Cue responses in woody plants of North America

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1 Research questions:

1. How do species in deciduous forests across North America respond to varying chilling, forcing, and photoperiod cues?
2. Do we see similar trends when we compare species eastern deciduous forests to western deciduous forests communities?
3. How do shrub species differ from tree species in their cue use?

2 Results

1. General Survival and germination success
   (a) 2496 samples went into chilling
   (b) 2458 survived the experiment
   (c) 1.52% mortality
   (d) 9.5% of the remaining samples did not budburst at all
   (e) 18.42% did not have terminal budburst, most of these were vac mem, followed by rubpar and acegla.
2. Our model found...
   (a) The root trait was X and lambda was X - meaning...
   (b) While all cues did lead to the advance in budburst date, there were strong interactions between cues and between cues and sites.
   (c) Strong delaying interaction between forcing and chilling
   (d) Strong delaying interaction between forcing and the two eastern sites
   (e) Strong delaying interaction between chilling and the two eastern sites
   (f) moderate advancing interaction between photoperiod and our eastern sites

3 Tables and figures

Table 1: Summary output from a phylogenetic mixed-effect model in which species are partially pooled and phylogeny is included on the intercept. The model includes photoperiod, forcing, and site as dummy variables, while the chilling effect is included as continuous chill portions.

	mean	sd	2.5%	50%	97.5%	n_eff	Rhat
Forcing	-8.81	0.72	-10.23	-8.80	-7.38	9931.87	1.00
Photoperiod	-3.45	0.41	-4.25	-3.45	-2.63	8418.40	1.00
Chilling	-15.17	1.27	-17.71	-15.16	-12.66	5282.13	1.00
Manning Park	1.90	0.35	1.22	1.90	2.60	13833.47	1.00
Harvard Forest	-4.15	1.06	-6.26	-4.14	-2.12	1330.94	1.00
St. Hippolyte	-7.13	0.99	-9.10	-7.13	-5.23	1329.89	1.00
Forcing x photoperiod	-0.19	0.65	-1.43	-0.19	1.11	12000.48	1.00
Forcing x chilling	8.66	0.86	7.00	8.65	10.39	7759.42	1.00
Photoperiod x chilling	-0.75	0.90	-2.55	-0.75	1.01	6849.85	1.00
Forcing x Manning Park	-1.78	0.77	-3.27	-1.78	-0.25	11224.65	1.00
Photoperiod x Manning Park	0.54	0.78	-0.99	0.54	2.04	9557.53	1.00
Chilling x Manning Park	-0.23	1.63	-3.51	-0.20	2.94	5942.76	1.00
Forcing x Harvard Forest	3.54	1.14	1.31	3.52	5.82	3930.17	1.00
Photoperiod x Harvard Forest	-2.22	0.87	-3.91	-2.23	-0.50	8263.34	1.00
Chilling x Harvard Forest	7.08	2.11	2.80	7.14	11.06	2838.67	1.00
Forcing x St. Hippolyte	4.86	1.15	2.59	4.86	7.14	4048.10	1.00
Photoperiod x St. Hippolyte	-2.36	0.85	-4.02	-2.37	-0.69	7814.44	1.00
Chilling x St. Hippolyte	6.21	1.72	2.76	6.24	9.57	3335.24	1.00

