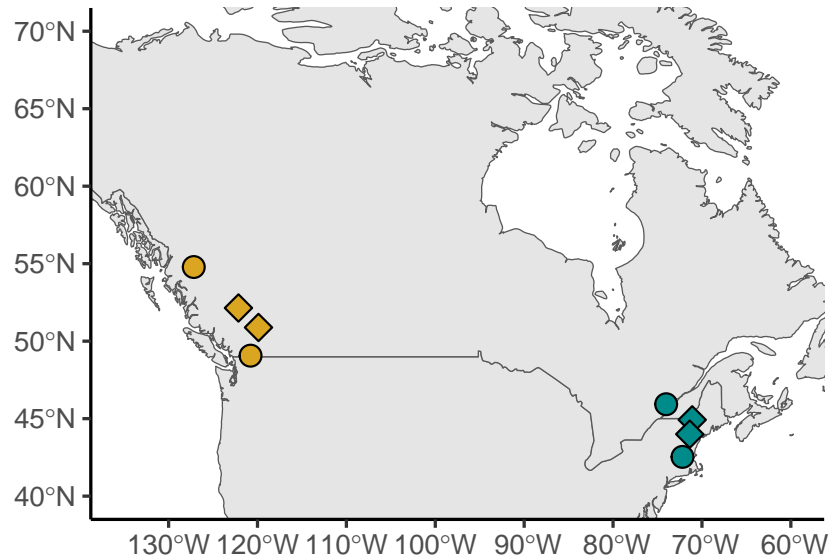


Figure S1: We measured leaf and structural traits in eight temperate deciduous forests, spanning four eastern communities shown in blue and four western communities shown in yellow, across a latitudinal gradients of 4-6°. The branch clippings used in our two growth chamber experiments were taken from the most northern and most southern populations in each transect, as represented by the circles.

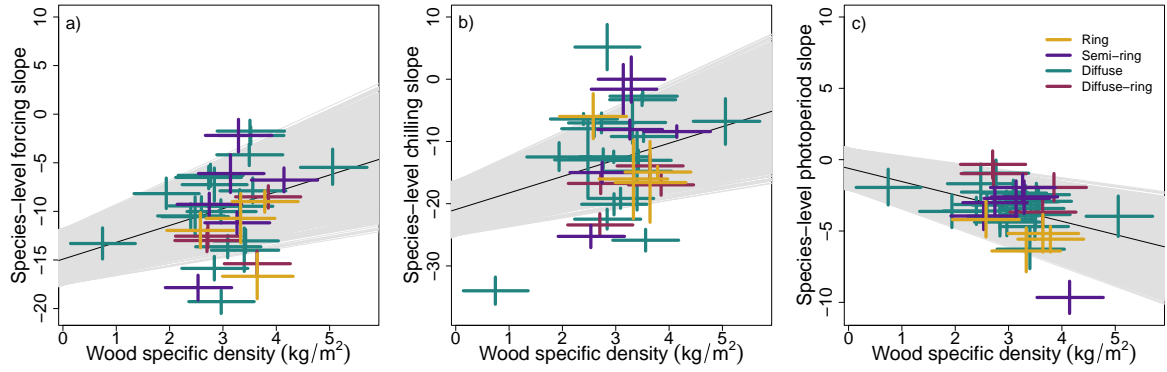


Figure S2: Despite previous studies finding relationships between leaf out timing and species wood xylem structures, we did not find clear differences in species-level estimates of cue responses with wood structure or relative to their wood specific densities. Each cross represents the 50% uncertainty interval of **a.** forcing, **b.** chilling, and **c.** photoperiod responses and WSD, with colors depicting different types of wood structure.

5 Tables

Table S1: Summary output from a joint Bayesian model of height and budburst phenology in which species are partially pooled. The effect of transect is modeled as a dummy variable and latitude as continuous, with an interaction term between latitude and transect. The model includes environmental cues as z -scored continuous variables, allowing comparisons to be made across cues.

	mean	5%	25%	75%	95%
Transect	7.58	-1.08	4.05	11.08	16.16
Latitude	0.05	-0.03	0.02	0.08	0.12
Transect x latitude	-0.20	-0.39	-0.28	-0.12	-0.01
Forcing	-10.31	-12.59	-11.09	-9.41	-8.35
Chilling	-13.44	-17.22	-14.81	-11.99	-9.89
Photoperiod	-2.54	-4.03	-3.20	-1.94	-0.81
Trait x forcing	0.28	-0.07	0.14	0.42	0.61
Trait x chilling	0.25	-0.46	-0.04	0.54	0.96
Trait x photoperiod	-0.34	-0.52	-0.41	-0.27	-0.16

