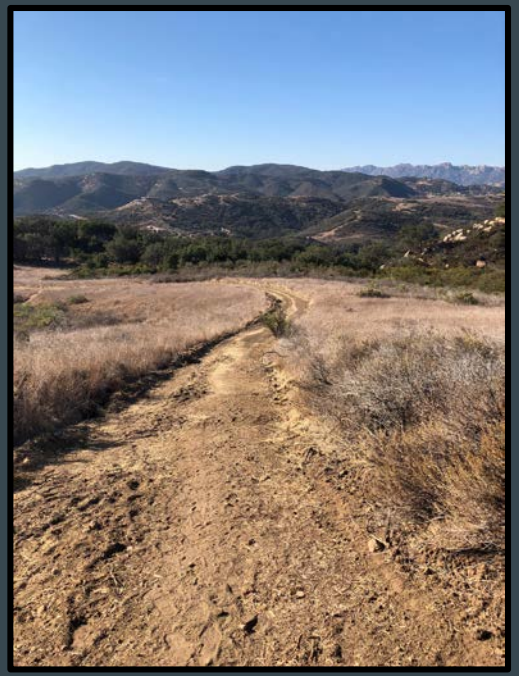


Potrero Rd.

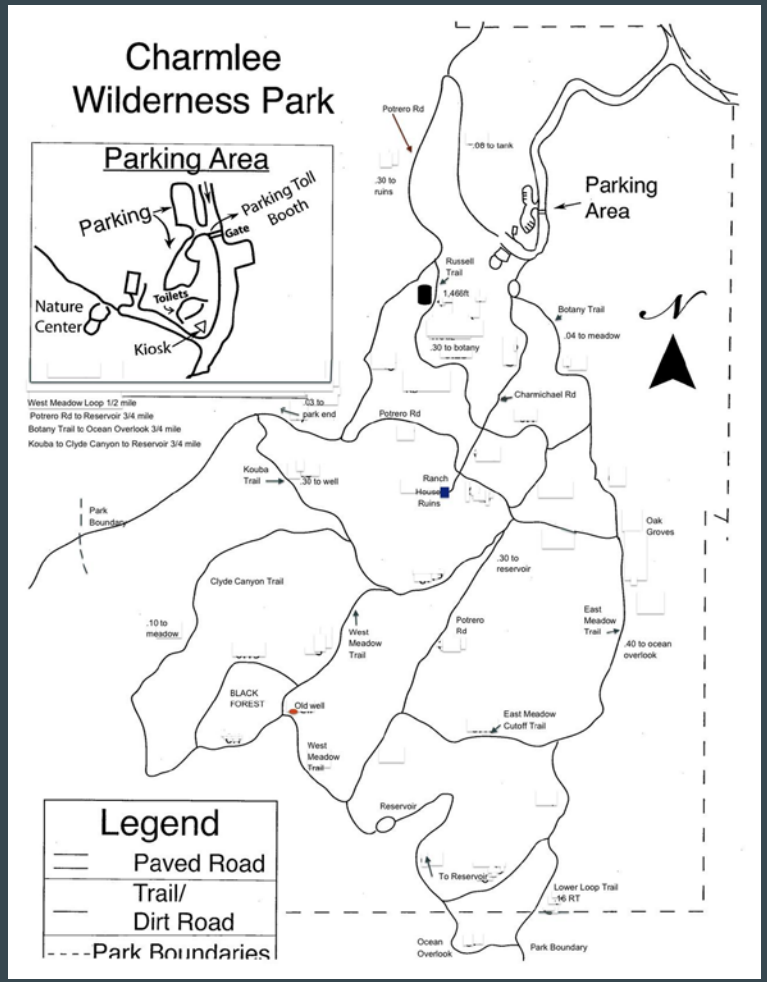
Charmlee Park Vanguard Species

...

