

Phenology: Tables and Figures

Deirdre Loughnan

4 February 2021

1 General Survival and sucess

At the start of the experiment, 2496 samples went into chilling, 2458 went into forcing and survived the experiment. Of the samples that did died, it was largely due to human error, some species were very brittle, while others popped out of their flasks or were returned to the wrong flask, but these samples were only 1.52In total, 9.5% of samples did not bud burst at all. Of all the samples, 18.42% did not have terminal bud burst, most of these were vac mem, followed by rubpar and acegla.

Table 1: Proportion of samples with budburst per species

Proportion Budburst	
acegla	0.83
alninc	1.00
alnvir	0.92
amealn	0.99
betpap	1.00
corsto	0.99
loninv	0.87
menfer	0.80
popbal	0.98
poptre	0.90
rhoalb	1.00
riblac	0.82
rubpar	0.94
samrac	0.95
shecan	1.00
sorsco	0.99
spibet	0.94
spipyr	0.92
symalb	0.84
vacmem	0.90
vibedu	1.00

2 Results:

- All three cues cause an advance in budburst, but vary in their response when considered together

- Forcing is the dominant driver of budburst, closely followed by chilling for both terminal and lateral budburst.
- Forcing has a stronger effect on lateral budburst (-18.52) than terminal budburst (-16.87), but the effect of chilling is slightly weaker at -13.17 for lateral buds and -14.75 for terminal buds
- Our northern site is slightly more advanced
- The interaction between high forcing and high chilling shows a delaying effect, the impacts terminal budburst (6.53) more than lateral budburst (4.78)
- There is a greater effect of photoperiod at the more Northern site for terminal budburst (-1.40) than lateral (-0.45)

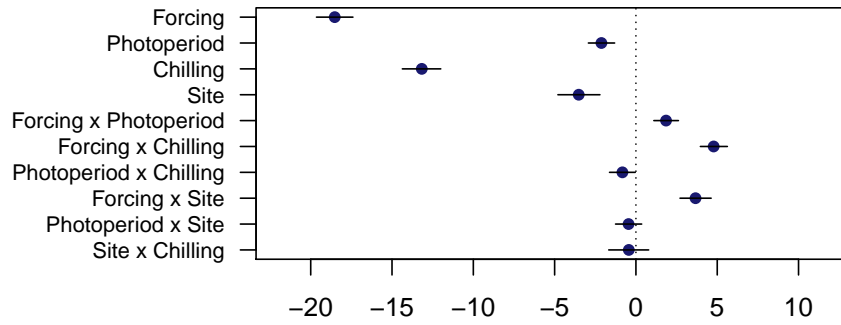
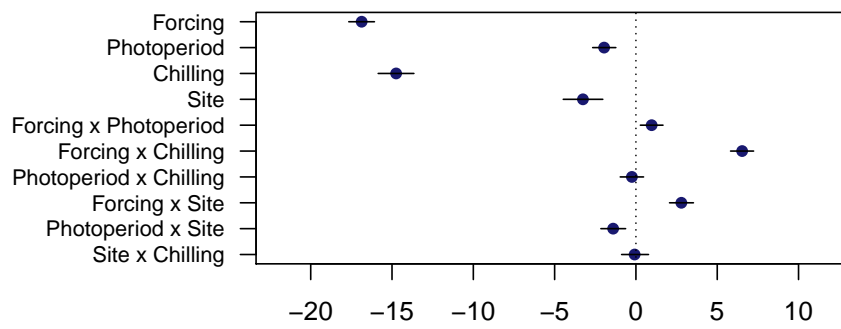
Table 2: Model estimates for budburst of terminal buds

	Mean	Sd	2.5%	50%	97.5%	Rhat
Forcing	-16.87	1.19	-19.20	-16.88	-14.54	1.00
Photoperiod	-1.96	1.07	-4.00	-1.96	0.14	1.00
Chilling	-14.75	1.67	-17.93	-14.76	-11.35	1.00
Site	-3.26	1.90	-7.05	-3.25	0.53	1.00
Forcing x Photoperiod	0.97	1.03	-1.04	0.96	2.95	1.00
Forcing x Chilling	6.53	1.06	4.45	6.54	8.59	1.00
Photoperiod x Chilling	-0.25	1.07	-2.33	-0.25	1.88	1.00
Forcing x Site	2.79	1.10	0.63	2.80	4.95	1.00
Photoperiod x Site	-1.40	1.16	-3.71	-1.40	0.88	1.00
Site x Chilling	-0.08	1.31	-2.72	-0.06	2.42	1.00

