

SUPPLEMENTAL MATERIALS

Supplemental Figures

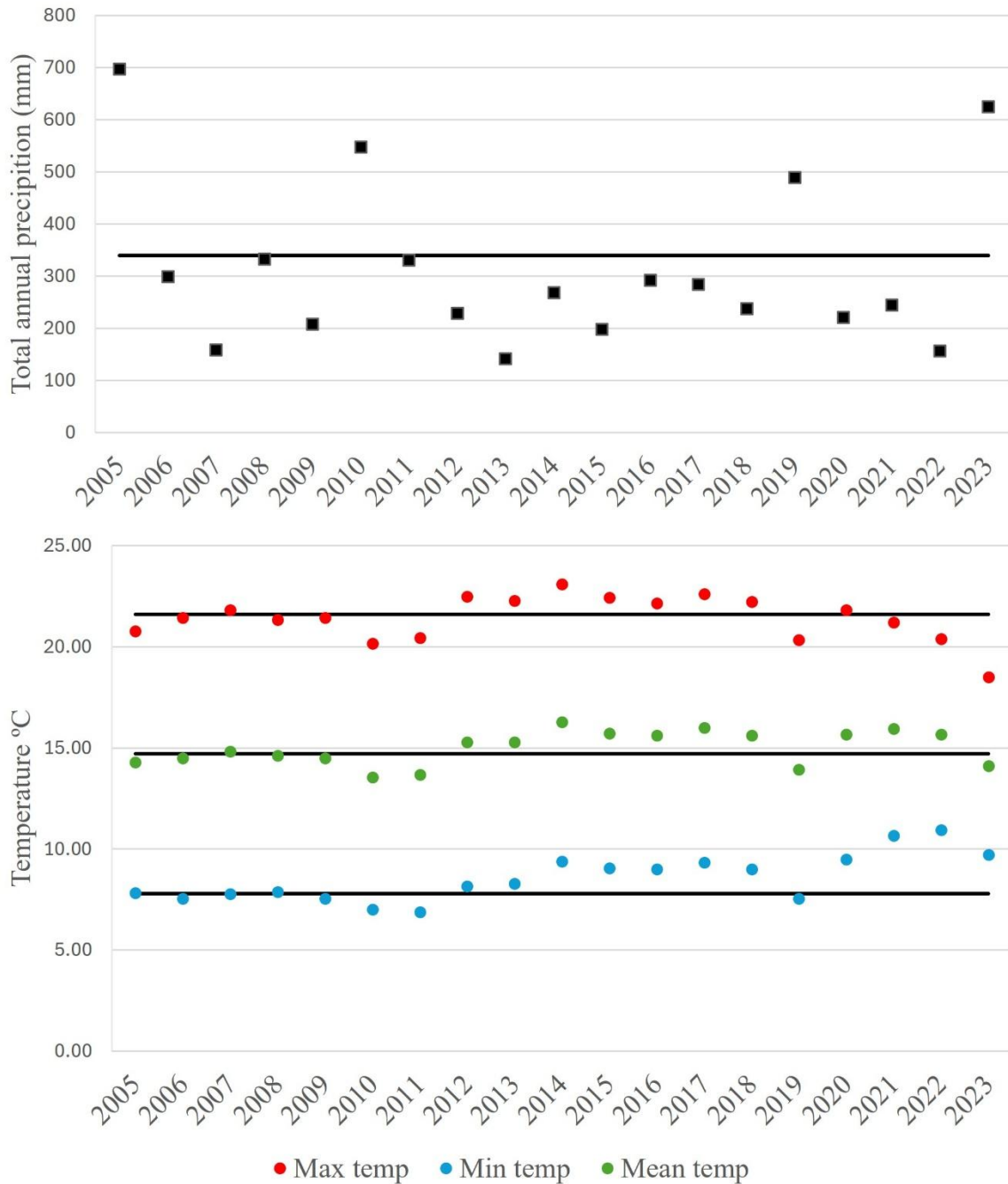


Figure S1. Total annual precipitation and annual maximum, mean, and minimum temperatures across our plots from 2005–2023. Black horizontal lines are the 30-year (1991–2020) means for the variable.