Dominique Vitti, Alex Paz, Keith Cunningham, Indalecio Chavez

Charmlee Park:

- Charmlee Wilderness Park is located in the Santa Monica Mountains and is home to native plant displays, a nature center, and 8 miles of hiking trails.



Study Objective:

- Determine how much mechanical disturbance there was since the last field study of this area (2014 & 2016).
- **Mechanical disturbance** involves invasive plants taking over, such as grasslands.

Process:

- Our field study consisted of us going off trail to find CSS species amongst the grasses.
- Gathered samples of about 90 CSS species, while recording various data about these plants: height, elevation, longitude, and latitude, etc.
- Captured 3 pictures of each plant (two far away from different angles, and one close-up).

Hypothesis:

H_o: California Sage Scrub species cannot tolerate conditions out in the grasslands.

H_A: California Sage Scrub species can tolerate conditions out in the grasslands.

Original Study v. Our Study

Our Study:

- North & South Patches
- 90 Total Samples
- Mid-Fall Season (Dry)

2014 & 2016 Study:

- Southwestern Patch
- 130 Total Samples Combined
- Early Spring (Wet) Increased Observance

Field Study Areas

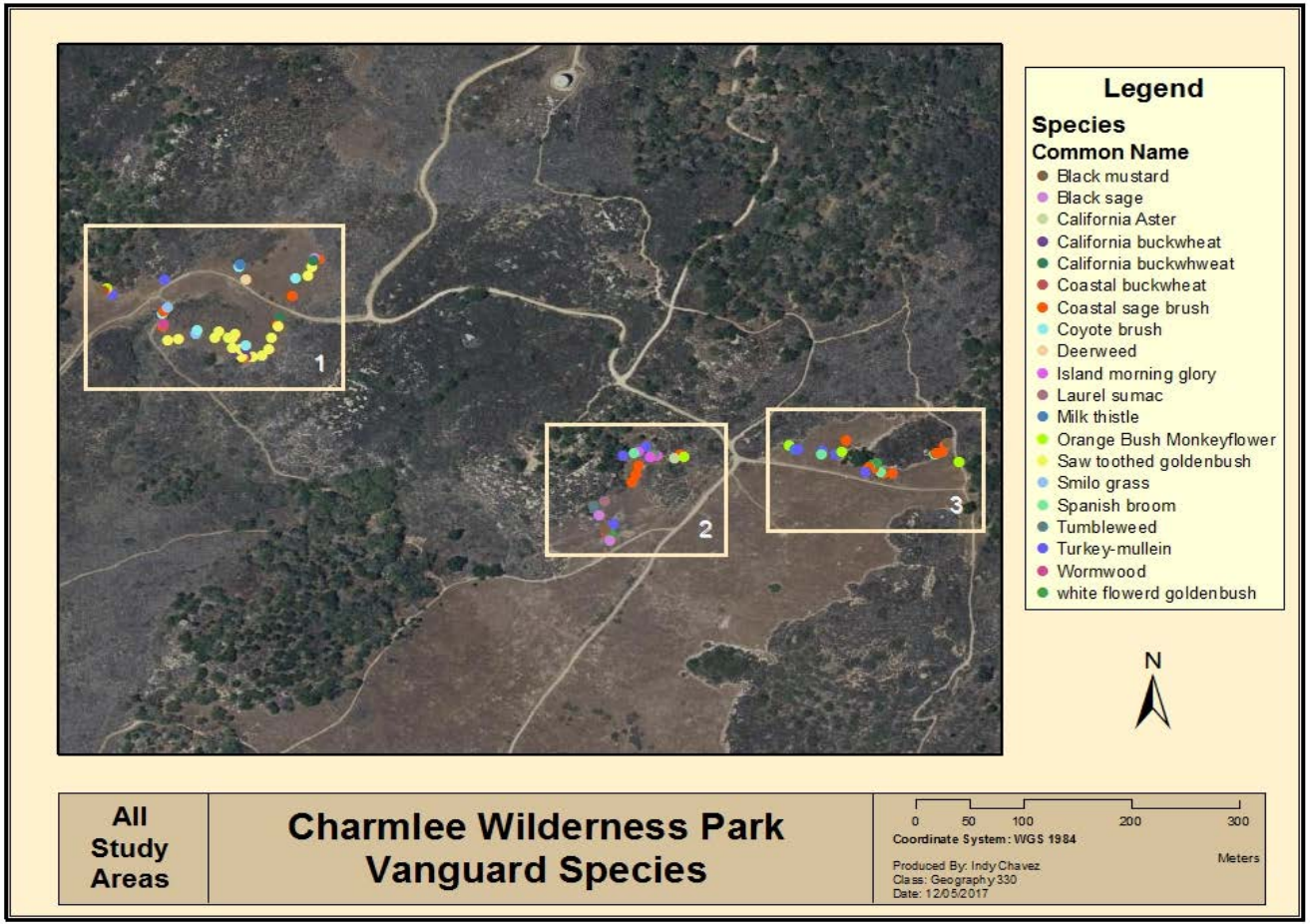
North Patch (blue):