Table 3: Model estimates for budburst of lateral buds

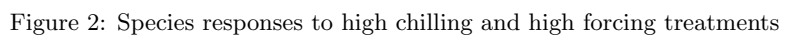
	Mean	Sd	2.5%	50%	97.5%	Rhat
Forcing	-18.52	1.69	-21.91	-18.50	-15.30	1.00
Photoperiod	-2.12	1.21	-4.46	-2.12	0.25	1.00
Chilling	-13.17	1.76	-16.55	-13.19	-9.67	1.00
Site	-3.52	1.94	-7.31	-3.55	0.39	1.00
Forcing x Photoperiod	1.85	1.10	-0.34	1.85	4.06	1.00
Forcing x Chilling	4.78	1.24	2.30	4.78	7.19	1.00
Photoperiod x Chilling	-0.83	1.17	-3.16	-0.83	1.47	1.00
Forcing x Site	3.66	1.48	0.75	3.64	6.62	1.00
Photoperiod x Site	-0.45	1.18	-2.76	-0.47	1.87	1.00
Site x Chilling	-0.44	1.79	-3.96	-0.39	2.96	1.00

NULL



Model estimate change in day of phenological event

Figure 1: Model estimates for a. terminal budburst and 50 percent of lateral buds



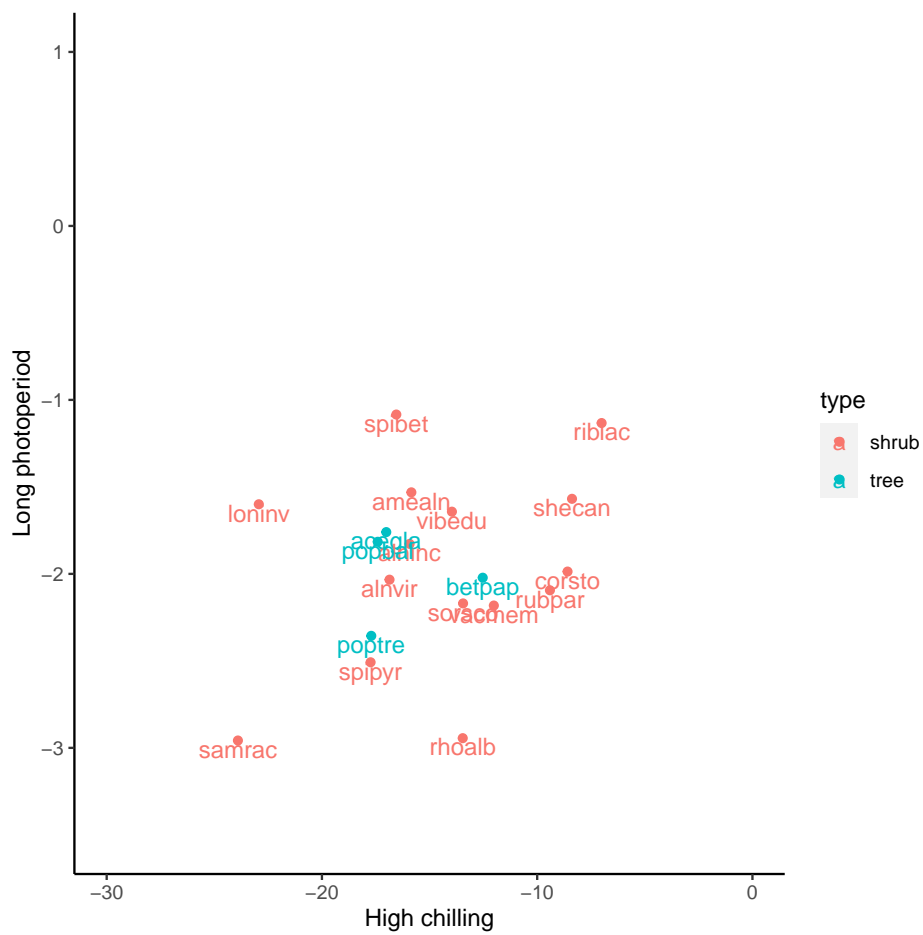


Figure 3: Species responses to high chilling and long photoperiod treatments

