Table S1 Generalized linear models associated with estimating *Cirsium pitcheri* seedling survival using previous year root slope, elevation, and aspect. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Slope + Aspect	3	832.9666	0.000	0.297
Global	3	834.3128	1.346	0.152
Aspect + Elevation	3	834.4393	1.473	0.142
Slope	2	834.866	1.899	0.115
Aspect	2	834.8921	1.926	0.113
Elevation	2	835.9559	2.989	0.067
Slope + Elevation	3	836.1413	3.175	0.061
Intercept	1	836.3989	3.432	0.053

Table S2 Generalized linear models associated with estimating *Cirsium pitcheri* juvenile survival using previous year root crown diameter, slope, elevation, and aspect. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Crown Diameter + Slope + Aspect + Elevation	5	932.391	0.000	0.413
Crown Diameter + Aspect + Elevation	4	934.365	1.973	0.154
Crown Diameter + Aspect	3	934.870	2.478	0.120
Crown Diameter + Slope + Aspect	4	935.315	2.924	0.096
Crown Diameter + Slope + Elevation	4	935.605	3.214	0.083
Crown Diameter + Elevation	3	936.140	3.749	0.063
Crown Diameter	2	936.778	4.387	0.046
Crown Diameter + Slope	3	938.039	5.648	0.025
Null	1	1068.946	136.554	0.000

Table S3 General linear models associated with estimating *Cirsium pitcheri* juvenile growth using previous year root crown diameter, slope, elevation, and aspect. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Crown Diameter + Elevation	3	366.381	0.000	0.425
Crown Diameter + Slope + Elevation	4	367.320	0.939	0.266
Crown Diameter + Aspect + Elevation	4	368.139	1.758	0.176
Crown Diameter + Slope + Aspect + Elevation	5	369.221	2.840	0.103
Crown Diameter	2	372.944	6.563	0.016
Crown Diameter + Aspect	3	374.708	8.327	0.007
Crown Diameter + Slope	3	374.942	8.561	0.006
Crown Diameter + Slope + Aspect	4	376.693	10.311	0.002
Null	1	704.138	337.756	0.000

Table S4: Generalized linear models associated with estimation *Cirsium pitcheri* flowering probability using previous year's root crown diameter, slope, elevation and aspect. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Crown Diameter + Slope	3	187.769	0.000	0.491
Crown Diameter + Slope + Aspect	4	189.396	1.627	0.218
Crown Diameter + Slope + Elevation	4	189.763	1.994	0.181
Global	5	191.388	3.619	0.080
Null	1	195.259	7.490	0.012
Crown Diameter + Elevation	3	196.755	8.986	0.005
Crown Diameter	2	196.946	9.177	0.005
Crown Diameter + Aspect	3	197.360	9.591	0.004
Crown Diameter + Aspect + Elevation	4	197.529	9.760	0.004

Table S5: Generalized linear models with a Poisson distribution associated with estimating the number of seedlings produced from a flowering *Cirsium pitcheri* plant previous year's rot crown diameter, slope, elevation and aspect. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Crown Diameter + Slope + Elevation	4	801.378	0.000	0.464
Crown Diameter + Slope	3	802.555	1.177	0.258
Global	5	803.300	1.922	0.178
Crown Diameter + Slope + Aspect	4	804.548	3.170	0.095
Crown Diameter	2	812.163	10.785	0.002
Crown Diameter + Elevation	3	812.518	11.140	0.002
Crown Diameter + Aspect	3	813.683	12.305	0.001
Crown Diameter + Aspect + Elevation	4	814.144	12.766	0.001
Null	1	920.823	119.445	0.000

Table S6 Generalized linear models associated with estimating *Cirsium pitcheri* occupancy using slope and elevation. Model rank is based on lowest AIC, K = number of parameters in model.

Model	k	AIC	ΔAICc	Model Weight
Slope + Elevation	3	99515.30	0	1
Slope	2	99837.19	321.90	0
Elevation	2	100479.64	964.34	0
Intercept	1	100704.96	1189.66	0