Table S2: Summary output from a joint Bayesian model of DBH and budburst phenology in which species are partially pooled. The effect of transect is modeled as a dummy variable and latitude as continuous, with an interaction term between latitude and transect. The model includes environmental cues as z -scored continuous variables, allowing comparisons to be made across cues

	mean	5%	25%	75%	95%
Transect	-24.13	-42.56	-31.70	-16.66	-5.88
Latitude	0.16	0.00	0.09	0.22	0.31
Transect x latitude	0.52	0.11	0.35	0.68	0.92
Forcing	-9.14	-11.41	-10.07	-8.30	-6.53
Chilling	-12.52	-16.21	-14.03	-11.12	-8.55
Photoperiod	-3.79	-5.68	-4.46	-3.08	-2.01
Trait x forcing	0.20	-0.06	0.09	0.30	0.46
Trait x chilling	0.16	-0.34	-0.04	0.37	0.65
Trait x photoperiod	-0.20	-0.34	-0.26	-0.15	-0.07

Table S3: Summary output from a joint Bayesian model of wood specific density and budburst phenology in which species are partially pooled. The effect of transect is modeled as a dummy variable and latitude as continuous, with an interaction term between latitude and transect. The model includes environmental cues as z -scored continuous variables, allowing comparisons to be made across cues.

	mean	5%	25%	75%	95%
Transect	7.24	4.42	6.04	8.42	10.01
Latitude	0.04	0.01	0.02	0.05	0.06
Transect x latitude	-0.15	-0.21	-0.17	-0.12	-0.09
Forcing	-14.91	-22.87	-17.59	-11.74	-8.63
Chilling	-20.94	-33.15	-25.21	-16.26	-9.75
Photoperiod	-0.61	-4.12	-2.14	0.82	3.30
Trait x forcing	1.73	-0.26	0.89	2.53	3.75
Trait x chilling	2.66	-0.94	1.32	4.04	6.11
Trait x photoperiod	-0.93	-1.99	-1.38	-0.51	0.19

Table S4: Summary output from a joint Bayesian model of LMA and budburst phenology in which species are partially pooled. The effect of transect is modeled as a dummy variable and latitude as continuous, with an interaction term between latitude and transect. The model includes environmental cues as z -scored continuous variables, allowing comparisons to be made across cues.

	mean	5%	25%	75%	95%
Transect	-22.04	-26.60	-23.92	-20.18	-17.51
Latitude	-0.15	-0.20	-0.17	-0.14	-0.11
Transect x latitude	0.48	0.38	0.44	0.52	0.58
Forcing	-2.68	-19.52	-9.07	4.01	13.94
Chilling	-2.67	-30.26	-13.87	8.06	26.04
Photoperiod	-13.97	-23.12	-18.10	-10.12	-3.54
Trait x forcing	-0.59	-1.97	-1.15	-0.04	0.83
Trait x chilling	-0.87	-3.29	-1.80	0.09	1.43
Trait x photoperiod	0.89	0.01	0.57	1.24	1.65

Table S5: Summary output from a joint Bayesian model of LNC and budburst phenology in which species are partially pooled. The effect of transect is modeled as a dummy variable and latitude as continuous, with an interaction term between latitude and transect. The model includes environmental cues as z -scored continuous variables, allowing comparisons to be made across cues.

	mean	5%	25%	75%	95%
Transect	-4.71	-12.82	-8.03	-1.40	3.24
Latitude	-0.14	-0.21	-0.17	-0.11	-0.06
Transect x latitude	0.04	-0.13	-0.03	0.11	0.22
Forcing	-14.43	-32.60	-21.41	-7.56	3.76
Chilling	-35.11	-68.11	-47.92	-22.15	-4.07
Photoperiod	6.39	-2.39	2.55	9.84	16.53
Trait x forcing	0.45	-1.26	-0.19	1.13	2.04
Trait x chilling	2.07	-0.81	0.96	3.24	4.82
Trait x photoperiod	-0.91	-1.69	-1.22	-0.61	-0.11