

Comparison of large-scale citizen science data and long-term study
data for phenology modeling

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Supplementary materials

Supplementary images S1 - S7 and Table S1

Figure S1: RMSE for specific species and phenophases of the NPN dataset. X marks the best performing models for each respective data type.



Figure S1

Figure S2: RMSE for specific species and phenophases of the LTER datasets. X marks the best performing models for each respective data type.

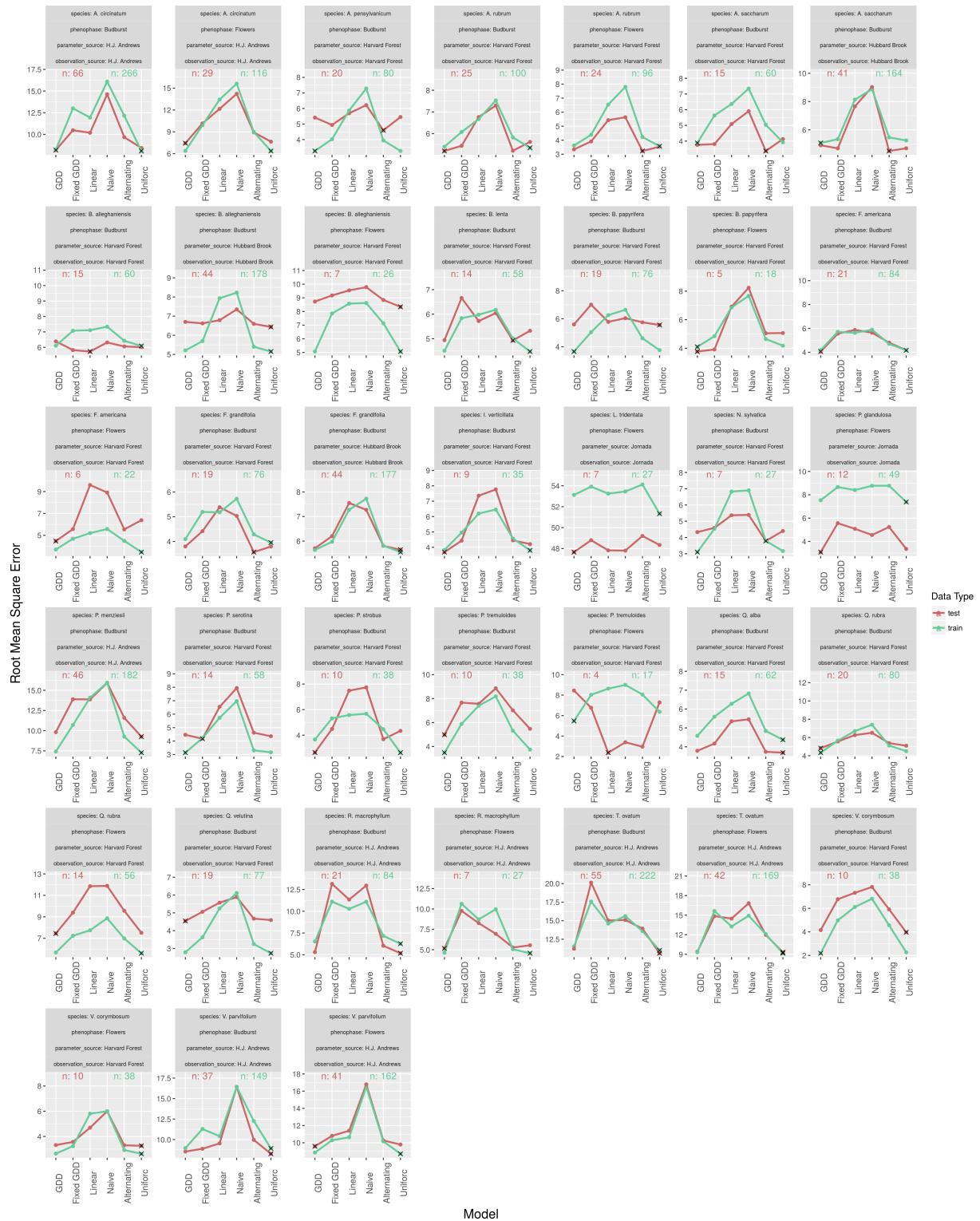


Figure S2

Figure S3: RMSE of all species and phenophases of the four scenarios described in the text. These values were calculated using held out test data.