- North Patch was on average a more dramatic incline than South Patch.
- This was a larger area with CSS primarily on the borders.

South Patch (white):

- More monospecific patches than the South Patch

Visual Representation of Species Encountered:



Legend

Species

Common Name

- Black mustard
- Black sage
- California Aster
- California buckwheat
- California buckwhweat
- Coastal buckwheat
- Coastal sage brush
- Coyote brush
- Deerweed
- Island morning glory
- Laurel sumac
- Milk thistle
- Orange Bush Monkeyflower
- Saw toothed goldenbush
- Smilo grass
- Spanish broom
- Tumbleweed
- Turkey-mullein
- Wormwood
- white flowerd goldenbush

N

Study Area 1

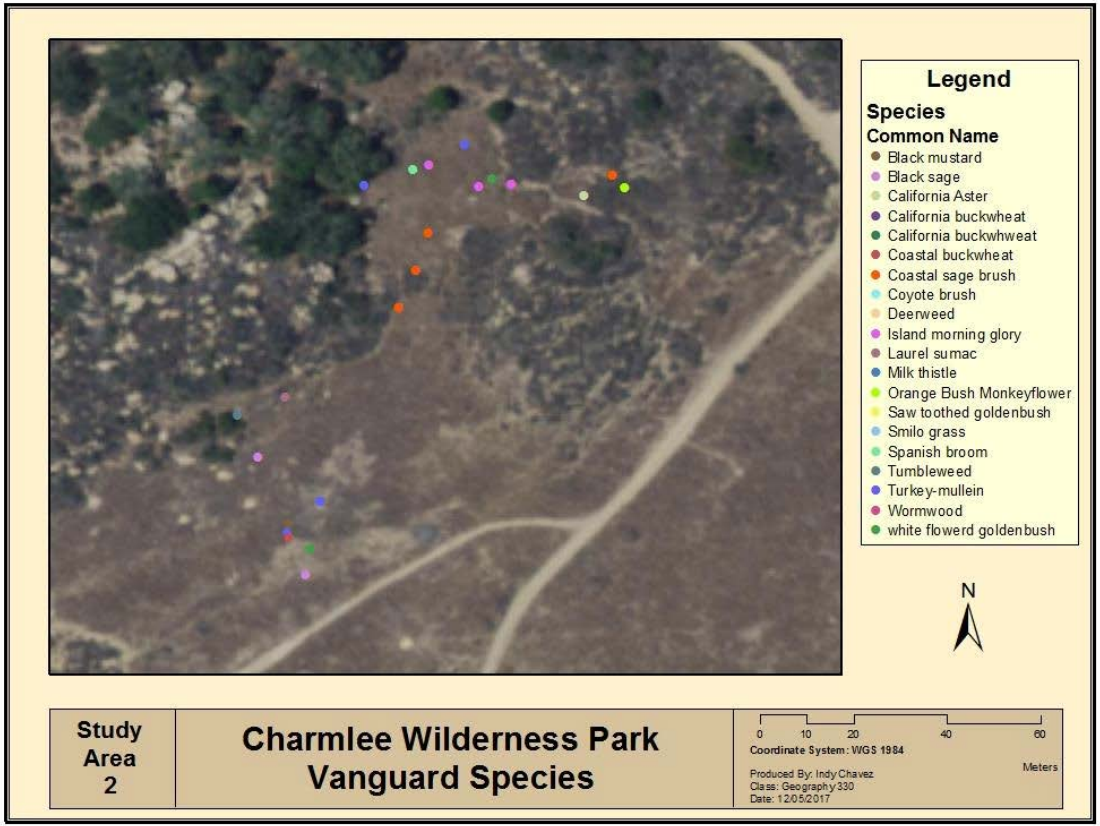
Charmlee Wilderness Park Vanguard Species