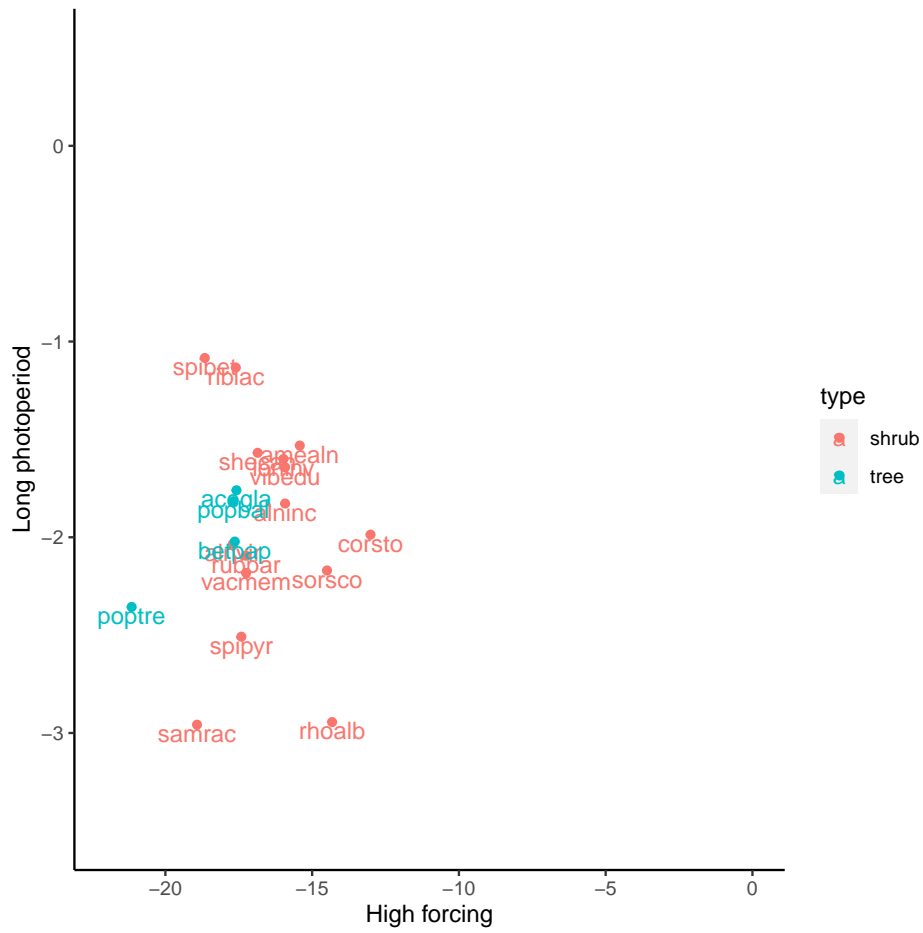


Figure 4: Species responses to high chilling and long photoperiod treatments

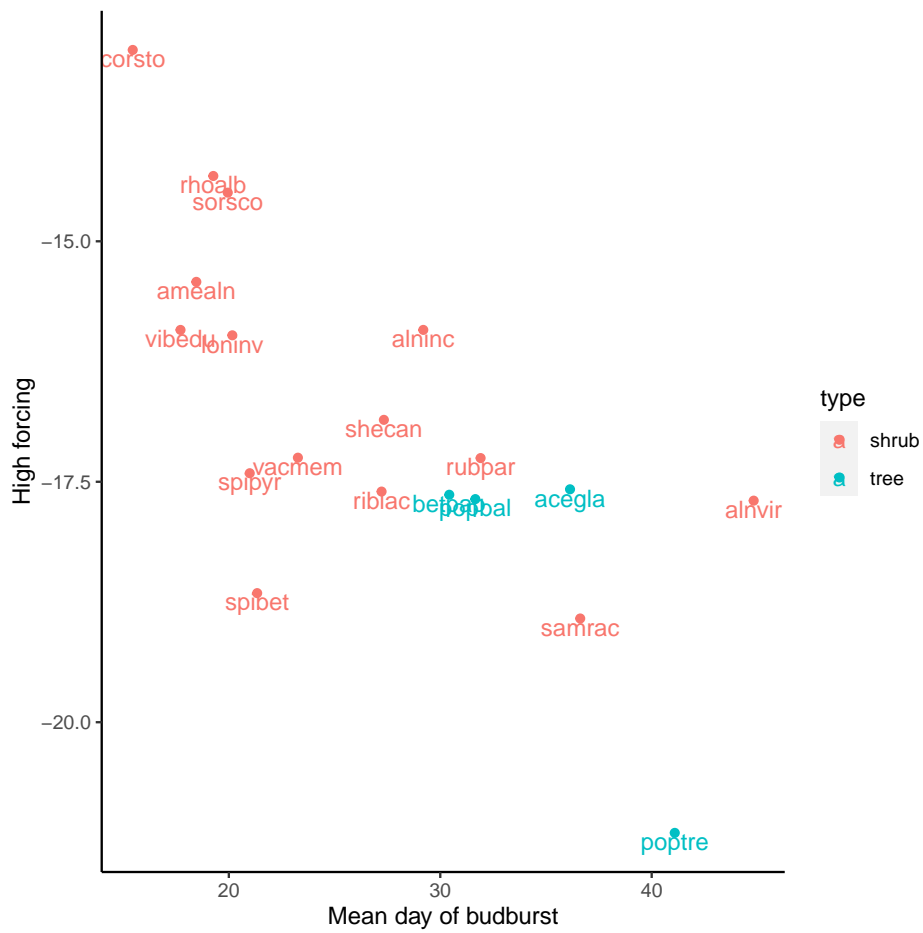


Figure 5: Species responses to high forcing and long photoperiod treatments

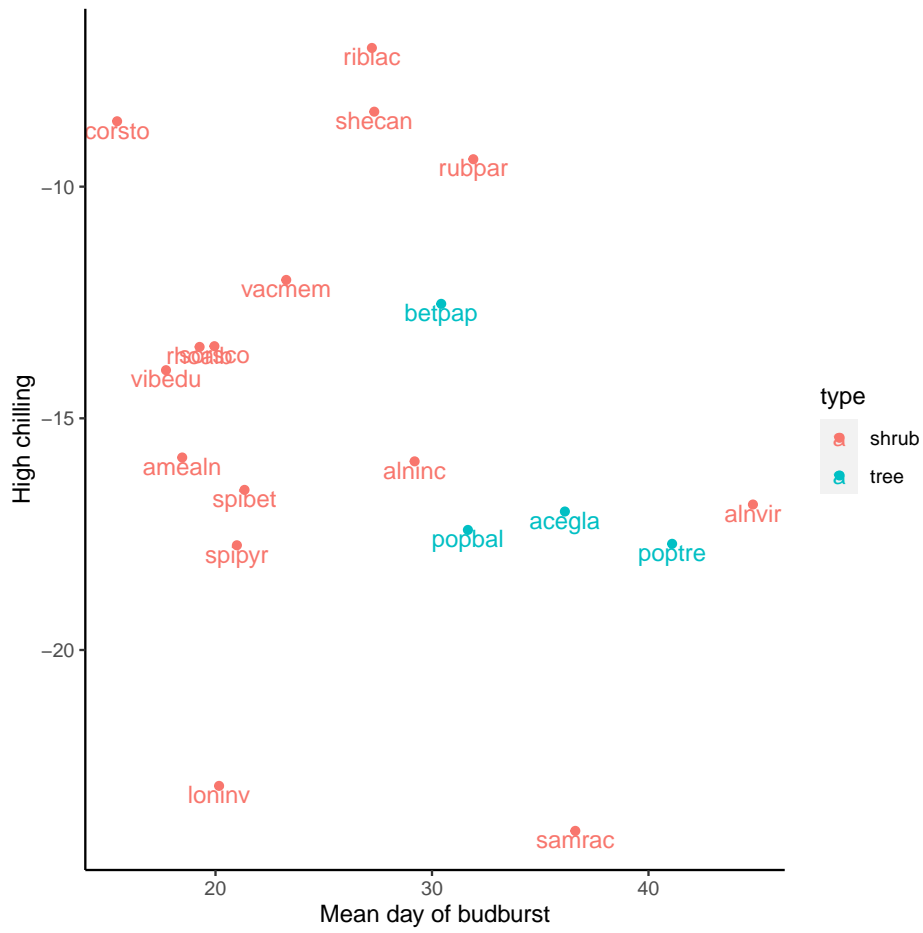