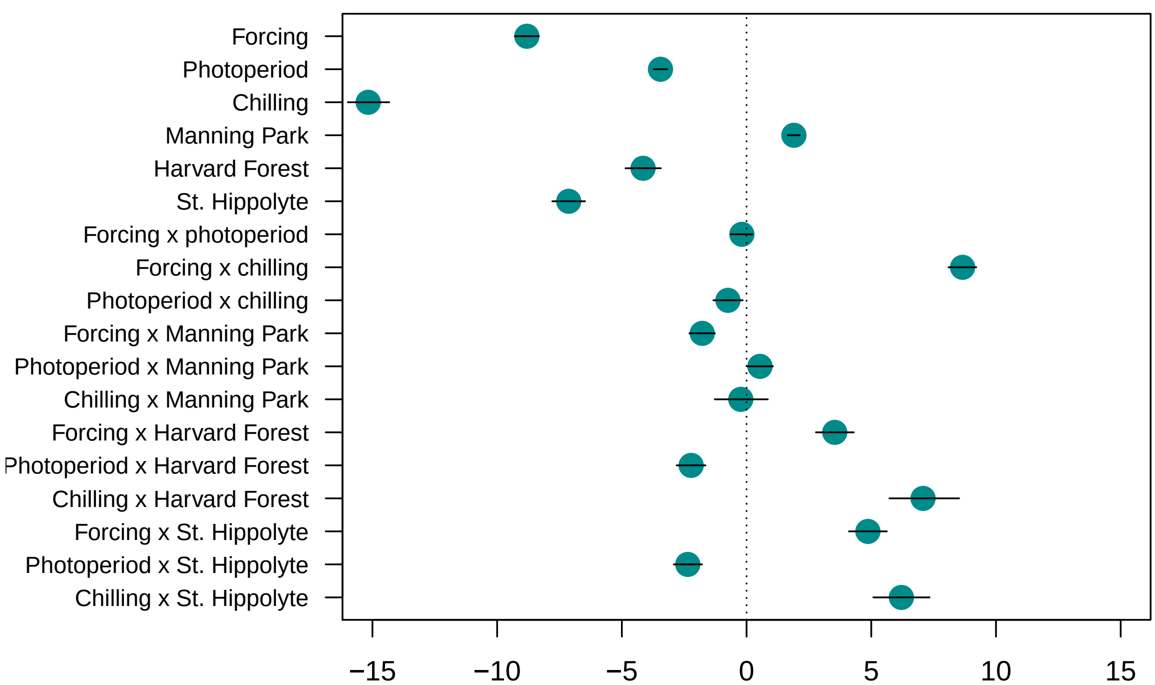

Figure 1: Estimated responses in budburst date across all bud types.

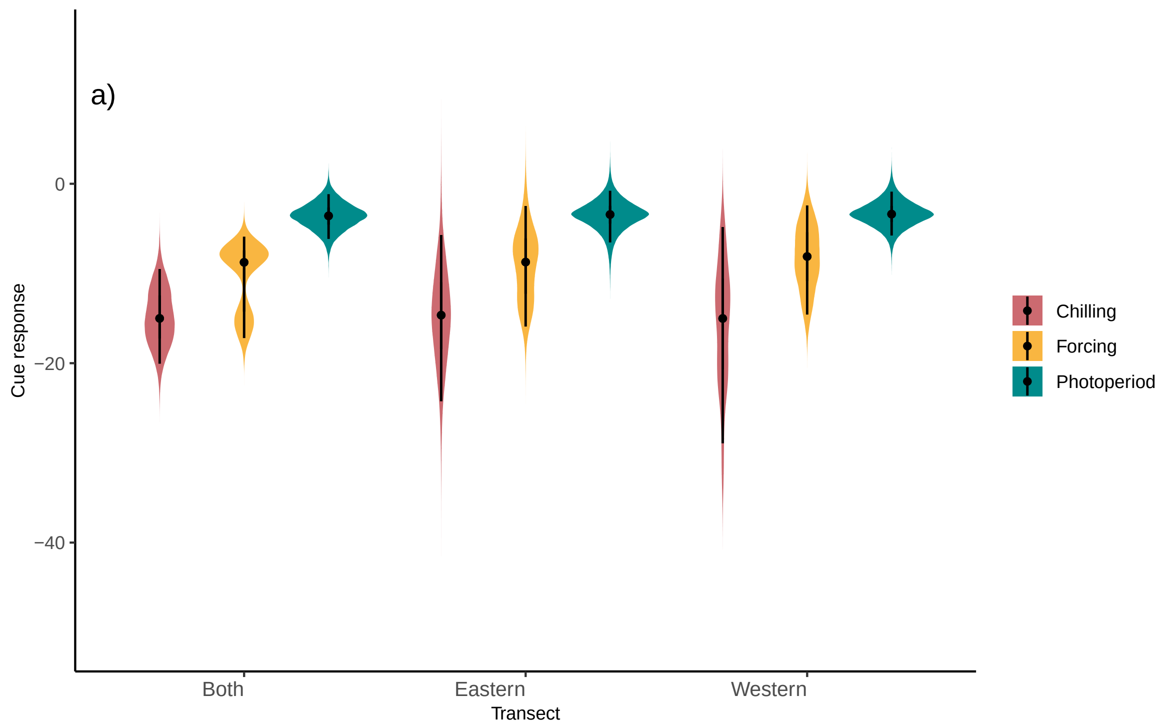

Figure 2: Interaction plots for the western transect. a) The interaction between chill portions and forcing, b) the interaction between photoperiod and chilling, and c) the relationship between forcing and site