0 15 30 60 90

Meters

Coordinate System: WGS 1984

Produced By: Indy Chavez
Class: Geography 330
Date: 12/05/2017


Legend
Species
Common Name
Black mustard
Black sage
California Aster
California buckwheat
California buckwhweat
Coastal buckwheat
Coastal sage brush
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Deerweed
Island morning glory
Laurel sumac
Milk thistle
Orange Bush Monkeyflower
Saw toothed goldenbush
Smilo grass
Spanish broom
Tumbleweed
Turkey-mullein
Wormwood
white flowerd goldenbush
N
Study Area 2
Charmlee Wilderness Park
Vanguard Species
0 10 20 40 60
Meters
Coordinate System: WGS 1984
Produced By: Indy Chavez
Class: Geography 330
Date: 12/05/2017

Legend

Species

Common Name

- Black mustard
- Black sage
- California Aster
- California buckwheat
- California buckwhweat
- Coastal buckwheat
- Coastal sage brush
- Coyote brush
- Deerweed
- Island morning glory
- Laurel sumac
- Milk thistle
- Orange Bush Monkeyflower
- Saw toothed goldenbush
- Smilo grass
- Spanish broom
- Tumbleweed
- Turkey-mullein
- Wormwood
- white flowerd goldenbush

N

Study Area 3	**Charmlee Wilderness Park Vanguard Species**	0 10 20 40 60 Coordinate System: WGS 1984 Meters Produced By: Indy Chavez Class: Geography 330 Date: 12/05/2017


Area 1; 2009


Area 1; 2016


Area 2; 2009


Area 2; 2016


Area 3; 2009


Area 3; 2016

Chi-Square Analysis

- 7 species in common between S14, F16, and F17
  a. *Eriogonum fasciculatum var. Foliosom* → *California buckwheat*
  b. *Artemisia californica* → Coastal sagebrush
  c. *Baccharis pilularis* → Coyote brush
  d. *Isocoma menzeissii* → White flowered goldenbrush
  e. *Croton setigar* → Turkey - mullein
  f. *Mimulus aurantiacus* → Organge Bush Monkeyflower
  g. *Salvia mellifera* → Black sage
- Changes in species population tested
  a. Old = S14 + F16
  b. New = F17

Chi-Square Results:

Significant: $X^2_{Calc} > X^2_{Calc}$

1. California Buckwheat
2. Coyote Bush
3. White flowered goldenbush
4. Orange Bush Monkeyflower

CSS species can tolerate conditions out in grasslands.

