Identifying mechanisms for successful ecological restoration with salvaged topsoil in coastal sage scrub communities

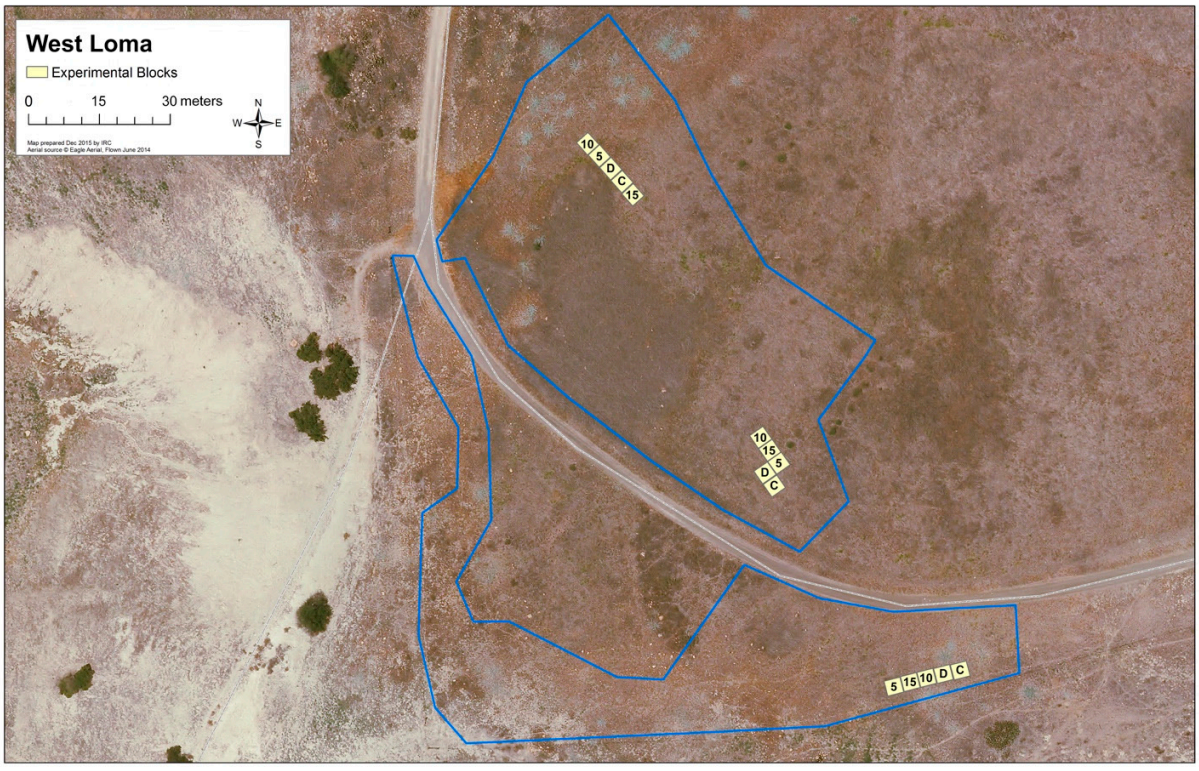
Supplementary Materials

Table S1: The distance of each recipient site from the donor site, as well as the size of each of the three sites that received salvaged topsoil and the volume of soil deposited at each recipient site.

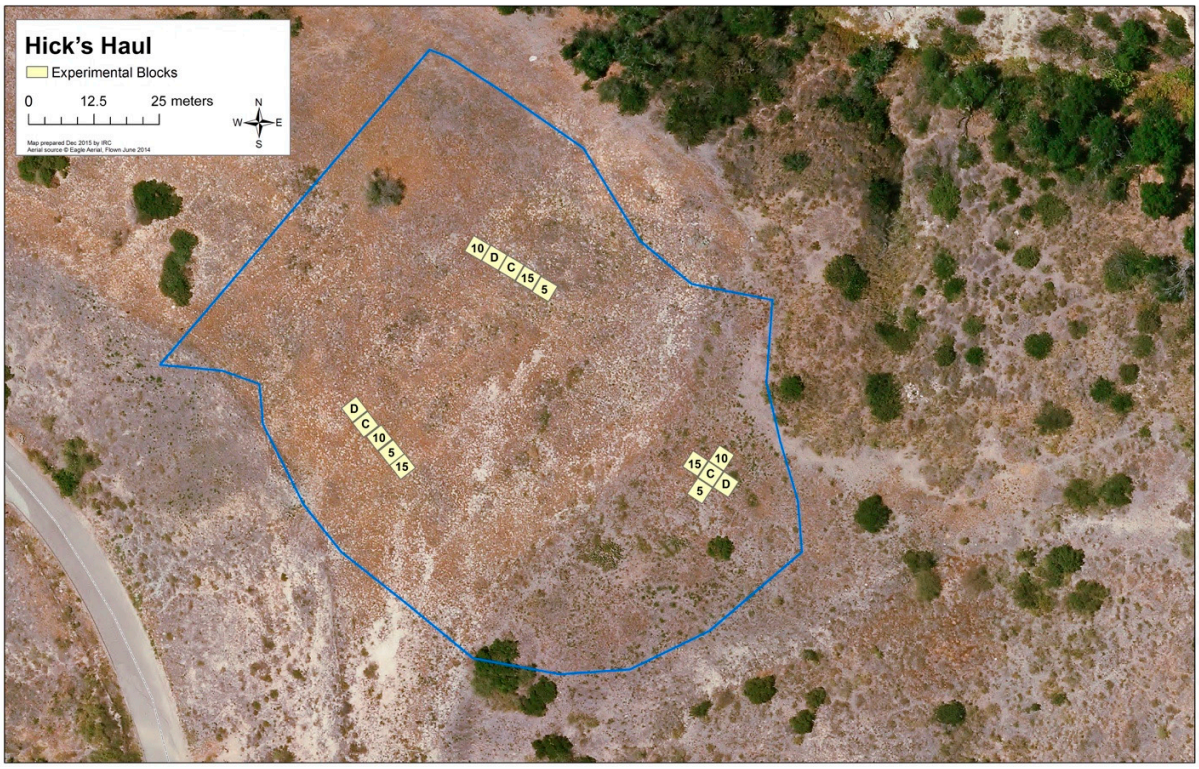
Site name	West Loma	Hick's Haul	Portola
Distance of site from donor site (km)	1.45	2.93	6.21
Size (hectares)	0.85	0.85	1.15
Soil received (m^3 at 10cm depth)	862.4	862.4	1175.9