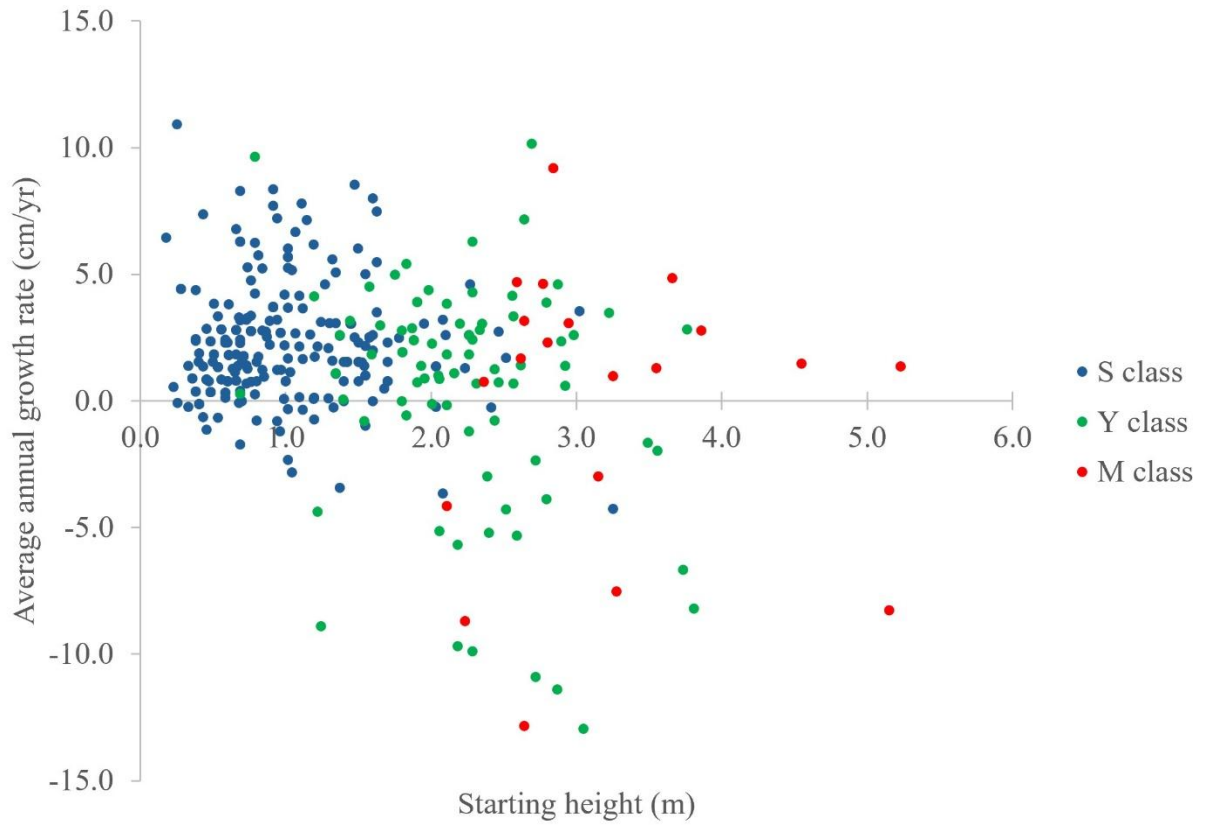


Figure S2. Average annual growth rates of S, Y, and M class stems plotted against their starting heights.