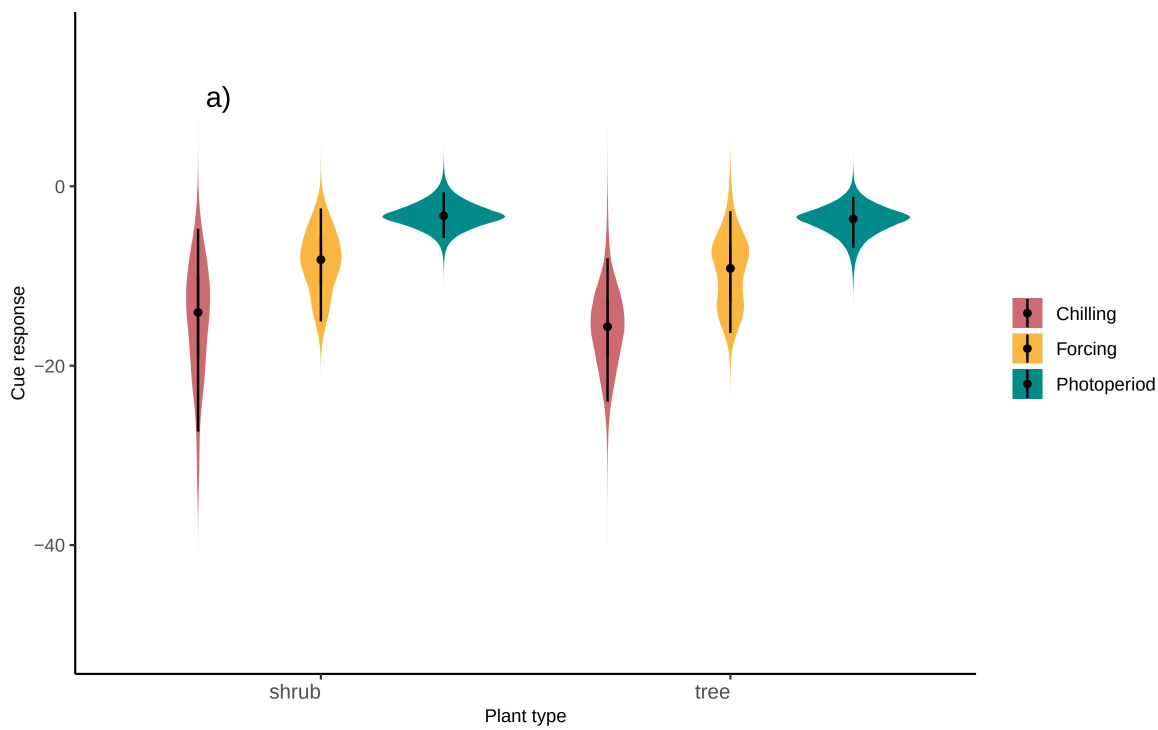

Figure 3: Interaction plots for the western transect. a) The interaction between chill portions and forcing, b) the interaction between photoperiod and chilling, and c) the relationship between forcing and site