Figure S1: Experimental block layout at each of the three recipient sites (A. West Loma, B. Hick's Haul, and C. Portola). Three experimental blocks were established at each site, each containing five plots representing all of the salvaged soil application treatments (C – control, no salvaged soil; D – dusting of salvaged soil; 5 – 5cm of salvaged soil; 10 – 10 cm of salvaged soil; 15 – 15 cm of salvaged soil). The blue borders represent the boundaries of the recipient sites. Outside of the experimental plots, the site received 10 cm of salvaged soil.

a)



b)


Hick's Haul
Experimental Blocks
0 12.5 25 meters
N
W E
S
Map prepared Dec 2015 by IRC
Aerial source © Eagle Aerial, Flown June 2014
10 D C 15 5
D C 10 5 15
15 10 C D 5

b)

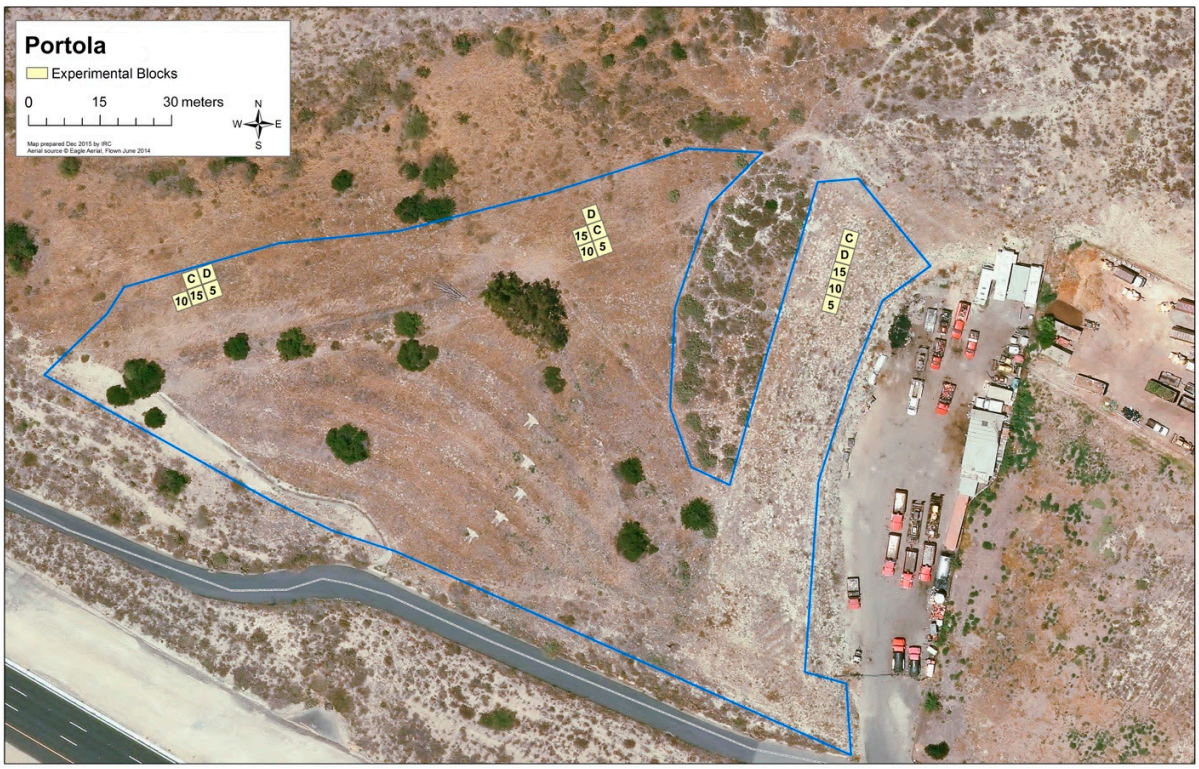

Portola
Experimental Blocks
0 15 30 meters
N
W E
S
Map prepared Dec 2015 by IRC
Aerial source © Eagle Aerial, Flown June 2014
C D 10 15 5
D 15 C 10 5
C D 15 10 5