1	X^2	Enter data and *alpha* in yellow cells only				Outputs in blue cells				
2	VAR 1	VAR 2		*		Cell	O	O sq.	E	O sq./E
3		a	b							
4	Obs	30	5	35		**a**	30	900	24.161	37.250
5	Exp	*24.161*	*10.839*			**b**	5	25	10.839	2.306
6		c	d			**c**	76.996359	5928.4394	82.835	71.569
7	Obs	76.99635947	43	119.996		**d**	43	1849	37.161	49.756
8	Exp	*82.835*	*37.161*							
9										160.882
10	*	106.9963595	48	154.996					X^2_{calc}	5.886
11									***alpha***	0.05
12									**df**	1
13				Yate's X^2 (over)correction for continuity	4.921				X^2_{crit}	3.841
14				prob (Yates)	0.027				**prob**	**0.015**
15				Pirie-Hamden X^2 correction for continuity)	5.879					
16				prob Pirie-Hamden	0.015				Yule's Q	0.540

1	X^2	Enter data and *alpha* in yellow cells only				Outputs in blue cells				
2	VAR 1	VAR 2		*		Cell	O	O sq.	E	O sq./E
3		a	b							
4	Obs	1	4	5		**a**	1	1	3.452	0.290
5	Exp	*3.452*	*1.548*			**b**	4	16	1.548	10.333
6		c	d			**c**	105.99636	11235.228	103.545	108.506
7	Obs	105.9963595	44	149.996		**d**	44	1936	46.452	41.678
8	Exp	*103.545*	*46.452*							
9										160.807
10	*	106.9963595	48	154.996					X^2_{calc}	5.810
11									***alpha***	0.05
12									**df**	1
13				Yate's X^2 (over)correction for continuity	3.682				X^2_{crit}	3.841
14				prob (Yates)	0.055				**prob**	**0.016**
15				Pirie-Hamden X^2 correction for continuity)	5.826					
16				prob Pirie-Hamden	0.016				Yule's Q	-0.812

Chi-Square results cont.

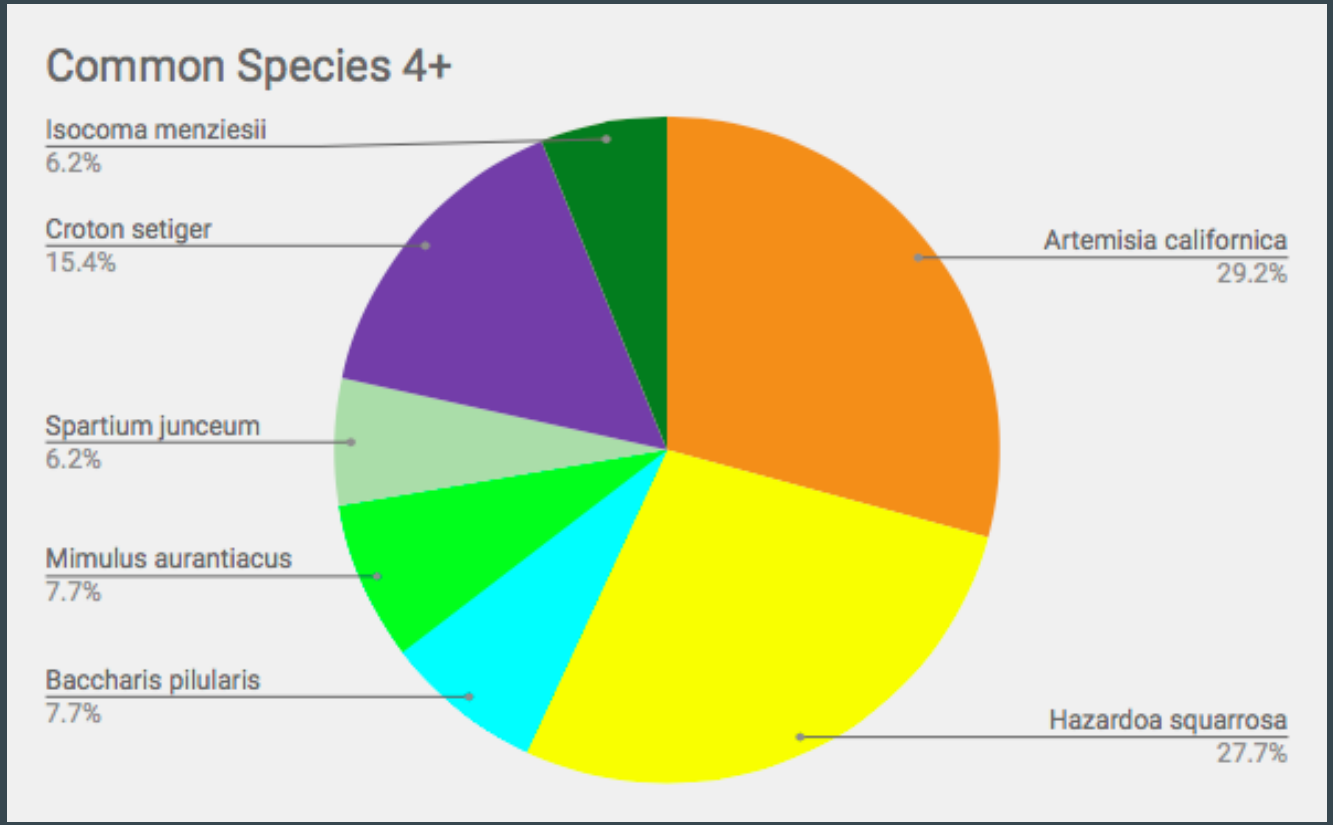
Not significant: $X^2_{Calc} < X^2_{Calc}$