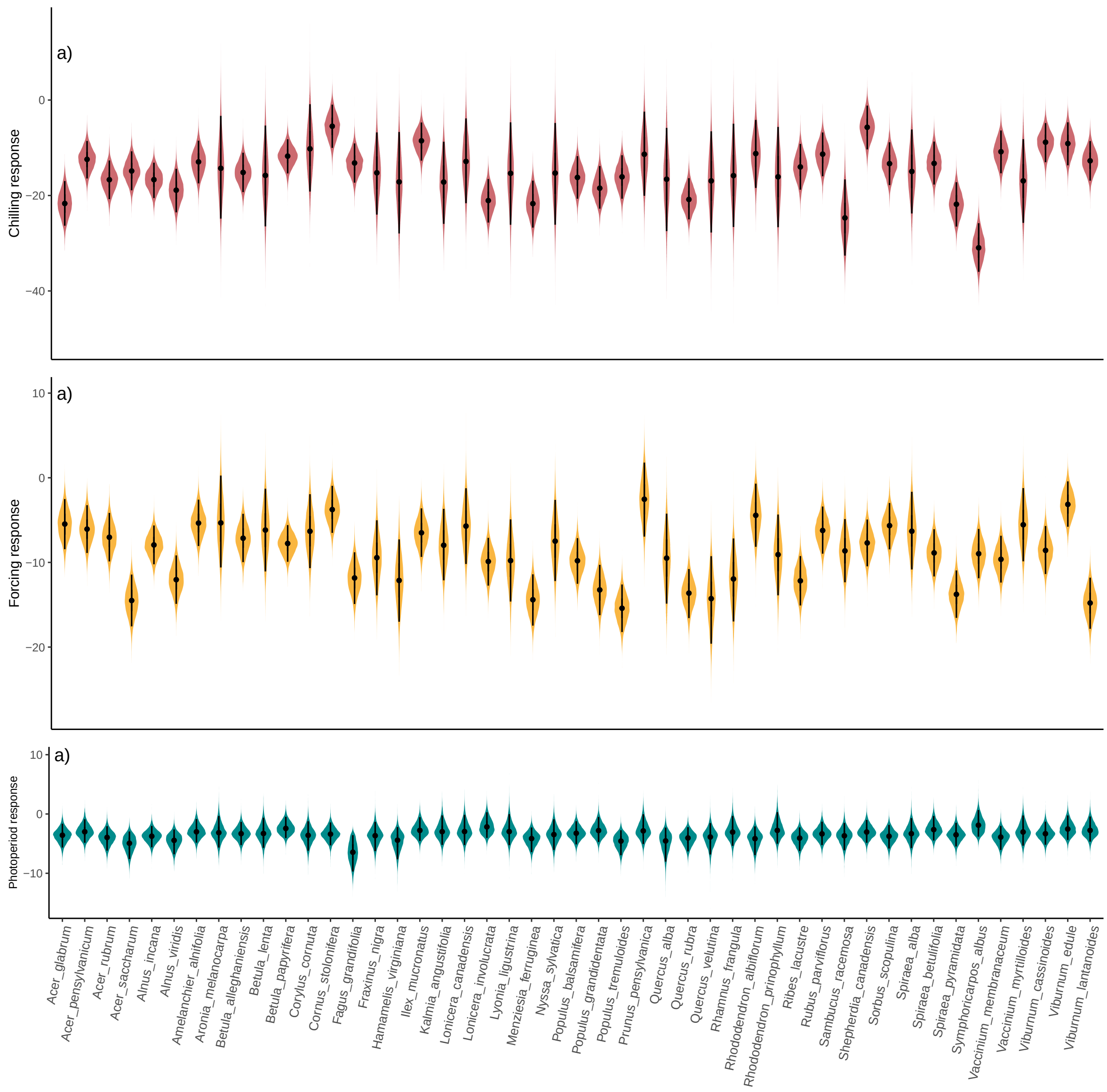

Figure 4: Interaction plots for the western transect. a) The interaction between chill portions and forcing, b) the interaction between photoperiod and chilling, and c) the relationship between forcing and site

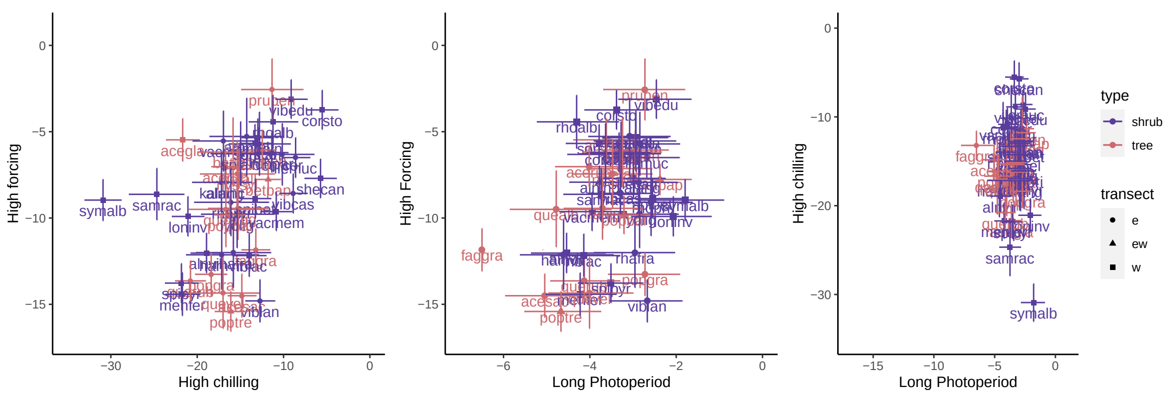

Figure 5: Interaction plots for the western transect. a) The interaction between chill portions and forcing, b) the interaction between photoperiod and chilling, and c) the relationship between forcing and site