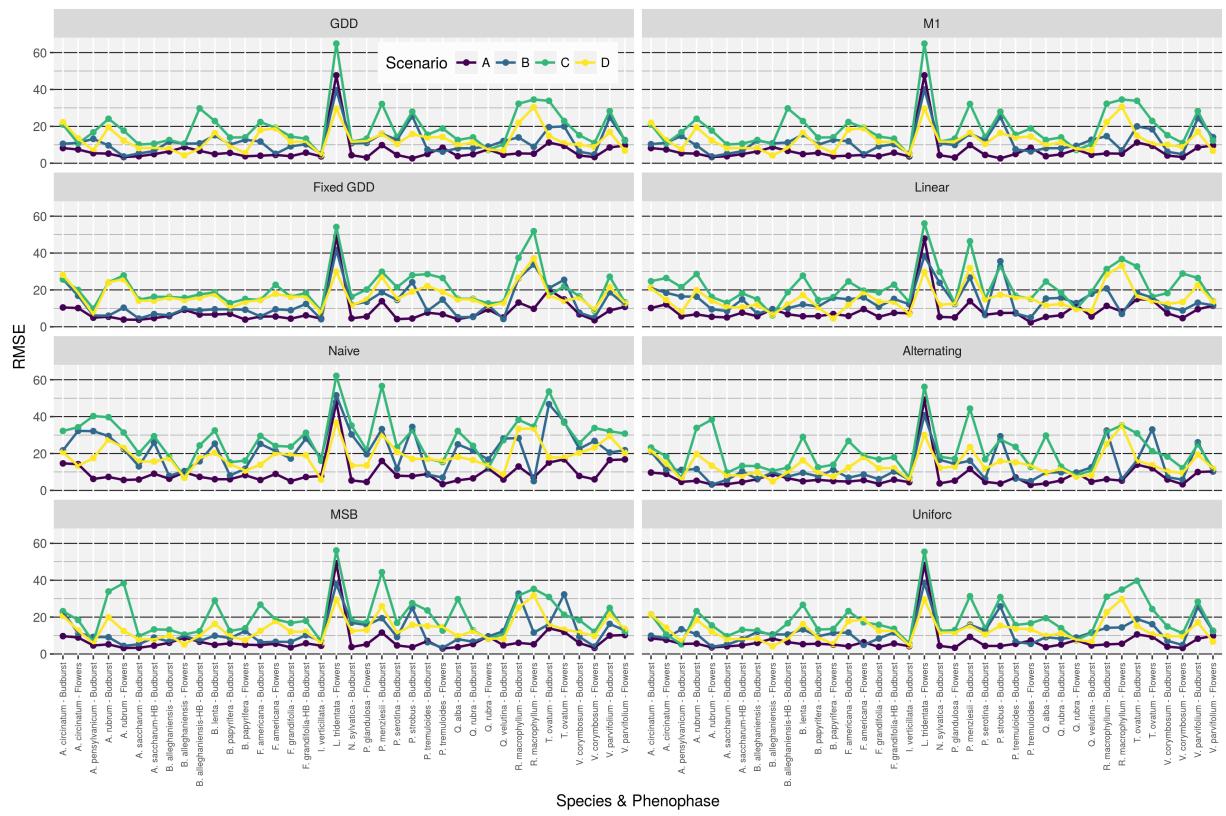


Figure S3

Figure S4: Distribution of parameters of the Naive, GDD, Fixed GDD, and Linear models for the three species common to the Hubbard Brook, Harvard, and NPN datasets. The phenophase is budburst for all three species. Vertical lines indicate either the mean (solid) or median (dashed) of the respective distribution. Note the heading for each sub figure.