1. Coastal Sagebrush
2. Turkey - Mullein
3. Black Sage

CSS species cannot tolerate conditions out in grasslands.

1	X^2	Enter data and *alpha* in yellow cells only				Outputs in blue cells				
2	VAR 1	VAR 2		*		Cell	O	O sq.	E	O sq./E
3		a	b							
4	Obs	59.0165644	19	78.0166		**a**	59.016564	3482.9549	53.856	64.672
5	Exp	*53.856*	*24.161*			**b**	19	361	24.161	14.942
6		c	d			**c**	47.979795	2302.0607	53.140	43.320
7	Obs	47.97979507	29	76.9798		**d**	29	841	23.839	35.278
8	Exp	*53.140*	*23.839*							
9										158.211
10	*	106.9963595	48	154.996					X^2_{calc}	3.215
11									***alpha***	0.05
12									**df**	1
13				Yate's X^2 (over)correction for continuity	2.622				X^2_{crit}	3.841
14				prob (Yates)	0.105				**prob**	0.073
15				Pirie-Hamden X^2 correction for continuity)	3.211					
16				prob Pirie-Hamden	0.073				Yule's Q	0.305

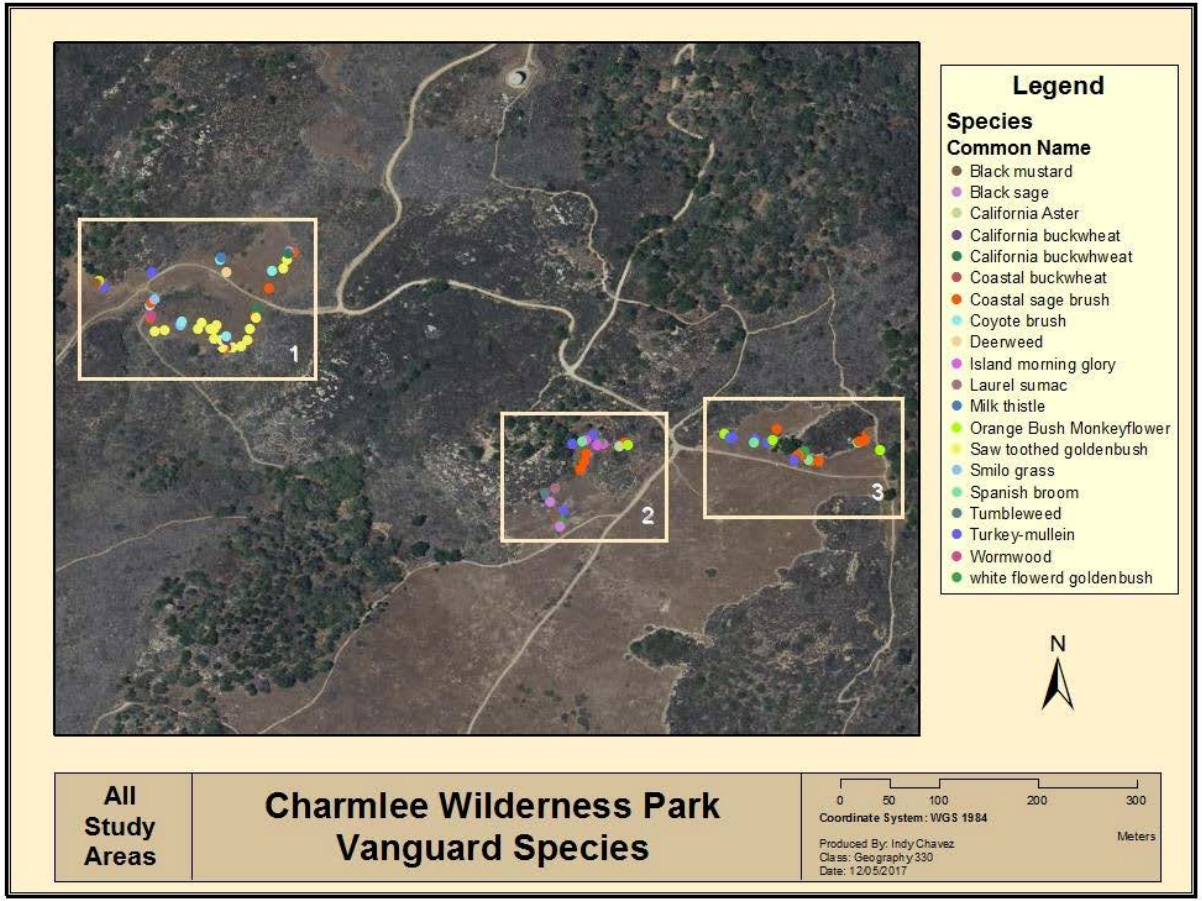
1	X^2	Enter data and *alpha* in yellow cells only				Outputs in blue cells				
2	VAR 1	VAR 2		*		Cell	O	O sq.	E	O sq./E
3		a	b							
4	Obs	14.0368098	10	24.0368		**a**	14.03681	197.03203	16.593	11.874
5	Exp	*16.593*	*7.444*			**b**	10	100	7.444	13.434