Figure S2: Representation of point-intercept data collection method utilized to collect data in February 2016. The center of the 3m x 3m experimental plot was marked with a pin flag. A 1m x 1m quadrat, pre-marked with 12 intersect points (represented by "x"), was placed in the plot with its corner aligned with the pin flag. All species located at each intersect point were recorded. The quadrat was subsequently moved to the remaining three corners of the plot, at which locations data was also collected, resulting in a total of 48 points.

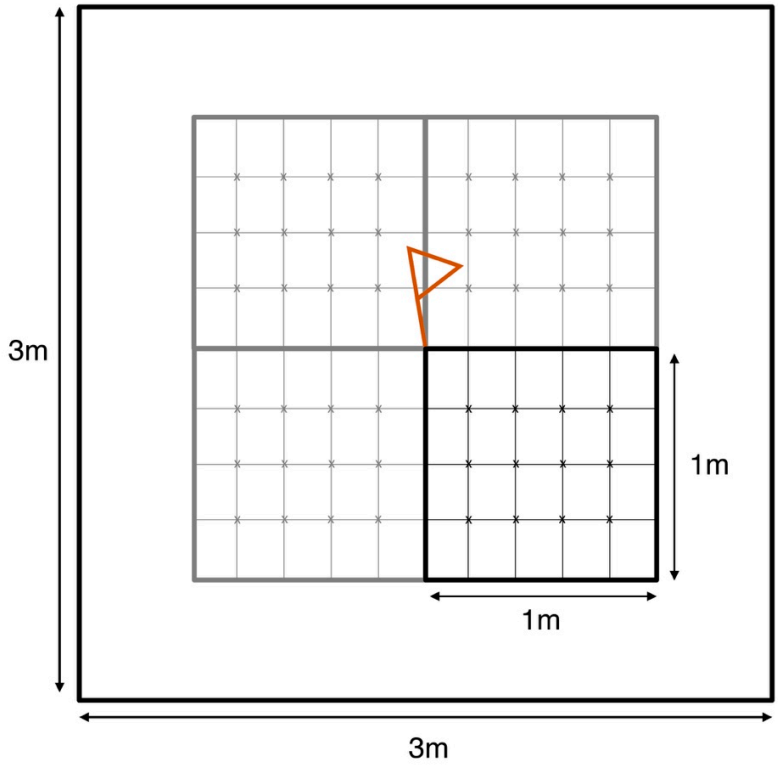


Table S2: Results from repeated measures ANOVA for native density, non-native cover, native species richness, and non-native species richness. Year corresponds to the two data collection periods: March 2016 and March 2017. Treatments include various salvaged soil applications (no salvaged soil, dusting of salvaged soil, 5cm, 10cm, or 15cm of salvaged soil). Site refers to the three recipient sites that received salvaged soil. Bolded values refer to effects that proved significant (where $p < 0.05$). Data treated as ln(x+1).

	Effect	**Num DF**	**Den DF**	**F Value**	**Pr > F**
Native Density	Year	1	59	0.13	0.7238
	Treatment	**4**	**59**	**21.42**	**<.0001**
	Year*Treatment	4	59	1.11	0.3625
	Site	**2**	**59**	**16.2**	**<.0001**
	Year*Site	**2**	**59**	**10.81**	**0.0001**
	Site*Treatment	**8**	**59**	**4.43**	**0.0003**
	Year*Site*Treatment	8	59	0.76	0.6415
Non-Native Cover	**Year**	**1**	**59**	**5.09**	**0.0278**
	Treatment	4	59	2.19	0.0808
	Year*Treatment	4	59	0.67	0.6152

	Site	**2**	**59**	**7.97**	**0.0009**
	Year*Site	**2**	**59**	**4.03**	**0.0228**
	Site*Treatment	8	59	0.33	0.9514
	Year*Site*Treatment	8	59	0.64	0.7401
Native Species Richness	Year	1	59	0.7	0.4073
	Treatment	**4**	**59**	**20.55**	**<.0001**
	Year*Treatment	**4**	**59**	**4.02**	**0.006**
	Site	**2**	**59**	**9.37**	**0.0003**
	Year*Site	**2**	**59**	**4.47**	**0.0156**
	Site*Treatment	**8**	**59**	**2.39**	**0.0263**
	Year*Site*Treatment	8	59	0.36	0.9394
Non-Native Species Richness	**Year**	**1**	**59**	**8.19**	**0.0058**
	Treatment	**4**	**59**	**4.78**	**0.0021**
	Year*Treatment	**4**	**59**	**3.94**	**0.0067**
	Site	2	59	0.12	0.8847
	Year*Site	2	59	0.08	0.9249
	Site*Treatment	8	59	0.85	0.5615
	Year*Site*Treatment	8	59	1.15	0.347

