

# Supplemental materials for Phenological sequences: How early-season events define those that follow

A.K. Ettinger, S. Gee, and E.M. Wolkovich

January 9, 2018

## Supplemental Tables

Table S1: Summary of linear models for relationships between later phenophases and earlier phenophases, as shown in Figure 3 in the main text. Two types of linear models were fit: those with the intercept only estimated and a forced slope of one, and those with both the slope and intercept estimated (i.e. standard regression model). All models were fit with the species-level mean day-of-year of the later phenological stages as the response variable, and mean day-of-year of earlier phenostage as the explanatory variable.

previous phenostage model	forced slope model			standard regression model				
	intercept	r <sup>2</sup>	aic	intercept	slope	p	r <sup>2</sup>	aic
leafout vs. budburst	8.94	0.10	164.78	65.84	0.53	<0.001	0.44	155.01
flowering vs. budburst	23.83	0.17	225.55	3.18	1.17	0.039	0.17	227.45
fruiting vs. budburst	46.87	0.17	246.71	-80.31	2.04	0.016	0.23	246.87
senescence vs. budburst	158.84	-0.12	210.97	243.88	0.30	0.427	0.03	209.43
flowering vs. leafout	14.90	0.23	223.60	-105.28	1.92	0.005	0.30	223.26
fruiting vs. leafout	37.93	0.11	248.29	-107.19	2.11	0.051	0.16	249.05
senescence vs. leafout	149.90	-0.07	209.74	237.39	0.33	0.484	0.02	209.58
fruiting vs. flowering	23.04	0.54	232.14	5.21	1.12	<0.001	0.54	233.79
senescence vs. flowering	135.00	-1.79	233.74	261.65	0.13	0.332	0.04	209.08
senescence vs. fruiting	111.97	-5.43	254.66	277.81	0.02	0.851	0.00	210.09

Table S2: Summary of linear models for relationships between later phenophases and interphase duration, as shown in Figure 4 in the main text. Linear models were fit with the species-level mean day-of-year of the later phenological stages as the response variable, and the number of days in each previous interphase duration as the explanatory variable.

interphase model	intercept	slope	r <sup>2</sup>	p
leafout vs. leafout-budburst	128.977	0.196	0.035	0.374
flowering vs. leafout-budburst	144.522	0.123	0.001	0.874
fruiting vs. leafout-budburst	276.477	-1.564	0.047	0.3
senescence vs. leafout-budburst	281.980	-0.151	0.004	0.763
flowering vs. flowering-leafout	129.280	1.097	0.926	<0.001
fruiting vs. flowering-leafout	245.864	1.117	0.250	0.011
senescence vs. flowering-leafout	278.627	0.134	0.034	0.381
fruiting vs. fruiting-flowering	143.556	1.018	0.740	<0.001
senescence vs. fruiting-flowering	258.294	0.191	0.242	0.013
senescence vs. senescence-fruiting	282.109	-0.082	0.047	0.296

## Supplemental Figures

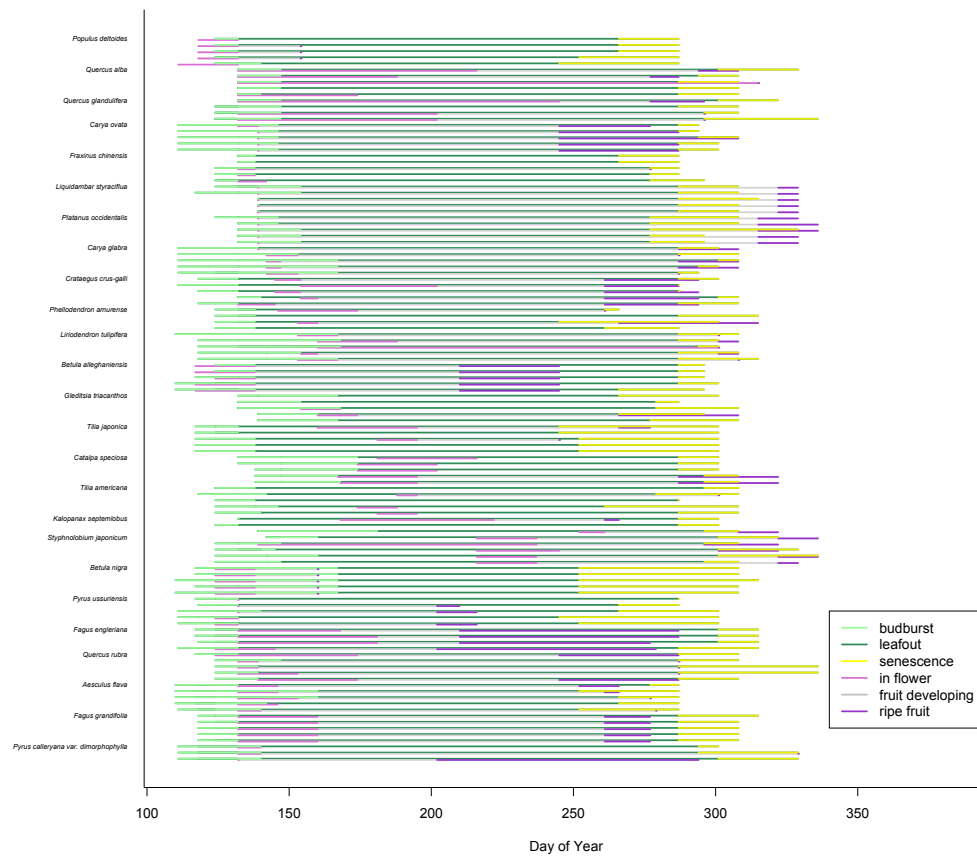


Figure S1: **Individual tree phenology during the 2015 growing season, ordered by species-level mean first-flower dates.** Growth phenology is shown for budburst (from its mean start day-of-year to the mean start day-of-year for leafout, across all individuals within a species), leafout (from the mean day-of-year when fully-expanded leaves were first observed through the start of senescence), and senescence (from the mean day-of-year when leaves first began changing color through the mean day-of-year when more than 95 percent of leaves on the tree had changed color). Reproductive phenology is shown for flowering (from the mean day-of-year when flowers first appeared to the mean day-of-year when fruits first appeared, across all individuals within a species) and fruiting (from the mean day-of-year when fruits first appeared to the mean day-of-year when more than 95 percent of fruits were first observed as ripe).