6		c	d			**c**	92.95955	8641.4779	90.403	95.588
7	Obs	92.95954967	38	130.96		**d**	38	1444	40.556	35.605
8	Exp	*90.403*	*40.556*							
9										156.501
10	*	106.9963595	48	154.996					X^2_{calc}	1.505
11									***alpha***	0.05
12									**df**	1
13				Yate's X^2 (over)correction for continuity	0.974				X^2_{crit}	3.841
14				prob (Yates)	0.324				**prob**	0.220


Common Species 4+
Isocoma menziesii
6.2%
Croton setiger
15.4%
Spartium junceum
6.2%
Mimulus aurantiacus
7.7%
Baccharis pilularis
7.7%
Artemisia californica
29.2%
Hazardoa squarrosa
27.7%

Suggestions for Further Research

- Try best to sample in the same vicinity as older studies
- Come prepared with more knowledge of non-CSS species
- Make distinctions between study areas different landscapes
- Rather than set a specific number of samples to shoot for, attempt to gather all samples in one patch

Questions?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Turkey-mullein
Wormwood
white flowerd goldenbush
1
2
3
N
All Study Areas
Charmlee Wilderness Park
Vanguard Species
0 50 100 200 300
Coordinate System: WGS 1984
Meters
Produced By: Indy Chavez
Class: Geography 330
Date: 12/05/2017