Table S3: Tukey post-hoc results for A) native density, B) native species richness, C) non-native cover, and D) non-native species richness, on the effects of salvaged soil treatment, recipient site, and data collection year, as well as their interactions. Results tables include various salvaged soil treatments (control-no salvaged soil, dusting of salvaged soil, 5cm, 10cm, or 15cm of salvaged soil); two data collection years (March 2016 and March 2017), as site (three different recipient sites: Portola, Hick's Haul, and West Loma). Mean standard error (SE) and letters from the Tukey post-hoc tests are also included, where different letters indicate significant differences and shared letters indicate no significant difference amongst groups.

a) Tukey-Kramer (p<0.05) post-hoc results for ln(x+1) native density

Effect of Year

Year	**Estimate**	**SE**	**Letter**
2016	1.6075	0.1756	A
2017	1.5453	0.1756	A

Effect of Treatment

Treatment	**Estimate**	**SE**	**Letter**
15 cm	2.4579	0.2301	A
10 cm	2.2555	0.2301	A
5 cm	1.9101	0.2301	A
Dusting	0.7827	0.2301	B
Control	0.4759	0.2301	B

Interaction of Year*Treatment

Year	Treatment	Estimate	SE	Letter
2016	15 cm	2.6697	0.3022	A
2016	10 cm	2.4963	0.3022	A
2017	15 cm	2.2461	0.3022	AB
2017	10 cm	2.0146	0.3022	AB
2016	5 cm	1.972	0.3022	AB
2017	5 cm	1.8482	0.3022	ABC
2017	Dusting	1.0036	0.3022	BCD
2017	Control	0.614	0.3022	CD
2016	Dusting	0.5617	0.3022	D
2016	Control	0.3379	0.3022	D

Effect of Site

Site	Estimate	SE	Letter
West Loma	2.2388	0.1951	A
Hick's Haul	1.4267	0.1951	B
Portola	1.0638	0.1951	B

Interaction of Year*Site

Year	Site	Estimate	SE	Letter
2017	West Loma	2.7812	0.2471	A
2016	Hick's Haul	1.7906	0.2471	B
2016	West Loma	1.6963	0.2471	B
2016	Portola	1.3357	0.2471	BC
2017	Hick's Haul	1.0628	0.2471	BC
2017	Portola	0.7919	0.2471	C

Interaction of Site*Treatment

Site	Treatment	Estimate	SE	Letter
West Loma	15 cm	3.7956	0.357	A
West Loma	10 cm	3.4738	0.357	AB
West Loma	5 cm	2.7812	0.357	ABC
Portola	15 cm	1.9175	0.357	BCD
Portola	10 cm	1.6799	0.357	CDE
Hick's Haul	15 cm	1.6607	0.357	CDE
Hick's Haul	10 cm	1.6127	0.357	CDE
Portola	5 cm	1.5596	0.357	CDE
Hick's Haul	Dusting	1.5036	0.357	CDE
Hick's Haul	5 cm	1.3894	0.357	CDE
Hick's Haul	Control	0.9671	0.357	DE

West Loma	Dusting	0.8212	0.357	DE
West Loma	Control	0.3219	0.357	DE
Portola	Control	0.1388	0.357	E
Portola	Dusting	0.02326	0.357	E

Interaction of Year*Site*Treatment

Year	Site	Treatment	Estimate	SE	Letter
2017	West Loma	15 cm	4.5208	0.4925	A
2017	West Loma	10 cm	3.8118	0.4925	AB
2017	West Loma	5 cm	3.4691	0.4925	ABC
2016	West Loma	10 cm	3.1359	0.4925	ABCD
2016	West Loma	15 cm	3.0704	0.4925	ABCD
2016	Portola	15 cm	2.5844	0.4925	ABCDE
2016	Hick's Haul	15 cm	2.3542	0.4925	ABCDEF
2016	Hick's Haul	10 cm	2.2874	0.4925	ABCDEF
2016	Portola	5 cm	2.213	0.4925	ABCDEF
2016	West Loma	5 cm	2.0933	0.4925	ABCDEF
2016	Portola	10 cm	2.0657	0.4925	ABCDEF
2016	Hick's Haul	5 cm	1.6097	0.4925	BCDEF
2016	Hick's Haul	Dusting	1.5036	0.4925	BCDEF
2017	Hick's Haul	Dusting	1.5036	0.4925	BCDEF
2017	West Loma	Dusting	1.3684	0.4925	BCDEF
2017	Portola	10 cm	1.294	0.4925	BCDEF
2017	Portola	15 cm	1.2505	0.4925	BCDEF
2016	Hick's Haul	Control	1.1981	0.4925	BCDEF
2017	Hick's Haul	5 cm	1.1691	0.4925	BCDEF
2017	Hick's Haul	15 cm	0.9671	0.4925	CDEF
2017	Hick's Haul	10 cm	0.9381	0.4925	CDEF
2017	Portola	5 cm	0.9063	0.4925	CDEF
2017	Hick's Haul	Control	0.736	0.4925	DEF
2017	West Loma	Control	0.736	0.4925	DEF
2017	Portola	Control	0.3698	0.4925	EF
2016	West Loma	Dusting	0.2739	0.4925	EF
2017	Portola	Dusting	0.1388	0.4925	EF
2016	Portola	Control	-0.09226	0.4925	F
2016	West Loma	Control	-0.09226	0.4925	F
2016	Portola	Dusting	-0.09226	0.4925	F