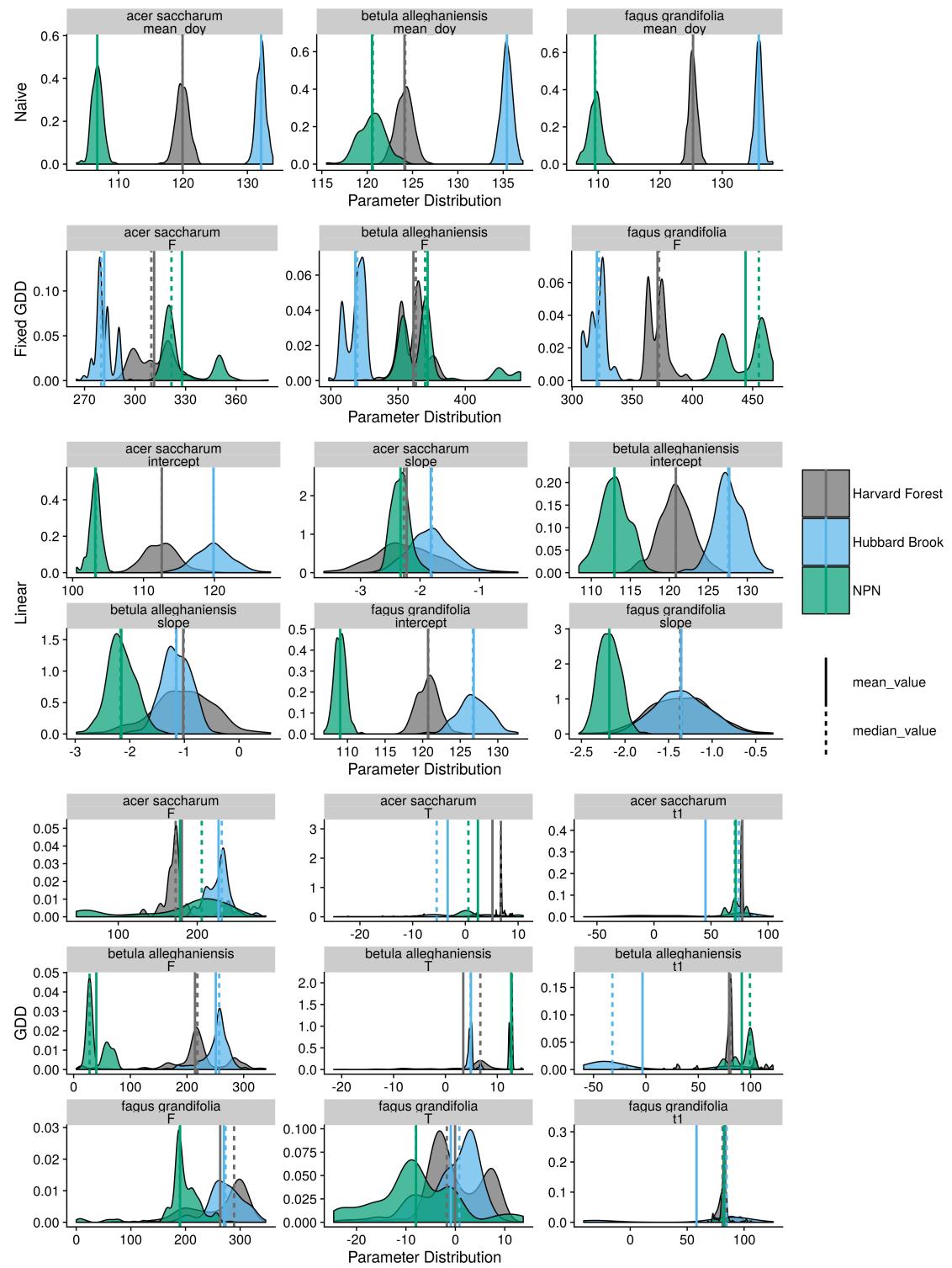


Figure S4

Figure S5: As in Figure S4, but for the Alternating and Uniform models.