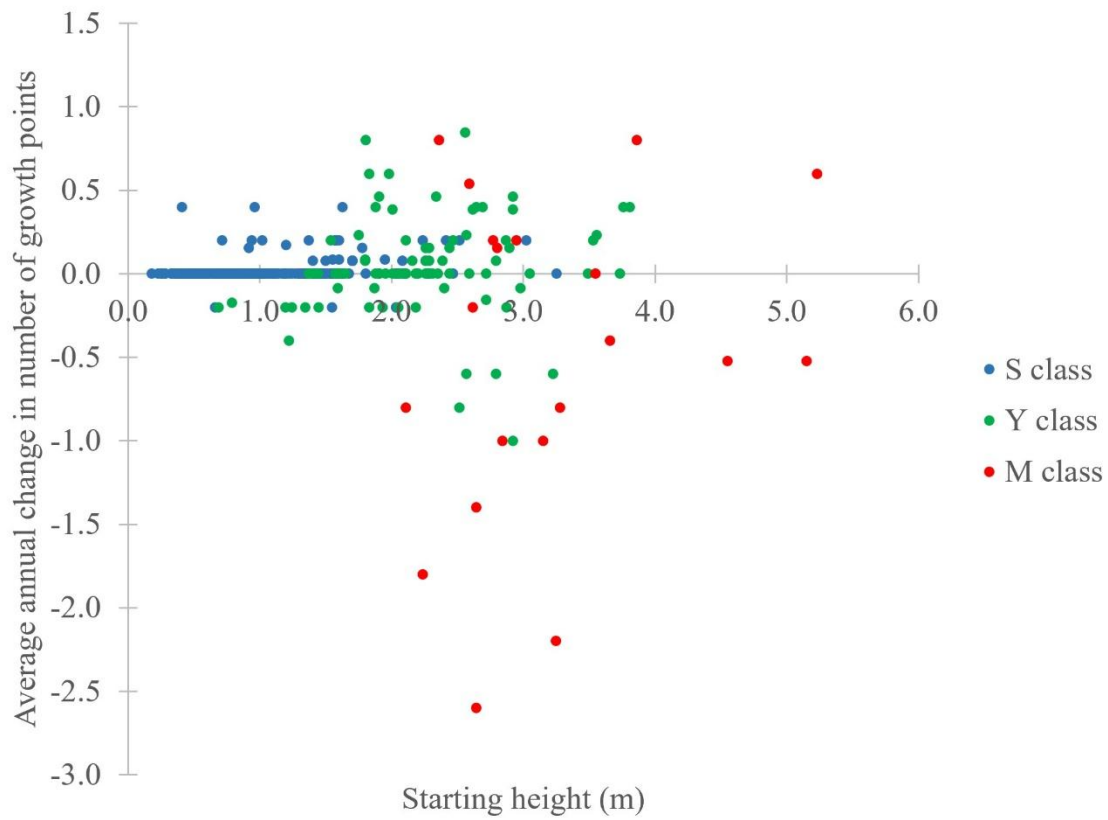


Figure S3. Average annual change in number of growth points of S, Y, and M class stems plotted against their starting heights.

Supplemental Tables

Table S1. Southwest corner locations, sampling dates, and physical characteristics of study plots used in the analysis of density, growth and changes in growth points rates (UTM UPS, NAD83).

Plot	Elevation (m)	UTM Easting	UTM Northing	Soil Series	Landscape Position	Mean Annual Precipitation (mm)	Mean Annual Temperature (°C)	Slope (%)	Aspect
1	1,068	354568	3859574	Hanford	Alluvial	315	15	5	SE
2	1,288	352566	3863274	Hanford	Canyon	297	13.2	20	S
3	1,235	353266	3862472	Hanford	Canyon	297	13.2	15	S
4	1,019	351385	3858620	Hanford	Alluvial	324	14.8	10	SW
5	1,058	354160	3858941	Hanford	Alluvial	318	15.1	5	SE
6	1,310	355771	3864925	Oak Glen	Canyon	303	12.7	15	S
7	1,073	354268	3859439	Hanford	Alluvial	313	14.8	5	SE
8	1,098	353696	3859814	Hanford	Alluvial	313	14.8	15	SW
9	1,105	354031	3860111	Hanford	Alluvial	313	14.8	5	SE

Plot	Elevation (m)	UTM Easting	UTM Northing	Soil Series	Landscape Position	Mean Annual Precipitation (mm)	Mean Annual Temperature (°C)	Slope (%)	Aspect
10	1,340	351887	3863771	Oak Glen	Canyon	314	12.3	15	S
11	1,100	353990	3859998	Hanford	Alluvial	313	14.8	10	SE
12	1,073	353718	3859320	Hanford	Alluvial	319	15	5	S
13	1,057	354694	3859339	Hanford	Alluvial	321	15.1	5	NE
14	1,230	353155	3862415	Hanford	Canyon	297	13.2	20	S
15	1,334	352029	3863696	Hanford	Canyon	314	12.3	20	S
16	1,228	354650	3863539	Oak Glen	Canyon	296	13.2	15	SE
17	1,250	358942	3865576	Hanford	Canyon	296	13.2	10	S
18	1,033	351568	3858951	Hanford	Alluvial	322	14.8	5	SW
19	1,037	351674	3858975	Hanford	Alluvial	322	14.8	10	SW