b) Tukey-Kramer ($p<0.05$) post-hoc results for ln(x+1) native species richness

Effect of Year

Year	Estimate	SE	Letter
2016	1.0204	0.1109	A
2017	0.9311	0.1109	A

Effect of Treatment

Treatment	Estimate	SE	Letter
15 cm	1.4617	0.1397	A
10 cm	1.3671	0.1397	A
5 cm	1.1892	0.1397	A
Dusting	0.4845	0.1397	B
Control	0.3764	0.1397	B

Interaction of Year*Treatment

Year	Treatment	Estimate	SE	Letter
2016	15 cm	1.7241	0.1839	A
2016	10 cm	1.5871	0.1839	A
2016	5 cm	1.3461	0.1839	AB
2017	15 cm	1.1993	0.1839	ABC
2017	10 cm	1.1471	0.1839	ABC
2017	5 cm	1.0322	0.1839	ABC
2017	Dusting	0.7691	0.1839	BCD
2017	Control	0.5079	0.1839	CD
2016	Control	0.2449	0.1839	D
2016	Dusting	0.1998	0.1839	D

Effect of Site

Site	Estimate	SE	Letter
West Loma	1.2524	0.1203	A
Hick's Haul	0.9534	0.1203	B
Portola	0.7215	0.1203	B

Interaction of Year*Site

Year	Site	Estimate	SE	Letter
2017	West Loma	1.4244	0.1518	A
2016	Hick's Haul	1.1626	0.1518	AB
2016	West Loma	1.0804	0.1518	ABC
2016	Portola	0.8182	0.1518	BC
2017	Hick's Haul	0.7442	0.1518	BC
2017	Portola	0.6247	0.1518	C

Interaction of Site*Treatment

Site	Treatment	Estimate	SE	Letter
West Loma	15 cm	1.9243	0.2114	A
West Loma	10 cm	1.8892	0.2114	A
West Loma	5 cm	1.5162	0.2114	AB
Portola	15 cm	1.3446	0.2114	AB
Hick's Haul	10 cm	1.1439	0.2114	ABC
Hick's Haul	15 cm	1.1162	0.2114	ABCD
Portola	10 cm	1.0682	0.2114	ABCD
Hick's Haul	5 cm	1.0506	0.2114	ABCD
Portola	5 cm	1.0006	0.2114	ABCDE
Hick's Haul	Control	0.752	0.2114	BCDE
West Loma	Dusting	0.7101	0.2114	BCDE
Hick's Haul	Dusting	0.7041	0.2114	BCDE
West Loma	Control	0.2223	0.2114	CDE
Portola	Control	0.1548	0.2114	DE
Portola	Dusting	0.03924	0.2114	E

Interaction of Year*Site*Treatment

Year	Site	Treatment	Estimate	SE	Letter
2016	West Loma	15 cm	1.9858	0.296	A
2016	West Loma	10 cm	1.9371	0.296	AB
2017	West Loma	15 cm	1.8628	0.296	AB
2017	West Loma	10 cm	1.8412	0.296	AB
2017	West Loma	5 cm	1.6317	0.296	ABC
2016	Hick's Haul	15 cm	1.6154	0.296	ABC
2016	Portola	15 cm	1.5709	0.296	ABC
2016	Hick's Haul	10 cm	1.5358	0.296	ABC
2016	West Loma	5 cm	1.4007	0.296	ABCD
2016	Portola	5 cm	1.3844	0.296	ABCD
2016	Portola	10 cm	1.2885	0.296	ABCD
2017	West Loma	Dusting	1.2655	0.296	ABCD
2016	Hick's Haul	5 cm	1.2534	0.296	ABCD
2017	Portola	15 cm	1.1182	0.296	ABCD
2017	Hick's Haul	Dusting	0.8872	0.296	ABCD
2016	Hick's Haul	Control	0.8872	0.296	ABCD
2017	Portola	10 cm	0.8479	0.296	ABCD
2017	Hick's Haul	5 cm	0.8479	0.296	ABCD
2017	Hick's Haul	10 cm	0.752	0.296	ABCD
2017	Portola	5 cm	0.6169	0.296	ABCD
2017	Hick's Haul	15 cm	0.6169	0.296	ABCD