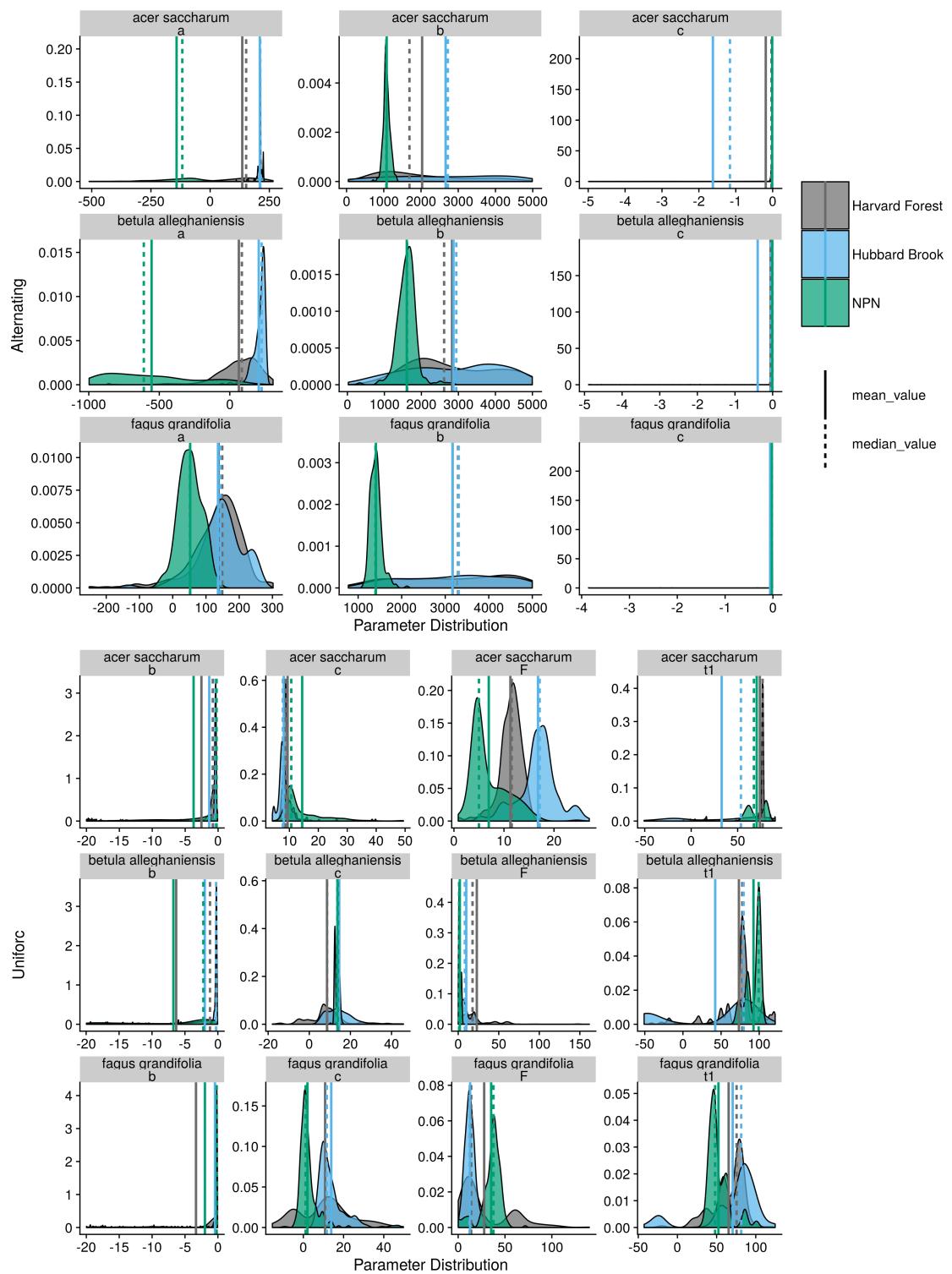


Figure S5

Figure S6: As in Figure S4, but for 4 selected species to show the difference in parameter distributions between LTER and NPN derived models. The phenophase for the four species is budburst. These 4 species are representative of the analysis, and for the remaining comparisons the reader is pointed to the script 'analysis/plot_select_species_parameters.R' in the code repository to generate additional figures.

