W. Sepulveda Basin

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ES&P/GEOG 330

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Spring 2017

Background

- Land usage of Sepulveda Basin
- Causes of change in Sepulveda Basin (flood, fires, etc)

April 2017

August 1989

Hypothesis

- Species patterns in Sepulveda vary depending on land use

Data Collection Methods

- Quadrats and sample collection
- Soil compaction penetrometer
- pH (Kelway) meter

Photos

Brassica nigra

Bromus diandrus

Erodium cicutarium

Hirschfeldia incana

Hordeum murinum

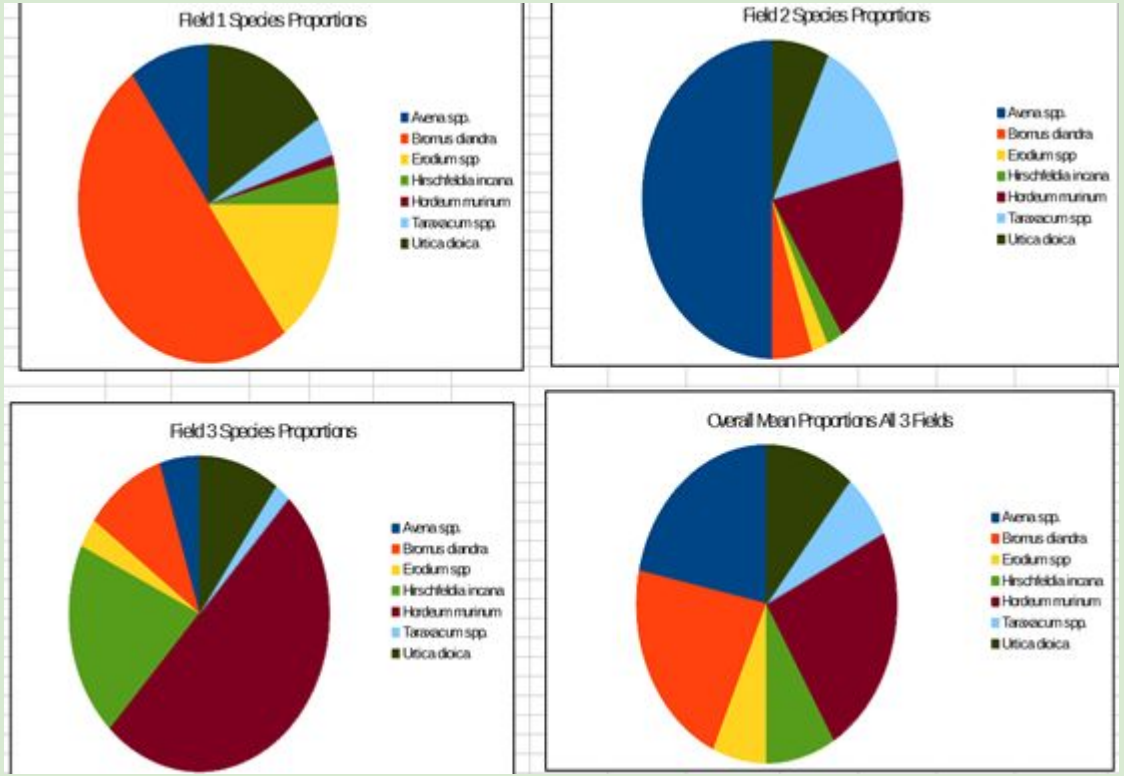
Z-Test of the Three Fields

- Using only 2 quadrats per field limited the data returned
  - Errors in z-test
- There is NO significant difference

		N field	Middle field	S field	Means	Diff of Prop	N vs Middle	N vs S	Middle vs S	St Err	N vs Middle	N vs S	Middle vs S	Z of diff of	N vs Middle	N vs S	Middle vs S	prob-value	N vs Middle	N vs S	Middle vs S
2	Bare soil	0.00	0.00	0.20	0.07		0.00	-0.20	-0.20		0.00	0.28	0.28		#DIV/0!	-0.71	-0.71		#DIV/0!	0.240	0.240
3	*Brassica nigra*	0.00	0.05	0.00	0.02		-0.05	0.00	0.05		0.15	0.00	0.15		-0.31	#DIV/0!	0.31		0.379	#DIV/0!	0.621
4	*Erodium* spp	0.13	0.40	0.27	0.26		-0.28	-0.14	0.14		0.42	0.39	0.47		-0.66	-0.36	0.29		0.255	0.360	0.614
5	*Hirschfeldia incana*	0.00	0.00	0.23	0.08		0.00	-0.23	-0.23		0.00	0.30	0.30		#DIV/0!	-0.76	-0.76		#DIV/0!	0.223	0.223
6	*Hordeum murinum*	0.06	0.30	0.00	0.12		-0.25	0.06	0.30		0.36	0.16	0.32		-0.68	0.34	0.93		0.249	0.634	0.823
7	Leaf litter	0.23	0.00	0.00	0.08		0.23	0.23	0.00		0.30	0.30	0.00		0.77	0.77	#DIV/0!		0.780	0.780	#DIV/0!
8	*Festuca perennis*	0.00	0.16	0.25	0.13		-0.16	-0.25	-0.09		0.26	0.30	0.40		-0.61	-0.81	-0.23		0.272	0.210	0.410
9														**Z critical 2-tailed for *alpha***							
10														$\alpha = 0.10$	-1.64						
11														$\alpha = 0.05$	-1.96						
12														$\alpha = 0.01$	-2.58						
13																					
14	n	2	number of quadrats for each field (6 in total): Your number might vary. If you did a different number, enter it for the appropriate field below																		
15	n North field	2																			
16	n Middle field	2																			
17	n South field	2																			

Visual Differences

- Field 1 Species - *Bromus diandrus* (50%)
- Field 2 Species - *Avena* spp. (50%)
- Field 3 Species - *Hordeum murinum* (50%)



Z-test of difference of proportions (2017)

T-Test of Soil Compaction

- 3 Soil compaction readings collected per quadrat
  - 6 per field
- NO significant differences of soil compaction, despite high p-value
  - Effect size: 0.346-0.602 (weak)
  - Power: 0.08-0.157 < 0.8 (Underpowered)
  - Prob-value: P > alpha (0.05)

	N vs S Fields	N vs Middle Fields	Middle vs S Fields
T-based on PVE	-1.043	-0.62	-0.599
T-Critical	2.228	2.228	2.228
P-based on PVE	0.322	0.549	0.562
Cohen's d (effect size)	-0.602	-0.358	-0.346
Power	0.157	0.087	0.08

Conclusion

- There is no significant differences in CSS in the Western parts of the Sepulveda Basin
- Sources of error
- Larger sample size needed
- T-test shows higher chance of Type II Error

References

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- Laris, P., S. Brennan, and K. Engelberg. 2016 The Coyote Brush Invasion of Southern California Grasslands and the Legacy of `Mechanical Disturbance. Geographical Review. 1-20.
- U.S. Army Corps of Engineers Los Angeles District, and Tetra Tech, Inc. "Sepulveda Dam Basin." *Sepulveda Basin Wildlife*. Los Angeles County, Aug. 2011. Web. 23 Apr. 2017. 43-48. <http://sepulvedabasinwildlife.org/pdf/Final%20Sepulveda%20Dam%20Master%20Plan.pdf>.