2017	Hick's Haul	Control	0.6169	0.296	ABCD
2017	West Loma	Control	0.521	0.296	ABCD
2016	Hick's Haul	Dusting	0.521	0.296	ABCD
2017	Portola	Control	0.3858	0.296	BCD
2016	West Loma	Dusting	0.1548	0.296	CD
2017	Portola	Dusting	0.1548	0.296	CD
2016	Portola	Control	-0.07628	0.296	D
2016	West Loma	Control	-0.07628	0.296	D
2016	Portola	Dusting	-0.07628	0.296	D
2016	Portola	Dusting	-0.09226	0.4925	F

c) Tukey-Kramer ($p<0.05$) post-hoc results for ln(x+1) non-native cover

Effect of Year

Year	Estimate	SE	Letter
2016	48.1332	4.8655	A
2017	35.6932	4.8655	B

Effect of Treatment

Treatment	Estimate	SE	Letter
Dusting	50.7532	6.1909	A
Control	48.1588	6.1909	A
10 cm	41.4477	6.1909	A
5 cm	37.7421	6.1909	A
15 cm	31.4643	6.1909	A

Interaction of Year*Treatment

Year	Treatment	Estimate	SE	Letter
2016	Control	61.531	8.7365	A
2016	Dusting	59.0977	8.7365	A
2016	10 cm	42.9421	8.7365	A
2017	Dusting	42.4088	8.7365	A
2017	10 cm	39.9532	8.7365	A
2016	5 cm	39.0866	8.7365	A
2016	15 cm	38.0088	8.7365	A
2017	5 cm	36.3977	8.7365	A
2017	Control	34.7866	8.7365	A
2017	15 cm	24.9199	8.7365	A

Effect of Site

Site	Estimate	SE	Letter
Hick's Haul	50.0943	5.2154	A
West Loma	46.921	5.2154	A
Portola	28.7243	5.2154	B

Interaction of Year* Site

Year	Site	Estimate	SE	Letter
2016	West Loma	63.3643	7.0711	A
2017	Hick's Haul	52.671	7.0711	AB
2016	Hick's Haul	47.5177	7.0711	ABC
2016	Portola	33.5177	7.0711	BC
2017	West Loma	30.4777	7.0711	BC
2017	Portola	23.931	7.0711	C

Interaction of Site*Treatment

Site	Treatment	Estimate	SE	Letter
West Loma	Dusting	60.2643	9.6934	A
Hick's Haul	Control	57.281	9.6934	A
West Loma	Control	53.4977	9.6934	A
Hick's Haul	Dusting	52.7977	9.6934	A
Hick's Haul	10 cm	51.1143	9.6934	A
West Loma	10 cm	50.4143	9.6934	A
Hick's Haul	5 cm	45.3143	9.6934	A
Hick's Haul	15 cm	43.9643	9.6934	A
West Loma	5 cm	42.431	9.6934	A
Portola	Dusting	39.1977	9.6934	A
Portola	Control	33.6977	9.6934	A
West Loma	15 cm	27.9977	9.6934	A
Portola	5 cm	25.481	9.6934	A
Portola	10 cm	22.8143	9.6934	A
Portola	15 cm	22.431	9.6934	A

Interaction of Year*Site*Treatment

Year	Site	Treatment	Estimate	SE	Letter
2016	West Loma	Control	84.1977	14.4209	A
2016	West Loma	Dusting	76.2643	14.4209	A
2016	Hick's Haul	Control	65.2643	14.4209	A
2016	Hick's Haul	Dusting	63.231	14.4209	A
2017	Hick's Haul	10 cm	61.8977	14.4209	A
2017	Hick's Haul	5 cm	59.8977	14.4209	A

2016	West Loma	10 cm	59.1643	14.4209	A
2016	West Loma	5 cm	52.4977	14.4209	A
2017	Hick's Haul	15 cm	49.8977	14.4209	A
2017	Hick's Haul	Control	49.2977	14.4209	A
2016	West Loma	15 cm	44.6977	14.4209	A
2017	West Loma	Dusting	44.2643	14.4209	A
2017	Hick's Haul	Dusting	42.3643	14.4209	A
2017	West Loma	10 cm	41.6643	14.4209	A
2017	Portola	Dusting	40.5977	14.4209	A
2016	Hick's Haul	10 cm	40.331	14.4209	A
2016	Hick's Haul	15 cm	38.031	14.4209	A
2016	Portola	Dusting	37.7977	14.4209	A
2016	Portola	Control	35.131	14.4209	A
2016	Portola	5 cm	34.031	14.4209	A
2017	West Loma	5 cm	32.3643	14.4209	A
2017	Portola	Control	32.2643	14.4209	A
2016	Portola	15 cm	31.2977	14.4209	A
2016	Hick's Haul	5 cm	30.731	14.4209	A
2016	Portola	10 cm	29.331	14.4209	A
2017	West Loma	Control	22.7977	14.4209	A
2017	Portola	5 cm	16.931	14.4209	A
2017	Portola	10 cm	16.2977	14.4209	A
2017	Portola	15 cm	13.5643	14.4209	A
2017	West Loma	15 cm	11.2977	14.4209	A

d) Tukey-Kramer ($p<0.05$) post-hoc results for ln(x+1) non-native species richness

Effect of Year

Year	**Estimate**	**SE**	**Letter**
2016	1.9291	0.09379	A
2017	1.7473	0.09379	B

Effect of Treatment

Treatment	**Estimate**	**SE**	**Letter**
10 cm	2.0903	0.12	A
15 cm	1.9887	0.12	AB
5 cm	1.8131	0.12	AB
Dusting	1.6568	0.12	B
Control	1.6419	0.12	B