Figure 6: Species responses to high forcing and long photoperiod treatments

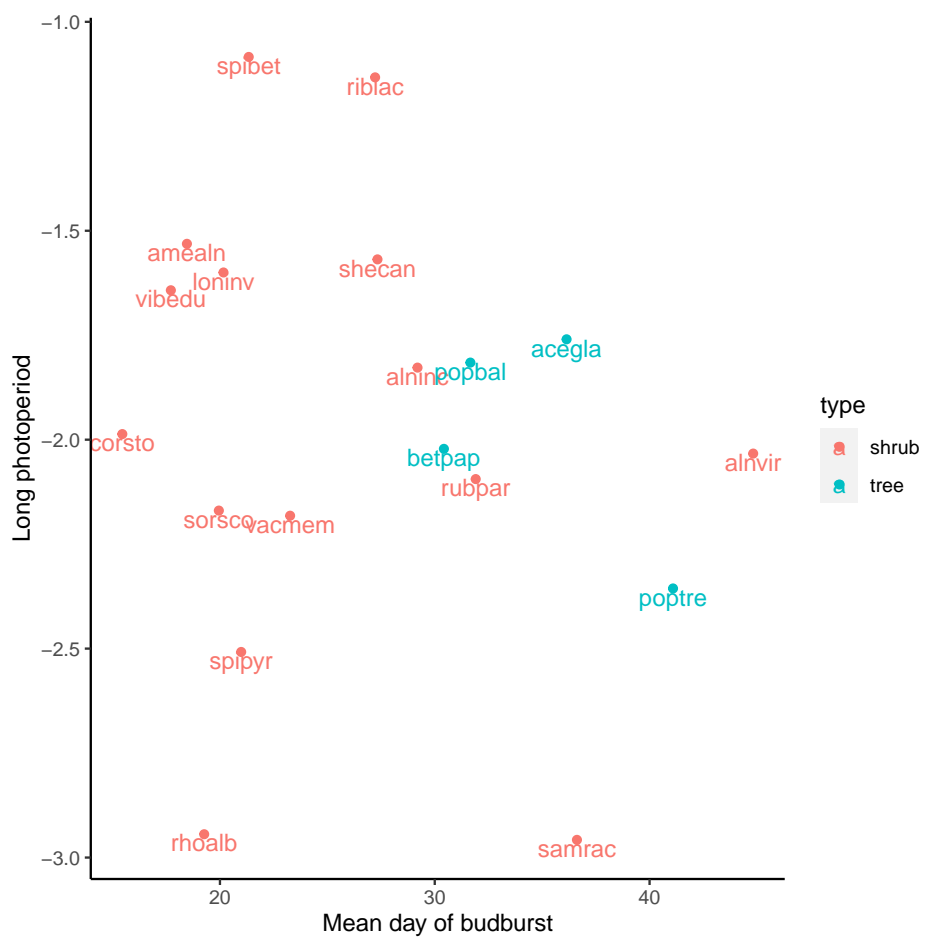


Figure 7: Species responses to high forcing and long photoperiod treatments

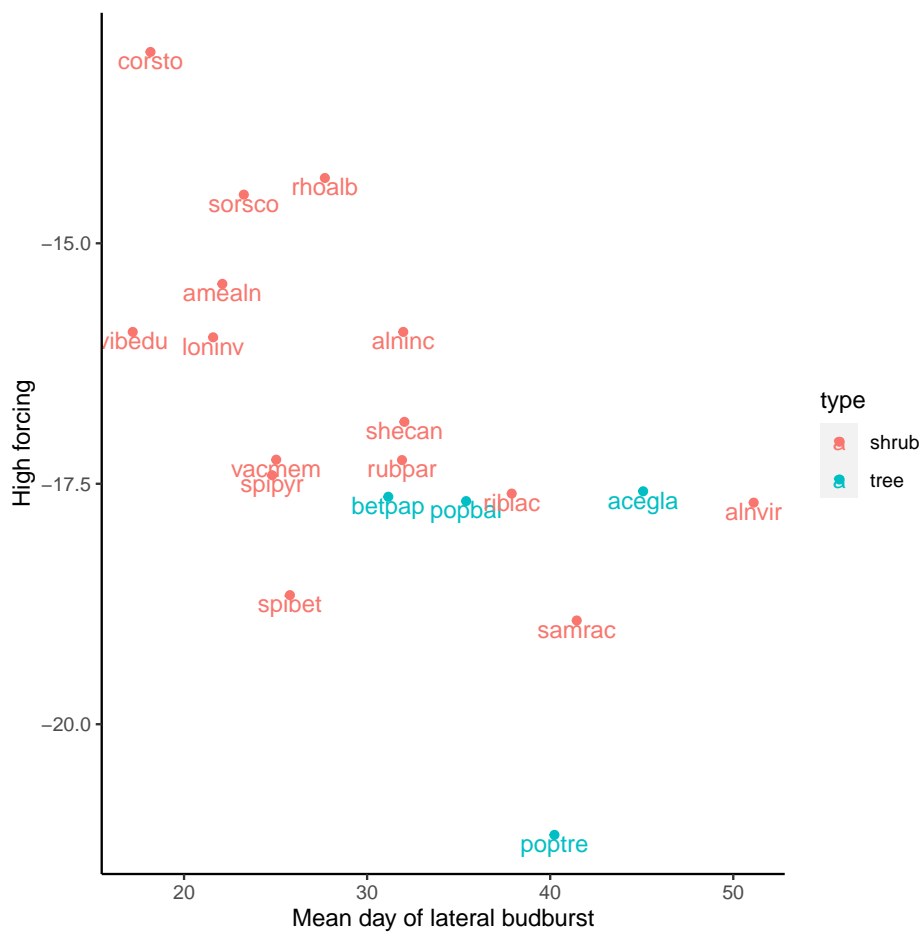