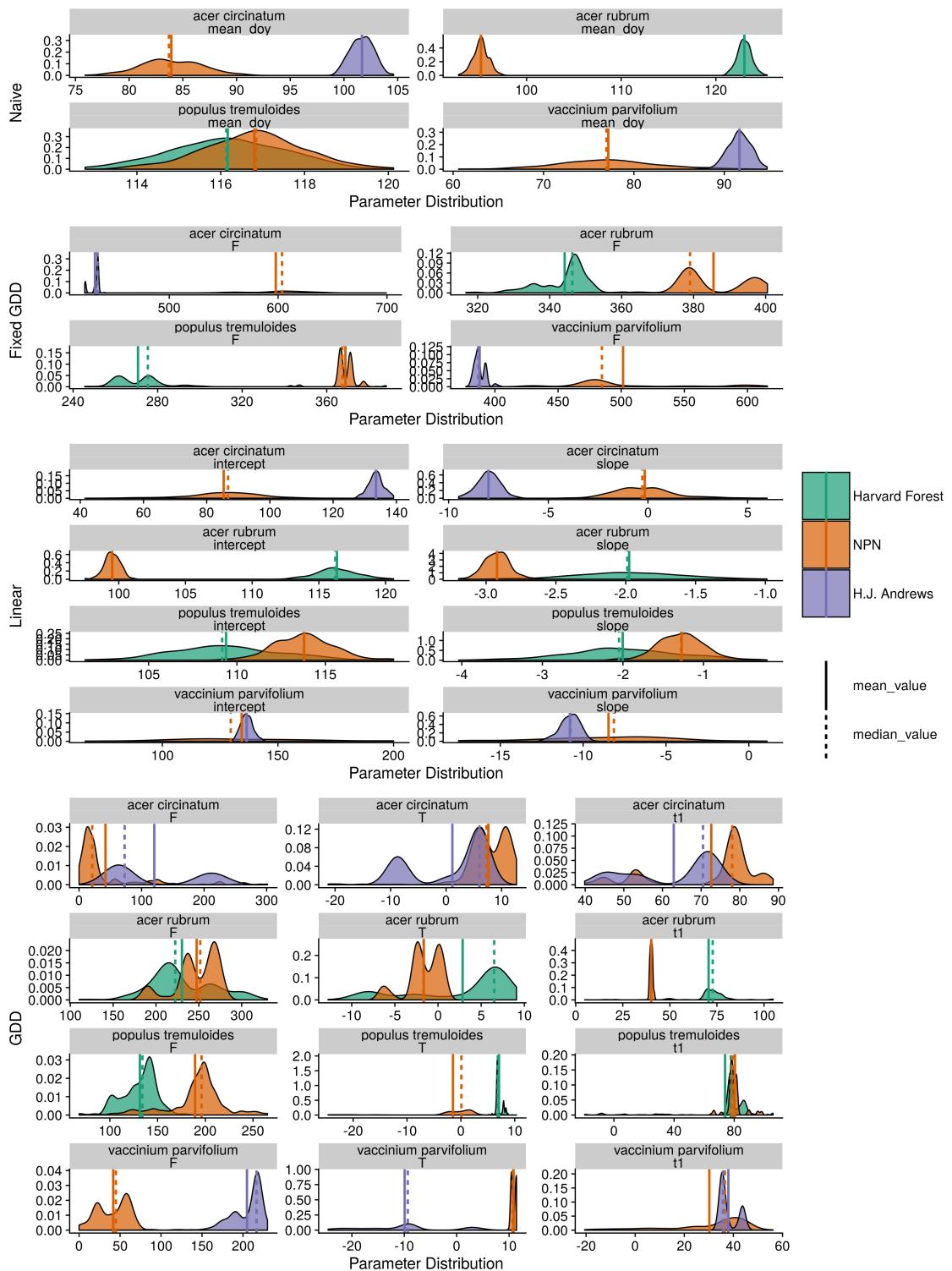


Figure S6

Figure S7: As in Figure S6, but for the Alternating and Uniform models.