Interaction of Year*Treatment

Year	Treatment	Estimate	SE	Letter
2016	10 cm	2.2521	0.1395	A
2016	15 cm	2.1907	0.1395	AB
2016	5 cm	2.0232	0.1395	ABC
2017	10 cm	1.9286	0.1395	ABC
2017	15 cm	1.7868	0.1395	ABC
2017	Dusting	1.752	0.1395	ABC
2017	Control	1.6659	0.1395	BC
2016	Control	1.6178	0.1395	C
2017	5 cm	1.6029	0.1395	C
2016	Dusting	1.5615	0.1395	C

Effect of Site

Site	Estimate	SE	Letter
West Loma	1.8567	0.1054	A
Hick's Haul	1.8476	0.1054	A
Portola	1.8101	0.1054	A

Interaction of Year*Site

Year	Site	Estimate	SE	Letter
2016	Hick's Haul	1.9434	0.1188	A
2016	West Loma	1.9304	0.1188	A
2016	Portola	1.9134	0.1188	A
2017	West Loma	1.7831	0.1188	A
2017	Hick's Haul	1.7518	0.1188	A
2017	Portola	1.7069	0.1188	A

Interaction of Site*Treatment

Site	Treatment	Estimate	SE	Letter
West Loma	10 cm	2.177	0.176	A
Hick's Haul	10 cm	2.1608	0.176	A
Hick's Haul	15 cm	2.0811	0.176	A
West Loma	15 cm	2.0372	0.176	A
Portola	10 cm	1.9332	0.176	A
West Loma	5 cm	1.9169	0.176	A
Hick's Haul	5 cm	1.8561	0.176	A
Portola	15 cm	1.848	0.176	A
Portola	Dusting	1.8412	0.176	A
Portola	Control	1.7621	0.176	A
Portola	5 cm	1.6662	0.176	A

Hick's Haul	Control	1.5905	0.176	A
West Loma	Dusting	1.5797	0.176	A
West Loma	Control	1.5729	0.176	A
Hick's Haul	Dusting	1.5494	0.176	A

Interaction of Year*Site*Treatment

Year	Site	Treatment	Estimate	SE	Letter
2016	West Loma	10 cm	2.4277	0.2147	A
2016	Hick's Haul	10 cm	2.3953	0.2147	A
2016	Hick's Haul	15 cm	2.3318	0.2147	A
2016	West Loma	15 cm	2.2533	0.2147	A
2016	West Loma	5 cm	2.2129	0.2147	A
2016	Portola	15 cm	1.9871	0.2147	A
2016	Hick's Haul	5 cm	1.9656	0.2147	A
2016	Portola	10 cm	1.9332	0.2147	A
2017	Portola	10 cm	1.9332	0.2147	A
2017	Hick's Haul	10 cm	1.9263	0.2147	A
2017	West Loma	10 cm	1.9263	0.2147	A
2016	Portola	Control	1.9033	0.2147	A
2016	Portola	5 cm	1.8912	0.2147	A
2016	Portola	Dusting	1.8519	0.2147	A
2017	Portola	Dusting	1.8304	0.2147	A
2017	Hick's Haul	15 cm	1.8304	0.2147	A
2017	West Loma	15 cm	1.821	0.2147	A
2017	West Loma	Dusting	1.7912	0.2147	A
2017	West Loma	Control	1.756	0.2147	A
2017	Hick's Haul	5 cm	1.7467	0.2147	A
2017	Portola	15 cm	1.7089	0.2147	A
2017	Hick's Haul	Dusting	1.6345	0.2147	A
2017	West Loma	5 cm	1.6209	0.2147	A
2017	Hick's Haul	Control	1.6209	0.2147	A
2017	Portola	Control	1.6209	0.2147	A
2016	Hick's Haul	Control	1.5601	0.2147	A
2016	Hick's Haul	Dusting	1.4642	0.2147	A
2017	Portola	5 cm	1.4412	0.2147	A
2016	West Loma	Control	1.3898	0.2147	A
2016	West Loma	Dusting	1.3683	0.2147	A

Table S4: Tukey post-hoc results for bacterial abundance. Results tables include data collection time period as well as various salvaged soil treatments: control-no salvaged soil, dusting of salvaged soil, 5cm, 10cm, or 15cm of salvaged soil, as well as soil collected from the donor site. Least squares mean (LS Mean) and letters from the Tukey post-hoc tests are also included, where different letters indicate significant differences and shared letters indicate no significant difference amongst groups.