Plot	Elevation (m)	UTM Easting	UTM Northing	Soil Series	Landscape Position	Mean Annual Precipitation (mm)	Mean Annual Temperature (°C)	Slope (%)	Aspect
20	1,134	356003	3862135	Oak Glen	Canyon	305	14.3	10	SE
21	1,182	355506	3863125	Oak Glen	Canyon	301	13.3	5	SE
22	1,016	353021	3857762	Hanford	Alluvial	319	15	5	SE
23	1,013	351288	3858566	Hanford	Alluvial	319	15	5	SE

Table S2. Mixed effects model results for factors potentially associated with positive and negative growth rates of *Y. brevifolia* stems. A) model summary including the coefficient of determination (R^2), adjusted R^2 , Akaike Information Criterion (AIC_c), and Bayesian Information Criterion (BIC).

A) Model summaries

Positive rate R^2	Positive rate Adj R^2	Positive rate AIC_c	Positive rate BIC	Negative rate R^2	Negative rate Adj R^2	Negative rate AIC_c	Negative Rate BIC
0.201	0.173	3,407.00	3,414.28	17.41%	0.21%	453.88	457.35

B) Tests of fixed effects

Fixed effect factor	Positive rate DF	Positive rate F	Positive rate P	Negative rate DF	Negative rate F	Negative rate P
Soil type	2.00	1.27	0.379	2.00	1.42	0.252
Elevation	1.00	0.00	0.953	1.00	0.58	0.450
MAP ^a	1.00	0.02	0.896	1.00	0.96	0.331
MAT ^b	1.00	0.07	0.812	1.00	0.71	0.402
Slope	1.00	0.02	0.896	1.00	1.91	0.173
Aspect	3.00	0.72	0.600	3.00	0.28	0.840
Landscape position	1.00	0.01	0.943	1.00	1.02	0.318

^a MAP = mean annual precipitation

^b MAT = mean annual temperature

Table S3. Mixed effects model results for factors potentially associated with positive and negative changes in growth point rates of *Y. brevifolia* stems. A) model summary including the coefficient of determination (R^2), adjusted R^2 , Akaike Information Criterion (AIC_c), and Bayesian Information Criterion (BIC).

A) Model summaries

Positive rate R^2	Positive rate Adj R^2	Positive rate AIC_c	Positive rate BIC	Negative rate R^2	Negative rate Adj R^2	Negative rate AIC_c	Negative rate BIC
0.061	0.029	3,385.72	3,393.06	37.27%	21.19%	346.30	349.29

B) Tests of fixed effects

Fixed effect factor	Positive rate DF	Positive rate F	Positive rate P	Negative rate DF	Negative rate F	Negative rate P
Soil type	2.00	0.26	0.768	2.00	1.37	0.265
Elevation	1.00	3.39	0.067	1.00	0.54	0.467
MAP ^a	1.00	4.72	0.031	1.00	0.27	0.607
MAT ^b	1.00	2.66	0.104	1.00	3.94	0.054
Slope	1.00	1.54	0.216	1.00	0.02	0.898
Aspect	3.00	2.01	0.113	3.00	2.14	0.110
Landscape position	1.00	3.60	0.059	1.00	3.54	0.068

^a MAP = mean annual precipitation

^b MAT = mean annual temperature

Table S4. Correlation matrix of continuous environmental variables (elevation, MAP, MAT, and slope) used in the mixed effects models. All pairwise correlations were statistically significant ($P < 0.0001$).

	Elevation	MAP ^a	MAT ^b	Slope
Elevation	1			
MAP ^a	-0.52	1		
MAT ^b	-0.89	0.80	1	
Slope	0.41	-0.43	-0.60	1

^a MAP = mean annual precipitation

^b MAT = mean annual temperature