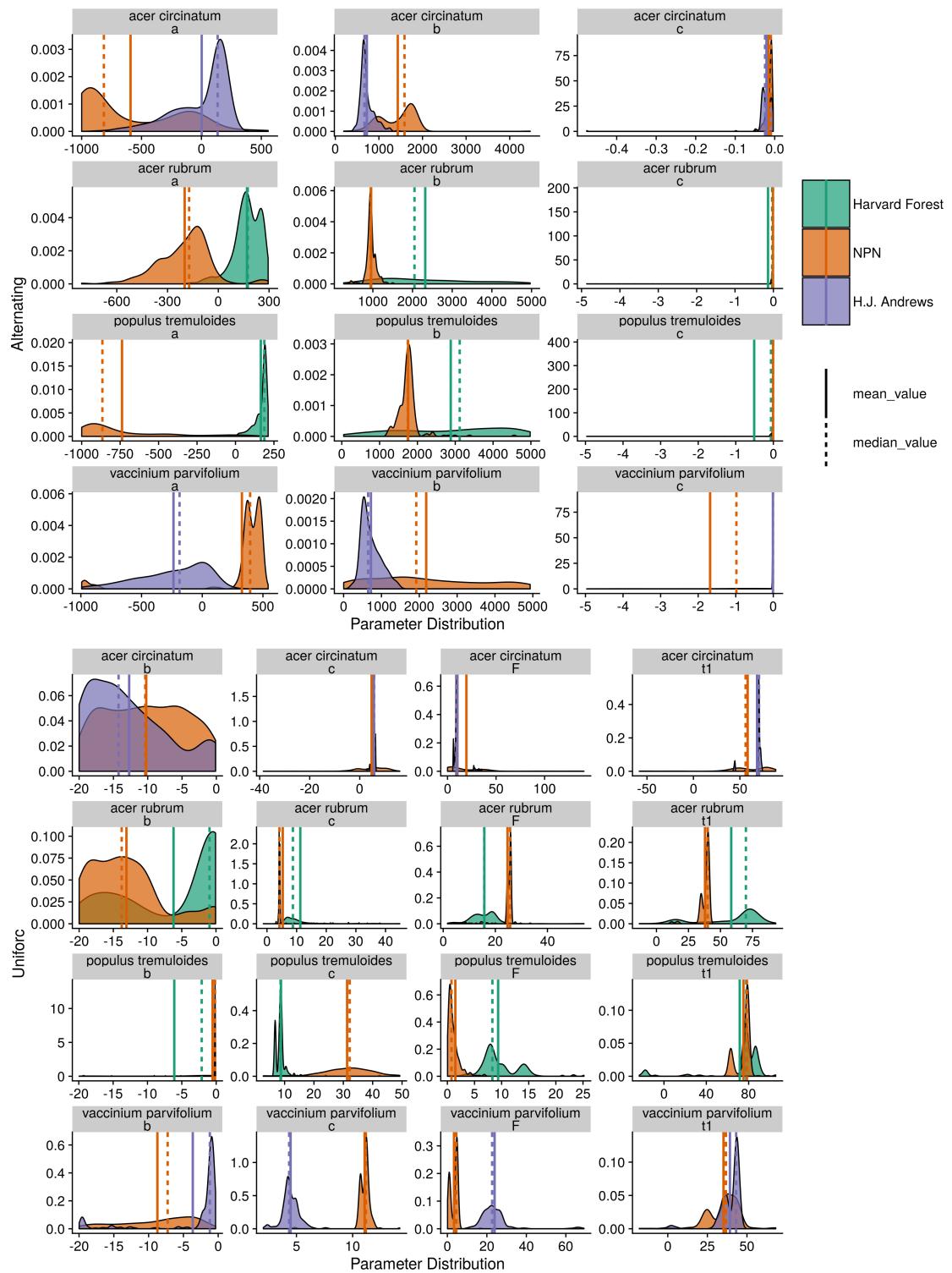


Figure S7

Species	PhenophaseID	Desc.	Harvard	H.J. Andrews	Hubbard	Jornada
acer circinatum	371	Budburst		x		
acer circinatum	501	Flowers		x		
acer pensylvanicum	371	Budburst	x			
acer rubrum	371	Budburst	x			
acer rubrum	501	Flowers	x			
acer saccharum	371	Budburst	x		x	
betula alleghaniensis	371	Budburst	x		x	
betula alleghaniensis	501	Flowers	x			
betula lenta	371	Budburst	x			
betula papyrifera	371	Budburst	x			
betula papyrifera	501	Flowers	x			
fagus grandifolia	371	Budburst	x		x	
fraxinus americana	371	Budburst	x			
fraxinus americana	501	Flowers	x			
ilex verticillata	371	Budburst	x			
larrea tridentata	501	Flowers				x
nyssa sylvatica	371	Budburst	x			
pinus strobus	496	Budburst	x			
populus tremuloides	371	Budburst	x			
populus tremuloides	501	Flowers	x			
prosopis glandulosa	501	Flowers				x
prunus serotina	371	Budburst	x			
pseudotsuga menziesii	480	Budburst		x		
quercus alba	371	Budburst	x			
quercus rubra	371	Budburst	x			
quercus rubra	501	Flowers	x			
quercus velutina	371	Budburst	x			
rhododendron macrophyllum	371	Budburst		x		
rhododendron macrophyllum	501	Flowers		x		
trillium ovatum	488	Budburst		x		
trillium ovatum	501	Flowers		x		
vaccinium corymbosum	371	Budburst	x			
vaccinium corymbosum	501	Flowers	x			
vaccinium parvifolium	371	Budburst		x		
vaccinium parvifolium	501	Flowers		x		

Table 1: Species used in the analysis.