Figure 8: Species responses to high forcing and long photoperiod treatments

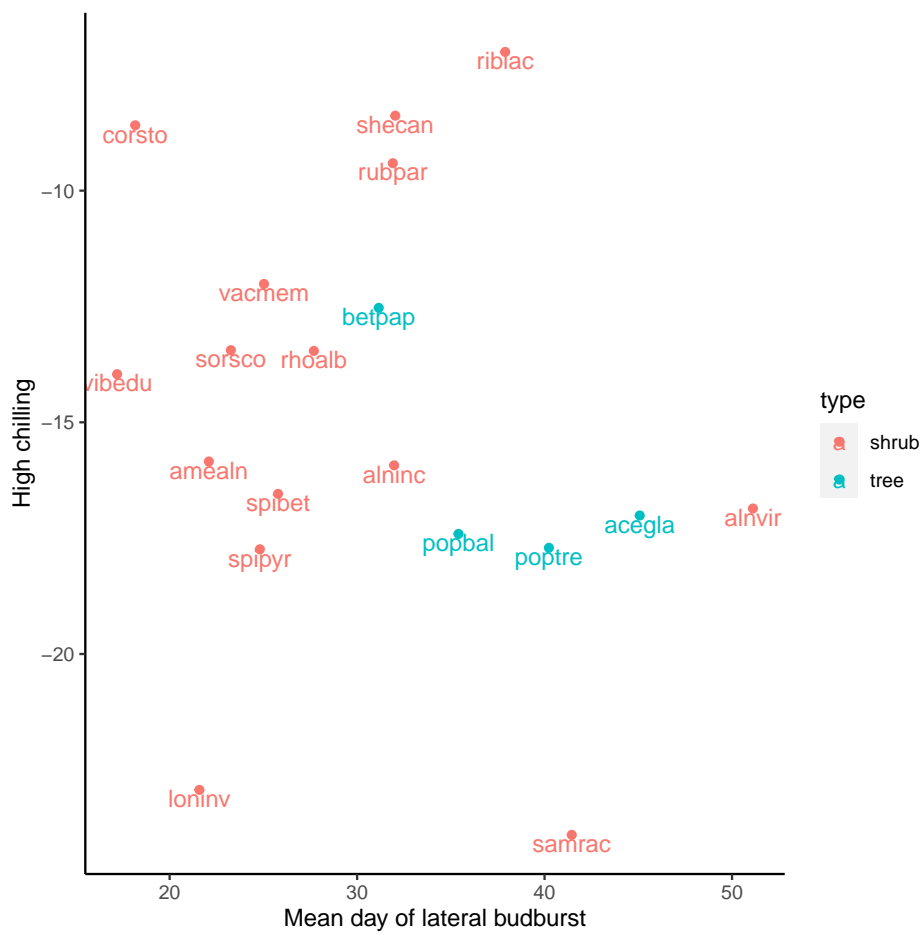


Figure 9: Species responses to high forcing and long photoperiod treatments

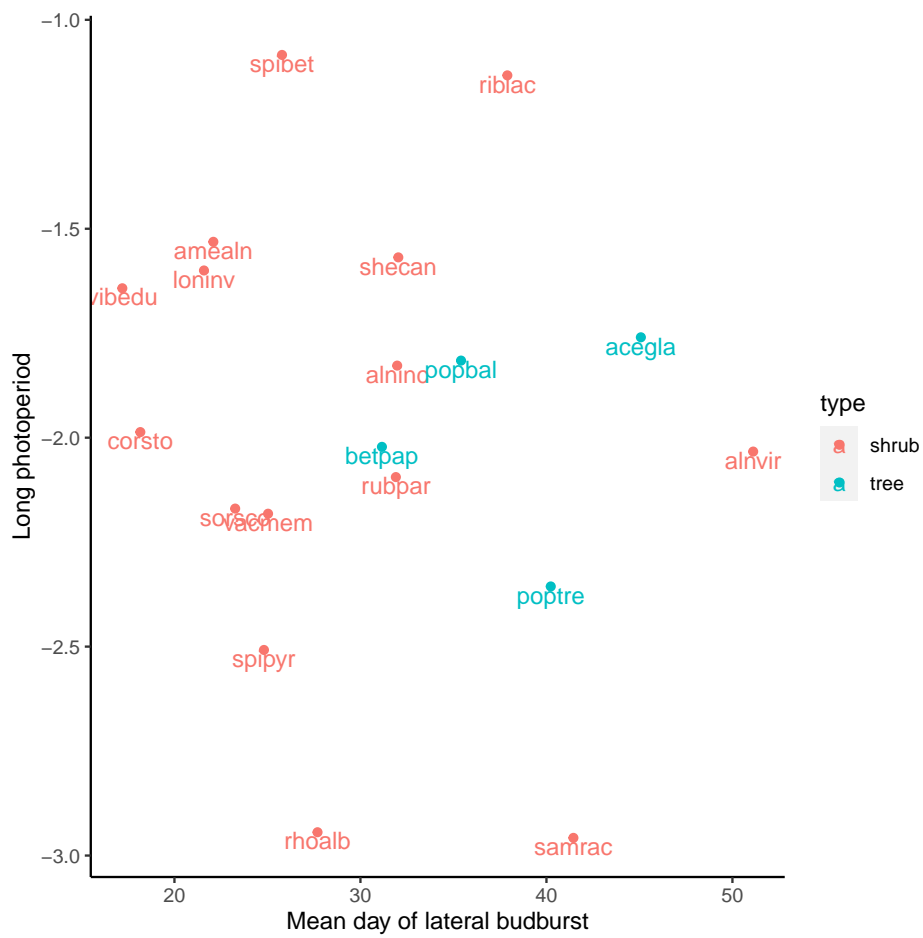


Figure 10: Species responses to high forcing and long photoperiod treatments