Treatment	LS Mean	Time	Letter
Dusting	242396146	Jan 2016	C
Control	190420008	Jan 2016	E
Dusting	154107097	April 2017	BE
Control	139165925	April 2017	BF
10 cm	120423327	Jan 2016	AB
5 cm	115312521	Jan 2016	AB
Donor Site	89460432	Jan 2016	ADF
5 cm	84723771	April 2017	AD
15 cm	78336938	Jan 2016	AD
10 cm	77847996	April 2017	AD
15 cm	50548494	April 2017	D

Table S5: Average species values observed in March 2016 (the first year of the study) by treatment, including A) average species count in treatment plots for native species and B) average percent cover of non-native species by treatment plot. All bolded species are species that are either present 1) only in the control and/or dusted plot or 2) only in one or more treatments with a significant amount of salvaged soil addition, including 5 cm, 10 cm, and 15 cm of salvaged soil. Species marked in blue are those present only in one or more treatments with a significant amount of salvaged soil addition (5 cm, 10 cm, and 15 cm of salvaged soil). Species marked in orange are those present only in the control and/or dusted plots.

a) Average species count in treatment plots for native species

	Control	Dusted	5 cm	10 cm	15 cm
Acmispon glaber	0.000	0.000	**2.889**	**5.000**	**4.556**
Acmispon maritimus	0.000	0.000	0.000	**0.222**	**0.222**
Acmispon strigosus	0.000	0.000	0.111	0.000	0.000
Artemisia californica	0.000	0.000	**0.111**	**0.111**	**0.444**
Calystegia macrostegia	0.000	0.000	**0.333**	**0.667**	**1.222**
Camissoniopsis micrantha	0.000	0.000	**0.222**	**0.333**	**0.333**
Cirsium occidentale	0.000	0.000	**0.111**	0.000	0.000
Convolvulus simulans	0.000	0.000	0.000	**0.111**	0.000
Crassula connata	0.000	0.000	0.000	0.000	**0.111**
Cryptantha intermedia	0.000	0.000	**0.889**	**1.111**	**1.778**
Deinandra fasciculata	0.111	0.333	1.667	1.556	2.333
Emmenanthe penduliflora	0.000	0.000	**0.111**	**0.111**	0.000
Eriogonum fasciculatum	0.000	0.000	**0.222**	**0.000**	**0.556**
Eucrypta chrysanthemifolia	0.000	0.000	**2.111**	**4.556**	**6.000**

Eulobus californicus	0.000	0.000	**0.111**	**0.111**	0.000
Galium parisiense	0.000	0.000	0.000	**0.222**	0.000
Gilia angelensis	0.000	0.000	0.000	**0.333**	0.000
Lupinus bicolor	0.000	0.000	**0.222**	**0.111**	**0.111**
Lupinus truncatus	0.000	0.000	0.000	0.000	**0.111**
Malacothrix saxatilis	0.667	2.111	0.000	0.333	0.111
Nicotiana quadrivalvis	0.000	0.000	**0.222**	**0.333**	**0.111**
Phacelia cicutaria	**0.111**	0.000	0.000	0.000	0.000
Phacelia parryi	0.000	0.000	**0.111**	0.000	**0.111**
Salvia mellifera	0.000	0.000	0.000	0.000	**0.111**

b) Average percent cover of non-native species by treatment plot

Species:	Control	Dusted	5 cm	10 cm	15 cm
Lysimachia arvensis	0.000%	0.000%	0.611%	0.167%	0.489%
Avena fatua	8.444%	8.122%	4.667%	4.333%	3.556%
Brachypodium distachyon	0.222%	1.111%	1.111%	0.889%	1.000%
Brassica nigra	11.678%	9.133%	3.678%	6.889%	2.900%
Bromus diandrus	36.667%	35.444%	16.011%	13.222%	13.000%
Bromus madritensis	0.222%	0.889%	2.111%	6.011%	5.567%
Capsella bursa-pastoris	0.000%	0.000%	0.000%	**0.011%**	0.000%
Centaurea melitensis	0.011%	0.011%	0.111%	0.144%	0.344%
Chenopodium album	0.000%	0.000%	**0.011%**	0.000%	0.000%
Erodium cicutarium	0.011%	0.022%	0.122%	0.456%	0.222%
Festuca perennis	0.000%	0.000%	**0.111%**	**0.678%**	**0.222%**
Hedypnois cretica	0.000%	0.000%	0.000%	**0.011%**	0.000%
Hirschfeldia incana	0.000%	0.000%	0.000%	**0.233%**	**0.333%**
Hordeum murinum	**0.111%**	**0.011%**	0.000%	0.000%	0.000%
Lamarchia aurea	0.000%	0.000%	0.000%	**0.111%**	0.000%
Logfia gallica	0.000%	0.000%	**0.011%**	**0.022%**	**0.011%**
Malva parviflora	**0.222%**	0.000%	0.000%	0.000%	0.000%
Melilotus indicus	0.022%	0.011%	0.367%	2.011%	0.900%
Nicotiana glauca	1.467%	1.256%	6.567%	5.022%	6.344%
Salsola tragus	0.000%	0.000%	**0.011%**	**0.133%**	**0.011%**
Silene gallica	0.000%	0.000%	**0.022%**	**0.056%**	**0.122%**
Sisymbrium irio	**0.011%**	0.000%	0.000%	0.000%	0.000%
Solanum elaeagnifolium	0.000%	0.000%	0.000%	**0.111%**	**0.111%**
Sonchus oleraceus	0.022%	0.000%	0.144%	0.222%	0.344%
Vicia villosa	0.222%	0.889%	1.222%	0.011%	0.333%